

Met.O.1025



The Met.Office

# The Marine Observer

*A quarterly journal of Maritime  
Meteorology*



Volume 68 No. 342  
October 1998



# THE MARINE OBSERVER

A QUARTERLY JOURNAL OF MARITIME  
METEOROLOGY PREPARED BY THE  
OBSERVATIONS VOLUNTARY (MARINE)  
BRANCH OF THE MET. OFFICE

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VOL. 68

No. 342

OCTOBER 1998

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COVER PHOTOGRAPH: Waterspout and funnel cloud in the Red Sea photographed by Captain P.J. Ward on 9 December 1997. (See page 199.)

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LONDON: THE STATIONERY OFFICE

## Excellent Awards 1997

The process of assessing marine meteorological logbooks is an on-going occupation among the many tasks of nautical officers in the Observations Voluntary (Marine ) branch. Logbooks arrive in a continuous stream and the records for any single year always overlap those of the next such that two years' assessments are running concurrently for a while.

Undaunted, we are happy to say that the logbooks for 1997 have all been assessed and ranked according to a set formula which not only takes into account the most important parameter of high-quality meteorological observations allied to their quantity but also the opportunity, availability and willingness of Observing Officers to undertake this voluntary work.

Out of all the records received covering the period 1 January to 31 December 1997, the following ships have made contributions which place them in the top range of marks for Excellent Awards. They are:

1. m.v. *Cardigan Bay*. (P&O Nedlloyd Ltd). Captain A.E. Spencer. Principal Observing Officer D.R.N. Copley. Radio Officer P.A. Whyley.
2. m.v. *Ormond*. (Associated Bulk Carriers (London) Ltd, formerly P&O Bulk Carriers Ltd). Captain G. Nicholls. Principal Observing Officer R.T. Mattos. Radio Officer D.C. Cutinho.
3. m.v. *Arctic Ranger*. (Boyd Line Management Services Ltd). Captain A.W. Walker. Principal Observer also nominated for transmission work, M. Allison.

Making important contributions to meteorological information available from UK coastal waters are the ships reporting in the MARID code. Their sea-temperature records and other non-instrumental observations have their own part to play in the forecasting of weather conditions, especially fog, close to home, and we are pleased to acknowledge the efforts of the observers on m.v. *Stena Challenger*, m.v. *Marine Explorer* and m.v. *Hera* during 1997 which have placed these ships at the top of the MARID fleet.

Our thanks and appreciation go to all of the above-named ships and observers, and also to the rest of those nominated in this round of awards whose names appear in the following lists. By now we hope that everyone will have received their letter of notification and that many will have claimed their awards but circumstances beyond our control can lead to mail being delayed or misdirected. Therefore, all observers are advised to check the listings and are asked to contact us direct, or through any UK Port Met. Officer, if they see their names and have *not* already been notified by post. Discharge Book or Seaman's Book numbers will be required to confirm the identification of those claiming in this way.

Sadly we are unable to hold unclaimed books indefinitely and we must give a deadline by which time we should receive claims. Therefore, we would appreciate your co-operation in ensuring that your claim form is dated no later than 30 April 1999. Claims dated later than this deadline will be honoured by a certificate.

HIGHEST RANKING UK VOLUNTARY OBSERVING SHIPS — 1997



FotoFlite Ltd

*m.v. Cardigan Bay*



Associated Bulk Carriers (London) Ltd

*m.v. Ormond*



Boyd Line Management Services Ltd

*m.v. Arctic Ranger*



Paul Amos Photography

*m.v. Stena Challenger*

## Excellent Awards (Year ending 31 December 1997)

CAPTAIN	COMPANY
R.C. Avenin .....	V. Ships (UK) Ltd
K.O. Avery .....	NERC Research Vessel Services
A.J. Ball .....	P&O Nedlloyd Ltd
R.M. Banton .....	The Maersk Co. Ltd
S. Barber .....	Shell International Trading & Shipping Co. Ltd
P. Beresford .....	Bergesen d.y. ASA
M.J. Bromwich .....	BT Shipping Ltd
P. Buckley .....	Blue Star Ship Management Ltd
K.P. Byrne .....	P&O Nedlloyd Ltd
W. Campbell .....	Andrew Weir Shipping Ltd
B.A. Chapman .....	CEFAS
A.J. Clarke .....	Tidewater Marine North Sea Ltd
B. Cosgrove .....	Shell International Trading & Shipping Co. Ltd
S.A. Cresswell .....	The Maersk Co. Ltd
A. Crofts .....	Ropner Shipping Services Ltd
G.A. Cubbinson .....	Boston-Putford Offshore Safety Ltd
M.A. Cully .....	Acomarit (UK) Ltd
C.J. Davies .....	Associated Bulk Carriers (London) Ltd
J.G.W. Dixon .....	P&O Nedlloyd Ltd
J.F. Dobson .....	Blue Star Ship Management Ltd
R.M. Ellsmoor .....	Associated Bulk Carriers (London) Ltd
T.D. Faithfull .....	James Fisher & Sons (Liverpool) Ltd
A.J. Fee .....	P&O Nedlloyd Ltd
G.A.W. Fink .....	Great White Fleet Ltd
I. Finlay .....	Boston-Putford Offshore Safety Ltd
D. Freeman .....	Shell International Trading & Shipping Co. Ltd
P.C. French .....	Blue Star Ship Management Ltd
P.M. Frost .....	London Ship Managers Ltd
R. Fullager .....	London & Overseas Freighters (UK) Ltd
P.A. Furneaux .....	P&O Nedlloyd Ltd
R.J. Gains .....	Associated Bulk Carriers (London) Ltd
W.E.L. Godsell .....	Acomarit (UK) Ltd
B. Graham .....	P&O Nedlloyd Ltd
I.C. Gravatt .....	Ropner Shipping Services Ltd
G.M. Hallett .....	BP Shipping Ltd
K.E. Hammerman .....	The Maersk Co. Ltd
S.P. Harris .....	London Ship Managers Ltd
T.H. Henderson .....	Scottish Office, Agriculture & Fisheries Dept
L.J. Hesketh .....	Associated Bulk Carriers (London) Ltd
I.M. Hill .....	P&O Nedlloyd Ltd
M. Hooson .....	Tidewater Marine North Sea Ltd
J.W. Jackson .....	Carisbrooke Shipping plc
P.W. Jackson .....	Denholm Ship Management (UK) Ltd
H. Janowski .....	Transportacion Maritima Mexicana
M.C.J. Jewell .....	Scottish Office, Agriculture & Fisheries Dept
B.N. Jones .....	Acomarit (UK) Ltd
P.R. Kaye .....	P&O Nedlloyd Ltd
J.N. Kelleher .....	P&O Nedlloyd Ltd
C. Kortum .....	Safmarine Ship Management
A.G. Lacey .....	James Fisher & Sons plc
S.J. Lawrence .....	British Antarctic Survey
D.W. Lax .....	P&O Nedlloyd Ltd
J.P. Laycock .....	Scottish Office, Agriculture & Fisheries Dept
M. Light .....	Great White Fleet Ltd
W.G. Lockie .....	Great White Fleet Ltd
R. Lyall .....	Denholm Ship Management (UK) Ltd

## Excellent Awards (contd)

CAPTAIN	COMPANY
P.J.R. Manson.....	P&O Nedlloyd Ltd
D. Marr .....	James Fisher & Sons plc
P. Mathews .....	Blue Star Ship Management Ltd
N.J. Mauger .....	Great White Fleet Ltd
D.K. MacCorquodale .....	P&O Nedlloyd Ltd
M.J. McGilvray .....	Blue Star Ship Management Ltd
M.J. McKinnon.....	Stephenson Clarke Shipping Ltd
P.A. Miley .....	Associated Bulk Carriers (London) Ltd
J.M. Milloy .....	Associated Bulk Carriers (London) Ltd
R. Mitchell.....	Marine Management Services Ltd
R.G. Murch.....	Great White Fleet Ltd
G. Nicholls.....	Associated Bulk Carriers (London) Ltd
B.W. Nuttall .....	P&O Nedlloyd Ltd
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G.J.H. Peaston .....	P&O Nedlloyd Ltd
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D.R. Perry.....	Leif Hoegh & Co. A/S
L.C. Pink.....	F.T. Everard & Sons Ltd
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C.A. Sheffield.....	Kuwait Oil Tanker Company
R. Sidney .....	V. Ships (UK) Ltd
J.E. Sinnott .....	Associated Bulk Carriers (London) Ltd
J.A. Smeeton.....	Associated Bulk Carriers (London) Ltd
A. E. Spencer.....	P&O Nedlloyd Ltd
M.J. Stares .....	James Fisher & Sons plc
A.P. Talbot .....	P&O Nedlloyd Ltd
Te Ho Wat .....	Cast Line (Liverpool) Ltd
L. Thorner.....	Swan Shipping A/S
I.D. Tranter .....	Denholm Ship Management (UK) Ltd
A.M. Tweedie.....	P&O Nedlloyd Ltd
J. Van der Kraan.....	MOL Tankship Management Ltd
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A.W. Walker.....	Boyd Line Management Services Ltd
M.J. Walker .....	Associated Bulk Carriers (London) Ltd
P.J. Ward .....	Kuwait Oil Tanker Company
C.C. Woodward.....	P&O Nedlloyd Ltd
J.R. Yensen.....	Boston-Putford Offshore Safety Ltd

## PRINCIPAL OBSERVING OFFICERS AND RADIO OFFICERS (WHERE CARRIED)

## COMPANY

A.H. Abid .....	P&O Nedlloyd Ltd
P.R. Acquiatan.....	Great White Fleet Ltd
J. Aguou.....	Acomarit (UK) Ltd
S.S. Akhtar .....	Kuwait Oil Tanker Company
S.J. Alletson.....	Scottish Office, Agriculture & Fisheries Dept
M. Allison.....	Boyd Line Management Services Ltd
J. Almeida.....	Unique Shipping (HK) Ltd

## Excellent Awards (contd)

PRINCIPAL OBSERVING OFFICERS AND RADIO OFFICERS (WHERE CARRIED)	COMPANY
I. Osei-Amoako .....	Acomarit (UK) Ltd
V.A. Arcegono .....	Acomarit (UK) Ltd
R.B. Arenal .....	Great White Fleet Ltd
R.M. Atkinson .....	NERC Research Vessel Services
M. Atta .....	Kuwait Oil Tanker Company
P.A. Austen .....	James Fisher & Sons plc
S. Azim .....	P&O Nedlloyd Ltd
N.J. Bailey .....	British Antarctic Survey
J.G.L. Baker .....	NERC Research Vessel Services
R.G. Barry .....	James Fisher & Sons plc
J.M. Bastone .....	Shell International Trading & Shipping Co. Ltd
I. Beaton .....	Scottish Office, Agriculture & Fisheries Dept
A.C. Beltran .....	Leif Hoegh & Co. A/S
J.C. Bennett .....	P&O Nedlloyd Ltd
J.K. Bhadra .....	Associated Bulk Carriers (London) Ltd
R.P. Billedo .....	Great White Fleet Ltd
M.W. Bingham .....	Denholm Ship Management (UK) Ltd
I.R. Blair .....	James Fisher & Sons (Liverpool) Ltd
A.J. Boyd .....	The Maersk Co. Ltd
P. Branagan .....	F.T. Everard & Sons Ltd
C.R. Brooks .....	P&O Nedlloyd Ltd
R. Brown .....	Tidewater Marine North Sea Ltd
R.S. Brownlee .....	Scottish Office, Agriculture & Fisheries Dept
J. Burwood .....	Ropner Shipping Services Ltd
L.M. Butler .....	P&O Nedlloyd Ltd
I.R. Buley .....	Boston-Putford Offshore Safety Ltd
D. Cabungcag .....	Great White Fleet Ltd
I. Campbell .....	Scottish Office, Agriculture & Fisheries Dept
J.A. Cardownie .....	London Ship Managers Ltd
R.M. de Castro .....	Blue Star Ship Management Ltd
T. Catchpole .....	Tidewater Marine North Sea Ltd
M.A. Chapman .....	Boston-Putford Offshore Safety Ltd
J.W. Charlton .....	Marine Management Services Ltd
R.S. Chauham .....	Associated Bulk Carriers (London) Ltd
L.-J. Cheesbrough .....	P&O Nedlloyd Ltd
G. Collins .....	Boston-Putford Offshore Safety Ltd
C.Y. Constantinou .....	P&O Nedlloyd Ltd
J.D. Crasto .....	Associated Bulk Carriers (London) Ltd
S.D. Crookes .....	Shell International Trading & Shipping Co. Ltd
D.R.N. Cropley .....	P&O Nedlloyd Ltd
A. Cross .....	The Maersk Co. Ltd
J. Currie .....	Shell International Trading & Shipping Co. Ltd
D.C. Cutinho .....	Associated Bulk Carriers (London) Ltd
I.J. D'Silva .....	Associated Bulk Carriers (London) Ltd
W.E. Danby .....	Carisbrooke Shipping plc
A.R. Davidson .....	Scottish Office, Agriculture & Fisheries Dept
R. Dela Rosa .....	Kuwait Oil Tanker Company
L.S. Delfin .....	Great White Fleet Ltd
P.D. Dewan .....	Associated Bulk Carriers (London) Ltd
B.J. Dias .....	Associated Bulk Carriers (London) Ltd
C. Eager .....	Denholm Ship Management (UK) Ltd
C. Edwards .....	Ropner Shipping Services Ltd
E.E. Erispe .....	Marine Management Services Ltd
E.M. Esinduy .....	P&O Nedlloyd Ltd

## Excellent Awards (*contd*)

PRINCIPAL OBSERVING OFFICERS AND RADIO OFFICERS (WHERE CARRIED)	COMPANY
W. Europa.....	Safmarine Ship Management
N.B. Fagan.....	The Maersk Co. Ltd
C.O. Ferraren.....	Swan Shipping A/S
A. Firman.....	P&O Nedlloyd Ltd
R.R. Flintham.....	Ropner Shipping Services Ltd
R. Forson.....	Stephenson Clarke Shipping Ltd
S. Frediani.....	P&O Nedlloyd Ltd
B.B. Garing.....	Blue Star Ship Management Ltd
F.R. Gerstner.....	London & Overseas Freighters (UK) Ltd
R.H. Ginger.....	Stephenson Clarke Shipping Ltd
I.L. Guinoo.....	Blue Star Ship Management Ltd
E.F. Gumera.....	Blue Star Ship Management Ltd
S.J. Gyasi.....	Acomarit (UK) Ltd
S.K.A. Hagan.....	Acomarit (UK) Ltd
J.C. Hague.....	Denholm Ship Management (UK) Ltd
P.C. Handley.....	P&O Nedlloyd Ltd
C. Henderson.....	P&O Nedlloyd Ltd
K. Henderson.....	Ropner Shipping Services Ltd
M.C. Hill.....	P&O Nedlloyd Ltd
U.T. Hlaing.....	Cast Line (Liverpool) Ltd
A.P. Hodgson.....	The Maersk Co. Ltd
S.C. Holding.....	P&O Nedlloyd Ltd
C.E. Holmes.....	Scottish Office, Agriculture & Fisheries Dept
A.J. Howlett.....	James Fisher & Sons plc
J. Hyde.....	Unique Shipping (HK) Ltd
S.J. Illingworth.....	P&O Nedlloyd Ltd
Z.S. Irani.....	Associated Bulk Carriers (London) Ltd
A.M. Jameson.....	P&O Nedlloyd Ltd
R.N. Jayasekara.....	London Ship Managers Ltd
A.W. Jones.....	James Fisher & Sons (Liverpool) Ltd
S. Jones.....	MOL Tankship Management Ltd
R. Jopia.....	Shell International Trading & Shipping Co. Ltd
C.D. Joshi.....	Associated Bulk Carriers (London) Ltd
M. Joshi.....	Associated Bulk Carriers (London) Ltd
M.K. Judson.....	Denholm Ship Management (UK) Ltd
J.K. Kazi.....	Associated Bulk Carriers (London) Ltd
F. Kozachenco.....	Andrew Weir Shipping Ltd
S. Kumar.....	V. Ships (UK) Ltd
P.A.H. Labine.....	Shell International Trading & Shipping Co. Ltd
R. Lavictoria.....	London Ship Managers Ltd
D.B. Lemon.....	Tidewater Marine North Sea Ltd
Liu Rong Tu.....	Wah Tung Shipping Agency Co. Ltd
P.G. Lloyd.....	James Fisher & Sons (Liverpool) Ltd
A. Lomas.....	Stephenson Clarke Shipping Ltd
C.W. Longmuir.....	P&O Nedlloyd Ltd
M. Loka.....	BT Shipping Ltd
R. Mabuyo.....	London Ship Managers Ltd
A.D. Macpherson.....	Andrew Weir Shipping Ltd
M.A. Magee.....	Scottish Office, Agriculture & Fisheries Dept
A.G. Mansaray.....	Tidewater Marine North Sea Ltd
A. Martinez.....	Transportacion Maritima Mexicana
O. Maslov.....	Andrew Weir Shipping Ltd
P.A. Mathews.....	P&O Nedlloyd Ltd
R.T. Mattos.....	Associated Bulk Carriers (London) Ltd

## Excellent Awards (contd)

PRINCIPAL OBSERVING OFFICERS AND RADIO OFFICERS (WHERE CARRIED)	COMPANY
N.P. Mayers .....	P&O Nedlloyd Ltd
H.P.G. Maynard.....	London & Overseas Freighters (UK) Ltd
E.C. Mayor .....	Blue Star Ship Management Ltd
W. McCormack .....	Boston-Putford Offshore Safety Ltd
M. McKenzie.....	Shell International Trading & Shipping Co. Ltd
T. McMahon.....	James Fisher & Sons plc
M.P. McShane .....	The Maersk Co. Ltd
I. Medina .....	Transportacion Maritima Mexicana
M.N. Messenger .....	P&O Nedlloyd Ltd
S.G. Miller.....	The Maersk Co. Ltd
M.A.B. Miquiabas .....	Great White Fleet Ltd
R.C. Mitra.....	Marine Management Services Ltd
N. Mondragon .....	Blue Star Ship Management Ltd
V.A. Monteiro .....	Wallem Shipmanagement Ltd
C. Moss.....	P&O Nedlloyd Ltd
T. Murphy.....	MOL Tankship Management Ltd
B. Nalam.....	Kuwait Oil Tanker Company
R.A. Necretaces .....	Marine Management Services Ltd
R.G.C. Noble .....	P&O Nedlloyd Ltd
T.W. Noronha.....	Associated Bulk Carriers (London) Ltd
I.S. Norris .....	P&O Nedlloyd Ltd
T. Nyunt.....	Denholm Ship Management (UK) Ltd
O. Oblea.....	Acomarit (UK) Ltd
J. Ocampo.....	Leif Hoegh & Co. A/S
R.C. Paala .....	Swan Shipping A/S
V. Padmanabhan.....	V. Ships (UK) Ltd
M.A. Pagente.....	Bergesen d.y. ASA
S.D. Palmer.....	James Fisher & Sons plc
J.S. Parhar .....	Associated Bulk Carriers (London) Ltd
P.V. Peralta.....	Acomarit (UK) Ltd
R. Pineda .....	Blue Star Ship Management Ltd
F. Pinera.....	Great White Fleet Ltd
I.B. Pinto.....	BT Shipping Ltd
A. Plisenko .....	Andrew Weir Shipping Ltd
L.D. Potnis.....	Associated Bulk Carriers (London) Ltd
P.I. Preston .....	The Maersk Co. Ltd
M. Rickaby .....	BP Shipping Ltd
R.C. Roquios Jr .....	Blue Star Ship Management Ltd
S.H. Sajeesh.....	V. Ships (UK) Ltd
C.R. Sajonia.....	Bergesen d.y. ASA
R.T. Santos .....	Blue Star Ship Management Ltd
P. Sathyamurthy .....	London Ship Managers Ltd
M. Saunders.....	BP Shipping Ltd
K.D.A.P. Sedrick.....	London Ship Managers Ltd
D.A. Selvido.....	London Ship Managers Ltd
A.L. Sendaydiego.....	Blue Star Ship Management Ltd
N. Sheard .....	Tidewater Marine North Sea Ltd
D.A. Smith.....	Scottish Office, Agriculture & Fisheries Dept
W.A.E. Smith .....	Boston-Putford Offshore Safety Ltd
V. Solatorio .....	Safmarine Ship Management
N. Sozinov .....	Andrew Weir Shipping Ltd
K. Sridhar .....	Associated Bulk Carriers (London) Ltd
B. Standerline.....	Stephenson Clarke Shipping Ltd
E.B. Stephenson .....	P&O Nedlloyd Ltd

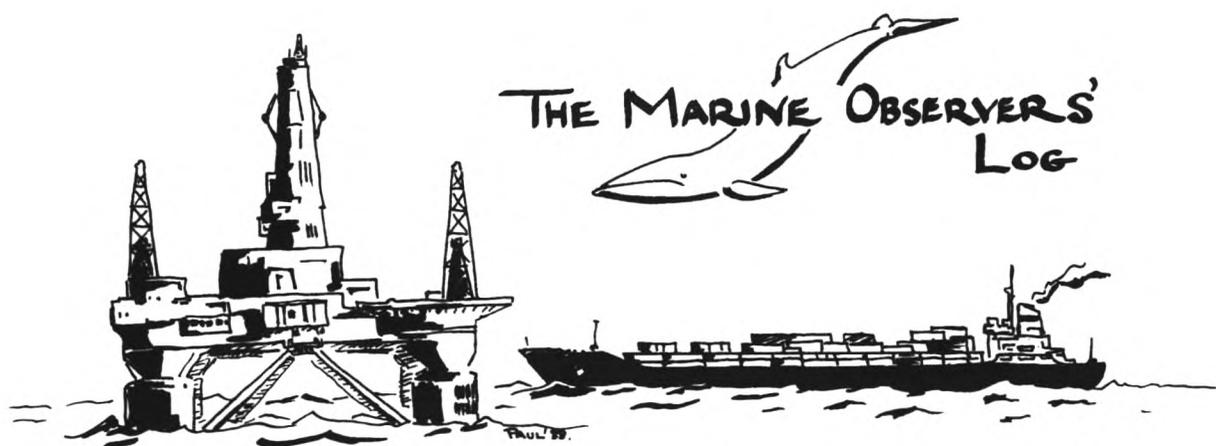
## Excellent Awards (contd)

PRINCIPAL OBSERVING OFFICERS AND RADIO OFFICERS (WHERE CARRIED)	COMPANY
D. Stevens.....	P&O Nedlloyd Ltd
M.B. Styles.....	Scottish Office, Agriculture & Fisheries Dept
D.M. Sugden.....	NERC Research Vessel Services
G.J. Swadel.....	Great White Fleet Ltd
V.J. Thayil.....	Associated Bulk Carriers (London) Ltd
J. Thompson.....	Tidwater Marine North Sea Ltd
B.D. Tucker.....	P&O Nedlloyd Ltd
G. Vathiath.....	Associated Bulk Carriers (London) Ltd
C. Veitch.....	Boston-Putford Offshore Safety Ltd
D.J. Vickery.....	P&O Nedlloyd Ltd
A.C. Villas.....	Acomarit (UK) Ltd
C.A. Waddicor.....	British Antarctic Survey
P.C. Waiton.....	Scottish Office, Agriculture & Fisheries Dept
A.A. Ward.....	P&O Nedlloyd Ltd
S.J. Ward.....	James Fisher & Sons plc
S. Waterman.....	Marr Vessel Management Ltd
M. Wdowikowski.....	Stephenson Clarke Shipping Ltd
N. Weston.....	Shell International Trading & Shipping Co. Ltd
P.A. Whyley.....	P&O Nedlloyd Ltd
M.P. Willis.....	P&O Nedlloyd Ltd
E.K. Andoh-Wilson.....	F.T Everard & Sons Ltd
H.S. Wright.....	Great White Fleet Ltd
M.J. Young.....	The Maersk Co. Ltd
B.H. Zainuri.....	Cast Line (Liverpool) Ltd
Zheng Jian Hua.....	Wah Tung Shipping Agency Co. Ltd

## 'MARID' SHIPS †

OBSERVERS	COMPANY
D. Williams, G. Pritchard, A. Burt.....	Stena Line Ltd
Captain R. Wood, Captain R. Young, ..... Captain B. Webster	Eidesvik Shipping Ltd
Captain E. Onsoien, O.F. Apellanes,..... M.V. Cayone	Bergesen d.y. ASA

† Vessels working in the North Sea and in coastal waters, and which are recruited primarily to observe and transmit sea-water temperatures, and also to make non-instrumental observations.



## October, November, December

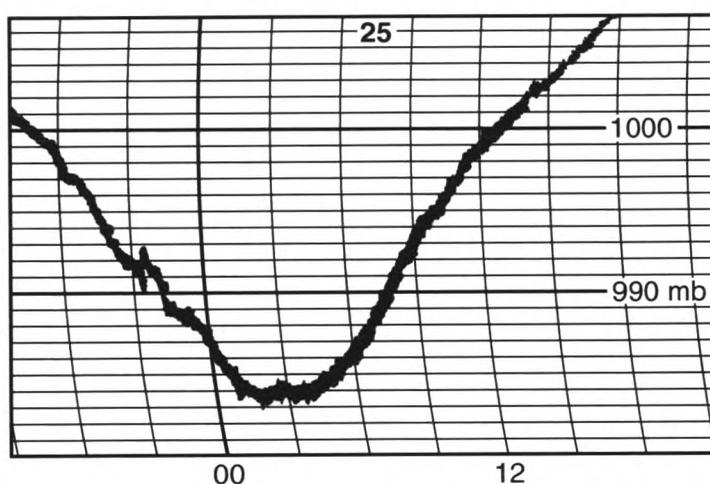
*The Marine Observers' Log* is a quarterly selection of observations of interest and value compiled from the meteorological logbooks of the UK Voluntary Observing Fleet and from individual observers' contributions. Responsibility for each observation rests with the contributor. All temperatures are Celsius unless otherwise stated. The standard international unit for barometric pressure is the hectopascal (hPa) which is numerically equivalent to the millibar (mb).

### DEEP DEPRESSION

#### North Atlantic Ocean

m.v. *Vine*. Captain M.J. Walker. Amsterdam to Puerto Bolivar. Observers: the Master and ship's company.

24–26 November 1997. During the 24th weather conditions were changing as winds freshened from the SW and reached gusts of 35–40 knots, the pressure falling all the while. (See barograph trace.)



The sea was very rough with a heavy swell and it was prudent to reduce the ship's speed so as to bring down the hull stresses experienced; a south-westerly course was steered to ease the effects of the heavy beam swell.

Weather reports received later in the day indicated that the storm was predicted to pass about 150 n mile north of the vessel, that is, astern. During the night of the 24th through to the early hours of the 25th, conditions had deteriorated further

with seas increasing to 8 m accompanied by a swell of 10 m, the wind was WSW'ly, force 10 and the pressure dropped to 982 mb. In order to maintain the vessel's steerage and to reduce the heavy rolling and pitching being experienced, the decision to hove to was made. By 1100 UTC on the 25th the wind had veered from SW'ly to W'ly and then to NW'ly.

Nightfall brought about an improvement in the weather conditions with the wind becoming NNW'ly, force 6 but with a heavy swell still prevailing, the vessel was forced to remain on a westerly course until daylight on the 26th when it was then safe to turn south in the direction of the vessel's destination.

During the above period a container vessel was not so lucky, breaking up just north of the Azores a few hundred miles away.

Position of ship at 1200 UTC on the 25th: 39° 36' N, 16° 18' W.

## WATERSPOUTS

### North Sea

m.v. *Putford Aries*. Captain R.A. Stockley. Awaiting orders at rig *ENSCO-80*. Observers: Mr P.G. McCardle, Chief Officer and Mr J. Dupres, SG1.

23 October 1997. Prior to the observation the cloud cover had included cumulonimbus without anvil and there had been intermittent showers of rain. At 1015 UTC a wisp of cloud was noticed hanging from the base of a cumulonimbus cloud, and it then developed rapidly to become a funnel cloud, the bottom of which resembled the handle of an umbrella.

The sea area under the cloud appeared to be whipped crests through the force of the wind. After 20 minutes the base of the cloud where the waterspout had been was a ragged and thin layer.

The wind was N'ly, force 4 and the sea temperature was 13.3°.

Position of ship: 54° 24' N, 02° 24' E.

### Eastern North Atlantic

m.v. *Seki Cedar*. Captain P.W. Jackson. Setubal to Livorno. Observers: the Master, Mr M. Judson, 2nd Officer and Mr P. Wood, 3rd Officer.

4 December 1997. At 1415 UTC the vessel was approximately 50 n mile west-north-west of the Strait of Gibraltar on a course of 111° at 14.0 knots when, for about 30 minutes either side of the above location, a number of waterspouts were sighted below the base of a cumulonimbus cloud about 4 n mile from the ship. They were seen to form downwards, reach full maturity at the sea surface and then dissipate. In all, about 10 sightings of different spouts were made but at any one time three were visible, two mature and one forming, all within about two miles.

An individual spout lasted for about 15 minutes or a little longer for an exceptionally 'strong' one. Three double-walled spouts were sighted showing very dark sides, and were noticeably the strongest, causing distinct agitation at the sea surface. The largest surface agitation was estimated to be between 20 m and 40 m, and there was a visible 'lift' of spray to the ship's bridge height of 20 m. It was felt

that the direction of rotation was clockwise although the observers could not be certain; the rate of rotation was not assessed but with hindsight a rate of 30 r.p.m. seemed reasonable for a 30-m diameter spout.

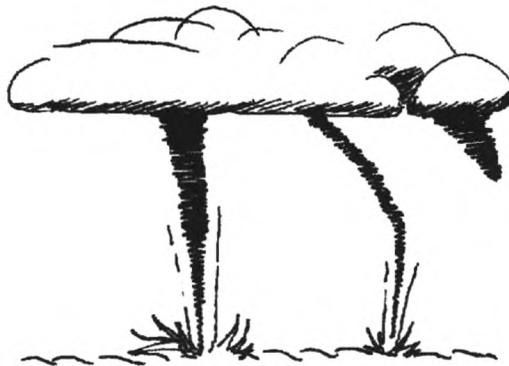
Weather conditions at the time were: air temperature 17.4°, wet bulb 15.0°, sea 19.3°, pressure 1002 mb, wind W'ly, force 3–4 throughout. The cloud cover was 4 oktas mostly of cumulonimbus orientated in a 'street' lying 080°/260° and based at about 2,000 feet.

Position of ship: approximately 36° 12' N, 06° 36' W.

### Indian Ocean

m.v. *British Resolution*. Captain A. MacLeod. Mina al Fahal to Batangas. Observers: the Master, Mr R. Hancock, Chief Officer and Mr S. Moss, 2nd Officer.

12 October 1997. The vessel was proceeding along a course of 118° towards the southern end of Sri Lanka, and various amounts of low cloud had already passed the vessel with no precipitation being evident. At 0045 UTC a developing waterspout was noticed emanating from a large dark low cloud abeam of the vessel. The waterspout quickly developed in width and length, and at the sea surface water was seen being 'churned up' as the spout grew. At 0055 UTC a second waterspout started to form just to the right of the first one (see sketch); this one also developed quickly but only to about half the width of the original.



A third spout was then noticed to the right of the second one but was visible for only about 10 minutes compared to the 40 minutes duration of the first one. Weather conditions at the time were: air temperature 28.5°, wet bulb 26.0°, sea 28.0°, wind SE'ly, force 4. The cloud cover was 3 oktas of cumulus (type 2, of moderate or strong vertical extent) and 2 oktas of cirrus.

Position of ship: 06° 28' N, 78° 39' E.

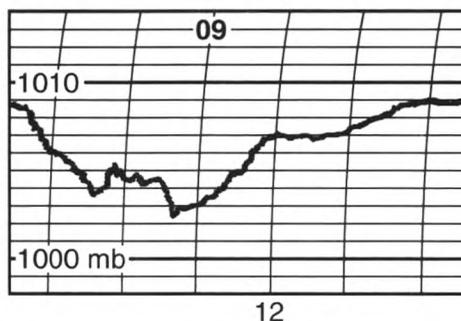
### THUNDERSTORM

#### South Atlantic Ocean

R.R.S. *Bransfield*. Captain J.B. Marshall. Grimsby to Montevideo. Observers: the Master and ship's company.

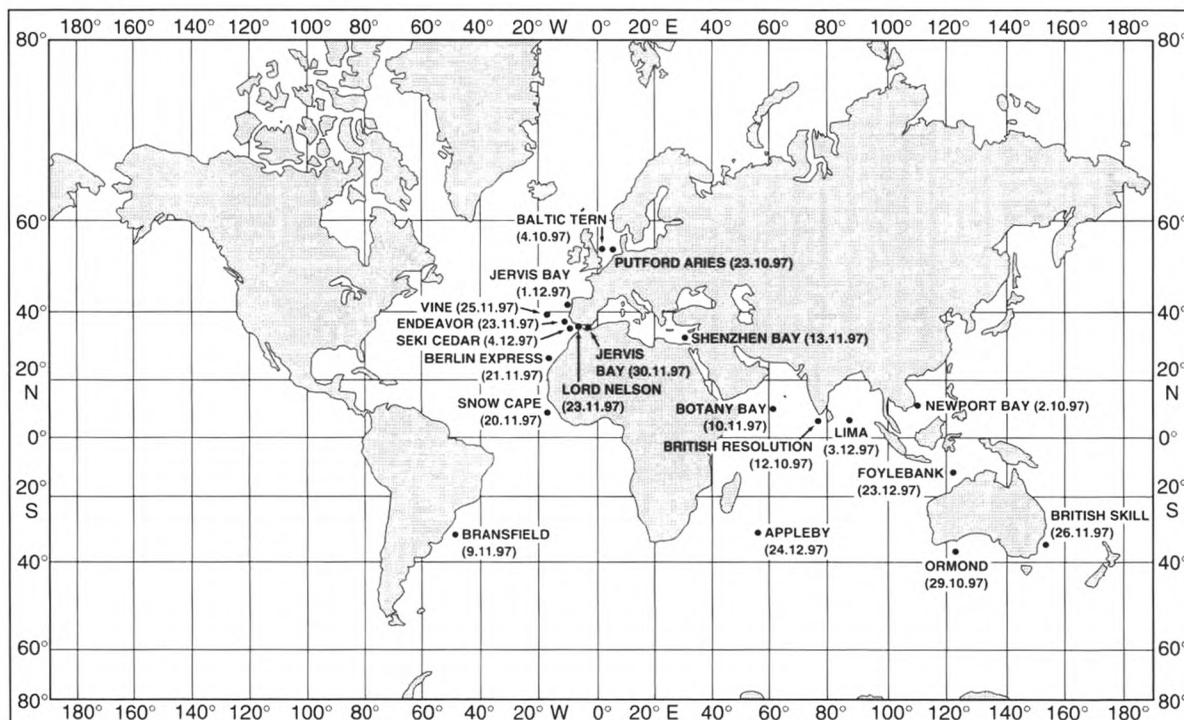
9 November 1997. At 0200 UTC the vessel encountered an electrical storm. Prior to the event there had been the occasional flash of sheet lightning in the distance but from 0200 the storm slowly grew in intensity until, at 0430, the wind

backed from NNW'ly to S'ly and reached gusts of 50 knots. Torrential rain was encountered at this time also, restricting visibility to less than 100 m at times. The rain lasted for about 30 minutes but the storm then continued with sheet lightning and occasional forked lightning, and was still observable astern at 0745. The barograph chart shows the pressure changes associated with the storm.



Once the rain was passed, the wind then veered back to NNW'ly. During the storm the following data was recorded: air temperature 21.8°, wet bulb 14.2°, pressure 1008.3 mb.

Position of ship: 32° 37' S, 51° 25' W.



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

## TEMPERATURE CHANGE

### Tasman Sea

m.v. *British Skill*. Captain N. Curran. Persian Gulf to Brisbane. Observers: Mr M.J. Horgan, 3rd Officer, Mr G. Hayter, Cadet and Mr J.I. Maclean, Cadet.

26 November 1997. Whilst approximately 75 n mile south-east of Sydney the vessel was experiencing intermittent rain showers from 7 oktas of cloud consisting of stratus, stratocumulus and altocumulus (cirrus was also visible through gaps in

the lower layers). Over a two-minute period commencing at 0830 UTC the wind speed increased from force 6 to force 8 while the pressure dropped by 2.5 mb and distant lightning was visible to the south.

The dry-bulb temperature suddenly rose from 23.0° to 35.5°, remaining at that reading for approximately five minutes before falling suddenly to 29.0° and becoming steady. At 0835 the wind speed decreased from force 8 to force 3 but again increased at 0845 to force 6 while the dry bulb read 25.0° and the wet-bulb temperature was 23.2°. After 0845 both the temperature and the wind speed remained constant.

Position of ship: 35° 09' S, 151° 49' E.

## **DISCOLOURED WATER**

### **North Sea**

m.v. *Baltic Tern*. Captain K.F. Steven. Felixstowe to Hull. Observer: Mr R. Parker, 2nd Officer.

4 October 1997. At 1244 UTC a change in the water colour from brown to blue was observed ahead of the vessel, and white water was also noted. The chart was checked, and it was noticed that the discolouration marked the boundary of Silver Pit.

The sea-water temperature was taken before the colour change and was found to be 14.8° whereas afterwards it was 15.3°. As the colour changed from brown to blue, the echo-sounder registered a sharp drop into Silver Pit, and the wake from the vessel was observed to 'kink' at the boundary to the north. The sea clutter on the radar distinctly showed this boundary. As the vessel crossed the limit of the pit the colour of the water reverted to brown.

At the time of the event the wind was W'ly, force 3 with an opposing current (an hour after high water at Dover), and it was assumed that this situation had caused the phenomenon.

Position of ship: 53° 27.1' N, 00° 41.7' E.

## **SOUNDING**

### **Strait of Gibraltar**

m.v. *Jervis Bay*. Captain C.C. Woodward. Port Said to Le Havre. Observers: the Master, Mr W.J. Stoker, 1st Officer and Mr C.J. Lewis, SM1.

30 November 1997. The echo sounder was in use during the passage of the Strait of Gibraltar, producing some unexpected results. At 1610 UTC, when abeam of Pta Carnera, the depth under the keel was in excess of 600 m but the echo-sounder trace was registering 55–60 m approximately. The depth of the trace was maintained until 1637 when it started to reduce; at this time the vessel was abeam of Pta Oliveras with the nearest chart sounding showing 450 m.

At 1643, with the 'depth' indicating about 40 m, the echo-sounder range scale was changed from 'Deep' to 'Medium'. At about 1703 a harder trace was seen on the recorder roll and the wavy trace of the previous hour started to deteriorate. It was thought that the initial trace was from a thermal layer while the later trace was caused by multiple echoes of the echo-sounder pulse. Shortly before 1710 the 'depth' indication reached less than 10 m whilst still in waters exceeding 500 m.

At 1716 the echo sounder registered a depth of approximately 210 m which was nearer the charted depth for the ship's position.

The sea-water temperature at 1500 and 1800 was 18.4° and 18.8°, respectively, and low water at Gibraltar was at 1410. The tide was east-going 2–3 knots.

The echo-sounder was of type JRC JFE-570S with a deep-scale transmission rate of 66 pulses per minute, and a medium scale transmission rate of 133 pulses per minute. The operating frequency was 200 kHz and the transmitting velocity was 1500 m s<sup>-1</sup> in sea water.

Position of ship: approximately 36° 00' N, 06° 30' W.

## CETACEA

### South China Sea

m.v. *Newport Bay*. Captain R.B. Gurney. Hong Kong to Singapore. Observers: the Master and Mrs C.L. Hickin, 3rd Officer.

2 October 1997. At 0115 UTC the Master appeared on the bridge, having satisfied his hunger with a full English breakfast, and immediately spotted a group of whales on the port bow blowing and diving. As the vessel was travelling at 22.9 knots, speed was of the essence to make it to the bridge wing in time to make a satisfactory observation. For obvious reasons the Master did appear a little slow!

The whales passed approximately 3–5 cables off the port side although one stray came quite close to the ship. There appeared to be two groups of about 10 individuals heading north on a reciprocal course to the ship.

After great discussion it was decided that they were about 3–4 m long with a tall thin dorsal fin of roughly 20–30 cm in height. The flukes were never raised out of the water but there did appear to be a 'hump' at the end of their backs, very close to the flukes. The whales seemed to be very dark brown or black in colour.

Following consultation with *The Seafarer's Guide to Marine Life* it was agreed that they had all the characteristics of a Fin Whale but on a much smaller scale.

At the time the wind was variable, force 1 and the sea temperature was 28.9°.

Position of ship: 11° 33' N, 109° 51' E.

## SHARK

### Indian Ocean

m.v. *Appleby*. Captain A. Crofts. Saldanha Bay to Qingdao. Observers: the Master and Mr K.C. Townley, Chief Officer.

24 December 1997. At 1130 UTC a single hammerhead shark was seen 250 m off the port bow. The ship was steaming on a course of 070° at 13 knots, and the sea was oily calm.

The shark, between 3.0 m and 3.5 m long, was identified through the crystal-clear water by its unmistakable shape; it appeared to be alone and remained close to the surface until disturbed by the vessel's wake at which point it dived deep and was not seen again.

Position of ship: 29° 45' S, 57° 55' E.

## **BIRDS**

### **Indian Ocean**

m.v. *Botany Bay*. Captain L.J. Fletcher. Colombo to Jeddah. Observer: Mr B. Tucker, 3rd Officer.

10 November 1997. At 0540 UTC a booby, thought to be an immature Blue-faced Booby, was seen flying around the bow in a pattern almost like that of a skua or frigatebird in that it was chasing other birds.

Seen through binoculars, it was observed catching flying-fish on the wing which surprised the observer who was used to seeing boobies diving for fish.

It may have eaten one fish while flying but may possibly also have dropped it; however, it caught another one and landed before eating it. The identification of the bird was made by Tuck's *Seabirds of Britain and the World* (1980 edition). The only boobies indicated to be in the area were Blue-faced, Red-footed and Brown boobies, and the bird was very similar to the drawing of the immature Blue-faced Booby.

Position of ship: 10° 23' N, 60° 27' E.

## **BAT**

### **Timor Sea**

m.v. *Foylebank*. Captain J.J. Millar. Darwin to Singapore. Observers: the Master, Mr D.G. Bruce, Cadet, Mr N. Shipshin, Bosun and ship's company.

23 December 1997–4 January 1998. At about 0000 UTC a fruit bat or flying-fox was observed flying around the vessel. Its body was dark-brown in colour whereas its wings were black or dark-grey. The bat landed on deck crane supports and was approached by crew members for a closer inspection; it was about 30 cm long and had a wing-span of approximately 1 m. It was not unduly alarmed by human activity although it did become agitated if approached closer than one 1 m. The bat conducted numerous 'fly-bys' before disappearing.

The next day it was discovered underneath a container, apparently in good health, by the Bosun but had visible tearing on its wings. The bat was transferred to a darkened locker and fed on breadfruit, bananas and water, of which the breadfruit seemed to be the most popular.

Attempts were made each night to release the animal; however, each morning it was to be found hanging from the lifeboat grablines (see photograph on page 192), apparently preferring the warmth of the locker and a regular food supply. This 'routine' continued until the vessel arrived in Singapore when, with the condition of its wings deteriorating and it becoming steadily more grey in appearance, the bat was put ashore.

Position of ship on the 23rd December: 11° 42' S, 121° 30' E.

## **BIOLUMINESCENCE**

### **Great Australian Bight**

m.v. *Ormond*. Captain B.J. Kirtley. Haypoint to Redcar. Observers: Mr S. Singh, 3rd Officer and Mr R. Negapatan, Quartermaster.

29 October 1997. At 1400 UTC when the vessel was at the western end of the Great Australian Bight, a glance at the wake established the presence of light-emitting creatures in the sea. The wake was lit up with bright spots for about a mile.

At first, it seemed possible that the light from the vessel was being reflected by the breaking waves but on observing the ships' side, it was found that these were light-emitting creatures just below the sea surface and they appeared to be oval in shape, about 60 cm in length. It was not a case of bioluminescent water as the shapes were very distinct and separate from each other. These creatures were observed for a further two miles.

Position of ship:  $36^{\circ} 29.3' S$ ,  $123^{\circ} 41.6' E$ .

## HALOES Indian Ocean

m.v. *Lima*. Captain D. Freeman. Juaymah to Singapore. Observers: the Master, Mr M.K. Khan, 3rd Officer and members of ship's company.

3 December 1997. At 0950 UTC a partial halo was observed in dense cirrus cloud. Its arc covered some  $25^{\circ}$  and there was a bright 'spot' some  $40^{\circ}$  distant from the sun. The cloud cover at the time was very varied with cumulonimbus, towering cumulus spreading out to altocumulus, and dense cirrus formed from the tops of cumulonimbus, all making for a spectacular cloud display.

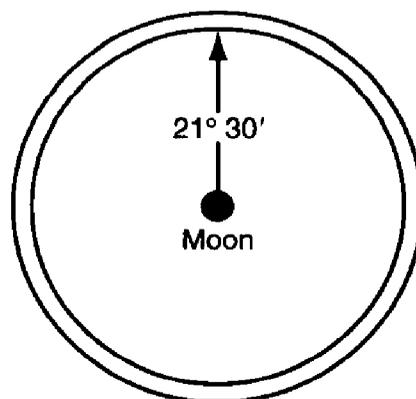
After approximately 15 minutes the arc faded, just leaving the bright spot clearly visible and displaying the colours of the spectrum. At 1010, owing to the changing cloud formations, the spot also faded although some irisation was still visible closer to the sun.

Position of ship:  $05^{\circ} 59' N$ ,  $88^{\circ} 34' E$ .

## Mediterranean Sea

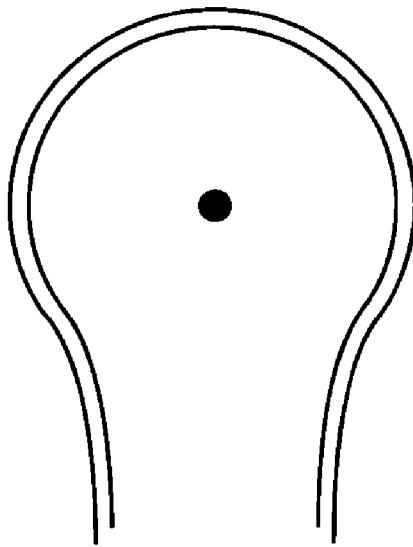
m.v. *Shenzhen Bay*. Captain D.W. Lax. Port Said to Le Havre. Observers: the Master, Mr E. Esinduy, 3rd Officer and Mr D.A. Reynolds, SM1.

13 November 1997. At 1800 UTC a halo of  $22^{\circ}$  was observed around the moon. As indicated in the first sketch it was well defined and, when measured by sextant, the angle from the centre of the moon to the inner edge of the halo was found to be  $21^{\circ} 30'$ . The altitude of the moon was also measured and was  $63^{\circ}$ , bearing  $150^{\circ}$ .



1800 to 2000 UTC

The inner edge of the halo had a slight brown tinge to it whereas the rest of the ring was white and bright. This formation lasted until 2000 but then began to change, and by about 2030 the halo had become quite deformed as shown in the second sketch (overleaf.)



2030 UTC

Weather conditions were: air temperature 20.4°, wet bulb 16.9°, pressure 1017.4 mb, wind NE'ly, force 4. The cloud cover was 7 oktas of cirrostratus and the visibility was 15 n mile.

Although haloes are a common occurrence and it is said that they cannot be a reliable sign of impending stormy weather (haloes often being spoken of as foreshadowing storms), at the time there were gale warnings in the central Mediterranean as a cold front associated with a depression over southern Italy was moving eastwards to cause S to SE'ly gales of force 8–9 in the Adriatic and Ionian Seas.

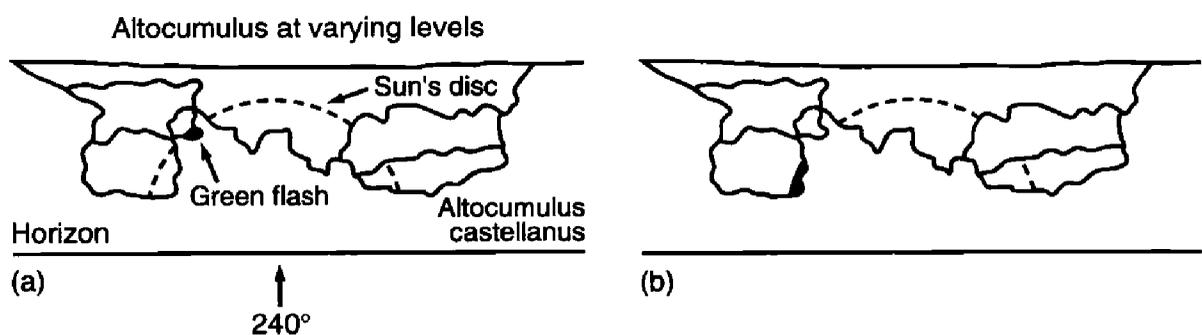
Position of ship: 32° 06' N, 30° 28' E.

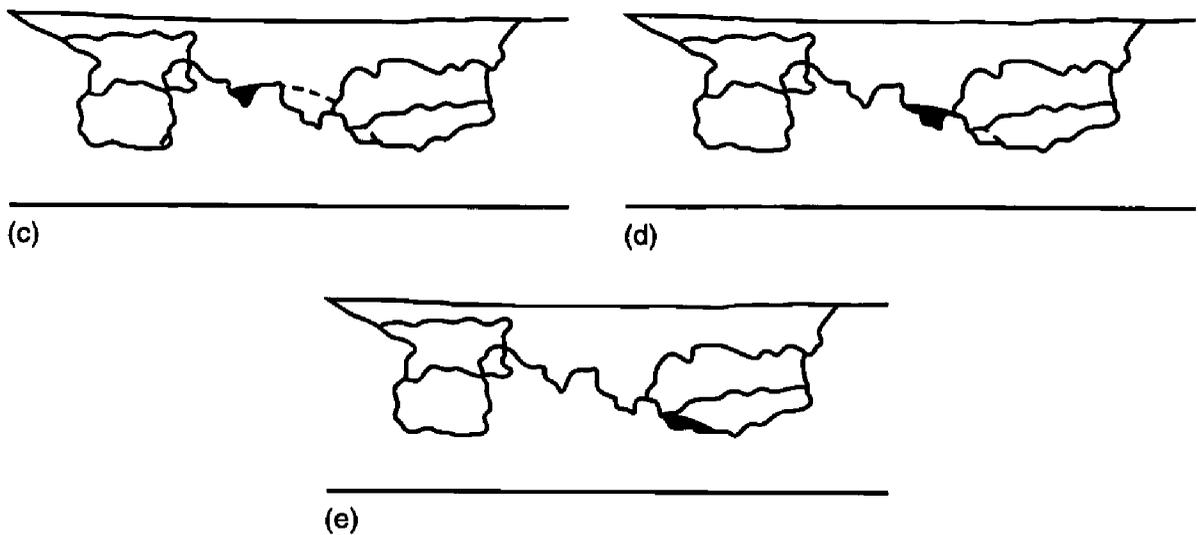
## GREEN FLASH

### North Atlantic Ocean

m.v. *Jervis Bay*. Captain C.C. Woodward. Suez to Le Havre. Observers: Mr W.J. Stoker, Chief Officer and Mr C. Lewis, SMI.

1 December 1997. Approaching sunset, at 1707 UTC, the sky was completely overcast with altocumulus at different levels except for a narrow band close to the horizon which had only a smattering of low castellanus-type cloud. As the sun set on an azimuth of 240°, it emerged from behind the main cloud area and began to set behind the low cloud near the horizon. A series of 'mini' green flashes was then observed as parts of the sun disappeared behind the castellanus clouds, such that five were seen in all. The sketches (a) to (e) show the sequence of events.





Weather conditions at the time were: air temperature 15.6°, wet bulb 14.0°, pressure 1022.6 mb, wind W×N'y, force 4. The visibility was excellent.

Position of ship: 41° 42' N, 09° 46' W.

*Editor's note:* We rarely receive accounts of multiple flash phenomena at a single setting of the sun. In this example the observers maintained their viewing level relative to the sun as it passed behind different elements of cloud while setting. Has anybody ever tried an alternative? That is, to move to progressively higher viewing points as the sun sets, thereby seeing it dip below successive horizons and perhaps seeing a green flash each time. Although it may be possible on paper, no doubt only budding 'Linford Christies' could manage to move to a higher point with sufficient speed to prove or disprove this theory!

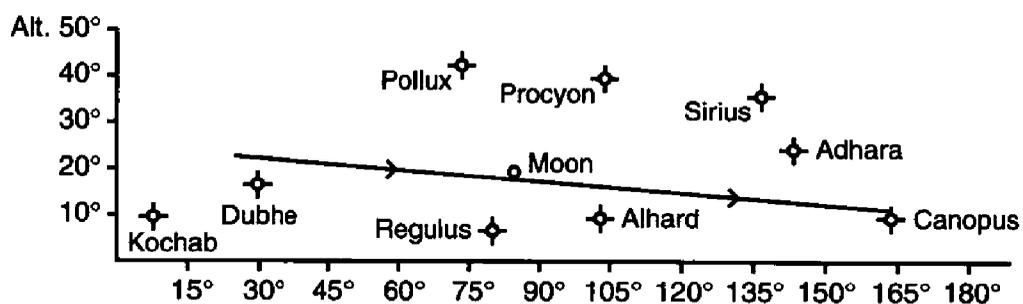
(This question follows an anecdote told to us by Dr Frank Evans — with whose name readers are no doubt familiar — who recalled a conversation with a meteorologist, the late E.W. Barlow, who claimed to have seen three green flashes during one setting by moving to progressively higher decks of a UK ocean weather ship while the sun went down. Our thanks to Dr Evans.)

## METEORS

### North Atlantic Ocean

m.v. *Berlin Express*. Captain I.M. Hill. Port Chalmers to Lisbon. Observers: Mr M. Langford, 2nd Officer and Mr M. Wescombe, SM1.

21 November 1997. At 0128 UTC a meteor was sighted bearing 025° at an altitude of 25°, above Dubhe, and moving through the sky in a south-south-easterly direction until it faded bearing 160° at an altitude of 10°, near Canopus. The sketch shows its trajectory.



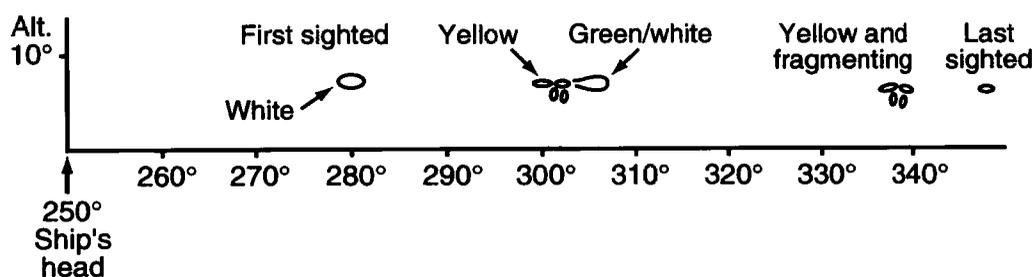
Initially, it was noted as a single very bright light with trail, and its brightness was greater than the moon which it passed just below. The trail was very clear and was about  $25^\circ$  long over all, decreasing in brightness as it went; it was very wide, at least  $10^\circ$ – $12^\circ$  of its length was bright, and there followed another  $15^\circ$  which was weak. The passage of the meteor was viewed through binoculars and it was seen that particles were breaking off it; these appeared to drop through the clouds as the meteor faded. The cloud cover at the time was 3 oktas based at 1,800 feet. The entire duration of the event was approximately two minutes.

Position of ship:  $24^\circ 09.5' N$ ,  $17^\circ 22.6' W$ .

s.t.s. *Lord Nelson*. Cadiz to Lanzarote. Captain G.R. Mills. Ms C.L. Cupples, 2nd Officer, Mr B. Shedel, Watch Leader and members of ships' company.

23 November 1997. At 0025 UTC with the ship following a course of  $250^\circ$  at 7 knots, a bright 'shimmering' white light was observed bearing  $280^\circ$  on the starboard bow at an elevation of approximately  $7^\circ$ . It appeared to be travelling at speed, parallel to the horizon and from left to right.

When on a bearing of  $305^\circ$  the white light developed a green tinge and then formed a yellowish tail of apparently burning debris which could be seen falling slightly before extinguishing. When bearing  $335^\circ$  it started to fragment and lost its green-white colour, becoming more dim and yellow. A very faint yellow light could be seen continuing on its course but was soon lost from sight. In all, the display lasted for about 15 seconds, and the various stages of its development and decay are indicated in the sketch.



The weather at the time was fine, cloudless and with excellent visibility, the stars were particularly bright as the moon had yet to rise. A suggestion from one of the voyage crew (Mark Glover) was that it could have been a Leonid meteor.

Position of ship:  $35^\circ 11.5' N$ ,  $08^\circ 30.5' W$ .

m.v. *Endeavor*. Captain R. Cordon. Gibraltar to Norfolk, Va. Observers: Mr T.A. Longstaff, 2nd Officer and Mr E. Abing, Quartermaster.

23 November 1997. Whilst the ship was on a course of  $271^\circ$  at 13.0 knots a 'fireball' was observed at approximately 0001 UTC. It first appeared at about three points to port (approximately  $235^\circ$ ) as a bright yellowish light at an elevation of roughly  $10^\circ$ . After passing the bow it appeared to elongate until it disappeared over the horizon abeam to starboard (about  $360^\circ$ ) by which time its length was approximately five or six times its diameter.

The sky was almost cloudless apart from some altocumulus which the object passed behind. The duration of the observation was less than a minute from start to finish.

Position of ship:  $36^\circ 01.3' N$ ,  $10^\circ 01.8' W$ .

## RADIO SIGNAL PROPAGATION

### Eastern North Atlantic

m.v. *Snow Cape*. Captain G. Bryson. Cape Town to St Petersburg. Observers: the Master and Mr A. Noble, 3rd Officer.

20 November 1997. At about 2100 UTC the observers heard the vessels *Sydney Star* and *Melbourne Star* calling each other on VHF Channel 16. Both vessels were known to be on passage on the eastern coast of the USA; they were also heard calling Cape Town Radio on the same frequency.

At the time there was good visibility at the ship, clear skies and the temperature was 27.0°.

Position of ship: 10° 16.9' N, 17° 13.6' W.

*Editor's note:* The *Shenzhen Bay* has also reported an example of exceptional signal propagation from the Red Sea. On 9 October 1997, the vessel was in conversation with Jeddah Port Control on Channel 12 while still at a distance of about 300 n mile to the north.

## MISCELLANY ...

### An additional mélange of maritime sightings

*Atlantic Universal*. 10 November 1997. At 1300 UTC the Chief Officer watched a single large whale leaping repeatedly from the water at about one cable on the starboard beam. The ship was in position 17° 17.5' S, 42° 16.7' E.

*Aya II*. 26 October 1997. A small group of Bottlenose Dolphins was spotted in position 11° 40' N, 52° 55.4' E by Second Officer J. Medina and A. Perez.

*Colombo Bay*. 10 November 1997. A moon-bow was observed by Captain D.C. Thomson, Second Officer H. Radha and A. Thorne, SMS during the evening 12–4 watch. It formed in light rain falling from scattered cumulonimbus clouds and was white in colour, persisting for 10 minutes until the vessel had passed through the rain. The ship was on passage from Singapore to Hong Kong in position 05° 00' N, 106° 39' E.

*Duhallow*. 22 December 1997. At 1130 UTC Captain C.J. Davies, Second Officer M. Joshi and Radio Officer K. Sridhar noted two patches of sea smoke which seemed to be moving parallel with the vessel which was on a course of 077° at 14 knots. The patches were each about 50 m wide and were about 200 m and 100 m long, reaching a height of five or six metres. The vessel was on passage from Norfolk, Va., to Rotterdam, in position 39° 13' N, 59° 42' W, and experienced much thicker and deeper sea smoke all around the vessel three hours later.

*Ibex*. 12 December 1997. In position 53° 31.3' N, 03° 18.1' W a meteor was sighted at 0235 UTC by Captain N.C.E. Spencer. It was visible for three seconds on a bearing of 300°.

*Iolair*. 8 October 1997. Whilst the vessel was in the Foinaven oil field, three Fin Whales were sighted moving west to east. A report was sent to the Joint Nature Conservation Committee in Aberdeen.

*Isocardia*. 8 October 1997. Two unidentified whales each 6–7 m long, black in colour with small dorsal fins, were sighted by Captain P.N. Rowden, Chief Officer C.M. Renton and Fourth Engineer N.R. Shepherd. The ship's position was 25° 59' S, 34° 46' E.

*Kalahari*. 22 November 1997. St Elmo's fire was observed at 1210 UTC in the form of luminous 'brushes' on the ship's aerials and bridge-wing extremities. The discharge was 10–15 cm long on the aerials and 23 cm on the bridge wings, and was light-blue to white in colour. The light was accompanied by a buzzing sound, and there was heavy lightning from strongly developed cumulus clouds. The ship was on passage from Hay Point to Constantzia, in position 02° 51' S, 142° 35' E.

*Kazimah*. 4 November 1997. At 1230 UTC Captain P.J. Ward noted a flock of birds surrounding the vessel. They were essentially white with the tips and trailing edges of their wings being black. They had short bodies, pale-yellow heads and dark tail feathers. They were thought to be Cape Gannets. Position of ship 35° 13' S, 22° 14' E.

*Kumasi*. 22 November 1997. While in calm seas in position 06° 11.2' N, 11° 45.2' W, the vessel passed through yellowish-coloured water for an hour commencing at 1430 UTC. Captain G.K. Thomson and Second Officer E.S. Boye noted that there was no odour and that the ship had a frothy wake. It was thought to be a possible 'red tide'.

*Maersk Sussex*. 23 October 1997. At 0217 UTC Third Officer A. Boyd and Cadet L. Kavanagh spotted a school of approximately 30–40 unidentified dolphins surfacing and diving continuously. They were visible 5–10 m from the ship and beyond; some of them leapt vertically out of the water, and all were heading in a westerly direction. The ship was in position 07° 55.1' N, 103° 03.2' E.

*Moreton Bay*. 4 October 1997. At 1400 UTC in approximate position 10° 58' S, 106° 28' E a land-like glow was observed centred at about 360° and spanning roughly 30° of the horizon. This quickly spread over the whole horizon ahead while it was realised that the sea directly beside the vessel had taken on a 'smoky' appearance. Within two minutes it had turned to a brilliant white, and lasted for 15 minutes before gradually fading through grey to normal. Upon consulting the local Pilot book, it was determined that the phenomenon was sheet bioluminescence, normally expected further north, during August.

*Murex*. 22 November 1997. A halo of 22° was sighted around the sun at 0550 UTC, lasting for about 20 minutes. Below the halo was an arc with a measured radius of 42°. The ship's position was 05° 45' N, 83° 00' E. The observers were Captain J.T. Little and Second Officer D. Taylor.

*Newport Bay.* 7 December 1997. The vessel was in the Red Sea on passage from Singapore to Jeddah and was entering an area of showers emanating from a broad band of cumulonimbus cloud lying north-west to south-east. At 0435 UTC several waterspouts were seen of which two were complete while the rest were partially developed. Captain A.C. McCulloch, First Officer A. Farthing and A. Lockhart, SMS noted that the waterspouts were four miles south-east of the vessel and lasted for 15 minutes.

*Oriental Bay.* 22 November 1997. At 0115 UTC in position 38° 44' N, 09° 46' W whilst the vessel was passing through one of many squally showers, a lunar rainbow was observed on the starboard side at an altitude of about 30°. Second Officer R.G.C. Noble, Deck Cadet S. Granger and S. Lynn, SMS observed that the rainbow was milky-white with no other colours being visible to the naked eye.

*Pacific Sandpiper.* Whilst on passage from Balboa to Hitachi, successful measures were taken in order to avoid supertyphoon 'Ginger' between 25 and 29 September 1997. The ship's position on the 25th was 25° 08' N, 178° 17' W.

*Palliser Bay.* 21 December 1997. When in the South Atlantic Ocean on passage from Port Chalmers to Lisbon, Captain S.D. Smith, Second Officer Z. Kuzmanov and Third Officer G. Culkin together with members of the ship's company, logged the positions of three tabular icebergs. Observed at 1550 UTC both visually and by radar, the first two were 0.5 n mile long by 40 m and 30 m high, respectively, while the third was 1.1 n mile long and 100 m high. Their positions were: first berg 48° 54.25' S, 54° 25.8' W, second berg 49° 06.38' S, 54° 14.84' W, third berg 49° 03.06' S, 54° 12.87' W.

*Putford Achilles.* 1 December 1997. At 1030 UTC Chief Officer R.W. Cartwright watched a waterspout about 3 n mile from the vessel (which was working cargo at the Cleeton Gas Field in position 54° 02' N, 00° 44' E). The wind at the time was NW'ly, force 3, and the cloud base was 1,000–1,500 feet. The waterspout was moving from west to east, and followed a curved path from the cloud to the sea surface where spray was visible. The duration of the sighting was 40 minutes.

*Sulisker.* 27 October 1997. When in position 58° 55' N, 00° 04' E four or five Carrion Crows (possibly) were seen on top of the mainmast and on the yards by Commanding Officer D. Temple and Seaman D. Roberts. The weather had been generally quiet but latterly there had been S'ly winds of force 5. The birds looked decidedly dejected, and such birds had never been seen so far offshore; on second thoughts the observers believed they may have been Jackdaws as they were too small to be crows or ravens.

*Tudor Star.* 13 December 1997. At 1353 UTC Captain A. Tibbott and Third Officer R.M. Canete noted the presence of large amounts of Sargasso weed in position 24° 42.7' N, 74° 39.8' W whilst on passage from Columbia to Philadelphia.

### ... and finally

Wherever possible we endeavour to print observers' sightings together with full expert comment and analysis. Should our production schedule preclude this, then we will publish comments retrospectively, referring readers to the appropriate edition of *The Marine Observer*.

ISSUE	PAGE	SHIP	COMMENTS
April 1998	61	<i>Shenzhen Bay</i>	Captain M.K. Barritt, Chairman of the Royal Naval Birdwatching Society, said, "These birds were probably Noddies. The white marking on the head and long sharp bill are distinctive features. In my experience they are frequently attracted onboard at night, especially during rain squalls. If the size has been measured accurately, these may possibly have been Lesser Noddies ( <i>Anous tenuirostris</i> ). Mention of passage through the Amindivi and Cannanore Island groups is particularly valuable."
April 1998	61	<i>British Resource</i>	Captain Barritt said, "The careful description enables these birds to be identified with some confidence as Bee Eaters ( <i>Merops apiaster</i> ). This will be a valuable record of a spring migration route northwards from eastern and southern Africa."

## The international exchange of meteorological data

### Introduction

With the improvement in the transmission of messages during the latter part of the nineteenth century, when telegraphy services were developing, the passage of non-essential information was enabled on a near real-time basis, and the existence of urgent situations could be made known and acted upon much more speedily.

The uses of this technological breakthrough were endless, and it was not long before governments realised that it had meteorological applications too. Indeed, the UK Meteorological Office, founded in 1854 by the Meteorological Department of the Board of Trade would, through Vice-Admiral Robert FitzRoy, the office's first Director, introduce the first British storm warning for shipping in 1861, employing the electric telegraph, while the first telegraphic weather reporting was carried out in 1865.

National meteorological services (NMS) began to appear and were given the mandate to collect meteorological or scientific data and to exchange similar on an international basis.

### Greater demand for data

Into the twentieth century, the first attempts at numerical weather forecasting in the UK were made at the end of World War I by L.F. Richardson, of the UK Meteorological Office but the project was doomed partly because there was

inadequate data available and also because the necessary computing capabilities simply did not exist. The subject lay dormant until the end of World War II when Professor J.G. Charney, again from the Meteorological Office, revised it. Research then followed in several countries, carried out using faster and ever more powerful computers (allied with human skills) and so created an insatiable appetite by national meteorological services for even more data. The development of computer models of the atmosphere demanded, and continues to demand, regular input of meteorological parameters and, more recently, oceanographic information. This hi-tech approach to weather forecasting heightened the dependency of NMS upon the exchange of data.

Within the World Meteorological Organization (WMO), its Members progressed with their forecasting abilities, and their successes enabled WMO to set up special programmes which incorporated the new capabilities; thus tropical storm warnings, and the prediction of floods and droughts were produced by member countries and exchanged between them to the benefit of all. The co-operative agreement between countries for the free and unrestricted exchange of data was then extended to cover meteorological and related products which contributed to the common good.

The weather services with which mariners are so familiar today could not exist without the continued exchange of data. Operational meteorology, its contributions to safety and protection, its climatological applications and its services to many and varied economic sectors all depend on this. Maintaining this free and unrestricted exchange of data is among the highest priorities of the WMO Member States.

### **Meteorology as a source of revenue**

Since the 1970s the science of meteorology and its applications have progressed apace. Advanced technology in the field of 'hardware' allied with sophisticated numerical models (now also representing the ocean-atmosphere interface), plus dedicated dissemination systems, have all contributed to the increasing value and variety of meteorological information. Also during these years, the private meteorological sector operating in some Member countries started to expand and to exploit the demand for applied meteorological services while some NMS, in addition to maintaining their government-funded programmes, began their own commercial activities, the resulting revenue from these latter enterprises contributing to the operating budgets of the originating body. NMS exist side by side with commercial meteorological ventures but there exists the potential for discord. Most data for private or commercial meteorological services are supplied by NMS; should the situation of direct competition arise, or should NMS propose charges for access to data, or even restrict access to data by the commercial sector, then at risk of possible damage is the principle of free exchange and ultimately the availability of data and the very information needed to sustain world meteorology. Major programmes such as the World Weather Watch and the World Climate Programme would then be clearly disadvantaged, to the detriment of all. WMO takes these concerns very seriously and, at the Twelfth World Meteorological Congress, in 1995, it adopted a policy on, and a new practice for, the international exchange of meteorological data and products.

## **The policy**

The policy, as adopted by Congress in Resolution 40 (Cg-XII), explicitly affirms WMO's commitment:

As a fundamental principle of the World Meteorological Organization, and in consonance with the expanding requirements for its scientific and technical expertise, WMO commits itself to broadening and enhancing the free and unrestricted international exchange of meteorological and related data and products. ("Free and unrestricted" means non-discriminatory and without charge. "Without charge" in the context of the resolution, means at no more than the cost of reproduction and delivery, without charge for the data and products themselves.)

## **The practice**

In Resolution 40 it was agreed that:

Members shall provide on a free and unrestricted basis essential data and products which are necessary for the provision of services in support of the protection of life and property and the well-being of all nations, particularly those basic data and products ... required to describe and forecast accurately weather and climate, and support WMO Programmes;

Members should also provide the additional data and products which are required to sustain WMO Programmes at the global, regional and national levels ...

... (In) providing these additional data and products, it is understood that WMO Members may be justified in placing conditions on their re-export for commercial purposes outside of the receiving country or group of countries forming a single economic group, for reasons such as national laws or costs of production;

Members should provide to the research and education communities, for their non-commercial activities, free and unrestricted access to all data and products exchanged under the auspices of WMO with the understanding that their commercial activities are subject to the same conditions identified (above) ...

## **Data to be exchanged**

A minimum set of meteorological and related data to be exchanged free of charge and without condition was specified upon the adoption of the policy. The set includes 'the data from the Regional Basic Synoptic Networks and as many data as possible that will assist in defining the state of the atmosphere at least on a scale of the order of 200 kilometres in the horizontal and six to 12 hours in time'. The minimum set also includes products distributed by World Meteorological Centres and also Regional Specialised Meteorological Centres (such as the UK Met. Office, at Bracknell) to meet their WMO obligations, and severe weather warnings and advisories for the protection of life and property. (Particular emphasis is placed on products required in support of time-sensitive operations regarding severe weather warnings and tropical cyclones.) For marine data, the minimum set includes the following: all available *in situ* observations from the marine environment, e.g. data in SHIP, BUOY, BATHY, TESAC codes, etc, and all available data from ship-borne upper-air soundings.

## **Storage of exchanged data — marine aspects**

The principle of exchanging data applies equally to meteorological information from both land and sea. Most of the maritime nations collect and archive marine

observations from ships of their own observing fleets regardless of the vessels' location at the time of reporting. In the past, meteorologists studying a particular area of the ocean found it difficult to discover exactly how many vessels, apart from those of their own nation's fleet, were in that area at a given time. Under the auspices of WMO, in the early 1960s, the NMS from a number of countries nominated nine countries each of which would be responsible for the collection and archiving of marine data from a specific area. Under the scheme, all countries agreed to send data from their own ships to the collecting centre for the area in which the ship happened to make the observations. This entailed a great exercise in international co-operation and owed its success to the computerised techniques of sorting and exchanging the data.

The UK Meteorological Office was nominated as one of the collecting centres, its area of responsibility covering much of the North Atlantic Ocean, the North Sea and the Arctic Ocean. The data received under the scheme formed part of its growing marine data bank and, in 1972, with the advent of updated computer capabilities, British marine data from the years of World War II and before, were transferred from punched cards to magnetic tape, and the computer then merged these historical data with those arriving under the collection scheme and those from the UK Voluntary Observing Ships (dating back to the 1850s), ocean weather ships and light-vessels to form a single data bank.

The further development of the marine data bank depended once more on international co-operation; exchange agreements made in the early 1980s with the USA, The Netherlands and Germany enabled data from their respective areas of responsibility to be added to the main marine data bank, while data from Hong Kong were purchased.

Marine data from UK ships are continually being added to the data bank, and the traditional parameters of wind speed and direction, past and present weather, cloud type and amount, temperatures, wind wave, swell waves, visibility, pressure and sunshine can be organised by computer into analyses over a given time or as statistical graphs, as required, for use in research or marine investigations.

## Conclusion

The free and unrestricted exchange of meteorological data is important for future improvements in forecasting techniques and for continued research into climate change. Individual countries within WMO wishing to compile and maintain their own data storage schemes should be ensured of the co-operation of others by the contents of Resolution 40. The world voluntary observing fleet of about 7,000 vessels (including those of the UK Voluntary Observing Fleet) needs to continue to make vital contributions to marine data banks.

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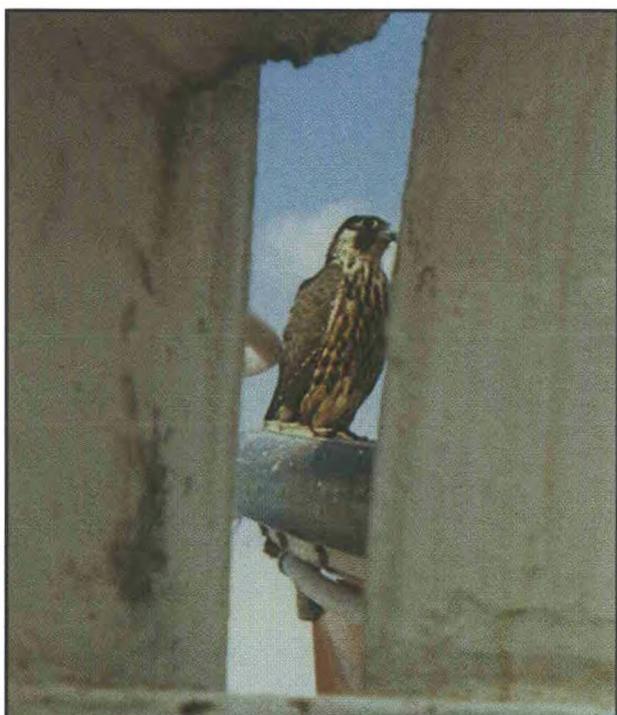
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## SCENE AT SEA



D.G. Bruce

A fruit bat or flying-fox which joined the *Foylebank* in the Timor Sea on 23 December 1997.  
(See page 180).



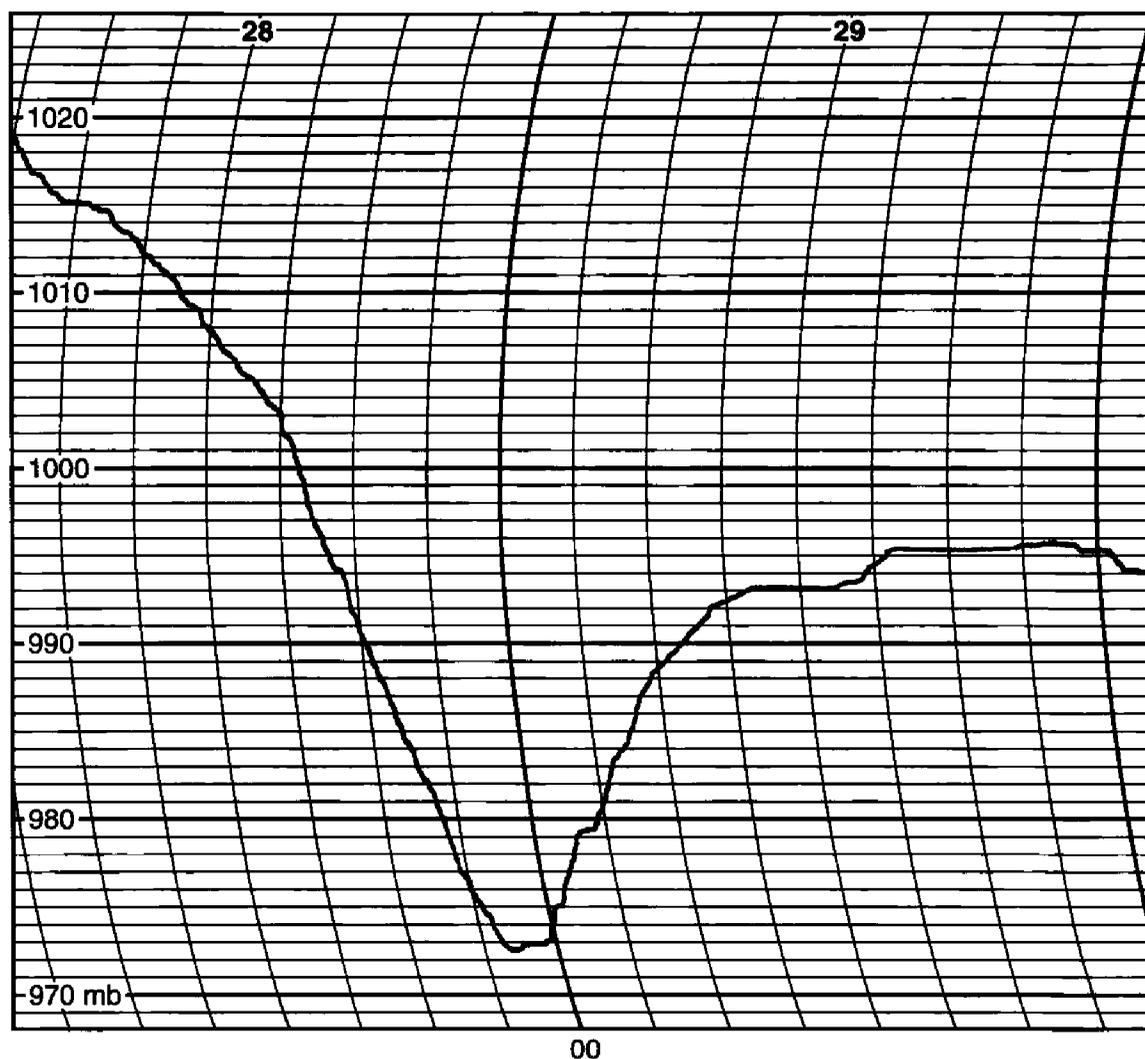
Captain M.J. Stares

The photograph shows 'Freddie' (thought to be a juvenile Peregrine falcon) who joined the *Pacific Sandpiper* on 7 November 1997 when the vessel was 430 n mile north-west of Midway Island. Captain M.J. Stares, Second Officer A. Howlett, Third Officer S. Palmer, Cadet M. Brown and members of the ships' company sighted him feeding on small birds.

After 8 November the bird was not seen for a few days but was again sighted on the 13th by which time the vessel was 900 n mile north-east of Hawaii. On the 18th, Freddie was observed eating numerous small birds and, on one occasion, a fish about 10 cm long.

During the day, the falcon was continually 'dining' but would sleep within the port navigation light enclosure (windward side) at night. It was last seen on 22 November at 1400 UTC.

## SCENE AT SEA



Barograph trace of a deep depression (ex-tropical cyclone 'Yali') which moved eastwards across South Island, New Zealand overnight on 28/29 March 1998.

At approximately 1200 UTC on the 28th the *Taiko* (reporting for the New Zealand VOF) was off Taiaroa Head at the entrance to Otago Harbour, and Second Officer J.P. Briand noted ENE'ly winds of force 7. By midnight on the 29th, at which time the vessel was already alongside at Dunedin, the wind had become SW'ly force 5-6 and the pressure had started to rise.

The following comments have been received from Port Meteorological Officer Julie Fletcher, of the Meteorological Service of New Zealand Ltd:

"Ex-tropical cyclone Yali travelled southeastwards out of the Coral Sea and deepened rapidly as it approached the West Coast of the South Island. The Automatic Weather Station (AWS) at Haast recorded 973.6 hPa at 1900 UTC on the 28th as the depression passed over the station, moving rapidly eastwards. The *Taiko* reported a pressure of 973.4 hPa in their observation at 2100. This was the lowest pressure reported with the passage of the ex-tropical cyclone, being also recorded by the AWS at Oamaru Airport at 2200. The Nugget Point AWS recorded 973.9 hPa at 2300. Fortunately, the fast-moving nature of ex-tropical cyclone Yali meant that the heaviest rainfalls and strongest winds were confined to periods of less than 12 hours."

## Deep depression in the Scotia Sea

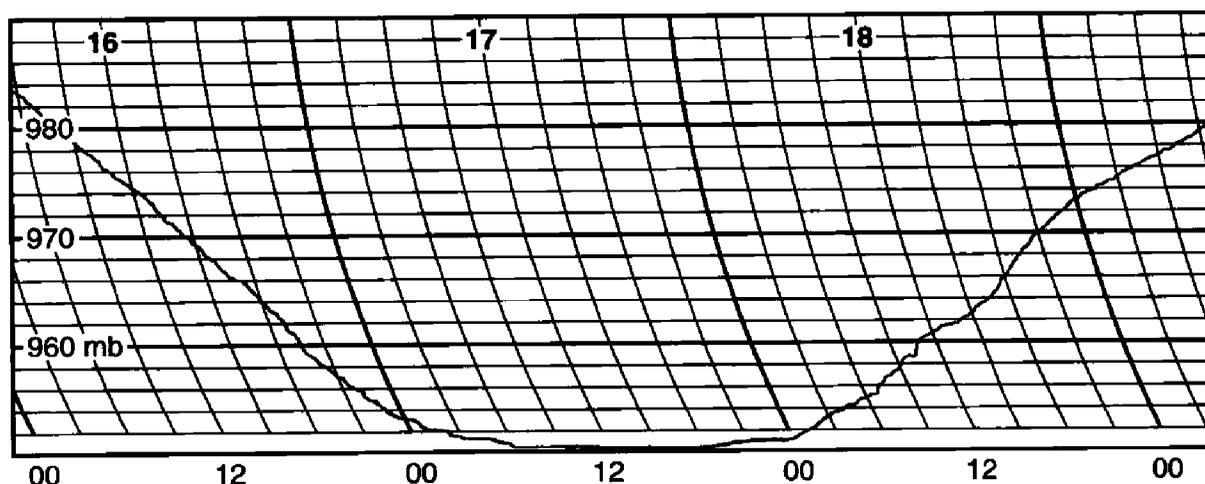
Whilst on passage between Signy Island (South Orkneys) and Saunders Island \* (South Sandwich Islands) the British Antarctic Survey (BAS) vessel R.R.S. *Bransfield* experienced the following depression in the Scotia Sea.

On Tuesday 16 December at 0200 UTC the ship's aneroid barometer gave a reading of 987.9 mb. The vessel was in position 57° 41' S, 27° 59' W and on an easterly course in light 8/10ths pack-ice. The wind was ESE'ly, force 4 and the visibility was poor owing to mist. At this time the barograph trace started a downward trend.

At 1000 on the 16th the vessel was north of Saunders Island at approximately 3 n mile but owing to low cloud and poor visibility only the base of the island was visible. At 1130 the ship altered course to 126°, the visibility still being poor, the vessel in medium to heavy 9/10ths pack-ice and the wind now ESE'ly, force 7. The barograph at this time read 977.5 mb; by 2200 it read 955.0 mb, the wind now E'ly, was force 8-9 and there was light snow, poor visibility and a large easterly swell. The vessel's position at this point was 58° 18' S, 24° 39' W.

On Wednesday 17 December at 0200 the pressure reached 950.6 mb, the wind had decreased and backed to NNW'ly, force 2, the visibility was still poor owing to mist and light snow, and the vessel in 10/10ths small broken pack-ice. By 0600 the vessel was in open water with mist and fog while the wind was N×E'ly, force 2. At 1000 the barograph showed 950.4 mb, the vessel was still in open water and the wind had become light and variable with a slight swell from the east.

When the vessel reached position 59° 17' S, 22° 01' W at 1400 on the 17th, the barograph trace had reached its lowest point of 949.6 mb, the wind was ESE'ly, force 3 with clear visibility and the vessel was in open water. The good visibility and open water did not last long, and by 1800 the wind had veered to SSW'ly, force 3, the vessel now finding herself in light mist and 6/10ths light to medium pack-ice.



By 2200 the wind had increased to force 7, its direction now SW×W'ly, the weather was overcast but clear, the barograph reading was 952.2 mb and the vessel was still in 6/10ths light to medium pack-ice.

The vessel then turned south while the barograph trace continued its upward trend and, by 0200 on the 18th when in position 60° 15' S, 20° 30' W, the wind had eased to S×W'ly, force 6 and a long low northerly swell was encountered along with 4/10ths pack-ice.

This good weather did not prevail and, by 1000, the wind had once more increased to SW×W'ly, force 9 and the barograph showed 960.7 mb. For the next 16 hours the wind eased again to S×W'ly, force 4 while the pressure continued to rise to 978.0 mb, and the vessel reached 62° 41' S, 20° 12' W passing through 8/10ths light to medium pack-ice.

\*The vessel was *en route* via Saunders Island not only because the ice conditions were more favourable but because we had been informed by one of BAS's vulcanologists that, after viewing an Aries satellite image of the Scotia Sea, he believed that Saunders was now active.

Saunders is roughly crescent-shaped, having an extensive bay, Cordelia Bay, on its north-east side. In the middle of the island is the glaciated cone of Mount Michael at 990 m (3,250 feet) high, actively volcanic, while to the south-east corner is a promontory composed of bare hills 213–243 m high in which extinct craters are to be seen.

### **Acknowledgment**

We are grateful to Captain J.B. Marshall and Principal Observing Officer A.P. Wallis of R.R.S. *Bransfield* for compiling this account.

## **Recollections of marine bioluminescence**

BY CAPTAIN N. FRASER

(17 Lady Musgrave Drive Mountain Creek Mooloolaba Queensland 4557)

My first experience with bioluminescence was as a child. In summer my parents would take me to the south-east coast of Australia where I would run along the water's edge to make the tiny sparkling globules dance about in the water. In those days we called it phosphorescence, no doubt because it glowed in the same fashion as phosphorous does when it is exposed to oxygen. I never really thought about what caused the strange lights in the water but I accepted it as a part of a natural process, the same way that I accepted the spectacle of fireflies when I saw them years later in Asia.

As a cadet in the Merchant Navy in the late '60s I saw more displays of phosphorescence, particularly in the Indian Ocean region between Australia and Singapore. Sometimes they were tiny bits that caused the wake of the ship or the trail of a playful dolphin to glow on a clear dark night. At other times the phenomenon was confined to distinct clumps which flashed on and off in time to some unknown stimulus. Some said that the stimulus was the ship's engine, or more likely the propeller. I became familiar with all sorts of phosphorescence. I was happy to sit and gaze at it without asking too many questions. After all, I was a navigator not a marine biologist or an oceanographer. Nothing prepared me for the sight which I witnessed at 2.55 a.m. (local time) on 3 November 1997.

I was on watch aboard an oil rig supply ship in position 14° 46.9' N, 96° 26.9' E, heading for the port of Yangon in Myanmar. Before us lay the shallow, muddy Gulf of Martaban. The water depth was 45 fathoms and the nearest land was 79 miles to the east. I was standing on the starboard wing of the vessel when bioluminescence suddenly appeared all around us. Hundreds of submerged 'patches' of light were flashing on and off in precise unison at an estimated 80 cycles per second. I thought this was a curious thing so I called over the Philippine watchman, Samuel Apaya, to watch the display. Suddenly, the entire surface of the water for as far as we could see was pulsating with bright wands of light, a bit like the reflection of a strobe-light at a disco. Being mystified we looked up at the sky expecting to see a hovering aircraft or a 'UFO'. But there was nothing in sight, no

aircraft, ships, yachts, lighthouses, fishing boats, nothing that could make these lights. This weird display lasted only five minutes when it turned off as quickly as it had started. I estimated at the time that these wands of light were moving at about 100 knots. The interval between them was only a second or two. This is the first time that I have witnessed such a phenomenon in over 20 years at sea.

I read the *Mariners Handbook* (4.47 refers) which mentions briefly 'bioluminescent wheels'. This 'wheel' effect seems to describe what we saw. The 'wands' were my original way of describing the pulsating light but they were also like the spokes of a giant wheel. At 3.30 a.m. on 6 November 1997, at 14° 44.6' N, 96° 26.5' E, only a few miles from the previous sighting, I saw the same spectacle again, only this time the lights were not as bright. The spectacle lasted only three to four minutes before it disappeared completely. This time the sea was quite rough and the sky was overcast and rainy following the passage of typhoon 'Linda'.

Last week I was talking to an associate of mine, Captain Paul DeWaard, of Cairns, Australia. I showed him a report of my sightings in the Andaman Sea. He mentioned that he had witnessed a similar sighting off Cam Mau Peninsular, South Vietnam, in 1971 while he was watch-keeping officer aboard a destroyer. He gave me permission to send you his report, which is similar to my own experience:

During the night the sighting of an unusual phenomenon had intrigued us all. Whilst proceeding at moderate speed through calm seas with a new moon and 4 oktas of cloud, one of the lookouts reported a glow in the water directly ahead. The ship was slowed and all her sensors, radar as well as sonar, could not detect any sign of surface or sub-surface targets yet the glow was now clearly visible to all on deck and the ship seemed to be surrounded by it. As the ship came to a stop, the glow had become bright pulsating sweeps of light below the surface, and for some time it was thought that the source might be a collision light from a crashed aircraft. Checks with Saigon Command indicated that no aircraft were missing and, after a thorough search, the ship proceeded. The sighting was later explained as bioluminescence which is caused by the mixing of two currents, each at a different temperature. This causes the plankton to glow like underwater fireflies. As the area was known to be subjected to strong currents from the Gulf of Siam mixing with the South China Sea, bioluminescence would seem a reasonable explanation.

Has anyone else sighted such phenomenon in Far Eastern waters?

### **Postscript**

This account was forwarded to Dr Peter Herring, of the Southampton Oceanography Centre, who said, "This is a very detailed account of the phosphorescent wheel phenomenon. The rates of flashing, the speed of the strobe-like wands of light and the short duration all accord with those in the majority of other reports of this kind of phenomenon. Wheels like this are often the culmination of a display that begins as flashing patches and they invariably occur in shallow water (less than 200 m) notably in the Arabian Gulf, South China Sea and Bay of Bengal. There is no certain explanation for these phenomena; some scientists suggest they derive from multiple interference patterns of seismic activity reflected from the surface, others believe they may be related to the vibrations of the ship's engine. In the latter context the report forwarded from Captain DeWaard in the Andaman Sea is very interesting in that it notes that the phenomenon continued when the ship stopped (though of course the engines would still have been running). I do not think that current mixing could produce such effects, which I am certain involve the passage of multiple pressure waves, however they may be produced."

Our thanks to Dr Herring for his comments.

## Special Long-service Awards

The observing records of shipmasters have been examined up to the year ending 31 December 1996, and we are pleased to name the following who have qualified for specially inscribed marine barographs to mark their long service towards voluntary weather observing at sea. They are:

- CAPTAIN B. CUSHMAN who commenced his observing career in 1964.
- CAPTAIN A.C. MCCULLOCH whose observing career began in 1961.
- CAPTAIN J.L. PETERSON who has been observing the weather since 1964.
- CAPTAIN T.G. WHITTAKER who began weather observations in 1971.

Between them, they have a total of 110 years of service although Captain Cushman has now retired. The awards are made on the basis of the number of years during which meteorological logbooks have been received from ships working in the UK VOF, the minimum period being 18 years including the year in point.

On a date to be arranged, the nominees will be invited to The Met. Office Headquarters in Bracknell to receive their awards at a special presentation.

At the presentation of long-service awards for 1995, held on 8 October 1997, one recipient, Captain D.R. Llewellyn, was unable to attend. However, Dr S.J. Caughey (Technical Director of The Met. Office) was pleased to present Captain Llewellyn with his barograph on 5 August 1998, at Bracknell.

## Aurora notes October to December 1997

BY R.J. LIVESEY

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

In Table 1 are listed the three observations of the aurora that have so far been received for the period in question.

**Table 1 — Marine auroral observations**

DATE	SHIP	GEOGRAPHIC POSITION	TIME (UTC)	FORMS IN SEQUENCE
Oct. 9/10	<i>Norna</i>	59° 37' N, 04° 06' W	2220–0100	G.RB.RR.G.
10/11	<i>Sulisker</i>	60° 50' N, 00° 42' E	0200–0220	RA.amRB.amRA.amRR
10/11	<i>Vigilant</i>	57° 20' N, 07° 02' W	0210–0240	G.

KEY: a = active; m = multiple; G = glow; RA = rayed arc; RB = rayed band; RR = rays.

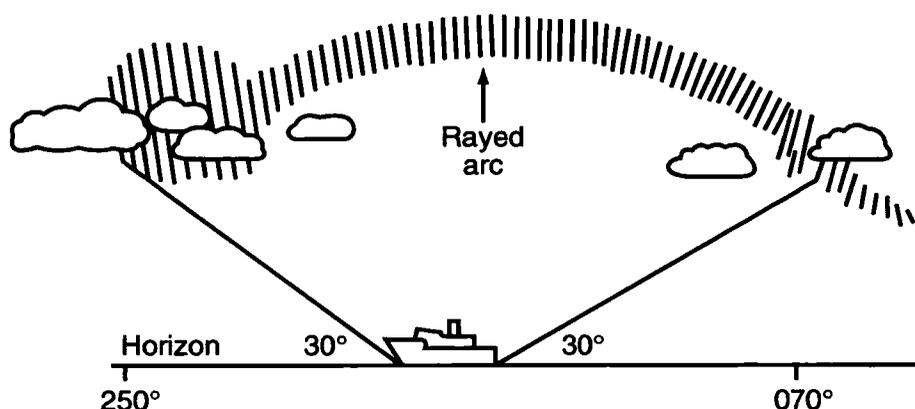
The observation made by f.p.v. *Norna*, near to the Orkney Islands, was associated with disturbed magnetic conditions. The aurora was also seen by an observer in Orkney, while at Reykjavik, close to the auroral zone, this event consisted of multiple arcs, a band forming a loop and some rays. The aurora was a relatively minor event associated with a small magnetic storm when the planetary magnetic index  $A_p = 11$  and  $K_p = 4$ . The aurora was also observed by the meteorologists at Kirkwall Airport and another observer in Orkney, where the auroral arc reached an altitude of 30 degrees with the tops of rays at 35 degrees above the horizon.

This aurora preceded substantial magnetic and auroral activity on the night of 10/11 October which was repeated on 6/7 November after one full rotation of the sun when the active region reached the same position with respect to the Earth.

The Fishery Protection Vessels *Norna*, *Sulisker* and *Vigilant* were the only vessels to report the October activity. On 9/10 October when *Norna* was on patrol duties north-west of the Orkney, a glow commenced in the north at 2220 UTC at altitude  $10^\circ$  and bearing between  $310^\circ$  and  $030^\circ$ . After a period of some ten minutes a rayed band appeared between  $325^\circ$  and  $335^\circ$ , followed by searchlight-like rays on a similar bearing. The rayed band reached an altitude of  $15^\circ$  and the rays  $20^\circ$ . By about 2250 these disappeared leaving only the glow which was eventually obscured at 0100 by the development of cloud.

On the afternoon of the 10th the Earth received a shock wave in the interplanetary wind of particles coming from the sun. This led to a substantial magnetic storm and an accompanying mid-latitude aurora. It was an active display and was variously reported between 1935 and 0515 on 10/11 October. It was also reported as active at Reykjavik but not very active by mid-latitude observers in the North American region.

During the night it was the turn of *Sulisker* and *Vigilant* to watch the activity. At about 0200 whilst the *Sulisker* was in the North Sea on a course of  $245^\circ$  at 6 knots, a rayed arc was sighted at an altitude of approximately  $30^\circ$ , with one end bearing  $070^\circ$ , and the other  $250^\circ$ . The sketch indicates what was seen.



At about 0215 the display increased to cover most of the northern sky from  $360^\circ$  round to  $200^\circ$ , and at its most spectacular stage there were bands, arcs and rays forming and disappearing across the entire sky on the above bearings. The whole display lasted for about 20 minutes and was most intense during the 'arc' phase.

The f.p.v. *Vigilant* first sighted the event at 0210 when in the Sea of the Hebrides. A bright grey/white glow was observed on the ship's starboard quarter and extended to an elevation of approximately  $40^\circ$  to  $45^\circ$  to the horizontal above low cloud cover situated over the Hebrides. The brightness intensified, and clear 'pulsing' of white light radiated beyond the outer edges of the glow. The display continued for 30 minutes.

These two reports were among the 15 received from UK observers distributed between the Orkney Islands and the Mull of Galloway.

After sunspot minimum in 1996 and a relatively slow start to the new cycle, the sun is becoming more active again. In 1997 the most active mid-latitude auroral apparitions were observed on 10/11 April, 3/4 September, 10/11 October, 6/7 and 22/23 November. The event of 3/4 September was the most widely observed when

aurora was overhead at the Moray Firth and active aurora was seen from the north of England. The October aurora was again active in northern England and widely seen northwards. The aurora of 6/7 November was itself not very substantial but was magnetically quite active which confirmed that the correlation between magnetic and auroral activities in mid-latitudes is not high. It was an active aurora as observed from central Scotland. Finally, the aurora of 22/23 November was widely observed with glows seen from Cornwall. It was overhead at the Moray Firth and active when seen from the Isle of Man.

Space weather has become a feature of studies relating to solar activity and how it affects the Earth. A number of space vehicles monitor the sun itself while others, such as the GOES and WIND vehicles, monitor the behaviour of the particles and magnetic fields emanating from the sun and coming in contact with the Earth. All indications are that the sun is becoming more active in terms of space weather so that more aurorae in mid-latitudes should manifest themselves in the next year or so.

## **Letters to the Editor**

### **Of medals, waterspouts and televisions**

A completed meteorological logbook was sent from the vessel during our port stay at Rotterdam in November. I trust this reached you safely. We have received on board the latest issue of *The Marine Observer* and it was very gratifying to note that our efforts have received your praise. A visit from the Port Met. Officer in Rotterdam brought our deficiencies up to date. He pointed out that had we been reporting to the Dutch Met. Office we should have received the honour of a medal presented by the Queen of The Netherlands. It is, however, a privilege to record data observed for the benefit of all, and at times a humbling experience to witness unusual natural phenomena.

One such incident occurred on 9 December [1997] in the Red Sea — Lat 21.09 N, Long 038.22 E, when the vessel passed very close to waterspouts. Observers were myself and Chief Officer Bassam Daha, the time was 0915 UTC, wind direction was South 18 knots, cloud Cb, air temperature 28.5° C. Multiple spouts were observed but one in particular caused great local disturbance of the water, as can be seen in the photograph. [See front cover.]

The satellite antenna seen has been fitted by staff on board to receive TV programmes worldwide, including weather reports which are at times extremely useful. It never ceases to amaze me that such equipment is not fitted by shipowners on VLCCs for entertainment purposes and for weather bulletins. Perhaps things will change when we move into the next century.

Captain P.J. Ward, Master of m.v. *Kazimah* (Kuwait Oil Tanker Company (S.A.K.))

### Ship's company gets the 'shudders'

I would like to relate to you the following incident which occurred whilst I was serving as Second Officer on board the m.v. *Loire Ore*.

Date: 1.5.98  
Time: 1718 UTC (1518 LMT)  
Wind: ESE 3  
Sea: Slight  
Swell: SE 1-1.5 m.    Visibility: 20 miles.    No clouds.  
Ship: Cape size bulk carrier in ballast.  
Co.: 204°  
Speed: 14.5 knots  
Position: 00° 58' N, 28° 23' W in vicinity of Penedos de Sao Pedro and Sao Paulo.

At this time a tremendous vibration was felt throughout the ship, from stem to stern, lasting for about 5 seconds, as though the ship had gone aground or hit a large wave. Charted depth of water in the area is over 2,000 m, and the sea was so calm and the visibility so clear that a wave large enough to produce this effect would have been seen. But it was not. All the chart table drawers came out about four inches, the fax machine came off its mounting and the galley was a mess. The crew were cleaning hatches at the time and came up on deck, thinking the ship was sinking. A mechanical malfunction has been ruled out because another cape size bulk carrier, the m.v. *Anaisai*, six miles to the south of us, also experienced the same phenomenon. The surface of the water was not discoloured in any way, nor did it appear disturbed (other than as normal by a force 3 wind).

As you can imagine, we all have our own theory as to what it was, and spend many a meal-time arguing about it. Perhaps it was some kind of seabed disturbance, an earthquake maybe?

Mr S. Woodhouse, Second Officer, *Loire Ore*.

*Editor's note.* Dr R.B. Whitmarsh, of the Challenger Division for Seafloor Processes at Southampton Oceanography Centre, said:

"There is no doubt that the vibration felt was caused by an earthquake. A search of the United States Geological Survey's preliminary earthquake database has turned up two earthquakes with the following co-ordinates and origin times in UTC:

Year	Month	Day	hhmm ss.ss	Lat. (° N)	Long. (° W)	Depth (km)	Magnitude
1998	05	01	1718 16.54	0.71	28.47	10	5.10
1998	05	02	1918 03.18	0.88	29.16	10	4.80

"The first event matches exactly the time given in the report, and it seems that the ship was located about 16 n mile from the epicentre of the earthquake. A magnitude of 5.1 is moderately strong so it is not surprising that the water-borne signal from the earthquake was felt on board when it struck the hull. The second event was presumably related to the first, a so-called aftershock.

"Reports of such events are not uncommon at sea, although I have never felt one myself but they do of course depend on a vessel being by chance quite close to the epicentre of the earthquake when it happens."

## Bioluminescence in the Molucca Sea

On 2 September 1997, 3rd Mate Craig Andrews handed over the navigation watch at 1500 UTC reporting the presence of a glow within the water surrounding the vessel. This noticeably lighter-than-usual condition was observed by myself and watch-keeping IR, Robert Watson, to increase from a dull 'aurora' to a clearly distinguishable glow over a period of about four hours.

The phenomenon was observed at the southern section of the Molucca Sea, in position 00° 42.5' S, 126° 35.2' E, when the vessel was steering 178° at an average speed of 16 knots.

The entire visible sea surface turned an off-white or opaque colour giving an appearance resembling a sea of milk or cloud. The effect was distinguishable to the extent that the normal appearance of a dark sea against a lighter sky was reversed to give a luminous sea against a dark sky. Additionally, the ship's wake and the disturbed water up to a metre out from the ship's side was noticed to be slightly more luminous than the rest of the sea (as if the vessel was passing through a continuous sea of phosphorescence).

All this gave an intriguing appearance, as if a high-intensity search-light was emitting its beam upwards from the sea bottom — illuminating the sea water as it would normally illuminate clouds (however, it did not illuminate the medium of air).

At this time the weather and sea conditions were: air temperature 25.0°, wet bulb 22.5°, sea 26.1° (by sea-water intake), wind SE×S'y, force 4, slight sea, no swell, no cloud and no other light source apart from the stars and Jupiter.

By 1900 the bioluminescence had disappeared. The dispersal was gradual, initially reducing to a clearly-defined ridge, similar in appearance to an on-coming fog bank, then becoming large patches before breaking down further to narrow bands within the troughs of the developing small swell (height 0.2–0.4 m) and finally vanishing a short period afterwards.

This is now the fourth time in three years that I have observed this phenomenon from this vessel. Previously, this has occurred in the southern or middle section of the Banda Sea, similar conditions prevailing but the intensity of the bioluminescence varied from brilliant-white (almost 'gloss' white) to a dirty off-white colour.

It was also assumed that this was a well-documented phenomenon but we now know that this is not so, hence we will in future report all cases.

Mr G. Burgess, Second Mate, m.v. *Northwest Snipe* (reporting for the Australian VOF).

*Editor's note.* We are always pleased to hear from ships in other Voluntary Observing Fleets, and have also heard from two more Australian ships, both of which reported bioluminescence in the same general area as the above account: on 7 September 1997, 3rd Mate S. Boot and G. Bezzant, IR on the *Northwest Stormpetrel*, noted the 'milky-sea' phenomenon in surrounding waters as far as could be seen, in position 04° 13.5' S, 125° 40.2' E, while on 9 October 1997, observers on the *Northwest Shearwater*, in position 00° 35' S, 126° 41' E, noted a milky-white light for 360° around the vessel, stretching to the horizon.

## Book Review

*Illegal drugs by Sea* compiled by Brigadier (Retd) B.A.H. Parritt CBE. 210 mm × 296 mm, 92 pp., *illus.* ISBN 1 870077 44 X. Published by The Nautical Institute 202 Lambeth Road London SE1 7LQ. Price: £16.00 (£22.86 for non-members) plus postage of £3.00 for UK destinations, £7.50 for air-mail and £5.00 for European destinations.

This book is not for the faint-hearted. That said, it is an easy to read and understand guide to the trade of illegal drugs and provides ample coverage of smuggling techniques used by the drug providers and how that may impact upon seafarers in general and shipmasters in particular.

The book is divided into twelve chapters, each written by individuals or organisations best placed to provide in-depth details of a particular aspect of this insidious trade, reckoned to be the second largest industry in the world (the first being the arms trade) and worth some US\$ 350 billion per annum in 1995. One chapter, written by Mr John Howlett, seriously questions our whole approach to the use, or perhaps abuse of drugs. It is worth considering although not really relevant to seafarers, and would receive short shrift if used in defence in court.

With the USA, followed by western Europe, being the primary consumers and South America and south-east Asia being the principal suppliers, with consignments measured in tonnes (though not necessarily so), it becomes readily apparent that the easiest method of transportation is by sea. Each year ships are impounded, crew members arrested and gaoled, and hideous fines imposed by desperate governments seeking to limit the damage caused upon their populations.

Nor should there be any doubt about the seriousness of the punishments meted out by various nation states. In Egypt, Malaya, Singapore and Iran those caught smuggling are sentenced to capital punishment. This list is bound to increase!

It will come as no surprise to ships' masters to know that amongst the endless reams of modern legislation with which they already have to contend, they are now first in the firing line when illegal drugs are found onboard a ship. 'Guilty until proved innocent' is the line taken by most authorities world wide. Chapter Five deals with the Master's Liability for transporting illegal drugs.

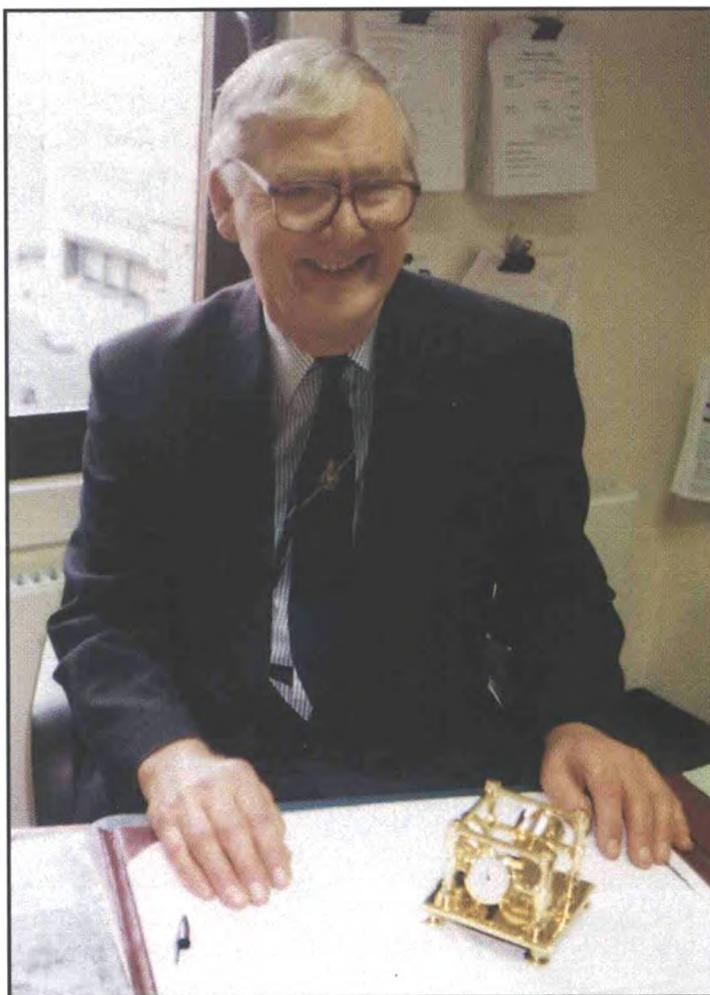
However, do not despair! There are sections provided with details of how to avoid many of the pitfalls, with guidance on the identification of various substances, methods of smuggling, detection and prevention, and how to deal with and report discoveries or suspicions to the authorities.

The book is amply provided with black and white illustrations (presumably to keep the cost down) which are both interesting and informative. Perhaps the inclusion of coloured photographs showing the various types of drugs to match the descriptions in Chapter Eleven would be of value.

Whilst a good general background is provided, essential to those with little knowledge of drugs, the emphasis of the book is on the maritime industry. It pulls no punches and leaves the reader in no doubt that we are at war with this trade, which is international and pervades all levels of society. Published in softback, it is reasonably priced for both members and non-members of The Nautical Institute.

Captain J. Roe  
Port Met. Officer (South-west England)

## Personalities



Captain S.M. Norwell

Pictured at his desk for the last time is Captain J.A. Williamson who retired as Port Met. Officer for North-west England in May 1998. (See *The Marine Observer*, July 1998, page 138.)

## Notices to Marine Observers

### Australian radiofacsimile weather chart broadcast

The Bureau of Meteorology has for many years been supplying the marine community with weather information in the form of charts broadcast via its AXM/AXI radiofacsimile service.

The HF transmitters for this service are provided and operated by the Royal Australian Navy (RAN).

The RAN is redeveloping its radio broadcasting systems, and is planning to commission a new communications facility in the next few years. HF transmissions are not included in these plans.

We are therefore seeking input from users of our AXM/AXI radiofacsimile service particularly in regard to current utilisation, and the impact on their activities if the service is terminated at some future stage.

Survey questionnaires are available from the sources listed overleaf:

- AXM/AXI broadcast at **0515 UTC–0600 UTC** daily.
- The Bureau's Web site at **[http://www.bom.gov.au/other/rad\\_sch](http://www.bom.gov.au/other/rad_sch)**
- Facsimile (in poll-mode **039661223** [within Australia] or **+61396621223** [international])
- Mail from SRRT NMOC Bureau of Meteorology GPO Box 1289K Melbourne Victoria 3001.

It would be helpful if completed questionnaires could be returned to our mailing address no later than 31 December 1998.

Participation in this survey will be an important factor in shaping the future provision of our Australian weather services to the marine and fishing industries, and recreational ocean users.

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ISSN 0025-3251

