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Meteorology*



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THE MARINE OBSERVER

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

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COVER PHOTOGRAPH: R.R.S. *John Biscoe* off Adelaide Island in January 1983, taken by R.C. Plumley, Chief Officer. (See page 128.)

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

LONDON: HMSO

EXCELLENT AWARDS 1989

During the year a total of 1044 completed meteorological logbooks were received from Selected Ships and Offshore observers of the Voluntary Observing Fleet. There were also 90 voyage sets of the modified VSOP log sheets collected from the ten Selected Ships co-operating in the Voluntary Special Observing Project — North Atlantic. After passing through quality control, each log undergoes assessment by a Nautical Officer at Bracknell and is awarded a marking which takes into account the potential of the observers to make log entries, dependent on the time available during the ship's normal operations. Taking all factors into consideration, nominations for Excellent Award books are made in respect of the 100 best submissions by Masters, Principal Observers and Radio Officers. Additional awards are reserved for the best results from VSOP ships.

Those ships falling into the five highest assessments are as follows:

1. m.v. *Forthbank*, Andrew Weir Shipping Ltd, Captain P. Simpson and Principal Observer Mr K.P. Mowat.
m.v. *Moraybank*, Andrew Weir Shipping Ltd, Captain A.T. McGregor and Principal Observer Mr D.E. Ginder.
m.v. *Lincolnshire*, Bibby Line Ltd, Captain R.A.F. Edwards and Principal Observer Mr I.D. Howard.
2. m.v. *ACT 7*, Blue Star Ship Management Ltd, Captain A.J. Cheshire.
3. m.v. *Flinders Bay*, P. & O. Containers Ltd, Captain R. Brinkworth.
m.v. *Resolution Bay*, P. & O. Containers Ltd, Captains D.V. Harradine and R.T. Wood.
m.v. *Liverpool Bay*, P. & O. Containers Ltd, Captain J.W. Welch.
4. m.v. *ACT 1*, Blue Star Ship Management Ltd, Captain R. Brownbill.
m.v. *Churchill*, Blue Star Ship Management Ltd, Captain D.R. Mackillop.
m.v. *Graiglas*, Graig Shipping plc, Captains E.M. Holmyard and G. Watson-Wood.
5. m.v. *Cardigan Bay*, P. & O. Containers Ltd, Captain P.J. Clark.
m.v. *Nosira Madeleine*, Bolton Maritime Management Ltd, Captains C.A. Sheffield and M.A. Gater.
m.v. *Al Arous*, Cunard Ellerman Shipping Services Ltd, Captain G.J. Ward.

A full list of Excellent Award recipients starts on the page opposite and photographs of the first three ships are published opposite page 114.

Books chosen for distribution as awards for 1989 nominees are *Great Journeys* (BBC Books), *Collins Atlas of the World* and *Cassell's Concise English Dictionary*.

J.F.T.H.

EXCELLENT AWARDS (Year ended 31 December 1989)

CAPTAIN		COMPANY		CAPTAIN		COMPANY	
J.H. Aynsley	...	C.M. Willie & Co. (Shipping) Ltd	C.J. Flanagan	...	Geest Line Ltd		
C.R. Bamford	...	Ropner Mgmt Ltd	A.C. Free	...	Caledonian MacBrayne Ltd		
A.D.G. Bell	...	A/S Havtor Mgmt	J.R. French	...	Minst. of Agriculture Fisheries & Food		
K.A., G. Biscoe	...	Shell Ship Mgmt Ltd	M.R. Gadd	...	C.M. Willie & Co (Shipping) Ltd		
P.J.S. Bishop	...	Cunard Ellerman Shipping Services Ltd	M.A.M. Gater	...	Bolton Maritime Shipping		
A.F. Bonehill	...	P. & O. Ferries Ltd	A. Gatt	...	Jebsens Ship Mgmt Ltd		
R. Brinkworth	...	P. & O. Containers Ltd	A.D. Gillie	...	London & Overseas Freighters plc		
R. Brownbill	...	Blue Star Ship Mgmt Ltd	D.C. Gray	...	P. & O. Ferries Ltd		
M. Cadman	...	Mobil Shipping Co. Ltd	D.V. Harradine	...	P. & O. Containers Ltd		
A. Chamberlain	...	B.P. Pet. Dev. Ltd	M.R. Harris	...	C.M. Willie & Co (Shipping) Ltd		
A.J. Cheshire	...	Blue Star Ship Mgmt Ltd	G. Hepple	...	P. & O. Bulk Shipping Ltd		
B.V. Chipperfield	...	P. & O. Containers Ltd	E.M. Holmyard	...	Graig Shipping Co. plc		
A.J. Chivers	...	Blue Star Ship Mgmt Ltd	S.J. Honey	...	Ropner Mgmt Ltd		
P.J. Clark	...	P. & O. Containers Ltd	C.J. Hughes	...	C.M. Willie & Co. (Shipping) Ltd		
C.A. Cleverley	...	Ship-Link (U.K.) Ltd	R.L. Hutchison	...	Caledonian MacBrayne Ltd		
M.J. Cole	...	British Antarctic Survey	J.H. Hutson	...	P. & O. Containers Ltd		
I.W. Collister	...	P. & O. Containers Ltd	P.E. Jackson	...	Beta Maritime Services Ltd		
J.A. Cosker	...	P. & O. Containers Ltd	T.L. Jeffrey	...	F.T. Everard & Sons Ltd		
J.C. Cowie	...	P. & O. Ferries Ltd	A.C. Jenkins	...	Geest Line Ltd		
P.J. Creber	...	Furness Withy (Shipping) Ltd	C.S. Kingston	...	Cunard Ellerman Shipping Services Ltd		
R.N. Cumbers	...	E. & F. Ship Mgmt Ltd	A.G. Lacey	...	James Fisher plc		
B. Cushman	...	P. & O. Containers Ltd	G.S. Laird	...	Denholm (I.O.M.) Ltd		
M.J. Davis	...	Geest Line Ltd	R.H. Lancaster	...	Charles England Ltd		
S.H. Duckworth	...	Denholm (I.O.M.) Ltd	S.J. Lawrence	...	British Antarctic Survey		
M.P. Easton	...	B.P. Pet. Dev. Ltd	D.J. Lloyd	...	Charles England Ltd		
R.A.F. Edwards	...	Bibby Line Ltd	J.H. Lowe	...	Ship-Link (U.K.) Ltd		
P.J. Elder	...	Andrew Weir Shipping Ltd	B. Luke	...	P. & O. Ferries Ltd		
A.J. Fee	...	P. & O. Containers Ltd	D.R. MacKillop	...	Blue Star Ship Mgmt Ltd		
I.W. Ferguson	...	B.P. Pet. Dev. Ltd	A.T. McGregor	...	Andrew Weir Shipping Ltd		
S.F. Findlay	...	Caledonian MacBrayne Ltd	M.L. Miller	...	James Fisher plc		
J.P.H. Fisher	...	Jubilee Sailing Trust	T.R. Mishra	...	B.C.P. Ship Mgmt Ltd		

Excellent Awards (contd)

CAPTAIN		COMPANY		CAPTAIN		COMPANY	
S.R. Montague	...	B.P. Shipping Ltd	...	S.D. Smith	...	P. & O. Containers Ltd	...
D.B.C. Morris	...	P. & O. Containers Ltd	...	E.D. Somes	...	Ocean Fleets Ltd	...
H.M. Munro	...	Jubilee Sailing Trust	...	T.M. Stones	...	B.P. Shipping Ltd	...
M.R. Nisbet	...	Bibby Line Ltd	...	C.E.W. Sturcke	...	B.C.P. Ship Mgmt Ltd	...
H.J. Norton	...	C.M. Willie & Co. (Shipping) Ltd	...	D.D. Sutherland	...	Ben Line Steamers Ltd	...
B.W. Nutall	...	Cunard Ellerman Shipping Services Ltd	...	G.W.H. Tennant	...	Dept of Agr. & Fish. for Scotland	...
D.N.B. Nutman	...	B.C.P. Ship Mgmt Ltd	...	J.D. Thomson	...	P. & O. Containers Ltd	...
T.N. O'Driscoll	...	B.C.P. Ship Mgmt Ltd	...	M.F. Tomlinson	...	Geest Line Ltd	...
O. Ottosson	...	Ship-Link (U.K.) Ltd	...	C.J.B. Trinick	...	E. & F. Ship Mgmt Ltd	...
A.J. Palmer	...	P. & O. Containers Ltd	...	D.J. Tyler	...	Charles England Ltd	...
M. Pocklington	...	B.P. Shipping Ltd	...	R.B. Wade	...	Graig Shipping Co. plc	...
A.A. Raiton	...	P. & O. Containers Ltd	...	G.J. Ward	...	Cunard Ellerman Shipping Services Ltd	...
D.L. Rattray	...	Dept of Agr. & Fish. for Scotland	...	J.W. Welch	...	P. & O. Containers Ltd	...
I.K. Rew	...	C.M. Willie & Co. (Shipping) Ltd	...	P.A. Wheeldon	...	Boyd Line Ltd	...
D.J. Robertson	...	P. & O. Containers Ltd	...	J.A. Wilson	...	Jebsens Ship Mgmt Ltd	...
J.F. Rowe	...	Blue Star Ship Mgmt Ltd	...	W.A. Wilson	...	Blue Star Ship Mgmt Ltd	...
D.M. Rundle	...	B.P. Pet. Dev. Ltd	...	J. Winterburn	...	P. & O. Ferries Ltd	...
P.A.E. Sambrook	...	P. & O. Containers Ltd	...	G. Watson-Wood	...	Graig Shipping Co. plc	...
C.A. Sheffield	...	Bolton Maritime Mgmt Ltd	...	R.T. Wood	...	P. & O. Containers Ltd	...
C.R. Short	...	P. & O. Containers Ltd	...	E.R. Wooldridge	...	South Atlantic Fishing Ltd	...
P. Simpson	...	Andrew Weir Shipping Ltd	...	D.P. Worsnop	...	P. & O. Containers Ltd	...
A.M. Smart	...	Jebsens Ship Mgmt Ltd	...	G.D. Younger	...	Jebsens Ship Mgmt Ltd	...
R.J. Smith	...	Denholm (I.O.M.) Ltd	...				

PRINCIPAL OBSERVING OFFICER		COMPANY		PRINCIPAL OBSERVING OFFICER		COMPANY	
M.A. Afghani	...	E. & F. Ship Mgmt Ltd	...	P.J. Flanagan	...	P. & O. Containers Ltd	...
D.J. Ayling	...	Jebsens Ship Mgmt Ltd	...	D. Friberg	...	Ship-Link (U.K.) Ltd	...
K.G. Baldwin	...	F.T. Everard & Sons Ltd	...	E.A. Garrick	...	C.M. Willie & Co. (Shipping) Ltd	...
B.G. Ball	...	P. & O. Containers Ltd	...	D.E. Ginder	...	Andrew Weir Shippig Ltd	...
J.C. Barton	...	Dept of Agr. & Fish. for Scotland	...	C.J. Poole-Gleed	...	British Antarctic Survey	...
C.A. Bates	...	Blue Star Ship Mgmt Ltd	...	R. Glover	...	Graig Shipping Co. plc	...
C. Bathgate	...	Dept of Agr. & Fish. for Scotland	...	G.C. Gove	...	P. & O. Ferries Ltd	...
B.W. Bedworth	...	C.M. Willie & Co. (Shipping) Ltd	...	M.R. Gover	...	Graig Shipping Co. plc	...
N.M. Bennett	...	Blue Star Ship Mgmt Ltd	...	P.S. Gracias	...	Beta Maritime Services Ltd	...
E.T. Bibby	...	Blue Star Ship Mgmt Ltd	...	A.J.T. Gray	...	Caledonian MacBrayne Ltd	...
J.E. Birdsall	...	P. & O. Ferries Ltd	...	M.R. Greenslade	...	P. & O. Containers Ltd	...
C.R. Booker	...	Mobil Shipping Co. Ltd	...	N.D.L. Gregory	...	P. & O. Containers Ltd	...
A.I. Boulton	...	P. & O. Containers Ltd	...	G.N. Hale	...	P. & O. Containers Ltd	...
R.M. Bradley	...	Cunard Ellerman Shipping Services Ltd	...	R.K. Harding	...	P. & O. Containers Ltd	...
R.J. Bridge	...	Jubilee Sailing Trust	...	R.A. Hawkins	...	P. & O. Containers Ltd	...
C.R. Brooks	...	P. & O. Containers Ltd	...	I.D. Hebborn	...	B.P. Shipping Ltd	...
P.D. Brooks	...	Ben Line Steamers Ltd	...	C.D. Heron	...	Ship-Link (U.K.) Ltd	...
N.D.J. Butler	...	Blue Star Ship Mgmt Ltd	...	G.R. Hicks	...	Geest Line Ltd	...
I. Campbell	...	Dept of Agr. & Fish. for Scotland	...	D.R. Hilton	...	Beta Maritime Services Ltd	...
H.F. Carter	...	Geest Line Ltd	...	P.W. Holliday	...	Bolton Maritime Shipping Ltd	...
R. Chadbourne	...	B.P. Shipping Ltd	...	I.D. Howard	...	Ropner Mgmt Ltd	...
I.G. Chadwick	...	B.P. Pet. Dev. Ltd	...	B.A. Hoyle	...	Bibby Line Ltd	...
B.A. Chapman	...	Minst. of Agriculture, Fisheries & Food	...	A.D. Hutchinson	...	C.M. Willie & Co. (Shipping) Ltd	...
D. Coombs	...	Sealink (U.K.) Ltd	...	P.W. Jackson	R/O	P. & O. Containers Ltd	...
G.D. Corbett	...	Cunard Ellerman Shipping Services Ltd	...	B.K. Jha	...	Denholm (I.O.M.) Ltd	...
I. Cousins	...	Blue Star Ship Mgmt Ltd	...	M.H.F. Kenny	...	B.C.P. Ship Mgmt Ltd	...
D.S.J. Craig	...	Dept of Agr. & Fish. for Scotland	...	D.K. Kothiyal	...	Geest Line Ltd	...
D.L. Dodsworth	...	P. & O. Containers Ltd	...	D. Kynaston	...	P. & O. Bulk Shipping Ltd	...
A.C. Dunning	...	Charles England Ltd	...	F.M. Leahy	...	Denholm (I.O.M.) Ltd	...
B. Edwards	...	C.M. Willie & Co. (Shipping) Ltd	...	S.G. Leitch	...	P. & O. Containers Ltd	...
M. Ellis	...	Blue Star Ship Mgmt Ltd	...	J.A. Lopez (Jr)	...	Ropner Mgmt Ltd	...
S.J. Fant	...	James Fisher plc	...	H.C. MacKenzie	...	A/S Havtor Mgmt	...
A.R. Farthing	...	Jebsens Ship Mgmt Ltd	...	A.P. MacLean	...	Geest Line Ltd	...
						C.M. Willie & Co. (Shipping) Ltd	...

Excellent Awards (contd)

PRINCIPAL OBSERVING OFFICER	COMPANY	PRINCIPAL OBSERVING OFFICER	COMPANY
P.R. Marriot	...	R.K. Singh	B.C.P. Ship Mgmt Ltd
W.M. Maughan	...	G.C. Smith	P. & O. Containers Ltd
M.S. McDonald	...	A.S. Spence	Boyd Line Ltd
S. Mehta	...	B. Standerline	Ship-Link (U.K.) Ltd
C.R. Merry	...	M. Stewart	P. & O. Containers Ltd
G.R. Mills	...	M.C.P. Sutcliffe	P. & O. Containers Ltd
D.C. Mohammed	...	B.R.G. Tasker	Charles England Ltd
H. Mouat	...	P.A. Trafford	P. & O. Containers Ltd
K.P. Mowat	...	D.M. Vann	B.P. Pet. Dev. Ltd
A.N. Murray	...	D.J. Vickery	P. & O. Containers Ltd
M.A. O'Neill	...	C.W. Watson	Blue Star Ship Mgmt Ltd
E.M. Pallister	...	M.J. Webber	London & Overseas Freighters plc
H.G. Pask	...	N.I. Wiggins	Furness Withy (Shipping) Ltd
A.W. Pitcher	...	D.C. Collins-Williams	P. & O. Containers Ltd
R.G. Pressler	...	D.J. Williams	B.P. Shipping Ltd
J.M. Reid	...	M.P. Willis	P. & O. Containers Ltd
D. Rogers	...	D.A. Wilson	Cunard Ellerman Shipping Services Ltd
D.C. Selley	...	E.K. Andoh-Wilson	C.M. Willie & Co. (Shipping) Ltd
R.I. Sime	...	T.G. Wilson	Caledonian MacBrayne Ltd
P.S. Sinclair	...	S.P. Wood	James Fisher plc
T. Sinclair	...		

RADIO OFFICER	COMPANY	RADIO OFFICER	COMPANY
N.M. Abbott	...	B.G.J. Hughes	Jebsens Ship Mgmt Ltd
E. Ackwundu	...	N.G. Johns	C.I. Shipping Ltd
I.F. Alexander	...	D.J. Kelly	Radio & Electronic Services
J.G.L. Baker	...	D.A. Kelsall	Dept of Agr. & Fish. for Scotland

M. Baker	B.P. Shipping Ltd	P.R. Lacock	<i>Havtor</i>	Buries Markes (Ship Mgmt) Ltd
R.P. Bate	Acomarit Shipping Ltd	D. Leeson	...	Marconi International Marine Co. Ltd
D.E. Beech	P. & O. Containers Ltd	A. Lloyd	...	Wallem Shipmanagement I.O.M.
A.S.T. Beveridge	P. & O. Containers Ltd	P.G. Luck	...	Matheson Shipping Ltd
G.A. Bird	P. & O. Containers Ltd	N. MacLean	<i>Mackenzie CS</i>	S.T.C. International Marine
D.W. Bone	Marconi International Marine Co. Ltd	R.A.S. MacMeikan	<i>NJA McKenry 180</i>	Jebsens Ship Mgmt Ltd
S.J. Bradshaw	P. & O. Containers Ltd	N. Mathews	...	Radio & Electronic Services
S.J. Braithwaite	Dept of Agr. & Fish. for Scotland	J.A. McKay	...	P. & O. Containers Ltd
R.A. Browne	Furness Withy (Shipping) Ltd	T. McMahon	...	James Fisher plc
A.J. Christopher	Blue Star Ship Mgmt Ltd	S.J. Mee	<i>E.E. Melbourne OF</i>	British Antarctic Survey
S.R. Cloutte	Marconi International Marine Co. Ltd	C. Moors	<i>B.C. Miller RES</i>	Wallem Shipmanagement I.O.M.
T. Collins	Wallem Shipmanagement I.O.M.	A.D. Moore	...	Wallem Shipmanagement I.O.M.
P.G. Corkin	Ship-Link (U.K.) Ltd	H.G. Moran	...	Blue Star Ship Mgmt Ltd
J.R. Cowan	Wallem Shipmanagement I.O.M.	M.F. Morgan	...	Geest Line Ltd
A.F. Crichtley	Electronic Nav. Co.	P.G. Morgan	...	C.I. Shipping Ltd
A.B.K. Crosland	Ship-Link (U.K.) Ltd	M. Moynihan	...	Denholm (I.O.M.) Ltd
R.M. Crozier	Marconi International Marine Co. Ltd	B.P. Murphy	...	Cunard Ellerman Shipping Services Ltd
A. Cumming	P. & O. Containers Ltd	C.G. Murray	...	Marconi International Marine Co. Ltd
C.G.A. Cupples	C.I. Shipping Ltd	D.J. Murray	...	Wallem Shipmanagement I.O.M.
R. Dolby	S.T.C. International Marine	R.J. Nummey	...	P. & O. Ferries Ltd
B. Donaldson	Geest Line Ltd	P. O'Neil	...	Denholm (I.O.M.) Ltd
P.W. Ferguson	B.P. Shipping Ltd	K.S. O'Sullivan	...	A/S Havtor Mgmt
D.W. Fletcher	Furness Withy (Shipping) Ltd	J. O'Toole	...	Shell Ship Mgmt Ltd
R.B. Fuller	James Fisher plc	N.A. Orpe	...	E. & F. Ship Mgmt Ltd
T. Gilmour	P. & O. Containers Ltd	J.G. Palethorpe	...	Bibby Line Ltd
M. Glendinning	P. & O. Containers Ltd	A.J. Pampling	<i>H.C. Park Safes</i>	S.T.C. International Marine
J.P.J. Goldsmith	Shell Ship Mgmt Ltd	K.E. Peacock	...	B.P. Shipping Ltd
P.G. Golson	Marconi International Marine Co. Ltd	P.I. Pegg	...	P. & O. Containers Ltd
R.E. Goring	P. & O. Ferries Ltd	D.L. Pereira	...	P. & O. Ferries Ltd
V.A. Gorny	Marconi International Marine Co. Ltd	I.C. Petrie	...	Blue Star Ship Mgmt Ltd
M.D. Gray	Blue Star Ship Mgmt Ltd	M.D. Pike	<i>T. Plant</i>	Marconi International Marine Co. Ltd
J.S. Hallam	Marconi International Marine Co. Ltd	G.B. Randall	...	Geest Line Ltd
P.N. Hambleton	Wallem Shipmanagement I.O.M.	B. Ravindran	...	P. & O. Ship Mgmt Ltd
R.B. Hardy	Bolton Maritime Mgmt Ltd	D.S. Ray	...	E. & F. Ship Mgmt Ltd
P.M. Haslam	Fairfield Maxwell	D.E. Reilly	...	Jebsens Ship Mgmt Ltd
S.W. Heard	Beta Maritime Services Ltd	D.A. Richards	...	Acomarit Shipping Ltd
N.P. Hill-Heaton	P. & O. Containers Ltd	J.C.H. Ride	...	Jebsens Ship Mgmt Ltd
<i>D. Hobson</i>	<i>F.W.</i>			<i>Jardine?</i>

Excellent Awards (contd)

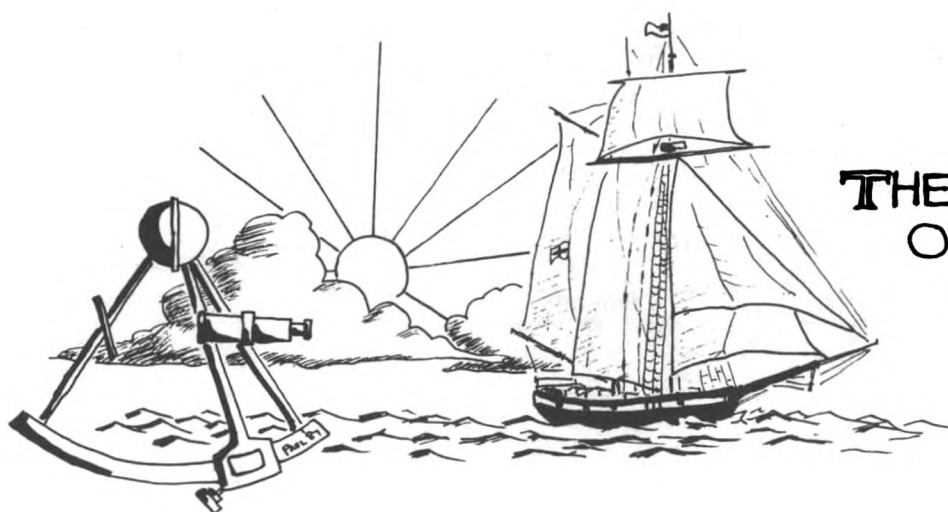
RADIO OFFICER	COMPANY	RADIO OFFICER	COMPANY
A. Robertson	C.I. Shipping Ltd	A.R. Taylor	Cunard Ellerman Shipping Services Ltd
D.G. Samant	B.C.P. Ship Mgmt Ltd	S.P. Taylor	B.P. Shipping Ltd
P. Sathyamurthy	Matheson Shipping Ltd	S.J. Thewlis	James Fisher plc
J.M. Shand	S.T.C. International Marine	J.C. Thompson	P. & O. Containers Ltd
G.N. Shaw	S.T.C. International Marine	A.G. Thomson	Manx Shipping Ltd
I.R. Shaw	Geest Line Ltd	J.A. Tomlinson	P. & O. Containers Ltd
M.R.W. Sheehy	Marconi International Marine Co. Ltd	T.A. Verling	Shell Ship Mgmt Ltd
R.J. Sheldon*	Dept of Agr. & Fish. for Scotland	C.A. Waddicor	British Antarctic Survey
B. Singh	B.C.P. Ship Mgmt Ltd	R.A. Wilson	Curnow Shipping Ltd
R.M. Slacke	Marconi International Marine Co. Ltd	K.S. Woodley	Marconi International Marine Co. Ltd
T.J. Smith	P. & O. Containers Ltd	J.F. Worcester	Radio & Electronic Services
M.G. Spencer	B.P. Shipping Ltd	P.Y. Wright	Radio & Electronic Services
E.B. Stephenson	P. & O. Containers Ltd	J.K. Wadsworth	Radio & Electronic Services
G. Swainbank	Fisher?	J.C. Yates	Radio & Electronic Services

'MARID' SHIPS†

CAPTAIN	PRINCIPAL OBSERVING OFFICER	RADIO OFFICER	COMPANY
S. Bryson Eastgate** Esso Avon**	J. Owens K.M. Seery T. Shaw	R. McGannan* —** L. Deveraux	ARC Marine Ltd Rowbotham Tankships Ltd Esso Petroleum Co. Ltd

* Deck Officer. ** Awarded to ship as requested by the company's managers.

† Vessels recruited for the purpose of observing and transmitting sea temperatures with non-instrumental observations in the North Sea.



THE MARINE OBSERVERS' LOG

July, August, September

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

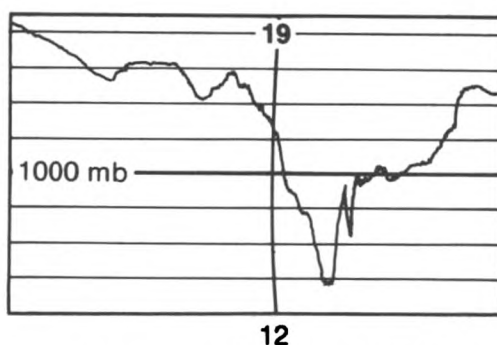
TYPHOON 'WAYNE'

Western North Pacific

m.v. *Osaka Bay*. Captain A.A. Railton. Kobe to Nagoya. Observers: the Master, and ship's company.

19 September 1989. Alongside at Kobe the vessel completed cargo operations at 0730 GMT and prepared for sailing at 0900. The preceding four hours had seen overcast skies with frequent heavy rain showers.

The vessel's departure from Kobe coincided with the passage of typhoon Wayne along the southern coast of Japan; a fax picture obtained at 0000 had given its position as 30.2° N, 128.5° E, with a central pressure of 970 mb, and it was proceeding north-east at 20 knots with maximum winds reaching 60 knots.



Under pilotage, the vessel proceeded to sea at 0900, again with overcast skies and very heavy rain squalls. Further forecast information received at 1000 gave the position of Wayne as 32.1° N, 133.1° E, having maintained its north-easterly track but increasing its speed to 30 knots.

Based on this forecast, the ship's intended course and speed would have placed it on a near collision course with the storm, and so, on dropping the Kobe Bay

Pilot at 1050, the Master proceeded on a southerly course at reduced speed and waited for the typhoon to pass. The following observations were recorded during the period, and the barograph trace shows the pressure changes associated with the storm.

Time (GMT)	Wind		Pressure (mb)
	Dir'n	Force	
0700	Light airs		1005.6
1000	E	6	1002.5
1100	E	6	1003.0
1200	E	8	1001.9
1300	ENE	8	997.1
1400	NE	8	993.4
1430	N	8	—
1500	NW	8	999.8
1600	WNW	8	1000.3
1700	W	8/9	1000.0
1800	SW	7	1001.2
1900	SSW	6/7	1002.9
2000	W	4/5	1004.8

After the storm had cleared the ship's path, course was altered to 090°, the speed was increased and passage was resumed.

Position of ship at 1200 GMT: approximately 33° 58'N, 134° 54'E.

SEVERE DEPRESSION

South Pacific Ocean

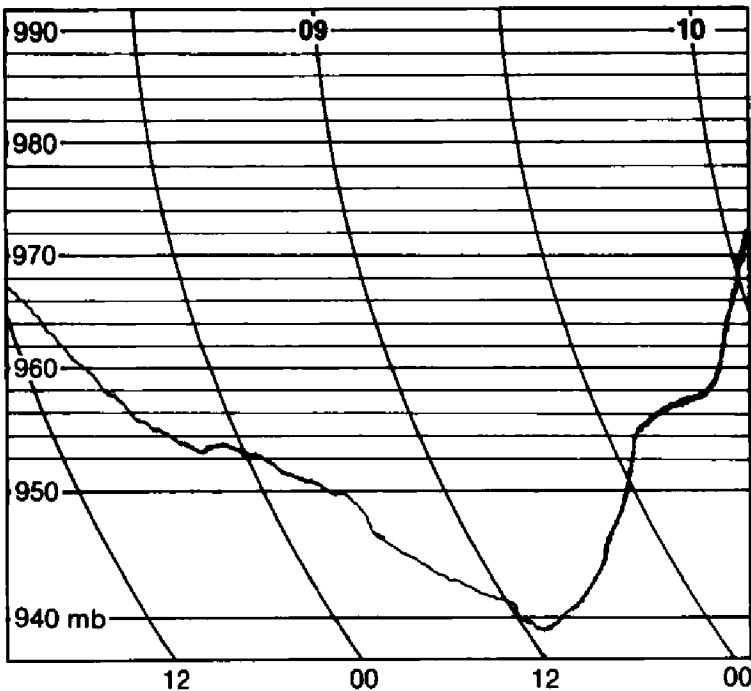
m.v. *Australian Venture*. Captain W.B. Jones. Auckland to Flushing. Observers: the Master, Mr J. Lewis, 1st Officer, Mr M. Davis, 2nd Officer, Mr M. Cragg, 3rd Officer and ship's company.

5–11 July 1989. Whilst on passage via Cape Horn the vessel experienced a deep depression. After departing Auckland the weather conditions were much the same as on previous voyages, that is, overcast sky with steadily falling pressure and a steady drop in temperature. During the morning of the 8th the wind decreased in force to light airs, then backed to NE'ly and increased once more as the pressure continued to fall quickly. When the minimum pressure was reached at 0500 on the 9th, the wind strengthened and increased to force 10/11. The vessel was at this stage rolling heavily in very rough seas and very heavy swell.

The following observations were made during the period, and the barograph trace shows the contours of the storm.

Date and time (GMT)	Wind		Dry bulb (°C)	Pressure (mb)	Remarks
	Dir'n	Force			
8th	0000	S	2	977.7	Overcast, moderate snow.
	1200	NE×N	6/7	953.1	Overcast, continuous moderate rain.
9th	0000	NNW	7/8	947.4	Cloudy, precipitation in sight.
	0400	NE×N	9	941.4	Overcast, moderate rain.
	0500	NE×N	10/11	939.7	Overcast. Minimum pressure reading.
	0600	NE×N	9	939.9	Overcast, moderate rain.
	0800	N	9	940.7	Overcast, moderate rain.
	1200	NNW	7	940.3	Overcast, sleet.

	1600	NW×W	7/8	3.0	943.2	Cloudy, precipitation in sight.
	2000	NW	8	1.5	948.1	Overcast, sleet.
10th	0000	NW	8/9	1.8	952.6	Overcast, sleet.
	1200	W×N	8/9	3.0	971.6	Cloudy, sleet.
11th	1200	NW×W	7	6.2	994.6	Cloudy, squalls.

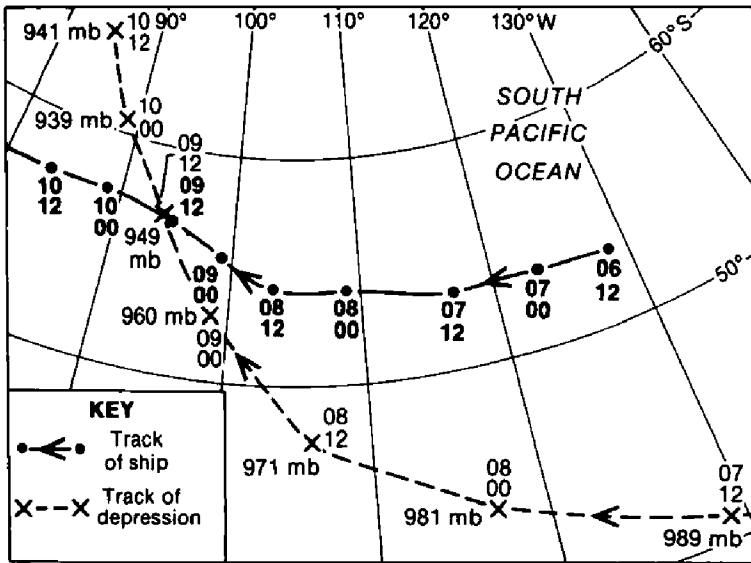


Similar conditions prevailed until the ship rounded Cape Horn at 2200 on the 11th.

Position of ship at 1200 GMT on the 9th: 56° 52'S, 94° 40'W.

Note 1. The *Australian Venture* is a Selected Ship of the Australian VOF.

Note 2. Mr R.D. Whyman, of the Marine Advisory and Consultancy Service, Met. Office, comments:



Note 2

‘As can be seen from the chart (based on a Southern Hemisphere circumpolar chart having the pole at the top), the *Australian Venture* and the depression had a close encounter on the 9th at 1200 GMT. The ship’s pressures show that the central pressure of the depression was somewhat lower than indicated by the extracted synoptic data.’

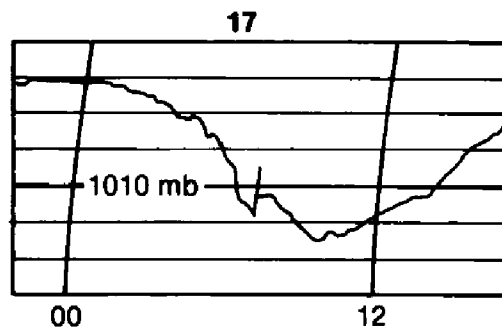
SQUALL

Baltic Sea

m.v. *Baltic Link*. Captain R. Hemmings. Kotka to Blyth. Observers: Mr G. Hill, 2nd Officer and Mr A. Devlin, Cadet.

17 August 1989. At 0720 GMT a dense mass of rain north-west of the ship at a distance of 6 n.mile was detected by radar, moving against the wind and towards the ship. This rain was seen visually at about 3 n.mile and appeared to be emanating from an isolated cumulonimbus cloud the base of which was approximately 700–800 feet.

The pressure had been falling steadily for seven hours (3 mb between 0630 and 0730), but at 0730, as the rain reached the ship, the pressure rose 3 mb instantly, as shown on the barograph trace. At the same time the wind changed rapidly from ESE'ly, force 2 to W'ly, force 7 and the dry-bulb temperature increased from 17.6°C to 19.8°.



The squall lasted ten minutes; during this time the low, easterly swell which was already present, continued but the W'ly wind blew the crests off the waves. At 0740, as the last of the rain passed over the ship, the pressure fell rapidly a further 1.5 mb and the wind returned to ESE'ly, force 2. A fax surface analysis chart showed a trough in the vicinity at the time.

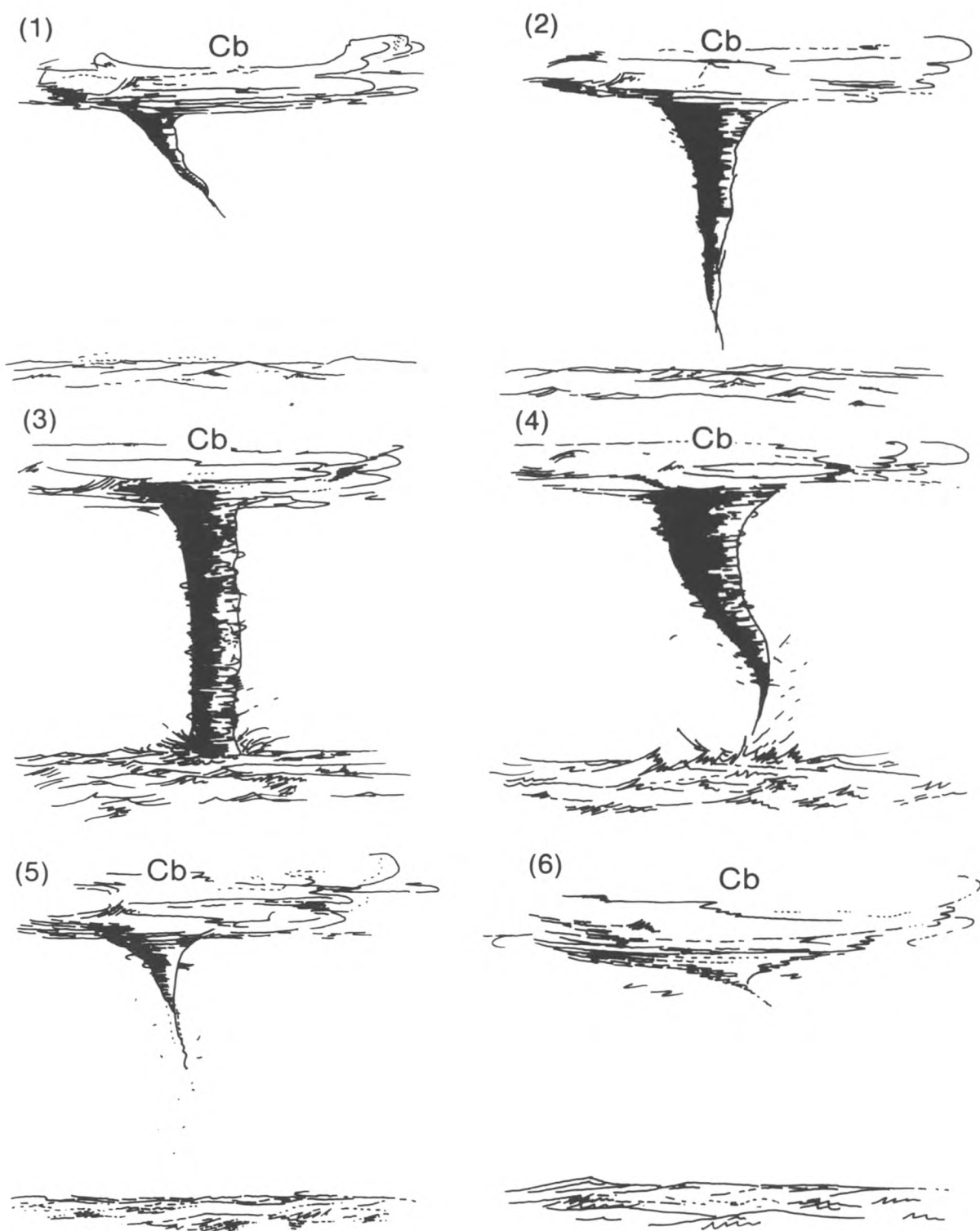
Position of ship: 59° 25'N, 22° 14'E.

WATERSPOUT

Strait of Malacca

m.v. *Havkong*. Captain A.L. Selmer. Yeosu to Shuaybah. Observers: the Master, Mr W.A.C. Gill, Chief Officer, Mr D. Elson, 2nd Officer, Mr V.A. Lopez, 3rd Officer and Mr K.S. O'Sullivan, Radio Officer.

16 September 1989. Between 0525 and 0536 GMT four developing waterspouts were observed at the base of cumulonimbus clouds, although only one was noted to develop fully to the extent of reaching the surface. The sketches show the stages of its transformation as observed from a distance of about 3 n.mile dead astern as the vessel was leaving the Strait of Malacca.



During the early stage of the waterspout's formation the sea beneath it remained unaffected. With the apex of the cone pointing downwards, it slowly became longer, and darker in colour, and as it neared the surface of the water the surrounding sea became choppy and disturbed. The funnel, which was almost cylindrical, remained virtually stationary. Its height was estimated to be between 300 m and 450 m, and it sustained the fully developed stage for two or three minutes before slowly becoming lighter in colour and dissipating.

Position of ship: 05° 55'N, 95° 40'E.

LIGHTNING

Western North Pacific

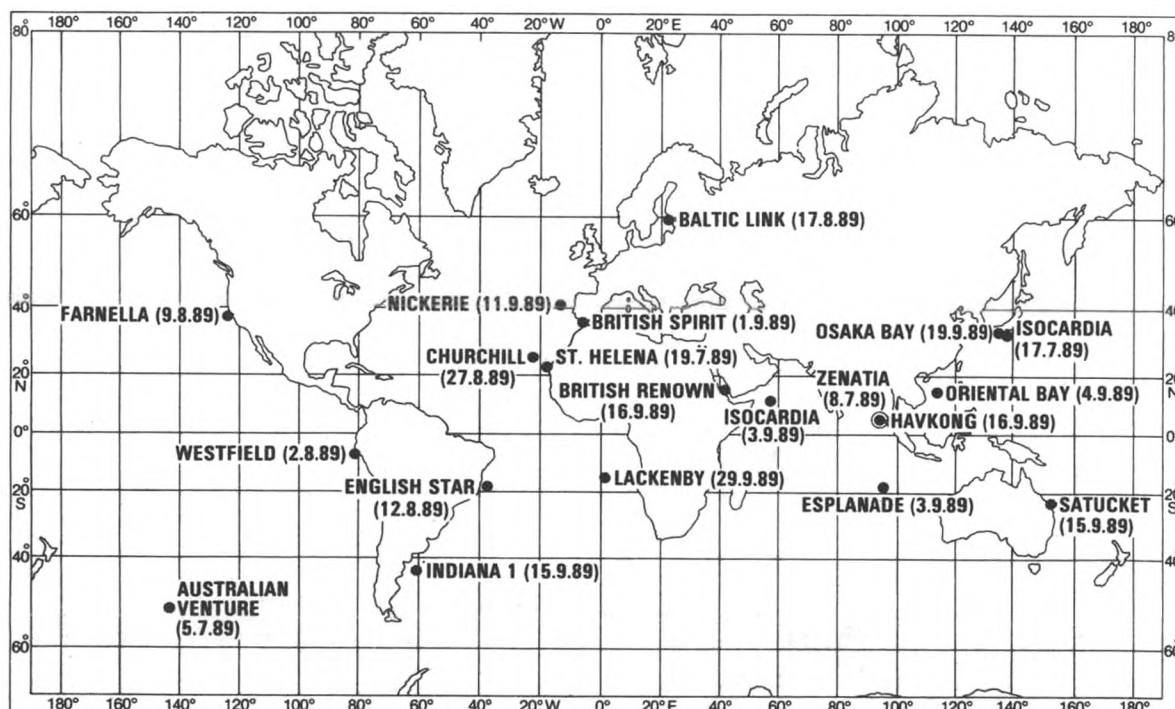
m.v. *Isocardia*. Captain S.J. Cutler. Aomori, Japan to Port Said. Observer: Mr C.A. Eason, 3rd Officer.

17 July 1989. At 1500 GMT the vessel entered an electrical storm with, initially, no rain. St Elmo's fire was observed as purple lobes on certain parts of the ship's superstructure; the most easily seen lobe at eye level was about 25 mm high. When the observer put his fingers to it, the lobe then emanated from his fingertips, and a small, tingle-like shock was received on withdrawing his hand.

There was varied lightning; most appeared as a brilliant ball, white in colour, and lightning sparked out everywhere across the skies without actually touching the sea or any earth. This fan-like form was much thinner and elongated in appearance than other lightning which would occasionally strike for Earth. Sometimes lightning covered 30 per cent of the sky. Later, as rain began to fall, the St Elmo's fire disappeared (it lasted five to ten minutes and had a humming sound).

At the time of the observation, the wind was E'ly and light while the cloud cover was quite high, certainly not cumulonimbus, perhaps nimbostratus and altostratus; the cloud became more cumuliform as the rain commenced.

Position of ship: 33° 35'N, 138° 38'E.



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

SHALLOW FOG

Western South Atlantic

m.v. *Indiana 1*. Captain J.B. Nichols. Punta Arenas to Montevideo. Observers: the Master and Mr M. Porteous, 2nd Officer.

15 September 1989. At 1600 GMT the vessel encountered patches of sea smoke or shallow fog which appeared to form the end of a continuous bank lying in a north-south direction, and extending for an estimated 50 n.mile. See photograph opposite page 115.

The smoke or fog seemed to rise to about 100 m above sea level and was white in colour whereas the main bank appeared grey and was transparent (the horizon was visible through it). It was thought that the observers were looking at a decaying fogbank.

Weather conditions were: air temperature 7.5 °C, wet bulb 6.8°, sea 8.8°, pressure 1027.7 mb, wind NNE'ly, force 3. Cloud cover was 3 oktas of high cloud and the visibility was very good.

Position of ship: 42° 45'S, 60° 21'W.

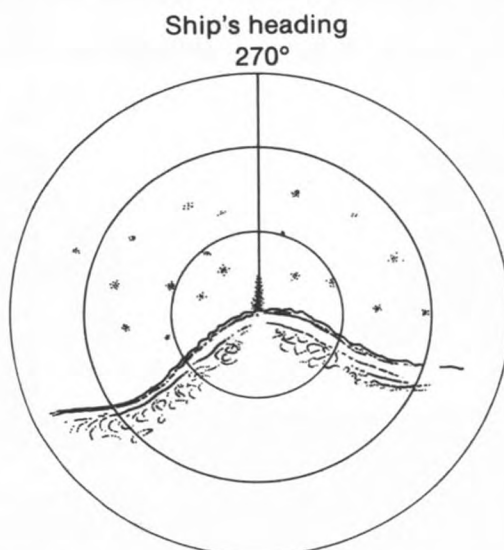
TIDE RIPS

Eastern North Atlantic

m.v. *British Spirit*. Captain A.R. Wilkinson. Genoa to Teesport. Observers: Mr D.K. Corlett, 2nd Officer and Mr E. Enion, EDH.

1 September 1989. The vessel had cleared the Strait of Gibraltar having experienced good visibility throughout and had altered course to 270° at a speed of 13 knots when a curved line of sea clutter with a well-defined edge in a north-south direction was noted at approximately 6 n.mile ahead.

When the vessel approached the tide rip, which extended 2 n.mile to starboard and 2.6 n.mile to port, the visibility was quickly reduced to 3.5 n.mile owing to mist; the air temperature at this time was 20.2 °C and the wet bulb read 19.5° ,



and on crossing the tide rip at 0242 heavy vibration was felt. The sketch shows the radar screen display at 0242 which was also the time of High Water at Gibraltar.

About five minutes after crossing the rip there was an improvement in the visibility and it was 6 n.mile at 0300; the ship's speed also increased to 14.4 knots. A series of sea-water temperatures was not possible owing to traffic density in the TSS. At the time of the observation the wind was SW'ly, force 3.

Position of ship: 35° 57'N, 05° 43'W.

Indian Ocean

m.v. *Zenatia*. Captain N. Dixon. Ulsan to Mina al Fahal. Observers: Mr R.M. Linley-Munro, Chief Officer and members of ship's company.

8 July 1989. At 1030 GMT a series of tide rips was observed across the vessel's track, extending 5 n.mile each way along 170°/350°, and at intervals of about 1 n.mile.

Before the ship entered the rips, the wind was SW×W'ly, force 5, and the swell was south-westerly with a period of 5 seconds and height 3 m. The pitometer log which was reading a steady 14 knots increased to 16 knots as the first rip was passed, then fell quickly to 13 knots between them where the wind was S'ly, force 2 with no swell.

The rips weakened as the vessel progressed westwards, and on clearing the last one, the following observations were made: wind SW'ly, force 4, pressure 1007.0 mb, air temperature 28.0 °C, wet bulb 25.5°, south-westerly swell of period 5 seconds and height 3 m. Sea temperatures taken in and between the rips showed no deviation from 28.8°.

Readily visible, with numerous 'white horses', the rips were believed to mark the confluence of the westbound current of the Strait of Malacca and the seasonal, eastbound current of the Bay of Bengal.

Position of ship: 06° 16'N, 95° 08'E.

CETACEA

North Atlantic Ocean

R.M.S. *St Helena*. Captain R.H. Wyatt. Tenerife to Ascension Island. Observers: Mr R. Young, 2nd Officer, Mr J.F. Harrison, 3rd Officer and Mr S. Biggs, CPO.

19 July 1989. At 1130 GMT whilst preparing to make the noon observation, a whale was sighted 'basking' on the surface off the port bow. It was heading in a northerly direction and made no attempt to sound as the vessel approached.

Approximately 6–9 m of the whale remained visible throughout the sighting. The colour was grey, and there were ridges ahead of the blow hole, see sketch,

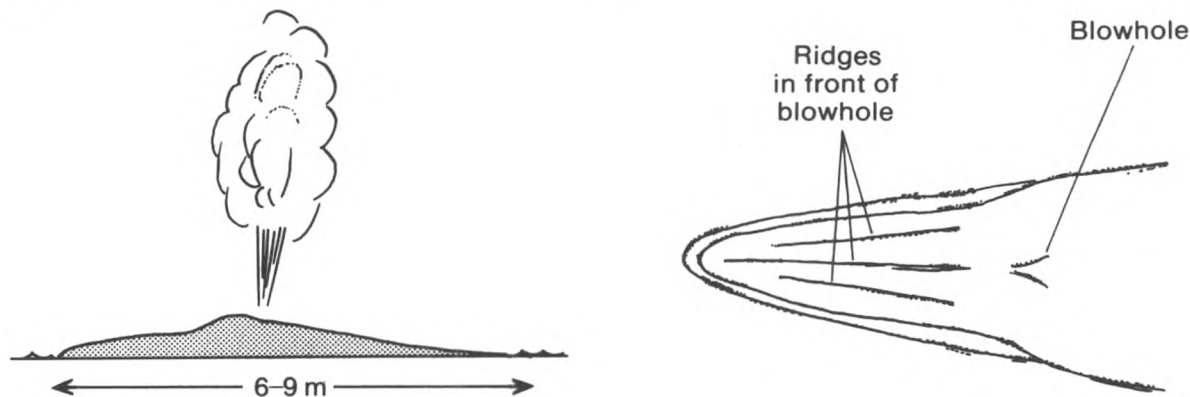




Photo. supplied by Andrew Weir Shipping Ltd
Fortbank (Andrew Weir Shipping Ltd) Captain P. Simpson



Photo. supplied by Andrew Weir Shipping Ltd
Moraybank (Andrew Weir Shipping Ltd) Captain A.T. McGregor



Photo by FotoFlite
Lincolnshire (Bibby Line Ltd) Captain R.A.F. Edwards

THREE OF THE SHIPS WHICH GAINED THE HIGHEST MARKS FOR THEIR METEOROLOGICAL LOGBOOKS DURING 1989. (See page 100.)

Opposite page 115

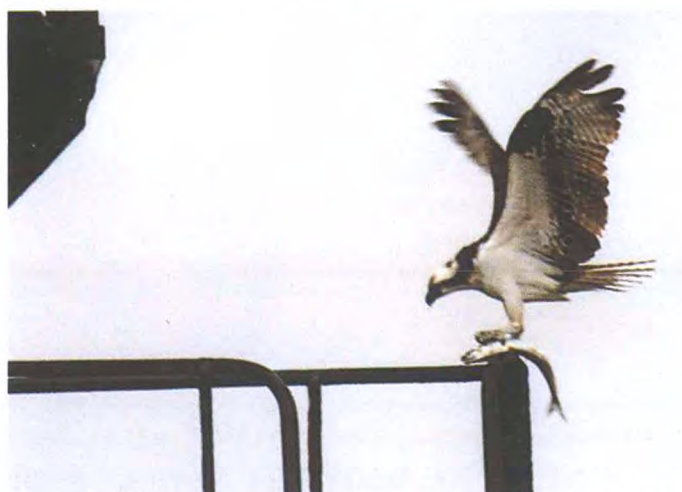


Photo. supplied by M. Porteous

Decaying fogbank observed from m.v. *Indiana 1*. (See page 113.)



Photo. supplied by M.A. Afghani



Above: Grey Herons on board m.v. *Nickerie*. (See page 117.)
Left: Osprey with fish pictured on board r.v. *Farnella*. (See page 118.)

Photo. supplied by A.V. Robinson

whereas the blow itself was vertical with an interval of 3–4 seconds. The dorsal fin which was rounded and about 45 cm high, only became visible when the whale 'dunked' its head below the surface, and the flukes were not observed.

At first, it was thought that the whale may have been injured because as the vessel approached at a speed of 15 knots it made no attempt at avoidance. Upon examination of diagrams held on board, the observers felt that it was a Bryde's Whale.

Weather conditions at the time were: dry bulb 24.0 °C, sea 22.0°, wind NW×W'ly, force 2, visibility good but with dust haze present.

Position of ship: 23° 17'N, 17° 18'W.

Note. Mr D.A. McBrearty, of the Dolphin Survey Project, comments:

'This could well have been, as suggested, a Bryde's Whale (*B. edeni*), but I doubt that it was injured, more likely it was simply hyperventilating after a deep dive. Bryde's Whales, like Minke Whales, are often seemingly curious about ships and will frequently approach a vessel. The three ridges shown in the sketch are diagnostic of the species.'

Western South Atlantic

m.v. *English Star*. Captain C.I. MacKillop. Foynes to Santos. Observers: Mr C.A. Bates, 3rd Officer, Mr A.J. Pampling, Radio Officer, members of ship's company and passengers.

12 August 1989. Between 1100 and 1200 GMT, while in the vicinity of Arquipélago dos Abrolhos off the Brazilian coast, four separate pairs of whales were sighted on the port side of the vessel, ranging in distance from 3 n.mile to 0.25 n.mile. The whales were sounding, breaching and flipping, also 'standing' on their heads with their tails raised vertically out of the water for up to 20 seconds at a time. These antics gave the observers the impression that they were witnessing a courting ritual between all four pairs.

One pair decided to investigate the ship and, in doing so, came to within 5 m of the port side before cruising lazily away. The whole of the body, about 12 m long and 4 m in breadth, could clearly be seen below the water; grey back, white undersides (as were both flippers and tail), all complete with barnacles and other parasites around the eyes and tip of the jaw. Being so close to them gave the observers a chance to estimate their weight, which probably lay between 14 and 18 tons; it also brought a scream of delight from the three children who were also watching this marvellous display.

It was a fine spectacle, made all the more so as it was the closest the observers had ever been to such creatures.

Weather conditions at the time were: air temperature 25.3 °C, sea 20.5°, pressure 1019.1 mb, wind E'ly, force 2. There was a slight sea with a very low swell, also occasional rain showers.

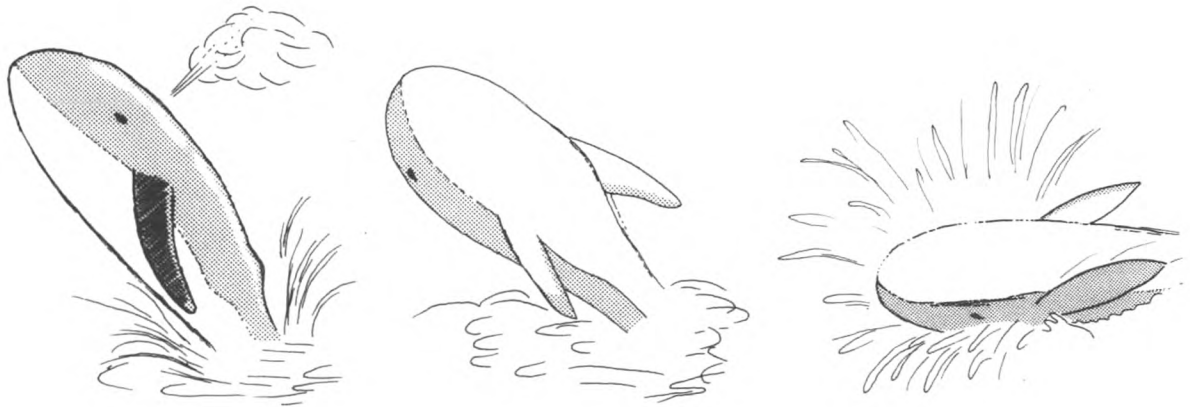
Position of ship: 18° 36'S, 38° 30'W.

Coral Sea

m.v. *Satucket*. Captain C. Thomas. Geelong to Port Moresby. Observer: Mr C.R. Booker, 2nd Officer, and members of ship's company.

15 September 1989. At 0700 GMT when transitting the inner route of the Great Barrier Reef two whales were spotted, and due to their size difference, it was assumed they were mother and calf.

Both were black on top and white underneath, with flippers having the same colouring, and both were jumping out of the water and turning so as to land on their sides or backs with great enthusiasm, gaining a height equal to three-quarters of their length, see sketches. The adult was 13–15 m long and the calf 3–4 m long.



This show lasted for several minutes and was then brought to a finale by the adult rolling slowly in the water through 360° so that her white belly showed uppermost and her flippers were up in the air, she appeared to be waving as if saying 'good bye'. This was repeated about four times but then distance prevented further sightings. At first, the observers thought they were Killer Whales, but it was then decided that they were not because these whales were too big and graceful.

Position of ship: 22° 15'S, 151° 20'E.

SHARKS

Red Sea

s.s. *British Renown*. Captain M. Pocklington. Fujairah to Ain Sukhna. Observers: Mr T.T. Latto, 3rd Officer and Mr J. Smith, Radio Officer.

16 September 1989. At 0600 GMT several objects were sighted in the sea close ahead of the vessel. On drawing closer, the objects revealed themselves to be a big school of approximately 15 large Whale Sharks. Three individuals passed very near to the vessel's port side at a distance of about 30 m. The distinctive, flattened snout, speckled upper body and rounded dorsal fin were clearly visible on all of them. These closest specimens were estimated to be about 6 m long. Despite being near to the vessel, the sharks appeared to take no notice of the engine noise and continued to swim lazily around.

At this time the sea-water temperature was 30.0 °C and there was a slight north-westerly sea; depth of water was in excess of 500 m and the weather was fine and clear.

Position of ship: 15° 36'N, 41° 42'E.

BIRDS

Eastern North Atlantic

m.v. *Nickerie*. Captain C.J.B. Trinick. Rotterdam to Paramaribo. Observers: the Master, Mr D.R. Attrill, Chief Officer, Mr M.L. Kinnear, Chief Officer, Mr M.A. Afghani, 3rd Officer and ship's company.

11 September 1989. At 0800 GMT four large land birds were sighted at the vessel; two came to rest on the deck cargo, looking tired, but the others lost contact with the vessel after about 30 minutes. Two of the birds are shown opposite page 115.

The back and wings were brownish-grey, but the tips and rear edges were black, the underside of the body was white with black speckles and there was a dark tuft on the head. These features plus yellow eyes, a yellow lower bill and a wing-span of about 2 m lead the observers to believe the birds were of the heron family.

They were very shy of human presence at first and would fly off, shortly to return, but they became more relaxed in time and could be approached to within 2 m. The resting birds stayed with the ship for two hours. It was interesting to note that each time they landed on the ship, the birds chose the grey pipes of the deck cargo — for best camouflage?

Position of ship: 40° 29'N, 13° 12'W.

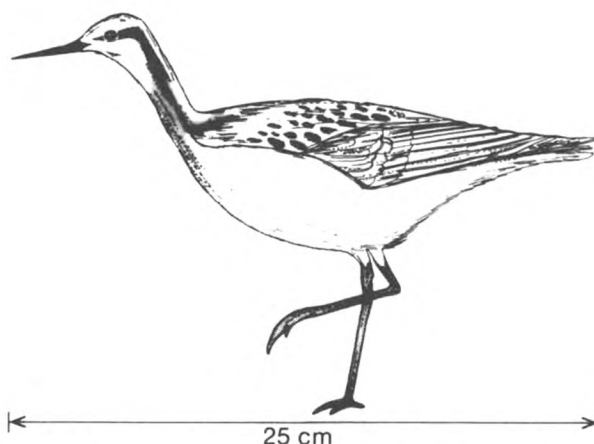
Note. Commander M.B. Casement, of the Royal Naval Birdwatching Society, comments:

'These were Grey Herons (*Ardea cinerea*). They breed in Europe, including the United Kingdom, and frequently make long, overseas journeys to Africa, often taking passage on board ships.'

North Atlantic Ocean

m.v. *Churchill*. Captain J.F. Rowe. Recife to Rotterdam. Observers: the Master, Mr P.J. Newton, Chief Officer, Mr P.S. Sinclair 3rd Officer and passengers.

27 August 1989. At 0830 GMT a small bird landed on top of the midship deck containers. On closer observation it was identified as being a member of the phalarope species, most probably Wilsons Phalarope, see sketch.



Its body was estimated to be approximately 25 cm long and its wing-span about 35–45 cm. The bird had a long, black bill, slender neck and long legs; the

lower back and wings were of a greyish-brown colour and the tail was grey. It had a black stripe from neck to eye and a pale, reddish breast and lower neck. Although several valiant attempts were made to obtain a photograph of the bird, it proved too difficult to get close enough for success.

The bird remained on board until 0915, taking occasional short flights from one container to another where it would wander around, pecking and scraping in the puddles of water before it eventually flew off to the east, obviously disgruntled at the attention it was receiving.

Weather conditions were: air temperature 25.5 °C, pressure 1013.5 mb, wind NNE'y, force 3. There was a moderate sea with a low swell, and the sky was overcast with occasional light rain showers.

Position of ship: 24° 30'N, 21° 45'W.

Eastern North Pacific

r.v. *Farnella*. Captain J.D. Cannan. On inshore survey operations off San Francisco. Observers: the Master, Mr A.V. Robinson, 2nd Officer and ship's company.

9 August 1989. At about 0400 GMT as the vessel was engaged in towing a side scan sonar at a speed of 3.5–4 knots, a bird of prey was sighted circling the ship with a fish held in its beak; it appeared to be searching for an area to land.

Its first attempt, on the after gantry was unsuccessful, after that, it flew to the foremast where, although it was once again unable to land, it did transfer the fish to its talons. After several more unsuccessful attempts it finally dropped the fish on the foredeck and flew away, making to attempt to recover the fish.

The bird, which was believed to have been an osprey, was approximately 60 cm from its head to the tip of its tail. The head showed a dark-brown band running from the bill, through the eyes and over the back of the neck, the underside of the head being deep-cream in colour. On the underside of the body the colour was off-white deepening to cream on the lower part of the legs. See photograph opposite page 115. The tail and topside of the body along with the outer edges of the wings were all golden-brown. As no book was available, no positive identification was possible.

The following weather conditions were observed at the time: air temperature 12.5 °C, wet bulb 12.0°, sea 13.7°, wind NW'y, force 5. Visibility was 3 n.mile in fogbanks. Position of ship: approximately 37° 48'N, 122° 48'W.

BIOLUMINESCENCE

Arabian Sea

m.v. *Isocardia*. Captain J. Sharp. Yanbu to Yokkaichi, Japan. Observers: Mr J.S Mercer, 2nd Officer, Mr M. Gooderham, 3rd Officer, Mr D. Austin, Cadet and Mr N. Hiscock, GI.

3 September 1989. At 2045 GMT the vessel passed through an area of bioluminescence. From horizon to horizon the sea had a markedly lighter appearance than the sky, there was almost a 'snow scene' about it. The sky was cloudless and there was no moon.

After approximately ten minutes, a definite 'line' could be seen as the vessel cleared the area, and the sea returned to its normal appearance. The depth of water at this time was in excess of 2000 m. At 2100 a second, similar area was entered and was cleared 20 minutes later. In neither case was there any increase in the brightness of the wake or the bow wave.

Weather conditions were: dry bulb 25.0 °C, sea 25.0°, wind S×E'ly, force 2–3; the sea was slight with a low swell.

Position of ship: 12° 03'N, 57° 55'E.

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

'These two areas were typical examples of the 'milky sea' phenomenon, which is usually interpreted as caused by luminous bacteria growing on a surface organic layer itself derived from a phytoplankton bloom. It occurs particularly often in the Arabian Sea in the July–September period, coinciding with the SW Monsoon. During this time, deep water upwells to the surface providing the nutrients for phytoplankton blooms, whose decay provides a surface layer enriched with organic material suitable for the growth of luminous bacteria. These glow steadily, and other observers have also likened the appearance to a field of snow. The lack of additional bioluminescence in the wake and bow wave is also a common feature of this phenomenon.'

Eastern South Atlantic

m.v. *Lackenby*. Captain C.R. Bamford. Saldanha Bay to Port Talbot. Observer: Mr P.W. Holliday, 3rd Officer.

29 September 1989. At approximately 1830 GMT the vessel began to pass through a kind of luminescence which had the effect of colouring the water along the ship's sides and in its wake. The colour was light-green close in to the ship's sides and in the bow waves, giving off a considerable glow, but the intensity then slowly began to diminish for about 2 m when it suddenly 'fell away' until at 4 m from the ship there was no visible effect. The phenomenon was present to a much lesser extent in the ship's wake, making it visible for roughly 100 m.

A sample of water was collected via the sea-temperature bucket, but even upon stirring and illuminating the contents, only clear water was evident. The temperature of the sample was 18.8 °C. The duration of the entire event was a little over 90 minutes.

Position of ship: 15° 30'S, 02° 50'E.

METEOR

South China Sea

m.v. *Oriental Bay*. Captain J.D. Thomson. Singapore to Hong Kong. Observers: Mr P.A. Trafford, 2nd Officer and Mr C. Cannon, SM.

4 September 1989. At 1345 GMT whilst on a course of 027° at a speed of 20.5 knots, a meteor appeared at an elevation of 15° to 20° at 6 points to starboard, by the star Diphda. It travelled in a straight line across the sky, maintaining the same elevation to a position approximately 3 points on the port bow, by the star Kochab, where it appeared to burn out.

The estimated duration of passage was 1–2 seconds, in which time the sky was illuminated by its brilliance, something similar to the moon. The meteor was of large appearance and red/white in colour with a large, luminous, green tail which disappeared immediately after the pass.

Position of ship: 14° 50'N, 112° 40'E.

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

'The report describes the passing of a very brilliant fireball across the sky. The large size was not indicative of the actual object, but was due to the object dragging along with it atmospheric molecules, these being ionised to produce the green colour. It is doubtful whether any sizeable particle survived the passage through the atmosphere.'

Pacific Ocean

m.v. *Westfield*. Captain P.T. Hodge. Lirquen, (Chile) to Antwerp. Observer: Mr W.L.K.F. Lansakara, 3rd Officer.

2–12 August 1989. Whilst on passage via Panama the following details of meteorite observations were recorded. All times are GMT.

Date/Time	Approximate Brg/Alt./Mag.	Duration (Seconds)	Ship's heading	Remarks
2nd 0148	052° 30° 2.5	4	360°	Very dim; heading north-west at constant altitude.
3rd 0348	012° 40° 2.5	5	012°	As above.
0442	360° 15° -3.9	3	012°	Large object. Fell vertically to disappear at alt. 5°.
0443	360° 20° 2.4	4	012°	Dim object. Other details as for 0442.
7th 0300	060° 25° -0.9	5	059°	Average size object. Constant alt. Disappeared on brg 040°.
10th 0023	045° 50° -0.9	3	045°	Average size object. Visible until alt. 45°. Brg steady throughout.
11th 0148	124° 30° -3.9	6	047°	Large object. Disappeared at brg 50°, alt. 5°.
12th 0026	040° 15° -3.9	6	057°	Large object. Steady course of 147°. Disappeared on brg 60°.
0048	025° 20° -3.9	8	057°	Large object. Moved up and then down. Disappeared on brg 327°. Slight tail; afterglow lasting about 4 seconds.
0104	025° 20° —	8	057°	Slightly less bright than previous object. Dim trace of light left behind; afterglow of about 2 seconds.
0130	280° 30° -0.9	8	057°	Average size object. Disappeared on brg 210°.
0142	057° 10° -3.9	6	057°	Large object travelling at right-angles to ship. Disappeared on brg 090°.

During the observations the sky cover varied from being clear, to 5 oktas cloud coverage and the visibility was excellent.

Position of ship at 0148 GMT on the 2nd: 05° 52'S, 81° 31'W.

Position of ship at 0142 GMT on the 12th: 30° 51'N, 55° 08'W.

Note. Mr H. Miles comments:

'This is a very useful log of meteor activity during the first part of August. With the exception of the observation made on the 11th and that of 0130 on the 12th, it is thought that they were members of the Perseid meteor stream which peaked on 12 August, the normal limits of which are from 23 July to 30 August. They are called Perseids because if the tracks made by the meteors are produced backwards they seem to meet at a point, called the radiant, in the constellation of Perseus. The Perseids consist of a stream of particles which orbit the sun, but the orbit intersects that of the Earth at the beginning of August. One characteristic of many of the Perseids is the production of a train of light following the particle and which fades slowly, a feature commented on with two observations on the 12th.

'The objects observed on the 11th and at 0130 on the 12th had tracks which did not pass through the Perseus region when produced backwards, and hence they did not belong to the Perseid meteor shower. They were more likely sporadic meteors; these occur all the year round, travel in all directions and generally cannot be predicted.

'I should like to comment on the values quoted for the magnitudes of the fireballs. It is difficult to assess the magnitudes of very bright objects even to integral values, most quoted values being considered intelligent guesses. Values of, say -3.9 , cannot be substantiated for a transient object, but I assume this value has been quoted because it was thought the object was about as bright as the planet Venus, which at the time had a quoted magnitude of -3.9 . Magnitudes brighter than that of Venus for objects crossing the sky can only be considered as approximate. It is, therefore, sufficiently accurate to quote a magnitude at the best to the nearest whole number.'

SATELLITE

Indian Ocean

m.v. *Esplanade*. Captain J. Conn. Richards Bay to Kwang Yang. Observers: the Master, Mr M. Legg, 3rd Officer and Byeon Hong Guen, Quartermaster.

3 September 1989. At 1500 GMT an object was sighted approximately 5° lower than the star Alpheratz, and on the same bearing of about 051° . The object was an extremely bright, silver-white colour, easily brighter than first magnitude stars, and possibly even brighter than the moon which had set only a short time before. It was falling in a northward trajectory and changed from the white brightness to a fiery, red and yellow tail with a white core where the mass of the body was centered.

Although it was visible for only 3–4 seconds, and appeared at an altitude of about 16° before 'winking' out at an altitude of about 5° , the observers felt that it seemed to be moving slowly in relation to the usual meteors seen on clear nights; for that reason those watching suspected that the object may have been a re-entering satellite rather than a true meteor.

The brightness of the 'satellite' from its silver-white beginnings to fiery, red and yellow tail even led the observers to expect an explosion as it disappeared, but no such sounds were heard, and it was thought that the brightness was deceiving, making the object seem nearer than it actually was. Despite the brightness, no afterglow was left and the image quickly faded from the retina.

Position of ship: $17^\circ 50'S$, $95^\circ 53'E$.

Unusually severe Atlantic storm hits the Iberian Peninsula during February 1989

By K.C. SMITH

(Marine Advisory and Consultancy Service, Meteorological Office)

During the period 23 to 28 February 1989 very strong winds blew almost continuously over the sea areas of Biscay and Finisterre. Their persistence and ferocity caused considerable havoc to both land structures and marine transport.

Over Portugal and northern Spain there was severe structural damage with at least 16 deaths reported in Spain. At sea it was far worse. Cargoes shifted, ships were sunk and many sailors perished. *Lloyd's List* on 27 and 28 February reported that up to 34 people were unaccounted for. The *River Gwara*, en route from the Ivory Coast to Dublin, was blown onto the rocks off Cape Espichel and sank, with 19 people reported dead or missing. Also, despite an extensive air and sea search, no survivors were found from the crew of the *Anna Leonhardt* when it sank crossing the Bay of Biscay.

The nature and severity of the Iberian storm has resulted in several queries and requests for information from legal and insurance companies, vessel charterers and owners. Further enquiries have arisen from the persistence of the storm and whether the long duration of ferocious weather was all due to the 'same' storm.

The Marine Branch of the Met. Office responds to these requests by providing hindcasts of the weather at sea, or by carrying out statistical analyses illustrating the rarity of the event in the context of past recorded conditions. A hindcast is an assessment of weather and sea conditions using all data relating to the event which have become available, either at the time or subsequently. The National Meteorological Archives retain all synoptic charts prepared in the Central Forecasting Office and these charts are supplemented by further vessel reports which are retained in the marine data bank. Marine meteorologists interpret these charts and then provide hindcast assessments of the weather and sea conditions pertaining at a given time over a defined area or route.

To provide this service the Met. Office relies heavily upon the co-operation of weather observers at sea to supply data from areas where no other facilities exist to record the information. Observations made by deck officers during the course of their normal duties aboard merchant ships are the main source of data. Weather reports are also received from the few remaining ocean weather ships, light vessels, buoys and oil and gas platforms. These data are all stored in the Marine Data Bank.

The storm over Iberia

The mean sea level chart (Figure 1) for February 1989 indicated low pressure over Iceland and high pressure over the Azores. The pressure anomaly chart for the month (Figure 2) revealed that the high pressure area in the latitudes of the Iberian Peninsula was 8 mb above average, and the low pressure area over southern Britain up to 4 mb below average. This pressure distribution was indicative of a prevailing westerly type with well marked cyclonic disturbances and hence occasions of stormy conditions.

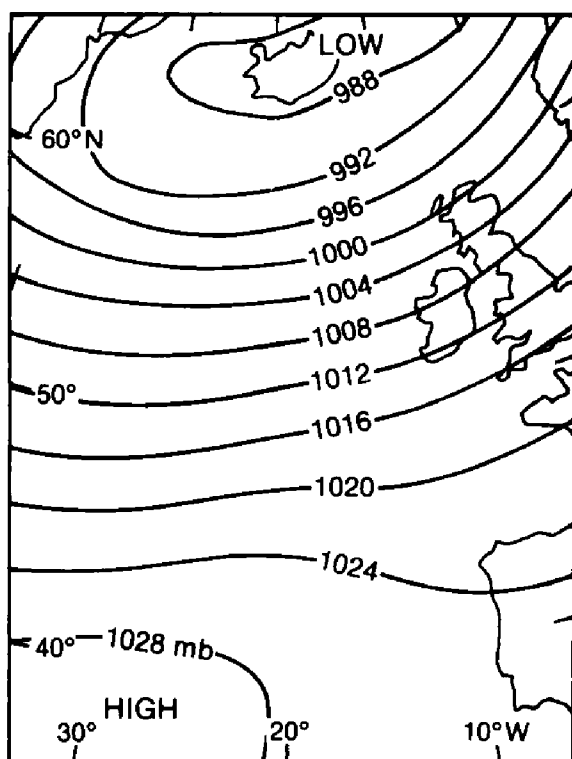


Figure 1. Mean sea level pressure, February 1989.

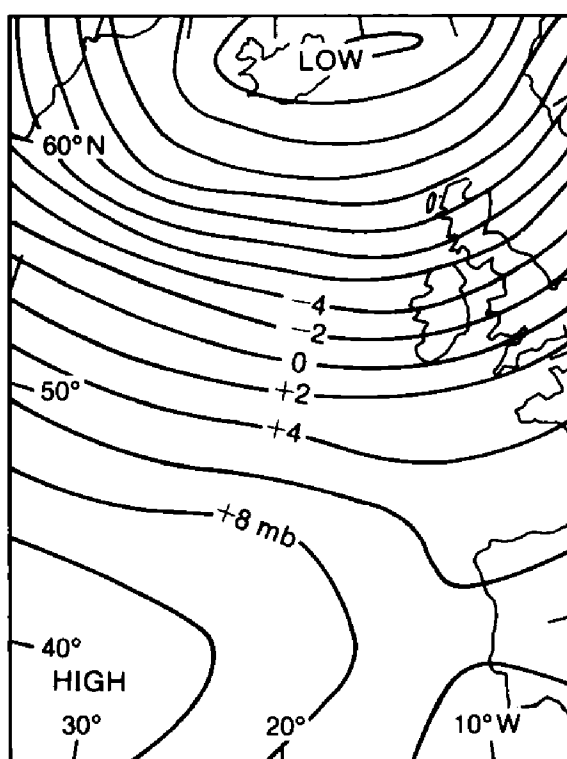


Figure 2. Mean sea level pressure anomaly, February 1989.

On 23 February the synoptic chart (Figure 3(a)) showed a low pressure area over the north-east Atlantic within an area from England to Iceland to Norway. As a result of this pressure distribution, west to north-west winds blew along a lengthy seatrack from Greenland, south-eastwards across the Atlantic Ocean to Biscay and the Iberian Peninsula (Figure 3(b)). The combination of strong winds, long fetch and the prolonged period of the blow, resulted in considerable wave growth off Iberia which reached a maximum on the 25th. The strong west to north-west winds continued until the 27th, but, with a slight change in fetch, wave heights were moderating by this time. By the 27th a low pressure area was over the North Sea. After this time, however, the strong north-westerly flow across to sea areas Finisterre and Biscay began to diminish.

Determining wave height by visual observation is not a simple matter and the approved method to be adopted is to observe only the well-formed waves in the centre of the wave groups. Without methods of measuring wave heights suitable for general use on merchant ships, we rely upon the estimates of practised observers. Whilst it is easy to distinguish between the definitions of wind waves and swell, it is rarely easy to make the distinction in practice, particularly with very strong winds and on this occasion, very little difference in direction of motion between the two wave types. Although some observers attempted to report both wind sea and swell wave heights independently under the atrocious conditions, others reported only a wind wave height which can be interpreted as the resultant of both wind wave and swell. If both wind sea and swell wave heights were reported, they could be readily combined to give a resultant wave height in the data bank.

The practice of reporting a sea wave height only, especially when gales are in progress, is recommended in the *Marine Observer's Handbook*. This is particularly relevant when both the wind waves and swell waves are coming from the same direction and it is virtually impossible to distinguish sea from swell.

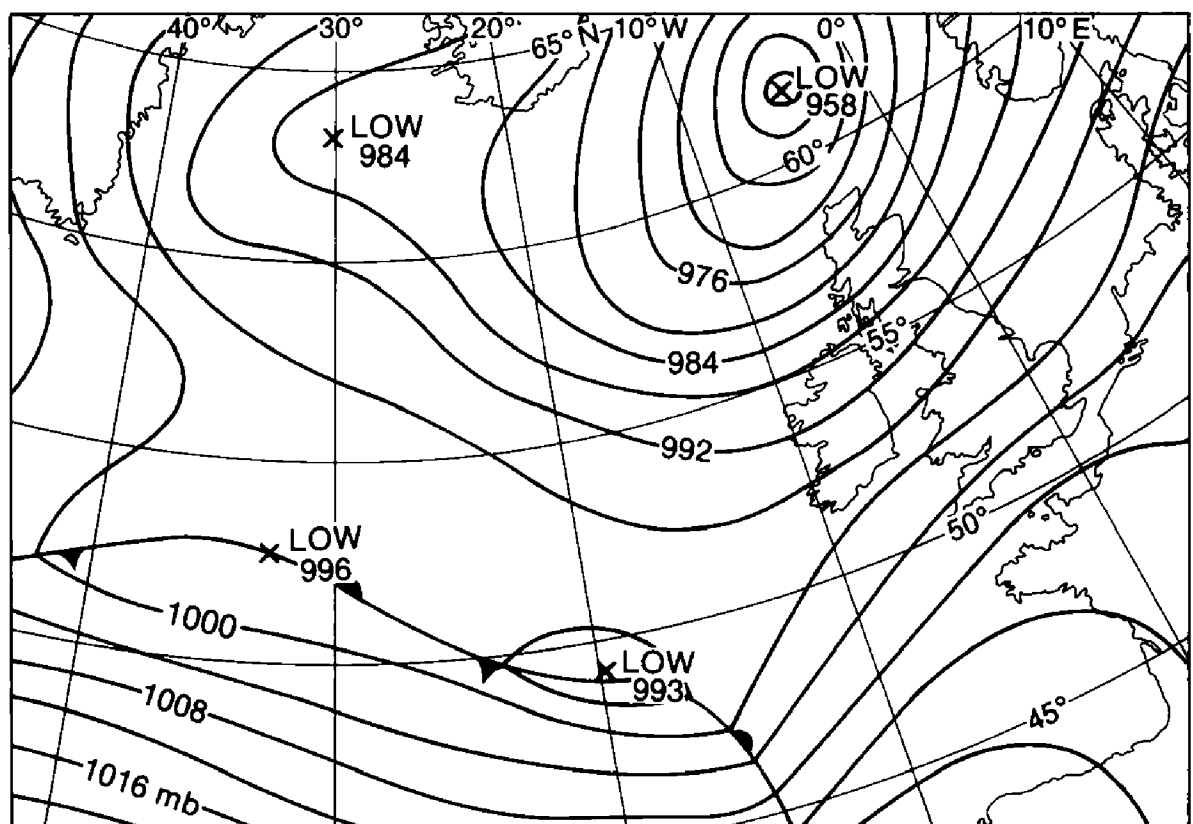


Figure 3(a). Synoptic chart for 1200 GMT, 23 February 1989.

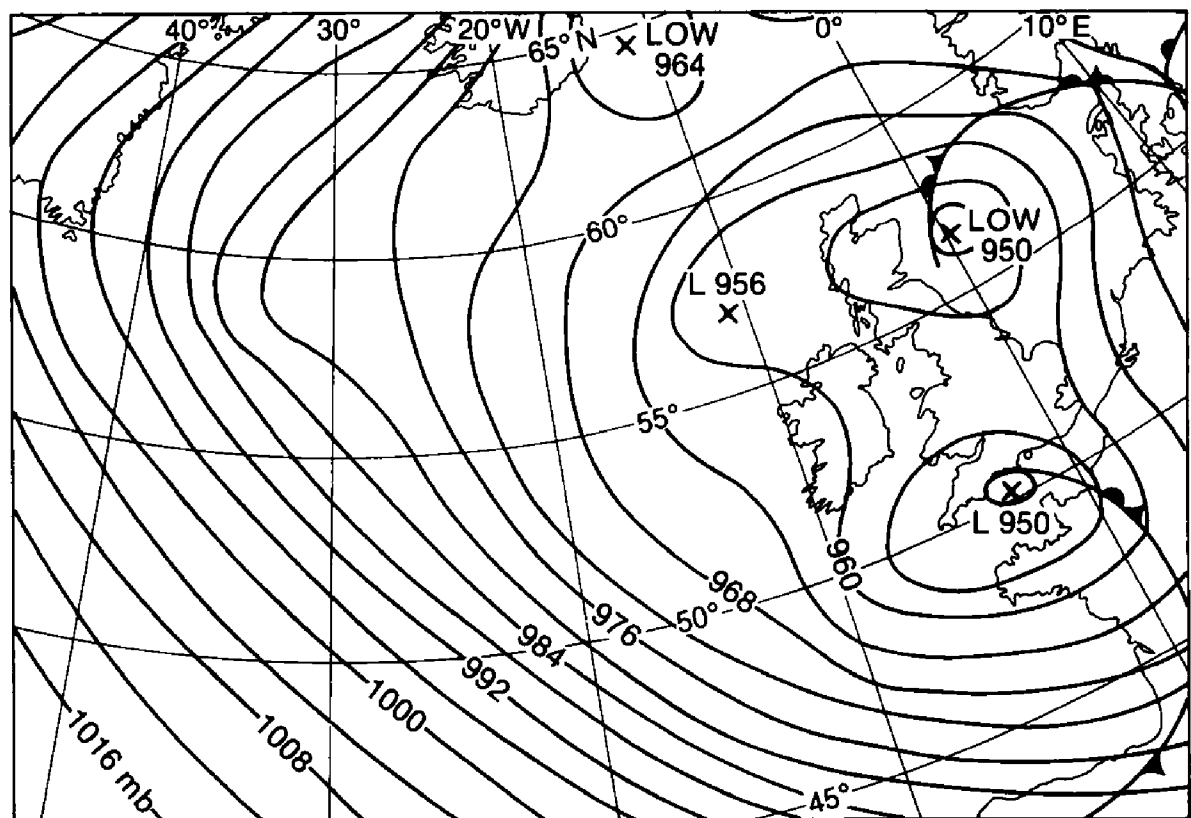


Figure 3(b). Synoptic chart for 1200 GMT, 25 February 1989.

Vessel reports from within the area bounded by latitudes 35° to 55° N and longitudes 0° to 15° W were extracted from the Marine Data Bank. These were plotted for 25th, 1200 and 1800 GMT (Figures 4(a) and 4(b)), when the seas were at their highest, and show the wind speed and direction together with the resultant wave heights rounded to the nearest metre. Heights vary considerably on the charts shown, but one must bear in mind the difficulties of observing during the storm.

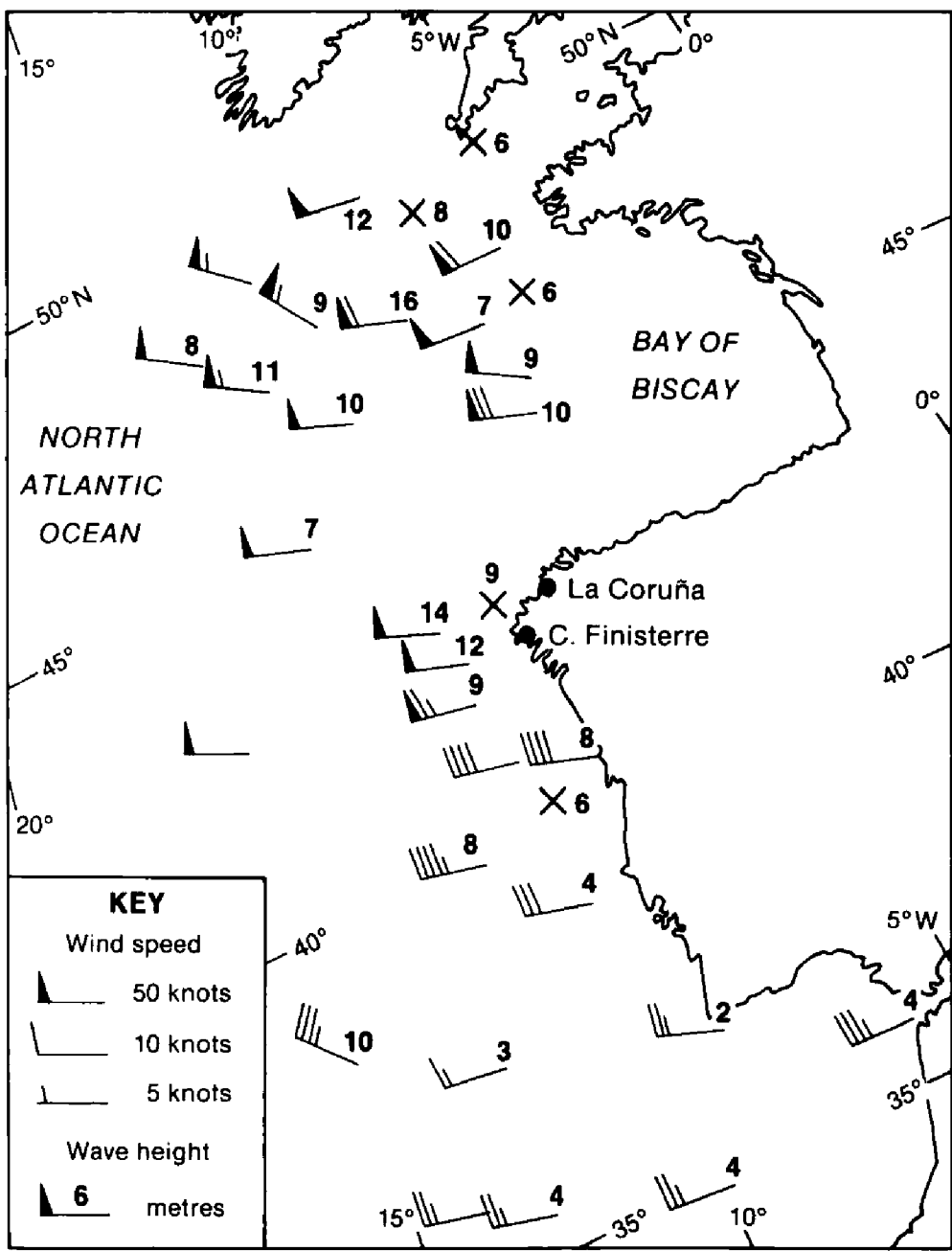


Figure 4(a). Prevailing winds and resultant wave height for 1200 GMT, 25 February 1989.

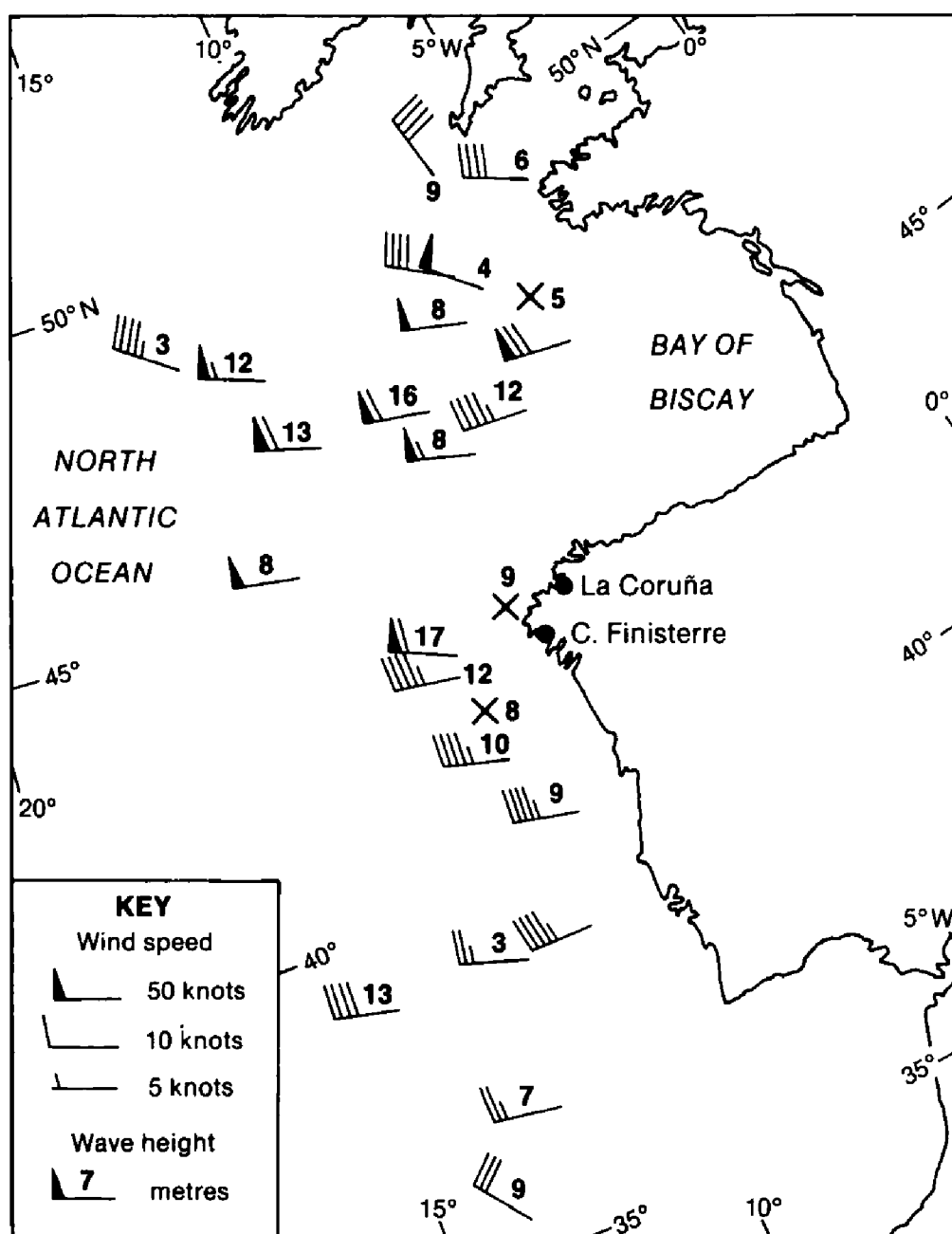


Figure 4(b). Prevailing winds and resultant wave height for 1800 GMT, 25 February 1989.

Frequency of occurrence — how unusual was the storm?

The Marine Branch of the Met. Office has a range of statistical computer programs at its disposal to summarise vessel reports in the most meaningful manner. Table 1 gives a frequency analysis of the wind speed during the month of February, compiled from reports made by vessels within the defined latitude and longitude boundaries shown on that table.

These percentage frequencies of visually estimated winds show that, over the period of available records, 9.97 per cent of winds during February over sea areas Finisterre and Biscay occur with speeds of gale force 8 or more. The same frequency analysis indicates that gales occur most frequently off the sea from the south-west (230° to 250°). During the storm in February 1989 the wind direction was from the north-west (290° to 310°). The long-term percentage frequency of winds of gale force 8 or more from this direction is 1.17 per cent. This would indicate that the wind direction of the February 1989 storm was unusual.

Table 1 — Frequency analysis of wind speed for area 44° N to 47° N, 7° W to 11° W, February.

Beaufort Force	0 to 7	8 to 9	10 to 11	12
Direction Variable	1.89	—	—	—
N to S thro' E (350° to 190°)	42.4	2.11	0.23	0.0
200° to 220°	11.1	1.57	0.25	0.0
230° to 250°	12.03	1.93	0.34	0.02
260° to 280°	9.24	1.33	0.25	0.01
290° to 310°	7.77	0.96	0.20	0.01
320° to 340°	5.45	0.58	0.17	0.01

Another aspect of the storm worthy of study was the time period for which the strongest winds blew. In the absence of stationary ships or platforms in the area, it is not possible to provide a rigorous duration analysis, showing the persistence of winds over the sea, but such an analysis can be readily performed for an adjacent weather recording station on land. Data from La Coruña (43.4° N, 8.4° W), which is about 50 miles from Cape Finisterre, were selected. Wind records are available from this station from 1974 onwards, and 15 years of data (1974 to 1988) were analysed to identify spells of the strongest winds.

This analysis gives the following results:

- (a) There was only one spell of wind where the mean wind speed remained between 31 and 45 knots. The duration of this spell was 12 hours, and:
- (b) There were no reports of wind speeds exceeding 45 knots.

A similar analysis of the wind speeds was made for the period 20 to 28 February 1989 at La Coruña. The results gave:

- (a) One 9-hour duration of wind speeds between 31 and 45 knots.
- (b) Two periods of 3 and 6 hours respectively when the wind speeds exceeded 45 knots. The maximum mean speed recorded was 58 knots.

The conclusions drawn relating to the storm of February 1989 are:

- (1) The direction of the blow was unusual in that most gales in that area in February are from the south-west.
- (2) Although wind speeds of gale force 8 occur relatively frequently, speeds of force 9 or 10 are much less common. As winds coming off the sea are reduced by greater surface friction when they blow over land, the probability of winds of 48 to 58 knots (force 10 to 11) over land may be similar to the occurrence of force 12 winds at sea. Table 1 shows force 12 occurring on only 0.05 per cent of occasions, thus demonstrating the rarity of the February 1989 event.
- (3) The 1974–1988 duration frequencies give only one period in 15 years where the speed remained over 31 knots. This was also matched in 1989 by a 9-hour period over this threshold.
- (4) The occurrence of winds in excess of 45 knots at La Coruña were not matched at all in the 15-year comparison period.

For marine insurance purposes, assessors and arbitrators often wish to know whether several instances at sea can be considered to have occurred as a result of the 'same' storm. In the light of the synoptic circumstances on this occasion, it is clearly very difficult to view the meteorological development in such simplistic terms. However, one can conclude that the winds off Iberia were unusual in speed, direction and duration. No doubt the event will be the cause of many marine litigation disputes for a long time to come.

John Biscoe and the Antarctic

By R.C. PLUMLEY
(British Antarctic Survey)

Early exploration in Antarctica

In the first half of the nineteenth century, Charles Enderby, of Enderby Brothers, a long established firm of shipowners concerned in the Antarctic sealing trade, was keen to make a name for himself in geographical circles. He sent the vessels *Tula* and *Lively* on an exploratory-commercial voyage to the Antarctic.

John Biscoe sailed from Gravesend in 1830 as Master of the *Tula* with Captain Avery in the *Lively* as consort 'on a voyage towards the South Pole'. The *Tula* was a two-masted brig of 150 tons, 74 feet 4 inches long and 11 years old, classified as second class, safe for dry-cargo and in perfect repair. The *Lively* was a sloop of 82 tons and was 36 years old. The two vessels carried 27 men and two boys.

From 1830 to 1832 Biscoe circumnavigated the Antarctic. He discovered and named Enderby Land south of the Indian Ocean, and continued eastwards until sighting land in position 67° S, 70° W which he named Adelaide Island, after Queen Adelaide. He also sighted high mountains approximately 90 miles to the south which were probably those of Alexander Island. Biscoe then sailed north-east past a chain of islands, now known as Biscoe Islands and made a landing on Pitt Island within the group. Further north he landed at Anvers Island and, believing it to be the mainland, took possession in the name of King William IV after which Mount William, on Anvers Island is named. He called the mainland Grahamland, after the First Lord of the Admiralty of the time.

Biscoe subsequently returned to England after a stay in the Falkland Islands, and Charles Enderby reported his discoveries to the newly formed Royal Geographical Society. The society gave Enderby their gold medal, he being the second recipient, and made him an Ordinary Member without payment of fees. The Antarctic voyage told on the health of John Biscoe and he died in 1843 in real poverty.

R.C. Plumley has served as Chief Officer on R.R.S. *John Biscoe* since 1984 having joined the British Antarctic Survey as Fourth Officer on R.R.S. *Bransfield* in 1976.

R.R.S. *John Biscoe* is operated by the British Antarctic Survey and has been a Selected Voluntary Observing Ship since her launch in November 1956.

The Royal Research Ship *John Biscoe*

In 1945 the Falkland Islands Dependencies Survey (FIDS) was set up in Stanley to administer scientific bases established by Operation Tabarin and in 1950 a small office was set up in London under the directorship of Dr (now Sir) Vivian Fuchs, with the remit to organize and publish scientific results. In 1959 Britain became a signatory to the Antarctic Treaty, and the name of FIDS changed to become the British Antarctic Survey in 1962.

By 1947 it had been agreed that a more suitable vessel for FIDS Antarctic operations was needed. Eventually, a boom-defence ship which had been returned to the American Navy under the World War II lend-lease agreement was found, having served in the war as H.M.S. *Pretext*. She was built of pitch-pine and had the following measurements:

Displacement	1015 tons
Length	194 ft
Breadth	34 ft
Draft	14 ft

Her twin diesel-electric engines developed 1200 s.h.p., giving a service speed of 12 knots. She was refitted under the supervision of the Crown Agents and on 15 December 1947 was renamed *John Biscoe* by Mrs Creech-Jones, wife of the Colonial Secretary, in honour of the Enderby Brothers' sealing skipper.

By 1954 the *John Biscoe* was ageing and with the increased number of bases she was finding it difficult to service them. Approval was given by the Colonial Office to build a new, steel ship to replace her. Captain W. (Bill) Johnston had been Master until 1956 and now took command of the new *John Biscoe*. The original *John Biscoe* was sold to the Government of New Zealand to become H.M.N.Z.S. *Endeavour*.

The new ship was built by the yard of Fleming & Ferguson of Paisley and classed with Lloyds' Register 100A1 with the special notation, 'Strengthened for Navigation in ice'. The principal measurements were:

Displacement	2341 tons
Length O.A.	220 ft
Breadth	40 ft
Draft	16 ft 4 ins

Diesel-electric propulsion developed 1450 s.h.p. giving a service speed of 12 knots.

The ship was launched by Lady Patricia Lennox-Boyd, wife of the Secretary of State for the colonies, Alan Tindal-Boyd, 1st Viscount Boyd of Merton. She was handed over by the builders to the owners in Glasgow on 16 November 1956 at noon, and sailed on her maiden voyage from Southampton on 26 November, arriving at Anvers Island, Antarctica on 29 December.

On 1 and 2 January 1957 she carried H.R.H. Prince Philip to visit some of the scientific bases on the Antarctic Peninsula before continuing with her first Antarctic relief season. This involved re-supply of the existing Antarctic Peninsula bases and the establishment of a new base at Prospect Point. Calls were also made to Stanley and South Georgia before the passage home via Tristan da Cunha and St Helena, arriving at Southampton on 4 June 1957.

During the following two seasons the ship continued to support the Peninsula's bases, often in heavy ice conditions resulting in protracted periods either beset, or maintaining position, within the pack-ice. The assistance of the American ice-breakers *Northwind* and *Edisto* was required to free her during one such period. Numerous field parties were established during the summer months allowing scientists and surveyors to reach areas unable to be visited from permanent bases at other times of the year. The ship recovered these parties at the end of the season before the passage back home to Southampton.

In the 1959/60 season the ship took cargo to the base established for the International Geophysical Year (IGY) at Halley Bay on the Caird coast of the Weddell Sea, taking about 11½ days to travel the 1836-mile route from South Georgia, working medium to heavy close pack-ice for 9 days. She returned to South Georgia in 8½ days before continuing to relieve the peninsula bases. The passage to Halley Bay was undertaken twice again in the seasons 1966/67 and 1967/68 in company with a chartered vessel, named *Perla Dan*, with equipment for the rebuilding of the IGY scientific base which was in need of replacement owing to the pressure caused by the build up of snow.

As well as relieving the scientific bases the *John Biscoe* has supported numerous hydrographic surveys; geological, botanical and biological landings using small inflatable craft; and, in the past 10 years, an on-going offshore research programme.

Major hydrographic surveys were undertaken with detached Naval survey parties using 'Hifix' equipment around South Georgia and the South Orkney Islands. Approaches to areas on the Antarctic Peninsula which were used regularly were also surveyed, including the Argentine Islands and Marguerite Bay. The ship carried a launch for the Naval survey party in addition to her own launch and scow. Both launches were used for inshore surveying in shallower waters, whilst the ship surveyed the deeper, approach waters.

Many smaller surveys were done by ship's staff on an opportunistic basis. One such survey involved obtaining soundings within the Pitt Islands, where John Biscoe had himself once landed on his exploration of the Antarctic, in order to allow the ship into a sheltered position to anchor when supporting geological landings in the Biscoe Island group in 1983. Geological landings were supported around South Georgia, the South Orkney Islands, the South Shetland Islands and the west coast and islands of the Antarctic Peninsula. (See front cover.) Botanical and biological surveys, ashore and afloat were supported around South Georgia and the South Orkney Islands.

The Offshore Biological Programme

The open-ocean research programme, known as the Offshore Biological Programme (OBP), commenced in 1978 and has become a major feature of each season. The ship was extensively re-equipped, refitted and re-engined in 1979 and provided with a capability for carrying out biological oceanographic research. Propulsion is now supplied by two diesel engines driving a controllable pitch propeller through a non-reversing reduction gearbox giving 1800 s.h.p. She was also fitted with an omni-directional bow thrust unit. The *John Biscoe* is fitted with a suite of laboratories and carries a range of apparatus for measuring environmental conditions, both underway and on station. The bulk of the biological research is carried out in the vicinity of South Georgia and Bransfield Strait on plants and animals, sampled with water bottles and a variety of nets



Photos. by A. MacCallum

Stratocumulus clouds photographed from f.p.v. *Vigilant*. (See page 132.)

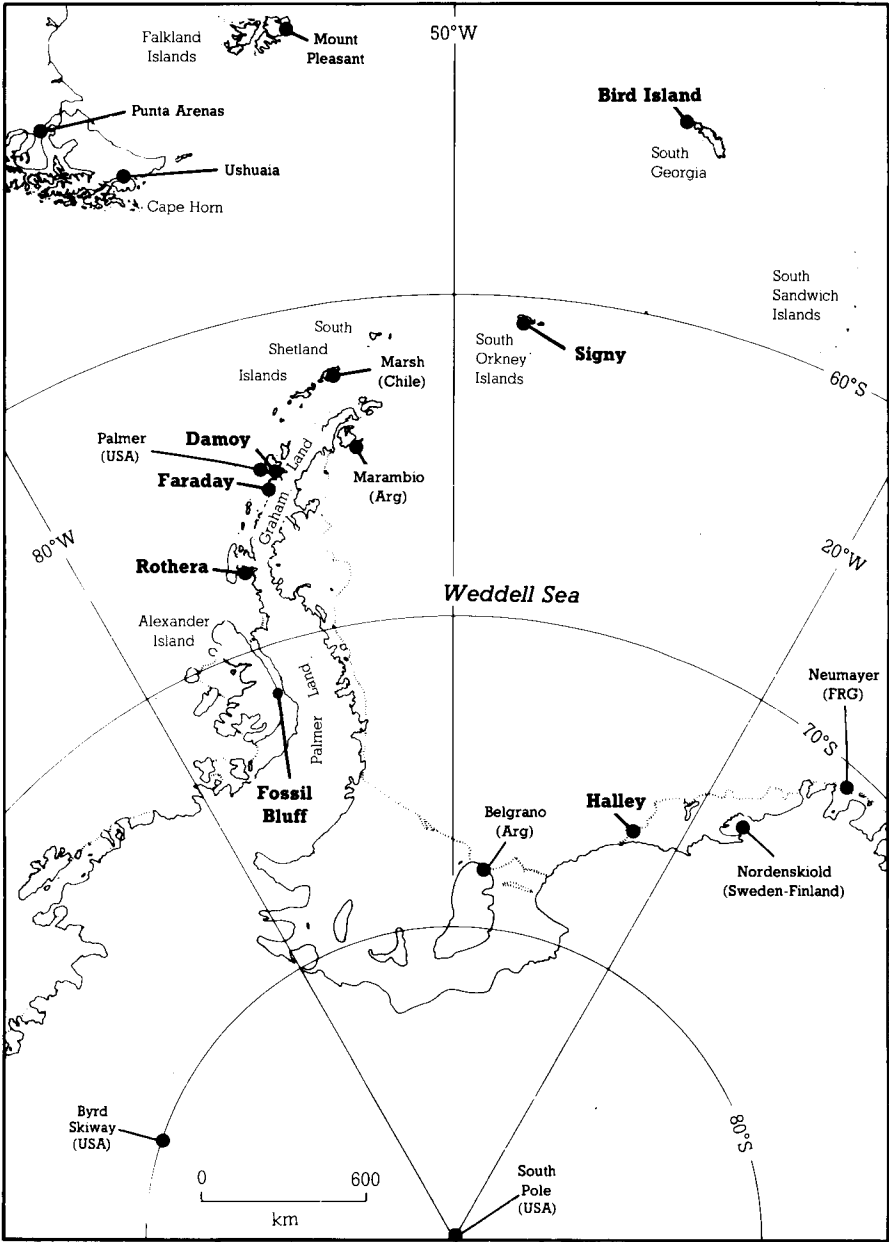


Figure 1. Scientific bases in Antarctica

ranging from small, vertical nets to large, research trawls with a mouth area of 25 m². The ship is also equipped to detect and survey krill using sophisticated echo-sounding techniques.

Although a certain amount of cargo space was lost owing to the conversion, the vessel continues to supply the bases of Bird Island (South Georgia), Signy (South Orkney Islands) and Faraday (Peninsula) during the spring and early austral summer before continuing with the OBP. An early season task, generally after the relief of Bird Island, is to take earth scientists to Damoy, a refuge on Wiencke Island on the Antarctic Peninsula. From there they are flown to Rothera Station on Adelaide Island. This allows an earlier start for the earth scientists' field season than could otherwise be achieved since access to Rothera by ship is not normally possible until a month or so later than Damoy. Generally, after two shuttles from Stanley to Damoy, the ship continues the relief of personnel and cargo at Signy and Faraday. This is usually completed by mid-December when most of the remaining season is devoted to research cruises. Figure 1 shows the bases mentioned above.

In 1989, as a change to the OBP, the ship supported a multi-disciplinary, multi-national geological project targeted at the James Ross Island group at the northern end of the Antarctic Peninsula. The bones of a plant-eating ornithomimid (bird-hipped) dinosaur, just over 3 m long, together with marine reptiles, marine invertebrates and fossil wood, were discovered in shallow-water rocks about 70 million years old. The dinosaur bones are thought to be the remains of a carcass that floated out to sea before being buried and fossilized. The marine rocks of the James Ross Island area contain abundant remains of shells (especially ammonites), drifted plant material (including the leaves of ferns, conifers and broad-leaf trees), and fossil logs up to 4 m long and 1 m in diameter.

The finds confirmed that the climate of that period in Antarctica was much warmer than it is at present and that no significant ice-cap existed. During the cruise, the ship recorded hydrographic data at every opportunity, including small area soundings using the launch, enabling the ship to be anchored in reasonable safety. Many of the charted soundings in the area are from old information obtained by the expeditions of Nordenskjöld and James Ross. In more recent years soundings have been recorded by the *John Biscoe*, R.R.S. *Bransfield* and H.M.S. *Endurance* during passages to the area. With the region gaining importance for scientific study using ship supported programmes, all hydrographic data collected by vessels are important.

Replacement for the *John Biscoe*

The *John Biscoe* is almost 35 years old now and is soon to be replaced by a new, multi-purpose research and logistic vessel presently under construction in the U.K. It is due to be launched in May 1991 and ready for her first austral summer of the same year, in the Antarctic. She is to be named R.R.S. *James Clark Ross*, after the explorer who spent time in the Antarctic 10 years after John Biscoe.

When is a Cb not a Cb?

The photographs opposite page 130 were taken from f.p.v. *Vigilant* on 27 August 1989 at about 1800 GMT when 23 n.mile north-west of the Flannan Isles, and the observers remarked that 'the towering cumulonimbus looked particularly interesting'.

Alas, all in the world of cloud observing is not as it seems, and it is possible for a humble cumulus to mimic 'big brother' before being transformed again into equally humble stratocumulus — hoodwinking the met. observer in doing so.

The first photograph shows shallow cumulus clouds lying in streets, and with some domes spreading horizontally; the second picture shows one dome in more detail. Figure 1 gives the synoptic situation for the time of the photographs, and shows an anticyclone centred to the west of Scotland. High pressure in summer is a sign of fine weather and not a breeding ground for cumulonimbus; additionally, upper-air ascents for the area show a very sharp temperature inversion at about 5000 feet above sea level, the air temperature rising from -3.0°C to $+8.0^{\circ}$. The air beneath this inversion is unstable to surface temperatures of $+10^{\circ}$ or above.

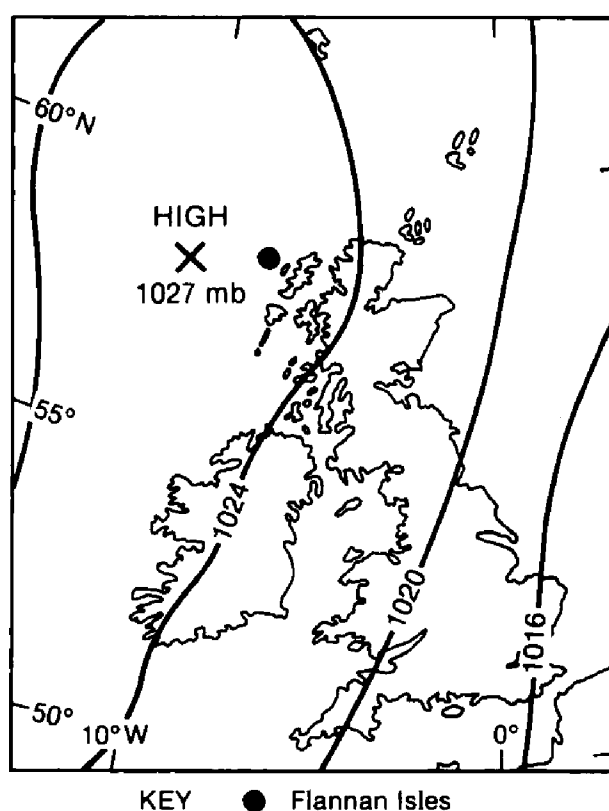


Figure 1. Synoptic situation for 1200 GMT, 27 August 1989.

The *Vigilant*'s recorded sea temperature was 12.7° and so the air was heated from below by the sea. Warm air rises, and as it does so it cools and expands until it reaches the temperature of the surrounding air or is prevented from rising by an inversion i.e., it is colder than the surrounding air. Under an inversion, the air can no longer rise and is forced to spread sideways. While the process of spreading is going on, the clouds do resemble a cumulonimbus, taking on the flattened, anvil shape, but are only a fraction of the size and should be coded as C_L4 . So when is a Cb not a Cb? In this case, when it is stratocumulus formed from cumulus.

AURORA NOTES JULY TO SEPTEMBER 1989

By R.J. LIVESEY

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

In Table 1 are listed the observations obtained from mariners during the period. In Table 2 are listed principal nights in which auroral activity was reported in the Northern Hemisphere by observers in various countries and ships at sea.

Table 1 — Marine aurora observations July to September 1989

DATE	SHIP	GEOGRAPHIC POSITION	TIME (GMT)	FORMS IN SEQUENCE
4/5 Aug.	.. Cumulus	.. .. 57° 05'N, 19° 59'W	2330-0030	qN, Max. alt. 12°
5/6	.. Cumulus	.. .. 57° 05'N, 19° 59'W	0000-0130	qN. Max. Alt. 18°
7/8	.. Falklands Desire	.. .. 53° 37'S, 60° 31'W	1120	HB. Red, vertical band in cloud
8/9	.. Cumulus	.. .. 56° 55'N, 20° 11'W	0230	qN. Max. alt. 18°
10/11	.. Cumulus	.. .. 56° 51'N, 19° 54'W	0130-0325	qN, qR. Max. alt. 40°
11/12	.. Cumulus	.. .. 56° 25'N, 19° 38'W	0025-0210	qN. Max. alt. 20°
12/13	.. Cumulus	.. .. 57° 02'N, 20° 17'W	2347-0340	qN. Max. alt. 20°
14/15	.. Cumulus	.. .. 57° 00'N, 20° 00'W	0240-0345	qN, qR. Max. alt. 80°
18/19 Sept.	.. Westra	.. .. 58° 40'N, 03° 50'W	0100-0240	RA, CRR, pRR, RB. All-sky
22/23	.. Vigilant	.. .. 58° 21'N, 07° 32'W	2030-2200	HA, mRR
24/25	.. Canmar Europe	.. .. 49° 50'N, 60° 24'W	0100-0300	qG, qRA. Max. alt. 20°

KEY: m = multiple, p = pulsating, q = quiet, A = arc, B = band, C = coronal ray structure, G = glow, HA = homogeneous, N = unspecified form, R = ray, RA = rayed arc, RB = Rayed band, RR = rayed bundle.

Table 2 — Principal aurorae July to September 1989

DATE	TIME (GMT)	NUMBER OF OBSERVERS	EUROPEAN MIN. GEOMAGNETIC LATITUDE	LOCATION AND ACTIVITY OF AURORAE*
6/7 Jul.	All night	1	—	North Dakota (5)
9/10	2248-0048	1	61	North Scotland (6)
12/13	All night	1	—	North Dakota (5)
1/2 Aug.	All night	1	—	North Dakota (5)
2/3	All night	1	—	North Dakota (3)
9/10	2300-0933	8	59	North Dakota (1), Winnipeg (7), Quebec (4), Scotland (5), Finland (2)
10/11	0130-0325	2	63	North Dakota (1), 'Lima' (4)
11/12	0015-0210	3	61	North Dakota (5), 'Lima' (1), North Scotland (4)
12/13	2347-0340	2	63	North Dakota (5), 'Lima' (1)
14/15	2323-0345	10	58	North Dakota (5), Winnipeg (7), 'Lima' (4), Ireland (5), Scotland (6), England (5)
15/16	2329-0250	8	58	Scotland (5), England (4), Finland (6)

Table 2 (contd)

DATE	TIME (GMT)	NUMBER OF OBSERVERS	EUROPEAN MIN. GEOMAGNETIC LATITUDE	LOCATION AND ACTIVITY OF AURORAE*
21/22	All night	2	62	North Dakota (3), Finland (6)
22/23	All night	1	—	North Dakota (5)
23/24	2330–2355	3	61	North Scotland (5)
25/26	0230	3	61	North Dakota (3), North Scotland (1)
26/27	2245	2	61	North Dakota (5), Scotland (2)
27/28	2150–0300	9	58	Scotland (5), North England (5)
28/29	2138–0630	12	56	North Dakota (6), Halifax (4), Scotland (6), Denmark (4)
29/30	2235–0300	4	57	North Dakota (5), Winnipeg (2), North Scotland (1)
31 Aug./ 1 Sept.	2030–2240	2	60	North Scotland (1), Finland (5)
3/4	0220–0630	4	56	North Dakota (3), Detroit (5), Quebec (4), England (4)
4/5	0015–0200	4	59	North Dakota (5), Winnipeg (5), Scotland (1), Finland (3)
7/8	All night	2	62	North Dakota (3), Finland (2)
8/9	All night	1	62	Finland (6)
9/10	0457	3	59	North Dakota (3), Winnipeg (5), Finland (6)
11/12	All night	1	57	North Dakota (4)
13/14	Morning	1	—	North Dakota (3)
15/16	2130–0350	6	59	North Dakota (6), Scotland (6)
17/18	2300	2	57	North Dakota (5), Ireland (6)
18/19	2001–0700	19	57	North Dakota (6), Detroit (6), Ireland (6), Scotland (7), England (7), Finland (6)
21/22	All night	1	—	North Dakota (3)
22/23	2030–2200	6	59	Scotland (4), Finland (5)
25/26	1022–1057	2	—	North Dakota (3), Winnipeg (6)
26/27	1825–0130	19	55	North Dakota (5), Scotland (7), England (7), Denmark (6), Finland (4)
27/28	2240–2315	2	61	Scotland (5), Finland (4)
28/29	2150–2310	2	61	Scotland (5)
30 Sept./ 1 Oct.	1923–0041	8	59	North Dakota (6), Scotland (4), Finland (2)

*Storm activity code: 1 = glow or patch, 2 = homogeneous arc or band, 3 = rayed arc or band, 4 = ray bundles, 5 = active moving or flaming storm, 6 = coronal or half sky, 7 = all-sky storm.

In July the summer twilight in the eastern Atlantic reduced the visibility of the aurora, which, because of the lower latitude to which it extends in America, remained visible on the Canadian — U.S. border areas during active nights. In fact, if the reader looks through Table 2 it will be noted how often North Dakota features in the record. This is the work of a lone amateur observer, Jay Brausch, living in Glen Ullin, North Dakota (47° 48'N, 101° 48'W) who enjoys remarkably good weather for auroral observing. Since about 1980 Jay has

observed and photographed the aurora on roughly 800 occasions, an impressive achievement. In augmentation of his logbook entries, he has lent to the BAA Aurora Section his collection of over 1000 auroral photographs which clearly record the extent to which the aurora is active in that part of the world.

Dr Mike Hapgood, of the Rutherford Appleton Laboratory has calculated that the corrected geomagnetic latitude of Glen Ullin is the same as that of Fair Isle just south of Shetland. This means that the frequency with which aurora takes place above the horizon at both locations should be of the same order. Now any mariner familiar with the waters around the northern Scottish isles, as are the meteorological officers at Wick, Kirkwall and Lerwick, will aver that these seas have their fair share of cloud cover and a good deal of auroral activity is not detected. However, calculations based on the observations of all observers reporting from north-west Europe and ships in the North Atlantic Ocean indicate that within the same time period, given no cloud cover, it should have been possible to detect auroral light at Fair Isle on more than 1000 nights. This goes to show the difference in weather conditions between the centre of North America and the eastern North Atlantic, and possibly too what a dedicated observer can do given the appropriate circumstances.

In Figure 1 is shown trends in auroral activity. The aurora is of course related to the disturbance of the Earth's magnetic field not only by the impact of particles arriving from the sun, but also and perhaps more importantly or so we think, by the orientation of the magnetic field in interplanetary space. The lower two graphs show the degree of disturbance of the magnetic field in terms of peak disturbances in any day and in terms of magnetic storms themselves. The second top graph records the annual frequency with which the magnetic field was bumped into by a shock-wave of particles coming from the sun. Such Storm Sudden Commencements, as these are called, do not themselves generate an aurora, nor do they necessarily precede a magnetic storm. The top graph indicates the annual frequency of auroral nights at the magnetic latitude of central Scotland. Note how the frequency of storm aurorae fell after the last sunspot maximum; we are waiting to see if the auroral lull will develop in the current sunspot cycle.

In 1989 the number of auroral reports coming in from our many correspondents world wide has exceeded previous yearly rates by a factor of three or thereabouts. The Great Aurora of 13/14 March has certainly caused many people, not least mariners, to take an interest in the aurora. A careful look at Figure 1 might suggest that the number of magnetic storms has not been large, but the number of days with some magnetic disturbance has been higher by quite a margin. Auroral records show that there was a high order of activity in northern Scotland, Orkney and Shetland, whether observed or not owing to cloud cover. One thing that has come out of the analysis is the benefit of having more observations from landmen and mariners in the higher magnetic latitudes. The larger number of higher latitude activity nights may be related to the high number of disturbed but not necessarily storm magnetic days.

We receive more reports now from North Sea oil-related support ships which augment the reports from the fishery protection vessels and the *Cumulus*. An old favourite hunting ground for aurora is the region between Belle Isle Strait and Anticosti Island, from where we receive reports by ships passing through. Reports received from southern waters are copied to the Aurora Section in New Zealand where the aurora australis is now correlated.

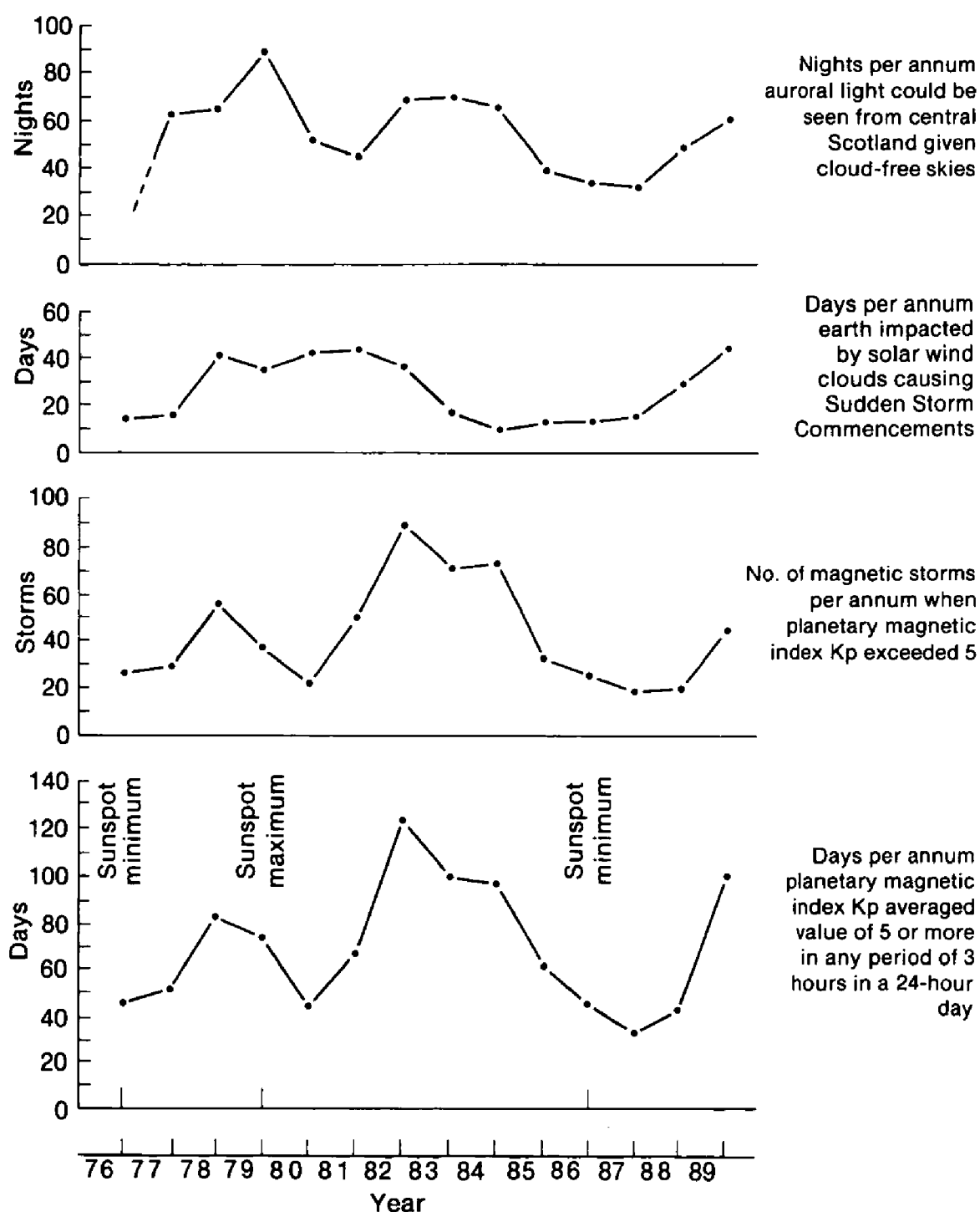


Figure 1. Trends in auroral activity 1976–89.

Dr David Gavine confirms that 1989 has been another good season for observing the noctilucent clouds (NLC). We believe that many sightings are not being reported because observers are assuming what they see to be cirrus. It is one of those quirks of human nature that there are a number of observers who report aurora regularly but never NLC, even though they must be seeing them, and there are observers who can be relied upon to report NLC but will never submit an aurora report. The observation of NLC in summer is currently of great importance to upper-atmosphere research and we are receiving more requests world wide for NLC observations than for aurora. Tell us what you see please and we can then sort out what the observation means. For example a ship

recently made observations and the officers concluded from the data that they had seen NLC and so reported it. Unfortunately, it was well outside the season of the year when NLC are visible. However, what they had seen was a good, going aurora, well observed by a good number of people, and the description given in the met. logbook was quite adequate for us to work out the nature of the aurora. Remember, an observation is an observation if it is properly logged and may be useful to somebody, even if it was made by the ancient Greeks and has waited two thousand years for its interpretation. Best wishes and good sailing.

Personalities

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

RETIREMENT — CAPTAIN J. COSKER retired on 31 March 1990, during the 44th year of his life at sea.

John Cosker was born in March 1930 and educated at Park High School, Birkenhead. He was indentured to Hain Steamship Company on 11 September 1946 and less than a week later sailed in that company's *Treworlas*. On obtaining his Second Mate's Certificate he joined the New Zealand Shipping Company in 1951, sailing first in the *Tongariro*, from which ship the following year he sent us the first of his 81 meteorological logbooks. He obtained his Master's Certificate in January 1957 and as Chief Officer of the N.Z.S. Co. he served for three years in each of the Cadet Training Ships *Rakaia* and *Otaio*. He was promoted to command of the *Surrey* in January 1964 and five years later he transferred to Ocean Fleets where he remained, with Overseas Containers and P. & O. Containers, the 21 years up to his retirement.

In his outstanding weather observing career, embracing 35 years of co-operation in this important field, Captain Cosker contributed 60 logs marked 'Excellent' on assessment and received a total of 17 Excellent Awards. His dedication was further recognized when he was presented with a long service barograph by the Director-General in 1977, at the age of 47.

John Cosker's grandfather served in sail with James Nourse, a company that was destined to combine with his own first employer before both became members of the P. & O. Group, and his great-uncle was a Master with Alfred Holt. His father was a Liverpool pilot and his eldest daughter was a Navigating Cadet with P. & O. before leaving the sea to marry a Navigating Officer with Ocean Fleets, who subsequently joined the R.N. as a Lieutenant.

Our thanks to Captain Cosker for the interesting family nautical history and particularly for his loyal and painstaking service in the cause of voluntary weather observing. We wish him happiness and enjoyment in retirement.

J.F.T.H.

Book Reviews

Fairplay World Ports Directory 1990, edited by P. Malpas. Four volumes, each 210 mm × 298 mm, totalling 1057 pp., paperback. Fairplay Information Systems Ltd, PO Box 96, Coulsdon, Surrey CR3 2TE. Price: £25.00 per volume, £95.00 per set of four.

The 41st edition of this esteemed reference work is, for the first time, divided into four volumes, separated by geographical region. This makes it easier to use and allows a purchaser greater flexibility in purchasing, hence cost control. It claims to include about 2,400 ports covering 40 elements of information available to each port. Each volume also contains a complete index embracing the whole set, making it a simple matter to find the required information. The geographic trading areas are nicely divided into Northern Europe, the Americas, the Mediterranean, Africa and the Middle East and the Indian sub-continent, Pacific Basin and Asia.

The entries in each volume are alphabetically listed by country and then by port, with clear headings and graphics enabling quick identification. The general information is fully comprehensive, providing location, pilotage, weather, communication, hours of working and port addresses. There are over 7,000 such addresses in the four volumes, covering port authorities, operators, agents, towage companies, repairers and bunker suppliers. Usually there is a full list of facilities, transport, berthing and warehousing details. For each port there is also a very useful table showing the means of assessment of dues, based on pilotage, tugs, docking, cargo handling, wharfage and storage. This could be particularly useful in decision-making when it is necessary to quickly divert a ship to an alternative port for any reason.

Finding most possible port information (except plans) under one title makes this a very useful and valuable aid to the ship operator and general trader. The editor would be grateful if readers would inform him of any discovered amendments or additions.

J.F.T.H.

The Age of the Arctic — hot conflicts and cold realities by Gail Osherenko and Oran R. Young. 155 mm × 235 mm, xvi + 316 pp., illus. Cambridge University Press, Trumpington Street, Cambridge CB2 1RP. Price: £37.50.

This is another volume in the series *Studies in Polar Research*, following our reviews of several other books in the series in recent years. It is the first we have received on the northern polar regions, the others having covered various aspects of the exploitation and protection of the Antarctic.

This book is the product of an ongoing collaboration between a husband and wife and a long-running exchange of ideas between a political scientist and a lawyer. The authors have learned much about conflict, not only from teaching courses on conflict and its resolution but also from the process of coming to terms with a variety of conflicts arising from our own temperaments, roles and professional training. Thus they are content if this study of the Arctic alerts the major players in this increasingly important region to the circumstances they face, and suggest innovative ways for them to come to terms with their conflicts of interest.

Amongst the discourse upon the security, industrial and environmental interests which dominate this book, the one factor which seems to stand out from others is the efforts made to involve and safeguard the interest of the indigenous population at every stage of events. They belong to the 'Fourth World' of peoples who are locked into nations they can never hope to rule, minorities living in seven Arctic rim nations — the United States, Canada, Denmark/ Greenland, Norway, Sweden, Finland and the Soviet Union. Though economically dependent on southern society, Arctic communities throughout the Circumpolar North look to areas outside the Arctic for capital, products, markets and transfer payments. This makes them most vulnerable to exploitation by increasing military and industrial presence. To safeguard their heritage, way of life and culture, the indigenous people of the Arctic have formed powerful, increasingly effective organizations to pursue their aims and voice their views. The authors provide a succinct commentary on how the original peoples in the Arctic battle to end internal colonialism and take control of their own destiny. They show that considerable success has been achieved by Native peoples becoming more powerful and articulate in moving their agenda. The particular needs of the Inuit, Inupiat, Dene and Iñupiat people, to mention but a few of the indigenous minorities, are clearly chronicled towards the return of the independence they seek.

The three parts containing nine chapters first set the scene on the Arctic dreams and realities, detailing the players and interested parties, then try to provide solutions to solve the problems of the many Arctic conflicts. The military emphasis has undergone a marked change since this book was conceived, with the advent of *glasnost* and President Gorbachev's Arctic zone of peace initiative. The authors have taken a welcome opportunity to add an epilogue, written in May 1989, updating the reader on recent proposals for international arrangements to protect the environment of the Arctic. This rounds off a treatise of much interest and one which fills a gap on works published about this region of interest.

J.F.T.H.

The Ships Atlas, publisher Colin Pielow. 230 mm × 305 mm, 75 maps + Index, illus. Shipping Guides Ltd, Shipping Guides House, 75 Bell Street, Reigate, Surrey RH2 7AN. Tel: (0737) 242255/6/7. Price: £33.00 in U.K., £38.00 outside U.K., including delivery.

This edition of *The Ships Atlas* is published only five years since the first edition appeared, such has been the demand for this excellent reference. However, the publishers also wished to attain further improvement that they felt bound to go ahead with the production of this third edition. There are twenty new maps and over ninety additional ports included in the atlas, making a total of some 75 maps in all, together with their relevant port information data in the index. There are also many additional distance tables, such a useful feature of the atlas. Although increasing the size of the book, a welcome change is the increase in size of type of the index, making it easier (especially for the poorly-sighted) to decipher at a dimly lit chart table.

Port data in the index, consisting of position, maximum ship dimensions capable of entry, availability of fuel and distance of airports and more, for main ports, are extracted from Shipping Guides' other well-known publications, *Guide to Port Entry* and *Guide to Tanker Ports*. The editors take the opportunity

to thank all those connected with the shipping industry for their helpful information and suggestions for improvement or amendment. They would clearly like this helpful interest to continue.

Since we published a review of the second edition of *The Ships Atlas* only eighteen months ago, it is sufficient to say that all well-run ships and company offices should have a copy.

J.F.T.H.

Notices to Marine Observers

GMT TO BE ENTERED IN MET. LOGS

As mentioned in the July 1989 edition of *The Marine Observer*, we now ask observers to enter the GMT of their observations in the first column of the second page of the log, as well as in column 4. Where GMT is printed in earlier editions of the log, this can be altered to suit the actual GMT of consecutive observations. The instruction 'For Office use only' at the head of the second GMT column should be ignored.

Please bring this advice to the attention of all observers who can help speed the process of quality control and computer archiving by entering the GMT on the second page.

ROYAL INSTITUTE OF NAVIGATION ANNUAL COMPETITION 1990

The closing date for this year's competition for young 'Navigators' is 1 October 1990. In the past, competitors have written about Sailing, Orienteering, Walking, Exploring, Potholing, Flying and other activities which involve getting from place to place. The judges for this Royal Institute of Navigation competition take into account the age and opportunity of entrants, who must be aged from 8 to 23. Prizes include compasses, clocks, binoculars, watches and books; seetime with the Royal Navy or in a merchant ship or square-rigger; flying and gliding with the Royal Air Force; and flying across Europe on the flight deck of an airliner.

The prize giving will be in London on 4 January 1991 and will include illustrated talks by navigation experts, plus tea. The closing date for entries is 1 October 1990 and further details and an entry form can be obtained from:

The Director
The Royal Institute of Navigation
The Royal Geographical Society
1, Kensington Gore
London SW7 2AT
Telephone: 071-589 5021
Fax: 071-823 8671

CORRECTION

In the comment on abnormal refraction, given on page 75 of the April issue of this journal, for 'diluted' read 'ducted'.

Fleet Lists

Fleet Lists

GREAT BRITAIN (Information dated 19.3.90)

The following is a list of British ships which have been equipped with instruments and which voluntarily co-operate with the Marine Division of the Meteorological Office. The names of the Masters, Observing Officers and Senior Radio Officers are given as ascertained from the last written returns received. The date of receipt of the last return is given in the second column. An asterisk indicates a new recruitment who has not yet sent in a logbook.

All returns received from observing ships will be acknowledged, direct to the ship, by the Marine Superintendent of the Meteorological Office.

The Port Meteorological Officers will make personal calls on the Masters and Observing Officers as opportunity offers, or on notification from the ship at any time when their services are desired.

Excellent Awards are made at the end of each calendar year. The names of the Masters, Principal Observing Officers and Radio Officers gaining these awards are published each July in *The Marine Observer*.

It is requested that prior notification of changes of service, probable periods of lay-up, transfer of Master or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to a Port Meteorological Officer or to the Marine Superintendent of the Meteorological Office at Bracknell.

Masters and Officers are invited to point out any errors or omissions which may occur in the list.

Selected and Supplementary Ships

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
Abbey	16.11.89	R.G. Gibbons	D.G. Lyon, G. Woodall, A. Ashurst	J.T. Miller	Furness Withy (Shipping) Ltd
ACT 1	27.11.89	D.R. MacKillip	K. Lumby, S. Rathbone, R.G. Pressler	J.M. Shand	Blue Star Ship Management Ltd
ACT 2	15.2.90	M. Thwaite	D.W. Lax, C.N. Hallam, M.J. Macalpine-Downie	J.C. Chatwin	Cunard Ellerman Shipping Services Ltd
ACT 6	2.11.89	D.M. Kissane	A.M. Tweedie, M.G. Dexter, C.D. Farmer	P.A. Hughes	Cunard Ellerman Shipping Services Ltd
ACT 7	15.1.90	N.D.T. Johnson	P.C. French, R.A.A. Morrison, P.J. Mahoney	J. Ramsey	Blue Star Ship Management Ltd
ACT 8	2.3.90	R. Nightingale	D. Spooner, A.D. MacPherson, A.V. Rehman		Denholm (I.O.M.) Ltd
Adelaide Express	22.12.89	H.K. Chopra	R.K. Goel, R. Singh	F. Da Costa	V-Ships (U.K.) Ltd
Adviser	3.1.90	R.J. Smith	B.H. Birch, G.A. Walter, J.C. Hague	J. Walsh	J. & T. Harrison Ltd
Al Shamiah	23.10.78	T. Williams	P. Walley		United Arab Shipping Co. (S.A.G.)
Aldington	15.9.89	J.N. Ramsay	P.M. Taylor, A. Soupe		Stephenson Clarke Shipping Ltd
Alert	18.4.88	R. Longworth	M. Swaffield, I. Smallshaw, P. Moodie		British Telecom International
Alliance	15.9.89	L. Hocht Schmidt	K.C. Maclean, J.W. Graham, S.M. Hamer	D. Vowles	Denholm Offshore Ltd
Almeda Star	7.3.90	C. Mundy	S. Mortimer, F. Aquino, M. Langit		Condordia Marine Co Ltd
Ambra Baleen	11.10.89	T.S. Nurcombe	R. Kumar, K.J.A. Remedios, K.M. Tripathi	T. De Leon	Wallem Ship Management (H.K.) Ltd
Ambra Blue	*	B.F. Satur	A. Chopra, F. Ajoc, R. Campos	C.J. D'Souza	Wallem Ship Management (H.K.) Ltd
Ambra Grey	*	N.A. Porter	C. Defisfruto, R. Neven, D.S. Hall, M. Mosot	V. Koothur	Wallem Ship Management (H.K.) Ltd
American Senator	6.3.89	K. Millar	R.K. D'Souza, M.A. Cully, Pankaj Sah	D.I. Masih	B.C.P. Ship Management Ltd
Andes	27.11.89	T.R. Barton	M. Brooks, J. Hollamby, S.D. Ward	J. Miller	Furness Withy (Shipping) Ltd
Anro Adelaide	10.10.89	P.V.S. Ezekiel		Win Kyi	Neptune Orient Lines Ltd
Antwerpen	*	J.F. Stokart		A. Renard	Antwerp Bulk Carriers N.V.
Appleby	21.2.90	F. Stuart		K.S. Woodley	Ropner Ship Management Ltd
Arctic Corsair	12.12.89	P. Wheelodon	A. Spence		Boyd Line Ltd

<i>Arctic Universal</i>	19.2.90	C.E.W. Ramsden	T.C. O'Callaghan, K.J. Bourne, M.R. Yakoob	S. Kodikara	Matheson Shipping Services Ltd
<i>Arma</i>	22.1.90	C. Kulkarni	B.K. Jha, S. Bhasin, R. Krishnamoorthy	D. Kapadia	B.C.P. Ship Management Ltd
<i>Asifi</i>	30.1.90	G.W. Wostenholme	R.I. Sime, D. Tucker		British (I.O.M.) Ltd
<i>Astrid</i>	*	M.C. Kichenside		V.H. Dolor	Astrid Trust
<i>Atlantic Amity</i>	25.9.89	M.J. Goulding	R.L. Literal, G.P. Rivera, J.C. Mirasol	J.J. Cooney	Furness Withy (Shipping) Ltd
<i>Atlantic Conveyor</i>	14.7.89	C.S. Kingston	L.P.V. des Landes, J. Brocklehurst, J.V. Dilley		Cunard Ellerman Shipping Services Ltd
<i>Atlantic Senator</i>	24.10.89				Furness Withy (Shipping) Ltd
<i>Atlantic Universal</i>	19.10.89	G. Pettingell	R.G. Crozier, R.A. Cotton	S. Hollingworth	Matheson Shipping Services Ltd
<i>Auckland Star</i>	11.8.89	W.J.G. Jones	E.T. Bibby, P. Owen, E. White	D. Hurren	Blue Star Ship Management Ltd
<i>Author</i>	3.1.90	G.S. Laird	N. Whittaker, J.T. Davis, S.J. Hamer	B. Brycki	T. & J. Harrison Ltd
<i>B.P. Advocate</i>	22.12.89	K.E. Peacock	C. Osyos, N.J. Collins, E. Koranteng-Adei	E. Ackwono	B.P. Shipping Ltd
<i>B.P. Architect</i>	14.11.89	J.M. Ronald	A.K. Birley, L.B. Jambas, R.L. Ferry	D. Simcox	B.P. Shipping Ltd
<i>B.P. Energy</i>	25.10.89	S.R. Montague	A.K. Sharma, J. Patterson, S. Agarwal	R. Pajura	B.P. Shipping Ltd
<i>B.P. Humber</i>	30.6.89	T.M. Stones	P.D. Walker, W.R. Durrans, R.M. Standing	J. Walsh	Bulk Tanker Management Ltd
<i>BT Nautilus</i>	20.6.89	T.J.E. Fitzearle	W. Hughes, N. Senapati, S.J. Reed	M. McCormack	Bulk Tanker Management Ltd
<i>BT Navarin</i>	10.11.89	N.A.J. Lowe	R. Westwater, D.D. Simon-Hart, G.W. Bell	W. Bennett	Bulk Tanker Management Ltd
<i>BT Navigator</i>	20.11.89	M.E. Guy	W.R. Donaldson, P.J. Tyson, C.F. Robinson	K.O. Glenn	Bulk Tanker Management Ltd
<i>BT Nestor</i>	9.10.89	M.S. Allen	I.F. Finlayson, M.T. Aung, K. Kuchroo	D.J. Minihane	Bulk Tanker Management Ltd
<i>BT Nimrod</i>	8.3.88	D.R. Cripps	R. Cordon, G.W. Bell, B.T. Sheridan	P. Hornby	Bulk Tanker Management Ltd
<i>Baltic Eagle</i>	1.8.89	R.C. Kreamer	M. Kearney, J.D.R. Chest, R.H. Barker		Andrew Weir Shipping Ltd
<i>Baltic Progress</i>	22.8.89	J. Foggin	R. Hutchinson, P.V. Ogg, R.N. Elikewela	E.R.I.A.S. Ranasinghe	Matheson Shipping Services Ltd
<i>Barbara E</i>	18.9.89	K.E. Hammerman	R. Knowles, D.W. Tucker	S.E. Saam	British (I.O.M.) Ltd
<i>Barrydale</i>	12.12.89	E.M. Meare	C.J. Meadows, K.M. Mehta, A.J.A. Jalali	H.M.S. Cherry	E. & F. Shipping Management Ltd
<i>Ben Ocean Lancer</i>	17.6.87	A.I. MacFeale	S.D.R. Campbell, D. Gilmour, T.V. Roberts	J. Allen	Odeco Ltd
<i>Benalder</i>	19.12.89	F.G.J. Anderson	J.M. Groat, S. Fish, S. Polson	P. Body	Ben Line Steamers Ltd
<i>Benavon</i>	5.1.90	J.I. Brown	M.N. Sherwood, N. Walker, R.J.A. Brearley	P. Sukumar	Ben Line Containers Ltd
<i>Benhope</i>	26.9.89	F.I. Hogg	J.S. Kainth, D.V. Ramah	A. Fernando	Ben Line Steamers Ltd
<i>Bering</i>	30.1.90	F.M. Colley	J.M. Collis, A. Raventhirathas, E.A. Lopez	U.R. Sompura	Matheson Shipping Services Ltd
<i>Bluestream</i>	24.10.89	J.E. Sturgess	A.J. Shakeel, J. Michael, N.P. Colling	A. Robertson	E. & F. Shipping Management Ltd
<i>Bora Universal</i>	6.10.89	R.J. Kendall	C.M. Turner, S.R. Davies, R. Chowdhury	S.J. Mee	C.I. Shipping Ltd
<i>Bransfield</i>	25.5.89	M.J. Cole	J.B. Marshall, J.N. Balkwill, C.J. Poole-Glead	R.I. Gow	British Antarctic Survey
<i>Bridgeman</i>	6.1.87	F. Craske	M.J. McGhee, P.S. Wright, M.D. Kerr	D. Walker	Rowbotham Tankships Ltd
<i>British Beech</i>	18.5.89	M. Hopkins	D.R. Lewis, D.M. Sharp, C. Beaton	D.W. Bone	B.P. Shipping Ltd
<i>British Esk</i>	11.4.89	J.E. Perry	I.C. Massey, N.K. Price, M. McDiarmid	M. Glendinning	B.P. Shipping Ltd
<i>British Forth</i>	14.2.90	A.J. Lockwood	S.B. Taneja, P.R. Anderson, N. Kapur	D. Richards	B.P. Shipping Ltd
<i>British Ranger</i>	14.3.90	J.C.E. Bovaird	P.D. Walker, D. Barclay, T.T. Latto	C.M. Taylor	B.P. Shipping Ltd
<i>British Reliance</i>	5.1.90	W. Young	J. Barker, T.L. Cullen, A.J. Drew	P. Clemence	B.P. Shipping Ltd
<i>British Renown</i>	20.2.90	J.O. Bailey	R.B. Bryant, C. Beaton, T.T. Latto	A. Moore	B.P. Shipping Ltd
<i>British Resolution</i>	23.1.90	L.V. McGeoch	G.P. Spence, A. Parkinson, T.C. Moore	K. Kielthy	B.P. Shipping Ltd
<i>British Resource</i>	27.2.90	M.C. Roberts	E.L. Nicolayson, J.G. Coull, N.J. McNeil	R. Ball	B.P. Shipping Ltd
<i>British Respect</i>	15.1.90	F.W. Wilkinson	N. Hannam, S.W. Burton, R.P. Coghlan	G.A. Bird	Furness Withy (Shipping) Ltd
<i>British Skill</i>	24.1.90	G.M. Hopkins	R. Chadbourne, Q. Cox, R.K. Harding	J. Hetherington	B.P. Shipping Ltd
<i>British Spirit</i>	8.3.90	M.T. Gordon	C.C. Rowdon, J.C. Taylor, L.M. McEwan	M. Wakelin	B.P. Shipping Ltd
<i>British Steel</i>	2.3.90	R.A. Whistler	M. Bartle, P.M. Newman, R.R. Kandiah	J. Smith	B.P. Shipping Ltd
<i>British Success</i>	7.12.89	P. Robinson	J.R. Gipson, D.M. Sharp, C.N. Curran	D.W. Bone	B.P. Shipping Ltd
<i>British Tamar</i>	22.2.90	P. Morris	K.J. Fear, V. Williams, A.B.W. Rugg		B.P. Shipping Ltd
<i>British Tay</i>	2.11.89	M. Mansbridge	T.I. Roberts, N.J. McNeil, A. Hirst		B.P. Shipping Ltd

Selected and Supplementary Ships (contd)

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>British Trent</i>	1.2.89	J.Y. Macalpine	M.S. Prestt, D.J. Buckley, M.J. Thorley	M.C. Spencer	B.P. Shipping Ltd
<i>British Wye</i>	27.10.89	R.H. Friar	A.J. Hilliard, A. Macleod, L.M. McEwan	B.E.A. Goodwin	B.P. Shipping Ltd
<i>Broompark</i>	8.2.89	S.H. Barker	M.J. Murzello, G.P. D'Souza, P.F. Arsiwala	R. Monteiro	Denholm Ship Management Ltd
<i>Brussel</i>	14.12.89	R. Maquestiau	P. Bussels, P. Corveleyn, M. Defer	H. Stevens	Antwerp Bulk Carriers N.V.
<i>Buffalo</i>	8.7.88	J.D. McCann	K.N. Metcalfe, M.E. Ingham, J. Gage	C.S. O'Sullivan	P. & O. Ferries Ltd
<i>CAM Defender</i>	*	M. Lightfoot	T.H. Foot .....	.....	CAM Shipping Ltd
<i>CAM Retriever</i>	30.1.90	W.M. Baker	E.A. Revell .....	.....	CAM Shipping Ltd
<i>CAM Supporter</i>	13.3.90	R. Monkman	P. Bartlett, S.C. Uperafi .....	.....	CAM Shipping Ltd
<i>CMB Eager</i>	*	C.R. Thomas	J.P. Ilarde, K.A. Bajpai, A.K. Verma	S.V.N. Potty	V-Ships (U.K.) Ltd
<i>CMB Ebony</i>	*	I.G. Juvala	R. Jamdar, K. D'Essa, S. Vellangi	V. Vats	Anglo-Eastern Ship Management Ltd
<i>CMB Enterprise</i>	*	R.C. Avenin	P. Simbu, H. Shekhar, D. Dias	D.D. Joshi	V-Ships (U.K.) Ltd
<i>CMB Exporter</i> .....	*	.....	.....	.....	V-Ships (U.K.) Ltd
<i>CMB Marque</i>	21.8.89	K. Millar	M.A. Cully, R.K. D'Souza, Sah Pankaj	D.S. Abraham	Mario Shipping Ltd
<i>CMB Merling</i>	20.11.89	W. Dubart	V. Vanderlinden, P. Legros, Y. Houard	D. Visart	CMB N.V. S.A.
<i>CMB Planin</i>	*	H. Demeure	D. Vastersaegher, S. Plateau, M. Nuytemans	W. Verstrepn	CMB N.V. S.A.
<i>Cable Protector</i>	20.9.89	W. Marr	B.K. Goodsir, M. Barras, P.D. Hey .....	.....	Cable & Wireless plc
<i>Cable Venture</i>	24.5.89	J.G. Paterson	T.D. Childs, S.B. Chalk, R.A. Hall .....	.....	Cable & Wireless plc
<i>Cableman</i>	10.10.89	R.D. Andrews	H.A. Williams, R.D.M. Low, D.J. Podger	J.D. Rennie	Rowbotham Tankships Ltd
<i>Canadian Explorer</i>	23.1.90	D.R. Llewellyn	D.J. Pritchard, M. Arif, M.A. O'Neill	M. Joniec	OOCL Ltd
<i>Canberra</i>	20.10.89	M.V.N. Bradford	M.R. Hill, P.S. Martin, J.O. Ellis	A.P.L. Hall	P. & O. Ship Management Ltd
<i>Canmar Ambassador</i>	3.1.90	K. Anderson	S. Cordozo, R.J. Smith, B.A. Ryan .....	.....	B.C.P. Ship Management Ltd
<i>Canmar Europe</i>	8.3.89	N. Fonteyne	D. De Nutte	D. Piette	OOCL Ltd
<i>Canmar Venture</i>	24.1.89	P.A. Woods	B.F. Adams, D. Chakraborty	R.S. Irani	B.C.P. Ship Management Ltd
<i>Canterbury Star</i>	19.12.89	A.J. Chivers	D.G. Robbie, R. Morrison, R.H. Evans	B. Randall	Blue Star Ship Management Ltd
<i>Cardigan Bay</i>	12.12.89	A.J. Leslie	W.M. Axon, P.M. Reid	J.A. Tomlinson	P. & O. Containers Ltd
<i>Carlagna</i>	19.5.89	D.S. Ritchie	Z.A. Utero, P.I. Ramos, C.S. Reyes	G.H. Adran	Denholm Ship Management Ltd
<i>Cavendish</i>	7.8.89	B.W. Dyson	K.V. Uthuppu, C.J. Stenning, J.A.B. Ashelfie .....	.....	Furness Withy (Shipping) Ltd
<i>Celtic Ambassador</i>	1.2.90	B.A. Hoyle	L. Illingworth, A.R. Anning, E.A. Garrick .....	.....	C.M. Willie & Co. (Shipping) Ltd
<i>Celtic Challenger</i>	9.1.90	J.H. Aynsley	B.W. Bedworth, J. Wigley, J.M.S. Lethbridge .....	.....	C.M. Willie & Co. (Shipping) Ltd
<i>Celtic Mariner</i>	21.11.89	H.J. Norton	R. Timmins, B.W. Bedworth, J. Wigley .....	.....	C.M. Willie & Co. (Shipping) Ltd
<i>Celtic Voyager</i>	23.1.90	G.W. Ralph	J.M.S. Lethbridge, M.A. Khan .....	.....	C.M. Willie & Co. (Shipping) Ltd
<i>Challenger</i>	26.9.88	G. Long	P.A. Evans, P.T. Oldfield, W. Campbell .....	.....	Natural Environment Research Council
<i>Charles Darwin</i>	30.11.89	K.O. Avery	A.R. Louch, S. Sykes, T.J. Rout	S. Thomson	Natural Environment Research Council
<i>Cheshire</i>	27.11.89	B. Desmet	K. Grootjans, P. Jacquemyn, L. Bauters	M. Bougard	Bibby Line Ltd
<i>Churchill</i>	14.1.90	J. Rowe	P. Newton, J. Ewart, S. Allen	N. Maclean	Blue Star Ship Management Ltd
<i>Cirolana</i>	26.1.90	G. Sinclair	R.W. Oliver, T.J. Durrant	R. Baty	Ministry of Agriculture, Fisheries & Food
<i>City of Edinburgh</i>	28.11.89	H.G. Gray	R.W. Lawrie, P.D. Brooks, R.G.C. Noble	F.J. Curran	Ben Line Containers Ltd
<i>City of Plymouth</i>	15.1.90	K.F. Steven	N.M. Crowther, B.R.G. Tasker, A. Atkin .....	.....	Denholm (I.O.M.) Ltd
<i>Claymore</i>	7.6.89	J. Campbell	M.B. Scott, C.D. McCurdy, I.F. Scarr	W. Adams	Caledonian MacBrayne Ltd

<i>Clydebank</i>	18.5.89	E.T. Rees	B. Stirling, J.C. Osman, L. Rigby	A.J. Pampling	Andrew Weir Shipping Ltd
<i>Contship Spain</i>	22.11.89	D. Tracey	T.G. Whittaker, T. Ayre, M.K. Eison	S.J. Bradshaw	P. & O. Containers Ltd
<i>Cordoba</i>	*	R.I. Crawford	J. Coleman, S. Ruiz, E. Walsley	S. Pinch	Cardiff Ship Management Ltd
<i>Cormorant Arrow</i>	11.1.89	J.M. Stanaway	E.W. Inkster, W. Daniel	D.H. Hibbert	Gearbulk Ltd
<i>Cornelis Veroline</i>	22.12.89	A. Van Hees	J.P. Van Hamme, P. Van Deuren, J. Walgraeve	G. Geuets	Sea Lanes N.V.
<i>Corystes</i>	14.11.89	J.R. French	B.A. Chapman		Ministry of Agriculture Fisheries & Food
<i>Coringa</i>	*	D.H. Cooper	J. Pintard, R. Elliott		F.T. Everard & Sons Ltd
<i>Crisilla</i>	*	J. Nichols	A. Somerton, W. Wilson		J. Marr & Son Ltd
<i>Dallington</i>	31.1.90	P. Squence	A.S. Reed, J. Halliwell, M.B. Wdowikowski	M. Deboo	Stephenson Clarke Shipping Ltd
<i>Deloris</i>	17.1.90	J.P. Hasselle	I. Deback, O. Basteyns, E. Gilon	N. Petkovic	Antwerp Bulk Carriers
<i>Direct Kea</i>	12.12.89	A.J. Fee	S.E. Bligh, J.C. Harris, D. Rogers	S.R. Cloutte	P. & O. Containers Ltd
<i>Direct Kookaburra</i>	15.1.90	P.D. Davies	A.W. Pitcher, C.D. Levesley, N. Turnbull	J. Bridge	P. & O. Containers Ltd
<i>Discovery</i>	30.11.89	M.A. Harding	P.A. Evans, P.T. Oldfield, R.A. Warner	C.R. Brown	Natural Environment Research Council
<i>Donnington</i>	20.9.89	P.I.E. Quance	G.P.D. Corbue, L.J.A. Gibb, P. White	P.D. Stapleton	Stephenson Clarke Shipping Ltd
<i>Drupa</i>	23.1.90	J.H. Tibbs	P.J. Razej, I. Kendall, S. De Yonge	C.J. Kellman	Shell Ship Management Ltd
<i>Durrington</i>	9.6.89	P.R. Thompson	J. Awdiej, P. McManaway	M. Fallon	Stephenson Clarke Shipping Ltd
<i>Eastella</i>	21.6.89	P. Taylor			J. Marr & Son Ltd
<i>Eastern Trust</i>	*				Marine Nav. Co. Ltd
<i>Eastray</i>	14.4.88	M. Izar-ul-Haque	A. Sattar, A.H. Zubair, M.A. Ullah	A. Hussain	Gulf (Shipowners) Ltd
<i>Ebalina</i>	3.7.89	J.G. Russell	A.J.M. Leach, C. Snape, D.C. Rands	V. Haidak	Shell Ship Management Ltd
<i>Eburna</i>	5.9.89	P.N. Bowden	M.G. Fennell, J.R. Evans, J. Wiberley	N.A. May	Shell Ship Management Ltd
<i>Echoman</i>	6.5.87	I. Storie	M. Thomason, G.H. Beaumont, J.W. Wilson	G. Duffield	Rowbotham Tankships Ltd
<i>Edinburgh Fruid</i>	5.1.90	W.A. Mason	J.S. Gill, N. Kumar, P.C. Pereira	M.M. D'Souza	Ben Line Steamers Ltd
<i>Edinburgh Savannah</i>	*				Ben Line Steamers Ltd
<i>Elgurdabia</i>	6.8.86	J.W. Niblock	R.J. Bridge, M.E. Lacey, S. Westrip	A.G. Thomson	Manz Ship Management Ltd
<i>Elk</i>	15.3.90	M.R. Godfrey	P. Brookes, R.W. Madden, G.P. Dawson	G. McDanielson	P. & O. Ferries Ltd
<i>Ellen Hudig</i>	22.2.90	J.C. Massart		— Gunawardena	ABC Container Line
<i>Encounter Bay</i>	21.6.89	B.V. Chipperfield	L.H.M. Johnson, G.R. Smith, D.C. Collins-Williams	C.R. Brooks	P. & O. Containers Ltd
<i>Endeavour</i>	3.10.89	D.J. Rouse	G. Cuthbert, P.C. Harris, S.K. Nixon	R. Spencer	Souter Shipping Ltd
<i>English Star</i>	9.11.89	I. MacKillop	D.R. Johnston, D.G. Robbie, C.A. Bates	A.J. Pampling	Blue Star Ship Management Ltd
<i>Enialina</i>	24.1.90	B.S. Rennison	T. Scott, J. East, C.F. Humphreys	J. O'Toole	Shell Ship Management Ltd
<i>Enterprise</i>	2.3.90	K.E. Greest	D. Pratt, C.M. Ashton, G. Code	W.T. Heaslip	Souter Shipping Ltd
<i>Equinox</i>	14.11.89	G.D. Sandercock	P.A. Helm, I. Robertson, G.I. Hamer	M.J. Hennessy	Shell Ship Management Ltd
<i>Ervila</i>	11.12.87	J. Rafferty	A.D. Lowrey, J.G. Taring, A.W. Batten	N.A. May	Souter Shipping Ltd
<i>Explanade</i>	19.2.90	J. Conn	R.W. Taylor, P.C. Harris, P.S. Jobling	A.P. Daff	Souter Shipping Ltd
<i>Esso Aberdeen</i>	23.1.90	G.T. Rymer	J.H. Donaldson, A.G. Pompa, P.Q. Rees	G. Cockburn	Esso Petroleum Co. Ltd
<i>Esso Demetia</i>	25.10.89	S. Clements	R.G. Allan, I.G. Swales	N. Banda	Esso Petroleum Co. Ltd
<i>Esso Fife</i>	30.11.89	F. Cook	K.H. Milne, T.J. Lowe, G.P. Young	D. Stewart	Esso Petroleum Co. Ltd
<i>Esso Tees</i>	14.3.90	M. Jones	J.H. Holmes, M. Hustwith, L. Burne		Esso Petroleum Co. Ltd
<i>Euplectia</i>	13.4.88	J. Brown	I. Shields, C.S. Bull, N.G. Mushet	M. Adams	Shell Ship Management Ltd
<i>Europa Point</i>	6.12.88	I.C. Dorse	A.A. Shah, M. Gulzar, M. Zakir	Azizul-Haq	Acomarit (U.K.) Ltd
<i>Eye of the Wind</i>	12.1.83	R.S. Grono			Adventure under Sail
<i>Falcon Arrow</i>	27.2.90	N.A.H. Funston	D.D. McFarlane, S.M.M. Kamal, S.K.Q. Islam	J. Byrom	Jardine Ship Management Ltd
<i>Falklands Desire</i>	11.10.89	M. Paterson	P. Musgrave, T. Smith	D.R. Legge	J. Marr & Son Ltd
<i>Falklands Right</i>	11.10.89	W. Wilson	N.R. Amery, W. Bridge, A.G. Hay	A. Jagger	J. Marr & Son Ltd
<i>Farnella</i>	22.11.89	J.D. Cannan	A.V. Robinson, R.P. Holliday	P.J. Appleyard	J. Marr & Son Ltd
<i>Fleetwave</i>	9.1.90	W.J. Harwood	E.R. Bruce, Mohammad Ali, V.A. Lartey	I. Arnah	E. & F. Shipping Management Ltd

Selected and Supplementary Ships (contd)

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Flinders Bay</i>	13.10.89	R. Brinkworth	M. Watts, A. Gordon, K. Bradshaw	B.W. Matten	P. & O. Containers Ltd
<i>Forthbank</i>	9.1.90	D. Stewart	C.C. Baines, K.P. Mowat, A.W. Blance	J.C. Yates	Andrew Weir Shipping Ltd
<i>Francis Drake</i>	*	G. Fairhurst	J. Feanside		Jebsens Ship Management Ltd
<i>Fremes</i>	7.7.89	E.F. Lobo	A.M. Khairar	D.G. Bhide	V-Ships (U.K.) Ltd
<i>Fremantle Express</i>	*				Lomar Shipping Ltd
<i>Frio Chile</i>	3.10.89	B.C. Dalanon	D. Lacquiao, E.L. Aquino Jr, P. Ilao	A. Urbiztondo	Jebsens Ship Management Ltd
<i>Fullnes</i>	9.1.90	J.C. Correa	S.K. Misra, G.U. Dattatray, I.J. Singh	S.A. Pereira	Dentholm Ship Management Ltd
<i>Gu Chau</i>	5.1.90	H.F. Monckton	J. Hanley, I. Newsome, S.K. Jones		Gardline Shipping Ltd
<i>Gardline Localer</i>	*	C.M. Berkley	B. Banista, M. De Felipe, F.J. Nichol		Graig Shipping plc
<i>Garth</i>	14.2.90	M.D. Salmon	P. Hebdon, N.G. Young, S.J. Keitch	S.T. Ilkov	B.P. Shipping Ltd
<i>Gas Enterprise</i>	5.12.89	A.C. Jenkins	R. Coombs, D. Buckingham, H.C. MacKenzie	J. Yates	Geest Line Ltd
<i>Geestbay</i>	12.12.89	C.J. Flanagan	A.B. Ward, D.J. Brown, M.A. Magee	P. Lindley-Curtis	Geest Line Ltd
<i>Geestcape</i>	29.11.89	K.M.R. Skinner	M.H. Kenny, J.H. Worwood, J.B. Hickey	P.R. Prophet	Geest Line Ltd
<i>Geesthaven</i>	19.12.89	M.J. Davis	T. Hogg, C. Roe, T.E. Evans	M.I. McGregor	Geest Line Ltd
<i>Geestport</i>	30.10.85	R.M. Mitchell	R. Borkowski, S.J. Windle, R. Ross	J. Donnan	Geest Line Ltd
<i>Gold Varda</i>	21.3.88	A. Mair	C.S. Swarnakar, S.R. Sukhrani, R. Kapuria	D.H. Logie	Haverton Shipping Ltd
<i>Golden Fleece</i>	10.11.89	E.M. Holmyard	D.G. Wignmore, M.R. Gover, B.J.V. Cook	P. Srikant	Ugland Bros. Ltd
<i>Graiglas</i>	15.2.90	R. Wade	H.W. Thomas, S.G. Fraser, P.A. Rock	C. Moors	Graig Shipping plc
<i>Graigwerdd</i>	24.4.87	L.A. Davis	B.R.F. Cox	C.E. Dequilla	Graig Shipping plc
<i>Greia-C</i>	15.9.88	R.A. Graham	M. Golz, K. Ballard, B. Clark	W.J. Stratford	Carisbrooke Shipping Ltd
<i>Greepace</i>	31.1.90	V.M. Damley	H.P. Goipora, A. Bajjak, S.S. Hasnat		Greenpeace Marine Division
<i>Gulf Speed</i>	2.11.89	F.R. Couting	N.C. Tewari, G.F. Kanjanapilly, S. Chopra	G.C. Sardar	Cunard Ellerman Shipping Services Ltd
<i>Gulf Spirit</i>	*	E. Chapman	V. Mitchell, R. Harris	S. Dasgupta	Cunard Ellerman Shipping Services Ltd
<i>H. V. Fox</i>	21.11.89	J.M. Waller	C.K. Finch, R.M. Agar, K. Perera		J. Marr & Son Ltd
<i>Harefield</i>	14.2.90	P.J. Duff	R.J. Harbourn, J.G. Wood	A. Deane	Burries Markes (Ship Management) Ltd
<i>Harold La Borde</i>	9.1.90	R. Tanguy	P.J. Brooks, C.W. Pollard, R. Nolasco	W.R. Ormrod	Bibby Line Ltd
<i>Havdrott</i>	31.1.89	P.R. Malarky	V.A. Lopez Jr, C. Payton, M.W. Ferguson	C. Agosila	A/S Havor Management
<i>Havjarl</i>	29.12.89	A.D.G. Bell	D.A. Gunn, T.G. Moore, W. Skivington	K.S. O'Sullivan	A/S Havor Management
<i>Havkong</i>	18.9.89	M. Kennedy	D.P. Gomez, T.H. Goldsmith, A. Tennant	K.S. O'Sullivan	A/S Havor Management
<i>Havprins</i>	9.8.89	N. Mushin	J. Moons, P. De Graeve, M. Walgraeve	W. Adams	Caledonian MacBrayne Ltd
<i>Hebridean Isles</i>	5.3.90	M. Micalis	K.W. Bennett, N.J. Blacker, E. Savellano	A. Endonila	Rederiet H.R. Myhre A/S
<i>Hekabe</i>	5.9.89	P.R. Dew	T. Retting, D.G. Brown, K.G. Murray, M.G. Garside	F. Jacquet	Rederiet H.R. Myhre A/S
<i>Helen</i>	10.8.89	J.A. Corcoran	D.T. Simpson, K. Ratcliffe, E.P. Broce	S. Nablea	Rederiet H.R. Myhre A/S
<i>Helikon</i>	15.3.90	P. Vennell	G.R. Phillips, C. Feeney, A. Caparo	G.J. Simpson	Rederiet H.R. Myhre A/S
<i>Hemera</i>	1.2.90	J.O. Spence	R.M. Deyes, N.L. Davis, G. Sumanpan	J.G. Delavin	Rederiet H.R. Myhre A/S
<i>Hemina</i>	15.3.90	V. Cook	D. McIntyre, G. Collier, D.J. Cowie	N. Torre	Rederiet H.R. Myhre A/S
<i>Hermod</i>	8.4.87	C. Green		P.G. Gacayan	Rederiet H.R. Myhre A/S
<i>Hesiod</i>				D. Gavin	Ugland Marine Ltd
<i>Highland Reel</i>					

<i>Hill Cove</i>	14.3.88	T. Doyle	M. Wainman	D.D. Divgi	J. Marr & Son Ltd
<i>Hoegh Duke</i>	5.10.89	C.V. Farrant	N.J. Elks, B. Zaman, A.J.P. Pinto	M. De La Torre	Leif Höegh (U.K.) Ltd
<i>Hudson River</i>	*	F.R.F. Martin	O. Domingo, G. Williams, F. Tiano	Z. Merr	Manx Ship Management Ltd
<i>Humanist</i>	15.3.90	M.J. Feltham	N.R. Francis, S. Sekandar, M.A. Kadir	D. Sherwood	Ocean Tramping Ltd
<i>Huqeh</i>	22.1.90	J.S. Grainger	J.L. Harvey, F.C.C. Lee, D. Dinsan	M. Patten	China Nav. Co. Ltd
<i>Ibn Abdoun</i>	15.12.87	A. Gupta	H.S. Sant, P. Verma, N. Jarrar	S.K. Datta	United Arab Shipping Co. (S.A.G.)
<i>Ibn Rushd</i>	8.4.87	P.W. Roberts	A. Sudaby, Hisham Almajali, M.A.K. Ibrahim	M. Patten	United Arab Shipping Co. (S.A.G.)
<i>Indiana I</i>	22.12.89	I.H. Leggatt	F.F. Khun, E.W. Casson, D.R.J. Nixon	R.J. Lodge	J. Marr & Son Ltd
<i>Iolair</i>	27.2.90	I. Ferguson	G. Gardner, A.S. Kenyon, H. Watson	J. Vaughan	B.P. Shipping Ltd
<i>Iris</i>	*	A.J. Chalmers	A. Reader, S.I. Lewin, K. Brooks	F.L. D'Souza	British Telecom International
<i>Irma M</i>	24.8.89	N.W. Thomas	J.P. Greening, A. Rehman, N.A. Shaikh	G. Graham	E. & F. Ship Management Ltd
<i>Ironbridge</i>	14.2.90	B. Walmsley	D. Bowman, M. Bartle, C. Jackson	M.D. Gray	Furness Withy (Shipping) Ltd
<i>Isle of Arran</i>	11.7.89	S. Findlay	R.J. Basford, A.J. Taylor-Gray, G.K. McBride	J.R. Jesia	Caledonian MacBrayne Ltd
<i>Isle of Mull</i>	4.8.88	C.W. Billimore	R. Morrison	P.M. Croft	Caledonian MacBrayne Ltd
<i>Isocardia</i>	5.12.89	J. Sharp	J. Horan, T.P. Doherty, M.J. Gooderham	J.K. Wadhwa	Shell Ship Management Ltd
<i>Isomeria</i>	4.8.88	J.G. Peace	I.C. Griffiths, T.S. Johnston, M. Creighton	H.G. Moran	Shell Ship Management Ltd
<i>Iver Alke</i>	25.1.89	A. Mendonca	J.S. Rathaur, V. Vij	K.V. Jayaprakash	Shell Ship Management Ltd
<i>Iver Tiki</i>	30.1.90	R.P.T. D'Souza	A.B.F. Ferrao, S.K. Akkineni, N. Murdeshwar	J.D.P. Jones	B.C.P. Ship Management Ltd
<i>Ivybank</i>	22.12.89	W.H. Martin	C.J. Butters, L. Rigby, G.D. Bissett	C.A. Waddicor	B.C.P. Ship Management Ltd
<i>Jarikaba</i>	12.12.89	J.J. Robinson	R.R. Kamat, P. Williams, B.P. Tapa	P. Birli	Andrew Weir Shipping Ltd
<i>Jasmine B</i>	7.12.89	R.G. Stollery	P. Tallant, K. Prakash, P.V. Rajagopalan	B. Puno	E. & F. Shipping Management Ltd
<i>Jervington</i>	17.12.87	L.G. Relton	G.F. Lack, T.S. Moseley	K.M. Amoa	Beta Maritime Services Ltd
<i>John Biscoe</i>	24.4.89	C.R. Elliott	R.C. Plumley, W.J. Pearn, G.C. Morgan	R.B. Redhead	Stephenson Clarke Shipping Ltd
<i>Jostelle</i>	7.3.90	B.G. Longley	K.G. Webb, J. Barrett, N.E. Blythe	V. Sabellano	British Antarctic Survey
<i>Kagoro</i>	13.9.89	E.D. Somes	J.D. Murray, K.S. Kalipe, E. Monserate	R. Skuse	Souter Shipping Ltd
<i>Keta Lagoon</i>	14.2.90	D.W. Gresemete	J.K. Harley, E.K. Adu	P.F.J. Kelly	Acomarit (U.K.) Ltd
<i>Kowloon Bay</i>	*	J.S. Thorpe	S.J. Edge, N. James, F.M. Leahy	D. McCallum	Black Star Line Ltd
<i>Kukawa</i>	14.2.90	B. Jones	S. Lumyeb, R. Infante, E. Parker, P. Marsham	M.D. Ferrer	P. & O. Containers Ltd
<i>Lackenby</i>	20.2.89	M.B. Bradley	I. Buckley, W.D. Russell, P.W. Holliday	H. Bonnet	Acomarit (U.K.) Ltd
<i>Lakenes</i>	15.11.89	T.A. Smith	W.D. Russell	L. Fernandes	Ropner Ship Management Ltd
<i>Lampas</i>	17.2.87	J. Meredith	G.M. Hill, M.S. Macdonald, J.G. Ferguson	B.C. Van Twest	Jebsens Ship Management Ltd
<i>Lancasterbrook</i>	5.12.89	I. Anderson	S.D. Clarke, D.A. Hughes	D. Kelly	Shell Ship Management Ltd
<i>Lanka Amila</i>	*	J.R. Olarte	R.M. Librando, O.S. Materiales, R.P. Bandalon	D. Fry	F.T. Everard & Sons Ltd
<i>Lanka Asitha</i>	11.10.89	A. Antonio	M. Makabenta	P.S.G. Hannon	Jebsens Ship Management Ltd
<i>Lanlau Trader</i>	24.10.89	F. Martin	P.D. Holloway, M. Nurullah, Z.A. Osmani	D. Cowhig	Jebsens Ship Management Ltd
<i>Larkfield</i>	23.1.90	R.R. Stephens	P.S. Vedamutru, T.T. George, R.M. Patmore	P. Sathyanurthy	T. & J. Harrison Ltd
<i>Lavender</i>	7.11.86	T.K. Dawson	I.R. Robinson, B.V.J.K. Sharma, D.A. Pereira	A.G. Thomson	Burles Markes (Ship Management) Ltd
<i>Leicesterbrook</i>	18.7.89	G. Wilson	W.J. Trafford, P. Bayliss, C.J. Blanc	N.C. French	Beta Maritime Services Ltd
<i>Leonia</i>	20.2.90	T.R. McNulty	D. Freeman, R.P. Wynner, S. de Jonge	G. De Bontridder	F.T. Everard & Sons Ltd
<i>Lerma</i>	14.3.90	A.D. Straight	K. Jones, V. Ortiz, V.A. Martinez	I. Alexander	Shell Ship Management Ltd
<i>Leslie Gault</i>	2.3.90	F.M. Colley	I.D. Spence, C.S. Tinlay, M.A. Magee		Cardiff S.M.S. Ltd
<i>Lincoln Universal</i>	18.5.89	M.R. Nisbet	A. Devanney, R. Lean, T.J. Luke		Seacot Ship Trading Ltd
<i>Lincolnshire</i>	15.1.90	A.J. Palmer	K. Krishnakumar, I.C. Claxton, H.U. Wimal		Shell Ship Management Ltd
<i>Liverpool Bay</i>	28.11.89	R.M. Herring	K. Wilkinson, D. Cramer, T. Sinclair		Matheson Shipping Services Ltd
<i>Liverpool Star</i>	7.3.90	J. Hiroux	C. Hughes, K.P. Ireland, D.R. Hilton		Bibby Line Ltd
<i>London Express</i>	30.1.90	R. Tarbuck	A. Pels, P. Goossens		P. & O. Containers Ltd
<i>London Spirit</i>	17.1.90		D. Wylie, W. Howarth, M.J. Webber		Denholm (I.O.M.) Ltd
					CMB N.V. S.A.
					London & Overseas Freighters plc

Selected and Supplementary Ships (contd)

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
London Victory	30.6.89	E.G. Humby	R.E. Mayman, B.C. Watkins, R.J. Parkinson	C. Stuart	London & Overseas Freighters plc.
Lord Nelson	11.4.89	H.M. Munro	P.J. Wilkes, R.J. Bridge, D.J. Neale		Jubilee Sailing Trust Ltd
Lord of the Isle	*	K. Gunn	R. Sneedon, M. Scott, C. MacCurdy, J. Robertson		Caledonian MacBrayne Ltd
Lough Foyle	*	A. Niblock		F.A. Dunn	Heyn Engineering & Shipping Service
Lumiere	24.4.89	D.S. Hughan	P.R. Kaye, I.M. Percival, J.V. Dillely		Cunard Ellerman Shipping Services Ltd
Luminence	24.4.87	B.D. Fern	H.J. Everington, H.J. Pugh		Crescent Shipping Co. Ltd
Maersk Cadet	5.12.89	W. Deasy	A. Cragg, R.A. Pemberton, F.A. Kinanguka	D.P. Wood	Maersk Co. Ltd
Maersk Captain	27.2.90	N. Vause	A. Roberts, R. Orange, R.A. Crook	D.J. Minihane	Maersk Co. Ltd
Maersk Commander	13.3.90	R.M. Banton	R. Cordon, C.A. Nugent, P. Messenger	W.C. Bennett	Maersk Co. Ltd
Maersk Gannet	15.2.90	S.R. Lyons	J.P. Rumsby, G.W. Bell, R. Smith	K.J. Forbes	Maersk Co. Ltd
Maersk Harrier	7.3.90	G. Daykin	A. Mathieson, L. Martin, A. Howard	G. Smith	Maersk Co. Ltd
Mairangi Bay	17.1.90	I.W. Collister	C.C. Young, N.R. Hart, E.P. Mullan	P.I. Pegg	P. & O. Containers Ltd
Mark-C	15.7.88	S. Smith	M. Hawkes		Carisbrooke Shipping Ltd
Maico Avon	19.2.90	P.A. Callaghan	K. McLoughlin, E.W. Parry, A.J. Salisbury		Mobil Shipping Co. Ltd
Maico Clyde	16.6.89	I.D. McKenzie	B. Marson, R. Skene, S. Ainscow		Mobil Shipping Co. Ltd
Maico Thames	24.1.90	C.A. Mottram	R.J. Kelly, N.C. Boon, S.W. Turner		Mobil Shipping Co. Ltd
Mediteranean					
Shearwater	13.3.90	G. Bates	R.G. Flynn, G.P. Farrell, P. Hilbert	C.P. Brockbank	James Fisher & Sons plc
Melhem	*	J.C. Smith	S. Morshad, M. Nash, W.M. Laverick	P.F. Darlington	C.I. Shipping Ltd
Merchani Pioneer	13.12.89	D. Jenkinson	A.J.C. Braganza, S. Ramesh, R. Sood	A.N. Monserrate	V-Ships (U.K.) Ltd
Merchani Premier	*	D. Petty	R. Kumar, C. Ashis, B. Kumar	F.A. Noronha	V-Ships (U.K.) Ltd
Merchani Principal	14.12.89	J.R. Taylor	V.P. Singh, A. Akbar, P. Sriram	A.V. Gomes	V-Ships (U.K.) Ltd
Merhane Princess	27.2.90	D.C.J. Still	D. Freeman, A.P. Elson	W.N. Greene	Shell Ship Management Ltd
Mistral	*	G.R. Paxton	M.M. Hasan, M. Chowdhury, L. Hodgson	C. Bent	C.I. Shipping Ltd
Mobil Acme	26.1.90	K.M. Calladine	P.J. Mahoney, M. Dent, P.A. Gahley	D. McSweeney	Mobil Shipping Co. Ltd
Mobil Falcon	8.3.90	P.J. Chambers	M.D. Jones, R.L. Horne, P.C. Waller	J. O'Sullivan	Mobil Shipping Co. Ltd
Mobil Petrel	5.9.89	D. Edwards	J.R. Fox, A.H. Al-Waal, S. Reidy	J.C. Mitten	Mobil Shipping Co. Ltd
Monarch	14.3.89	R.J. Walter	G. Digby, M. Hammond, M.R. Swaffield	K. Woodley	British Telecom International
Montarik	27.10.89	W.F. Jeffrey	A. Aejaz, A. Trivedi, M. Munir	S. Mansoor	Acomarit (U.K.) Ltd
Moraybank	4.8.89	A.T. McGregor	K.P. Mowat, D.E. Ginder, D.T. Wells	G.N. Shaw	Andrew Weir Shipping Ltd
Mulbera	8.7.87	A.J. Chivers	A.J. Brown, D.G. Robbie, M. Ellis	T. Baxter	Blue Star Ship Management Ltd
Napier Star	8.1.90	J. Inniss	D.J. Maclean, M.E. Stronge, A.P. Gillen	P. Clerly	Blue Star Ship Management Ltd
Navious Unique	27.10.89	M. Kalia	S.S. Rumde, M. Karan, A. Duggal	Z.A. Mulla	Unique Shipping Agencies Ltd
Nedlloyd Tasman	1.2.90	M. Watts	A.J. Skingley, T. Oliver, S.R. Paine	P. Murphy	P. & O. Containers Ltd
New Generation	14.4.88	J. Sharples	H.C. McWilliam, E.W. Casson, R. Borkowski	S. Price	James Fisher & Sons Ltd
Nickerie	3.1.90	C.J.B. Trinick			E. & F. Ship Management Ltd
Nivaga II	6.7.88	P. Sione	H. Iele, O. Panapa, A. Tapeva		Government of Tuvalu
Norna	22.12.89	B.A. Hall	R.T. Nield, I.A. Craig, M.C.J. Jewell		Dept of Agr. & Fish. for Scotland
Norisia	24.1.90	B. Cosgrove	R. Mellor, J. Kaighin	T.I. Kennedy	Shell Ship Management Ltd

Norsea	*	D. Wharton	M. Topping, K. Appleton, P. May, D. Collins	A. F. Marques	North Sea Ferries Ltd
Norfolk Fighter	*	B. Firth	P. Kohli Rajender, P. Malone, D.B. Firdaus .....	.....	Silver Line Ltd
Norihella	*	P.R.R. Ramsay	A. Baker, R. Holiday .....	.....	J. Marr & Son Ltd
Northern Horizon	*	P. Taylor	P. Garner, A. Fuller .....	.....	J. Marr & Son Ltd
Norihia	17.1.90	B.B. Pearson	A.R. Wynne, N. Wilkie, C. Billing	M. Collingwood	Shell Ship Management Ltd
Ocean Goose	3.8.88	D.A. Church .....	.....	.....	Capt. D.A. Church
Ocean Link	2.3.90	O. Otosson .....	.....	.....	Ship-Link (U.K.) Ltd
Oil Hustler	19.12.89	N. Brown	G. Edlund, D. Friberg, V. Steni .....	.....	Ocean Incheape Ltd
OOCL Challenge	*	T.N. O'Driscoll	L. Elms	E. Grogan	OOCL Ltd
OOCL Charger	*	A. Ross	T.F. Hill, J.L. Mitchell	I. Conn	OOCL Ltd
OOCL Dominance	*	J. Dab-Jyh	E.N. Hardy, L.T. Heng, C.K. Wah	L. Tak-Chua	OOCL Ltd
Orchid B	14.3.89	P.E. Jackson	D. Slade, J.D. Elsdon, P.K. Thakur	A. Knight	Beta Maritime Services Ltd
Oriental Bay	1.2.90	L.E. Howell	D.L. Baichelor, L.S. Norris, R.J. Hughes	A.D. Hutchinson	P. & O. Containers Ltd
Ormond	26.1.90	I.T. Blackley	G. Nicholls, G.K. Vincent, S.L. Pradhan	J.K. Bhadra	P. & O. Ship Management Ltd
Osaka Bay	19.2.90	A.A. Raitton	J.N. Kelleher, D.J. Hinson, M. Langford	M. McKenny	P. & O. Containers Ltd
Osoo Edmo	2.10.89	N.K. Deshpande	B.K. Jha, A.P. Rath	A.M. Ahuja	B.C.P. Ship Management Ltd
Pacific Crane	30.11.89	G. Bates	B.D. Miller, A.J. Howlett, P. Hilbert	T. McMahon	James Fisher & Sons plc
Pacific Guardian	31.7.85	P.R. Shaw	J.A. Tollady, W. Marr	S. Haslett	Cable & Wireless plc
Pacific Horizon	*	S. Morrell	G. Nowell, R. Boughen	J. Marr & Son Ltd	J. Marr & Son Ltd
Pacific Pintail	19.12.89	M.L. Miller	P.R. Ostick, P.F. Goodchild, S.P. Wood	A.P. Austen	James Fisher & Sons plc
Pacific Sandpiper	1.2.90	A. Lacey	M. Light, D. Farmer, T.C.R. Riley	N.H. Read	James Fisher & Sons plc
Pacific Swan	13.12.89	E.W. Griffin	D. Ilderton, J.W. Goddard, J.M. O'Ferrall	A.R. Watt	James Fisher & Sons plc
Pacific Teal	13.3.90	K.N. Young	J. Stafford, D. Williams, T. Bannister	P. Golson	James Fisher & Sons plc
Pacific Universal	20.11.89	S. Venner	R.A. Somerville, B.J. Dickson, C.T.V. De Costa	M.S. Irfan	Matheson Shipping Services Ltd
Paquita	28.3.88	I. Lawson	P. Crowle	K. Kalodimos	Sanders Stevens & Co. Ltd
Pegasus	20.6.86	A. Kaloudis	G. Kossenas	G. Hodgson	Kappa (Maritime) Ltd
Peninsular Bay	*	J. Hutson	C. Macleod, A. Wortley, D. Bailly .....	.....	P. & O. Containers Ltd
Perseus .....	*	.....	.....	.....	Kappa (Maritime) Ltd
Petersfield	17.10.89	A. Gardinet	P.H. Voisin, A. Mitchell, C. Abeyagunewardena	T.D.A. Samarasinghe	Burries Markes (Ship Management) Ltd
Pholas	10.11.88	T.D. Faithful	G.A. Davis, L.D. Brown, J.E. Clayton	D.A.C. Macrae	Coe-Metcalf Shipping Ltd
Pointisman	19.6.89	K. MacDonald	P.J. Wilkinson, R.D.M. Low, S.M. Fitzgerald .....	.....	Rowbotham Tankships Ltd
Pote Star	3.1.79	N. Morrison	W. Tullock, A.B. Welch .....	.....	Northern Lighthouse Board
Pride of Cherbourg	22.12.89	W.J.C. Clarke	J.W. Trickett, D.L. Perreira, J. Bell .....	.....	P. & O. Ferries Ltd
Pride of Hampshire	2.3.90	R.A. Shopland	A. Gorringe, A.R. Froude, P.I. Hillman .....	.....	P. & O. Ferries Ltd
Pride of Le Havre	9.10.89	A. Bonehill	R.J. Ross, P.I. Hillman, P.N. Hambleton .....	.....	P. & O. Ferries Ltd
Pride of Winchester	1.12.87	M. Edward	M.L. Bechley, J.R. Warton, P.A. Marcon	B.C. Bull	P. & O. Ferries Ltd
Princessfield	5.6.89	R. Blair	A.D. Chapman, A.G. Liyanage	E.A.W.G.S. Egalla	Burries Markes (Ship Management) Ltd
Profiler	5.1.89	H.J. Morrell	M. Pountain, R.C. Turner, M. Maines .....	.....	Gardline Shipping Ltd
Providence Bay	7.12.89	K.H. Davie	I.M. Overton, W.B. Solater, F.N. Cambra	D.W. Ray	P. & O. Containers Ltd
Puerto Cortes	22.1.90	G. Craciun	R.J. Smith, J. Fraser, S.K. Mandal	S.N. Pande	Sea Containers Ltd
Puma	26.6.86	E. Wildgoose	D. McNaughton, J.T. Jamieson	P.D. Sutcliffe	P. & O. Ferries Ltd
Pyichley	27.2.90	J.A. Smeeton	R.K. Srivastava, N.B. Solanki	D. Sequeira	P. & O. Ship Management Ltd
Queen Elizabeth 2	21.11.89	A.C. Bennell	A. Dockeray, G. Starkey, J.R. Gorman	C.C. Connerty	Cunard S.S. Co. Ltd
Rafnes	*	M.J. Paine	T. Leighton, J. Bennetts	D. Gracias	Jebsens Ship Management Ltd
Rapana	8.6.89	J. Taylor	S. Rogers, G. Harrison	P.G. Furmston	Shell Ship Management Ltd
Ravensraig	5.12.89	R. Copeland	R. Garner, L. Bridges, D.M. Tee	J. Fitzgerald	Ropner Ship Management Ltd
Reefer Jambu	16.8.88	C. Campbell	C.J. Meadows .....	.....	Sembawang Shipping Co. (Pte) Ltd
Reefer Manggis	28.6.88	J. Hutton	K. Kristiansen, Wang Zhi Song, Su Wei Shun	Aye Maung Yin	Sembawang Shipping Co. (Pte) Ltd

Selected and Supplementary Ships (contd)

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Reefer Nangka</i>	15.11.89	A.J. Wilson	A.W.H. Boo, B.S. Suratman, M.M.S. Raza	J.C.D. Hamel	Sembawang Shipping Co. (Pte) Ltd
<i>Regina Oldendorff</i>	8.12.88	D. Lawrence	N. Abeysena, S. Verma, S. Karandikar	D. O'Donovan	Egon Oldendorff (H.K.) Ltd
<i>Remuera Bay</i>	7.11.89	P.A. Furneaux	N.E. Lehman-Taylor, P. Jolley	C.K. Thornally	P. & O. Containers Ltd
<i>Repulse Bay</i>	14.4.88	C.M. Satapathy	C.M. Patel, D.D. Nair, L.C. Rodrigues	P.K. Basu	Ocean Transportation S.A.
<i>Resolution</i>	21.5.87	L.M. Wigmore	J.W. Renson, A.J. Rawlinson	Gardline Shipping Ltd	Gardline Shipping Ltd
<i>Resolution Bay</i>	14.3.90	R.T. Wood	C.J. Batty, N.D.C. Mitchell, F.N. Cambra	P. & O. Containers Ltd	P. & O. Containers Ltd
<i>Retriever</i>	24.5.83	A. Venables	P.M. Swan, R.C. Phillips, J. Creagh	D. Steel	Cable & Wireless plc
<i>Rhone</i>	*	G.S. Szulc	A.J. Hulse, J. Mackenzie, M.S. Brocklesby	M.R.T. Hannan	Burles Markes (Ship Management) Ltd
<i>Rimula</i>	5.10.89	J.T. Little	R.J. Payne, K. Wyper, C.E. Nockolds	V. Thavlingam	Shell Ship Management Ltd
<i>Rizcun Atlantic</i>	22.3.88	X.C. Gomez	S. Tiwari, A.K. Ghatak, A.S. Chhabra	G.G. Graham	Wisebrough Shipping Co. Ltd
<i>Rocknes</i>	18.5.88	A. Falconer	D. Cowell, C.S. Tinlay, J. Chapman	P.L. Sequerra	Jebsens Ship Management Ltd
<i>Rollnes</i>	22.12.89	A. Falconer	P.A. Holmes, D. Cowell, G.L. Baird	D. MacNeil	Jebsens Ship Management Ltd
<i>Royal Princess</i>	25.2.85	J.R. Young	N.P. Jenkins, J.A. Smith, J.A. Croft	K. McCarthy	P. & O. Ship Management Ltd
<i>Rozel</i>	*	N.R. Vardy	H. Le Cornu, A. Wilson	W.J. Smith	C.I.F. Management Ltd
<i>St Clair</i>	15.1.90	J.C. Cowie	D.J. Wheeler, J.S. Duncan, G.C. Gove	M. Lobo	P. & O. Ferries Ltd
<i>St Helena</i>	17.10.89	R.H. Wyatt	J.N.H. Case, R. Young, J.F. Harrison	E.L. Smith	Curnow Shipping Ltd
<i>St Nicholas</i>	20.3.89	B.C. Dennis	H.W. Ramsey, L.O. Roskell, D. Coombs	N.M. Abbott	Sealink (U.K.) Ltd
<i>Safo Endeavour</i>	20.11.89	R. Harris	H.R. Beisly, R. Volante	B.M. Keeling	South Atlantic Fishing Co. Ltd
<i>Sagacity</i>	23.11.84	W.M. Shireff	D. Lundy, S. Honey, L. Bridges	H.G. Pask	F.T. Everard & Sons Ltd
<i>Salmonpool</i>	15.10.86	R. Copeland	M.J. Stopford, A. Saksena, R. Rastogi	D. Bullard	Ropner Management Ltd
<i>San Lorenzo</i>	31.8.89	P.A. Woods	N. Pimentel, C.R. Tingay, C.B. Montenegro	N.R. Wadia	B.C.P. Ship Management Ltd
<i>Santa Maria</i>	7.9.89	D.S. Ritchie	P. Edwards, P. Williams, C.W. Blacker	J. Malaki	Denholm Ship Management Ltd
<i>Santos Star</i>	7.6.89	C. Bufon	P.W. Hickery, J.G. Harris, G. Elkewela	C. Crook	Blue Star Ship Management Ltd
<i>Satuckel</i>	27.2.90	M. Cadman	P.G.H. Stapleton, D.J. Sweet, P.M. Frost	D. Stewart	Mobil Shipping Co. Ltd
<i>Scamper Universal</i>	22.1.90	M. Cavaghan	S.M.A. Akbar, D.P. Colley, K.M. Chester	L.P.G. Jayatileke	Matheson Shipping Services
<i>Scam Dutch Corsica</i>	24.5.89	D.A. Saunders	J.E. Bannister, W.H. Laws, D. Dixon	Andrew Weir Shipping Ltd	Andrew Weir Shipping Ltd
<i>Scirocco Universal</i>	5.5.88	H.M. Jones	P. Holtby, F. Robertson, J. Sheridan	N.S. Varty	C.I. Shipping Ltd
<i>Scotia</i>	3.3.82	G.M. Coull	F.S. Greenfield, S. West, A. Hayward	J. Steven	Dept. of Agr. & Fish. for Scotland
<i>Scottish Star</i>	27.11.89	R.K. Bilton	K. Scott, J.A. Foster	P. Haslam	Blue Star Ship Management Ltd
<i>Sea Princess</i>	13.1.88	S.W. Townsend	R. Crawford, A.F. Vincent, A.G. Maclean	G. Chapman	P. & O. Ship Management Ltd
<i>Sea Searcher</i>	3.11.89	I.W. Crane	D.J. MacLellan, F.W. Wilson, D.J. Massey	C. Thompson	Gardline Shipping Ltd
<i>Seaboard Illustrious</i>	6.11.84	J. Gillies	N.J. MacKinnon, F. Watt, J. Forsyth		Seaboard Offshore Ltd
<i>Seaboard Invincible</i>	24.4.87	J.R. Brooks	I. Galenby, M. Walsh		Seaboard Offshore Ltd
<i>Seaboard Invincible</i>	22.2.90	P.J. Cooper	H. Shaw, J. Merry, G.C. Harwood		Sealion Ltd
<i>Sealion Columbia</i>	*	A. Morrice			F.T. Everard & Sons Ltd
<i>Selectivity</i>	22.2.90	G.L. Lewis	J.M.G. Arthur, M.J.G. Garner, K. Arnold		Semac Services
<i>Semac 1</i>	28.8.80	J. Dobeson	N. Sheard, D.E. Grief, I.A. MacDonald		Shell (U.K.) Ltd
<i>Shell Explorer</i>	22.12.89	D.J.G. Kain			Zapata Offshore Marine Ltd
<i>Shetland Service</i>	19.2.90	P.C. Dyer			

<i>Silver Tower</i>	13.3.90	S. Brookbanks	C. Eyre, C. Overall, P.E. Roche	A. Grant	Wallem S.M.S. (I.O.M.) Ltd
<i>Singapore Senator</i>	5.7.89	A.G. Moat	P. Bland, S. Datta, K.P. Mendonisa	P.A. Onasis	B.C.P. Ship Management Ltd
<i>Sir Eric Sharp</i>	*	A.A. Porter	M. Farn, P. Swan	M. Wilson	Cable & Wireless plc
<i>Sky Clipper</i>	15.3.90	P.E. Harwood	E.K. Dickson, C.R. Darnley, S.P. Saxena	M.S. Thatte	E. & F. Shipping Management Ltd
<i>Snow Crystal</i>	7.3.90	M. Baker	J.H. Clamp, C.C. Wang, H. Samul	M. McKenna	Frigomar Shipping GMBH
<i>Snow Drift</i>	19.2.90	B. Yelland	M.J. Williams, P.R.T. Wilyams, M. Haque	W.C. Hung	Frigomar Shipping GMBH
<i>Snow Flower</i>	26.1.90	M. Baker	A.E. Hamill, A. Tan, G.C. Grey	J. Hinaut	Frigomar Shipping GMBH
<i>Snowdon</i>	20.12.89	M.A. Hill	C. Campbell, P. Ranjan, M.A. Amroliwala	S.N. Venkatesan	P. & O. Ship Management Ltd
<i>Sociality</i>	5.8.88	T.L. Hooper	A.W.R. Gibbons, B.A. McNally	M.A. Brewer	F.T. Everard & Sons Ltd
<i>Sonia M.</i>	27.2.90	M.W. Slayman	M. Rickaby, D.S. Rendon, Y.G. Muñoz	G. Savage	Cardiff Ship Management Ltd
<i>Southland Star</i>	27.9.89	P.W. Hutchinson	T.R. Burke, A. Lee, D.W. Alexander		Blue Star Ship Management Ltd
<i>Speciality</i>	13.6.89	R.G. Davis	M.W.J. Cossar, P.F. Bayliss		F.T. Everard & Sons Ltd
<i>Stability</i>	6.7.88	M.W. Salisbury	C.D. Spencer-Payne, K.G. Baldwin, M.W.T. McDowell	C. Wade	F.T. Everard & Sons Ltd
<i>Staffordshire</i>	20.12.89	C.O. Thomas	A. Smith, G. Watson, N.A. Gibbons	J. McFarland	Bibby Line Ltd
<i>Stainless Spray</i>	16.3.88	J.H. Hirst	M.S. Chabba, J.W. Mampilly		Seamartin Shipping Ltd
<i>Stena Seawell</i>	27.9.88	M.A. Whittle	S.G. Beadle, M.V. Dolan, A.F. Ure	Stena Ltd	
<i>Stolt Birchwood</i>	7.8.88	C. Price	S.G. Beadle	Stolt-Nielsen	
<i>Stolt Cedarwood</i>	29.9.89	— Mannes	— Clemens, — Nieto, — Curano	Stolt-Nielsen	
<i>Stolt Falda</i>	26.6.89	E.R.T. Little	S. James, A. Fennymore, R.T. Watson	Stolt-Nielsen	
<i>Stolt Oakwood</i>	31.7.87	B.F. Hoare	P. Papango, C. Saberon	Stolt-Nielsen	
<i>Stolt Surf</i>	22.1.90	P.J.R. Manson	K.W.S. Macmillan, A.W. Lewington, N.E. Gardiner	P. & O. Containers Ltd	
<i>Strathbroa</i>	7.3.90	E.S. Fowler	N.P. Kelly, F.V. Ayap, E.Y. Paraz	Sea Containers Ltd	
<i>Srider Isis</i>	22.12.89	A.F. Drury	E.R. Entienza, R.G. Zamora, R.A. Lora	Sea Containers Ltd	
<i>Srider Juno</i>	19.9.89	A.C. Free	M.J. Buchanan, R. Donaldson, C. Campbell		
<i>Suliven</i>	15.1.90	T.H. Henderson	J.C. Barton, C.G.M. Dale, J. Ebdy	I.M. Charlton	Caledonian MacBrayne Ltd
<i>Sulsker</i>	16.1.90	A.M. O'Neill	P.C. Mackay, R.W. Marbaniang, D.C. Selley		Ministry of Agriculture, Fisheries & Food
<i>Sumburgh Head</i>	29.2.88	D. MacKinnon	S. Prabhakar, L.T. Richards, Chan Ping Fai	R.A.S. MacMeikan	Jebsens Ship Management Ltd
<i>Sun Suma</i>	16.1.90	L.E. Larsson	G. Jaro, S. Eliasson, D. Manguardia	M.L. Kershaw	Vermilion Overseas Management Ltd
<i>Swan Bay</i>	14.12.88	R. Bjorkman	D.T. Pingel, R.J. Taylor	G. Baron	Swan Shipping A/S
<i>Swift Trader</i>	12.4.88	A. Alexander	J. Hughes	L. Eblamo	Swan Shipping A/S
<i>T.N.T. Lynx</i>	27.10.89	G.C. Claye	M.D.S. Hossain, W.M. Haw, U.W. Kung		International Chartering Ltd
<i>Taiwan Senator</i>	*	I. Woodier	S. Mitra		T.N.T. Sealion Ltd
<i>Tamathai</i>	9.12.86	R.G. Burnet	J.M. Walker, H.J. Pearce, D.A. Jackson	S. Virk	OOCL Ltd
<i>Tankerman</i>	12.5.89	S. Vener	A.R. McPherson, J.M. Wright, S.R.B.S. De Silva	P. Kelly	Seacot Ship Trading Ltd
<i>Tasman Universal</i>	14.12.89	D.W. Clements	D.J. Ayling, A.R. Farthing	J.T. Scott	Rowbotham Tankships Ltd
<i>Telnes</i>	20.6.88	M.T. Hutton	D.S. Sadler, G.R. Snow, E.J. Cameron	A.G.S. Sirkett	Matheson Shipping Services
<i>Texaco Westminster</i>	17.8.89	H.D. East	P.R. Hughes, G.R. Snow, E.C. Neal	I. Wilson	Jebsens Ship Management Ltd
<i>Texaco Windsor</i>	*	J. Potts	G. Woodall, C. Ungod-Thomas	N. Samuel	Texaco Overseas Tankships Ltd
<i>Thorshavn</i>	31.1.90	R. Lanz	M. Fleming, A.J. Wilson, K.I. Milton		Texaco Overseas Tankships Ltd
<i>Toisa Furna</i>	14.3.90	M.J.R. Godbehear	C.J.A. Hughes, D.R. Hilton, M.K. Elson	J. Cameron	Wallem Ship Management Ltd
<i>Toisa Sentinel</i>	8.1.90	K.H. Davie	T.P. Talbot, J.G. Townsend, D.L. Dodsworth	S.J. Bradshaw	T.N.T. Sealion Ltd
<i>Tolaga Bay</i>	19.2.90	D.P. Worsnop	C.C. Woodward, A.N. Murray, J.P. Meade	P. & O. Containers Ltd	
<i>Tor Bay</i>	14.6.89	D.J. Conway	J. Cornwall, C.S. Bull, A. Pelson	P. & O. Containers Ltd	
<i>Tribulus</i>	3.11.89	H.M. Clifford	K.I. Stephenson, R.E. Wade, R.D.M. Gilchrist	E.B. Stephenson	Shell Ship Management Ltd
<i>Trinidad and Tobago</i>	7.3.90	J.S. Gavin	R.S. Gilbert, R. Kirk, S.M. Reyes	J.G. Lytle	Shell Ship Management Ltd
				G.J. Simpson	Bibby Line Ltd

Selected and Supplementary Ships (contd)

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Ulan Trader</i>	*	K.S. Sharma	N.R. Pradhan, B.H. Dias, A.R. Dias	G. Chattopadhyay	B.C.P. Ship Management Ltd
<i>Valdivia</i>	26.10.89	J.D. Dickinson	G.N. Shaw, S.A. Francis, T.A. McHarry	D.G. Samant	Harrison (Clyde) Ltd
<i>Vic Bih</i>	12.10.89	G.J. Stevens	M. Jacquet, M.D.F. Choudhury, J.W.P. Matco	N.G.L. Johns	Fairfield Maxwell Services Ltd
<i>Vigilant</i>	16.1.90	D.L. Rattray	A. Macallum, P.C. Walton, R.J. Sheldon .....	.....	Dept of Agriculture & Fisheries for Scotland
<i>Vivian M</i>	14.2.90	C.A. Hare	R.J. Clark, S.N. Alam, A.F.M. Ali Azfar	A.A. Agyeman	E. & F. Shipping Management Ltd
<i>Washington</i>	12.10.89	W.G. McNaughton	P.L.E. Quance, M.S. Ahmad	A. Lloyd	Stephenson Clarke Shipping Ltd
<i>Wellington Star</i>	25.10.89	T.C. Black	T. Olati, A. Tibbot .....	.....	Blue Star Ship Management Ltd
<i>West Moor</i>	7.3.90	D.J. Lloyd	R.S. Pascual, P. White .....	.....	Denholm Ship Management Ltd
<i>Westfield</i>	10.11.89	G.C. Clifford	M.W. Shoolbraid, N. Wiggins, W.L.K.F. Lansakara	B.G. Jayawardene	Burles Markes (Ship Management) Ltd
<i>Westra</i>	27.2.90	D.L. Beveridge	C.M. Bathgate, R.J. Sheldon, I.F. Muir	A.F. Clifford	Dept of Agr. & Fish. for Scotland
<i>Wheelsman</i>	17.11.86	P.J. Jameson	J. Whitford	P.M. Denchy	Rowbotham Tankships Ltd
<i>Zenatta</i>	23.8.89	N. Dixon	R.M. Linley-Munro, P. Lockie, G. Harrison .....	.....	Shell Ship Management Ltd
<i>Zidona</i> .....	*	.....	.....	.....	Shell Ship Management Ltd

‘Marid’ Ships

The following is a list of ships recruited for the observing and reporting of sea temperatures from the coastal waters of Great Britain.
Masters are requested to point out any errors or omissions from the lists.

NAME OF VESSEL	MASTER	OWNERS/ MANAGER
<i>Arco Thames</i>	S. Bryson	A.R.C. (Marine) Ltd
<i>Ashington</i>	D. Patrickson	Stephenson Clarke Shipping Ltd
<i>Authenticity</i>	J. McKay	F.T. Everard & Sons Ltd
<i>B. P. Joustier</i>	R. Rait	B.P. Oil Ltd
<i>B. P. Warrior</i>	W.S. Schuller	B.P. Oil Ltd
<i>Barra Head</i>	J. Taylor	Jebsens Ship Mgmt Ltd
<i>Beckenham</i>	R. Moody	Bowker & King Ltd
<i>Bowcross</i>	S. Isaacs	British Dredging Aggregates Ltd
<i>Bude</i>	P. Gibson	Bowker & King Ltd
<i>Briathorn</i>	D.J. Flynn	James Fisher & Sons plc
<i>City of Swansea</i>	H.R. Pope	United Marine Dredgers Ltd
<i>Devonia</i>	M. Call	Runwave Ltd
<i>Eastgate</i>	M. Corner	Rowbotham Tankships Ltd
<i>Emerald</i>	M. Chorazewski	Stephenson Clarke Shipping Ltd
<i>Esso Avon</i>	L.R. Spalding	Esso Petroleum Co. Ltd
<i>Esso Clyde</i>	C.C. Jorgensen	Esso Petroleum Co. Ltd
<i>Esso Fawley</i>	R.W. Noakes	Esso Petroleum Co. Ltd
<i>Esso Mersey</i>	J.H. Smith	Esso Petroleum Co. Ltd
<i>Esso Milford Haven</i>	D. Ling	Esso Petroleum Co. Ltd
<i>Esso Tenby</i>	N. Powell	Esso Petroleum Co. Ltd
<i>Frederick M</i>	D. Solly	Coe-Metcalf Shipping Ltd
<i>Gladonia</i>	P. Burden	Runwave Ltd
<i>Guidesman</i>	J. Suter	Rowbotham Tankships Ltd
<i>Harting</i>	C. Twomey	Stephenson Clarke Shipping Ltd
<i>Helmsman</i>	A. Shenton	Rowbotham Tankships Ltd
<i>Irishgate</i>	T. Frith	Rowbotham Tankships Ltd
<i>Jubilence</i>	J.E. Herbert	Crescent Shipping Ltd
<i>Kindrence</i>	A.J. Affleck	Crescent Shipping Ltd
<i>Malling</i>	A. Hennel	Stephenson Clarke Shipping Ltd
<i>Militence</i>	D. Jeffreys	Crescent Shipping Ltd
<i>Norgas Venture</i>	A.J. Lewis	Silver Line Ltd
<i>Northgate</i>	B. Wilson	Rowbotham Tankships Ltd
<i>Oilman</i>	S. Mahoney	Rowbotham Tankships Ltd
<i>Orionman</i>	F. Craske	Rowbotham Tankships Ltd
<i>Pride of Portsmouth</i>	B. Hayball	Sealink (U.K.) Ltd
<i>River Trader</i>	G. O'Brien	F.T. Everard & Sons Ltd
<i>Rora Head</i>	— Buchanan	Jebsens Ship Mgmt Ltd
<i>St Columba</i>	J.F. Sinnott	Sealink (U.K.) Ltd
<i>Shell Craftsman</i>	M. Atkinson	Shell (U.K.) Ltd
<i>Shell Trader</i>	D.M. Burn	Shell (U.K.) Ltd
<i>Stolt Colina</i>	S. Healy	Stolt Neilsen
<i>Stolt Hacienda</i>	— Brotherton	Stolt Neilsen
<i>Stolt Predera</i>	R. Black	Stolt Neilsen
<i>Storrington</i>	P. Thompson	Stephenson Clarke Shipping Ltd
<i>Vibrencia</i>	J.G. Setterfield	Crescent Shipping Co. Ltd
<i>Westgate</i>	B. Petch	Rowbotham Tankships Ltd

Light-tower

NAME	MASTER
<i>Royal Sovereign</i>	V.S. Pearce, P. Stafford

Oil Rigs and Platforms

NAME OF RIG OR PLATFORM	OWNERS/ OPERATORS
<i>Beatrice A</i>	B.P. Pet. Development Ltd
<i>Benlomond</i>	Atlantic Drilling Co. Ltd
<i>Benvreoch</i>	Atlantic Drilling Co. Ltd
<i>Benvrackie</i>	Atlantic Drilling Co. Ltd
<i>Beryl A</i>	Mobil North Sea Ltd
<i>Beryl B</i>	Mobil North Sea Ltd
<i>Clyde A</i>	B.P. Pet. Development Ltd
<i>Dan Baroness</i>	Jebsens Offshore Drilling Ltd
<i>Dan Countess</i>	Jebsens Offshore Drilling Ltd
<i>Deep Sea Pioneer</i>	Hamilton Brothers Oil & Gas Ltd
<i>Dixilyn Field 96</i>	Sonat Offshore Ltd
<i>Dixilyn Field 97</i>	Sonat Offshore Ltd
<i>Dunlin A</i>	Shell U.K. Exploration & Production Ltd
<i>F.G. McClintock</i>	Reading & Bates Ltd
<i>Glomar Arctic 3</i>	Global Marine Ltd
<i>Heather A</i>	Unionoil Co. of G.B. Ltd
<i>M.G. Hulme Jnr</i>	Reading & Bates Ltd
<i>Montrose A</i>	Amoco (U.K.) Exploration Ltd
<i>Morecombe Bay (API)</i>	Hydrocarbons (G.B.) Ltd
<i>North Sea Pioneer</i>	Hamilton Bros. Oil & Gas Ltd
<i>Ocean Alliance</i>	ODECO (U.K.) Ltd
<i>Santa Fe 135</i>	Santa Fe (U.K.) Ltd
<i>Santa Fe 140</i>	Santa Fe (U.K.) Ltd
<i>Sea Explorer</i>	B.P. Pet. Development Ltd
<i>Sedneth 701</i>	Sedco-Forex
<i>Sonat Rather</i>	Sonat Offshore Ltd
<i>Thistle A</i>	B.P. Pet. Development Ltd
<i>Viking BD</i>	Conoco (U.K.) Ltd
<i>Western Pacesetter IV</i>	Western Oceanic (U.K.) Ltd

BRITISH COMMONWEALTH

The following lists give the names of Selected and Supplementary Ships, and the number of Auxiliary Ships where known (i.e., those which only report in 'sparse areas'), which voluntarily co-operate with meteorological services of the British Commonwealth. Information for these lists is required by 31 March each year. Information for the January corrective lists is required by 30 September each year.

AUSTRALIA (Information dated 28.12.89)

NAME OF VESSEL	OWNERS/ MANAGER
Selected Ships:	
<i>Abel Tasman</i>	TT Line Tasmania
<i>Al Khaleej</i>	Livestock Transport & Trading Co. K.S.C.
<i>Al Qurain</i>	Livestock Transport & Trading Co. K.S.C.
<i>Al Rayyan</i>	Al Rayyan Maritime Inc.
<i>Al Shuwaikh</i>	Livestock Transport & Trading Co. K.S.C.
<i>Al Yasrah</i>	Livestock Transport & Trading Co. K.S.C.
<i>Anro Australia</i>	Australian National Line
<i>Anro Melbourne</i>	Australian National Line
<i>Arafura</i>	Overseas Containers Australia Pty Ltd
<i>Ariake</i>	Overseas Containers Australia Pty Ltd
<i>Arwa</i>	Wallem Ship Management Ltd
<i>Australian Advance</i>	Australian National Line
<i>Australian Exporter</i>	Australian National Line
<i>Australian Progress</i>	Australian National Line
<i>Australian Prospector</i>	Australian National Line
<i>Australian Spirit</i>	B.P. Australia Ltd
<i>Australian Trader</i>	Australian National Line
<i>Australian Venture</i>	Australian National Line
<i>B.P. Achiever</i>	B.P. Australia Ltd
<i>Bass Trader</i>	Australian National Line
<i>Brahman Express</i>	Vroon B.V. Breskens
<i>Buffalo Express</i>	Vroon B.V. Breskens
<i>C.Y. O'Connor</i>	Baltimar Ltd
<i>Canopus</i>	Howard Smith Industries Pty Ltd
<i>Cape Don</i>	Department of Transport
<i>Cape Moreton</i>	Department of Transport
<i>Danny F</i>	Rachid Fares Enterprises Pty Ltd
<i>Eigamoiya</i>	Nauru Local Govt Council
<i>Eigigu</i>	Nauru Local Govt Council
<i>El Cordero</i>	Cugado Shipping Co. S.A.
<i>El Redil</i>	Livestock Carriers Bari (Italy)
<i>Enegy Searcher</i>	Maretech
<i>Fernanda F</i>	Oceanic Shipping S.A.R.L.
<i>Flamingo Bay</i>	Mr D. Tomlinson
<i>Franklin</i>	C.S.I.R.O.
<i>Fua Kavenga</i>	Pacific Forum Line
<i>Hanne Bakke II</i>	Knutsen Offshore (Panama) S.A.
<i>Howard Smith</i>	Howard Smith Industries Pty Ltd
<i>Icebird</i>	Antarktic and Spegial
<i>Ilongo</i>	Weeke Ship Hong Kong Ltd
<i>Iron Arnhem</i>	Broken Hill Pty Co. Ltd
<i>Iron Capricorn</i>	Broken Hill Pty Co. Ltd
<i>Iron Kembla</i>	Broken Hill Pty Co. Ltd
<i>Iron Kirby</i>	Broken Hill Pty Co. Ltd
<i>Iron Newcastle</i>	Broken Hill Pty Co. Ltd
<i>Iron Pacific</i>	Broken Hill Pty Co. Ltd
<i>Iron Prince</i>	Broken Hill Pty Co. Ltd
<i>Iron Sturt</i>	Broken Hill Pty Co. Ltd
<i>Iron Whyalla</i>	Broken Hill Pty Co. Ltd
<i>Island Gas</i>	Broken Hill Pty Co. Ltd
<i>Jabiru Venture</i>	Broken Hill Pty Co. Ltd
<i>Jon Sanders</i>	Stateships
<i>Klang Reefer</i>	Sea Containers Ltd
<i>Koolinda</i>	Stateships
<i>Kowulka</i>	C.S.R. Ltd
<i>Lindesay Clark</i>	Howard Smith Industries Pty Ltd
<i>Mahsuri</i>	Blue Star Line
<i>Mary Durack</i>	Stateships
<i>Mawashi Al-Gasseem</i>	Saudi Livestock Transport & Trading Co.
<i>Mawashi Tabuk</i>	Saudi Livestock Transport & Trading Co.
<i>Mobil Flinders</i>	Mobil Oil Australia Ltd
<i>Nimos</i>	China Nav. Co. Ltd

Australia (contd)

NAME OF VESSEL	OWNERS/ MANAGER
<i>Nivosa</i>	Shell Co. of Australia Ltd
<i>Nordvind</i>	Nordholm I/S
<i>Ormiston</i>	C.S.R. Ltd
<i>Papuan Chief</i>	China Nav. Co. Ltd
<i>Pathfinder II</i>	Pan-Ore Transportation Inc.
<i>Pilbara</i>	Stateships
<i>Polar Queen</i>	Rieber Shipping A/S
<i>Portland</i>	Havard Smith Industries Pty Ltd
<i>Rig Seismic</i>	Bureau of Mineral Resources
<i>River Boyne</i>	Australian National Line
<i>River Embley</i>	Australian National Line
<i>River Torrens</i>	Australian National Line
<i>Sedco B.P. 471</i>	Overseas Drilling Ltd
<i>Swan Reefer</i>	Sea Containers Ltd
<i>TNT Alirans</i>	T.N.T. Bulkships Ltd
<i>TNT Capricornia</i>	T.N.T. Bulkships Ltd
<i>TNT Carpentaria</i>	T.N.T. Bulkships Ltd
<i>Tranztas Trader</i>	Joon Shipping & Trading B.V.
<i>Troubridge</i>	Govt of State of South Australia
<i>Uniceb</i>	Livestock Carriers Bari (Italy)
<i>Wyuna</i>	Australian Maritime College
<i>Zincmaster</i>	T.N.T. Bulkships Ltd
Supplementary Ships:	
<i>Iron Carpentaria</i>	Broken Hill Pty Co. Ltd
<i>Iron Curtis</i>	Broken Hill Pty Co. Ltd
<i>Iron Monarch</i>	Broken Hill Pty Co. Ltd
<i>Iron Shortland</i>	Broken Hill Pty Co. Ltd
<i>Iron Spencer</i>	Broken Hill Pty Co. Ltd
<i>Neptune Seginus</i>	Neptune Orient Lines

Auxiliary Ships:

Australia has 4 Auxiliary Ships currently reporting.

CANADA (Information dated 1.1.90)

NAME OF VESSEL	OWNERS/ MANAGER
<i>Advent</i>	Government of Canada
<i>Alberni Dawn</i>	Man Cheung Yuen Services Ltd
<i>Alert</i>	Government of Canada
<i>Algobay</i>	Algoma Central Railway Inc.
<i>Algopori</i>	Algoma Central Railway Inc.
<i>Ann Harvey</i>	Canadian Coast Guard
<i>Arctic</i>	Canarctic Shipping Co. Ltd
<i>Arko</i>	Trans Ocean Maritime Agency
<i>ASL Sanderling</i>	ASL Atlantic Searoute Ltd
<i>Astron</i>	Tarros Ventures (NFLD) Ltd
<i>Baffin</i>	Government of Canada
<i>Bartlett</i>	Canadian Coast Guard
<i>Bayfield</i>	Government of Canada
<i>Beiner</i>	Marine Institute of Newfoundland
<i>Bergen Arrow</i>	Jardine Ship Management Ltd
<i>Bibi</i>	Sir William Reardon Smith & Sons
<i>Bluenose</i>	Canadian National (Marine)
<i>Brierfield</i>	Buries Markes (Ship Management) Ltd
<i>Bunga Kantan</i>	Malaysian International Shipping Corp.
<i>C.S.L. Innovator</i>	Canadian Steamship Lines Co. Ltd
<i>Calga</i>	BCP Ship Management Co. Ltd
<i>Canadian Ace</i>	Montreal Shipping Ltd
<i>Cape Brier</i>	Government of Canada
<i>Cape Roger</i>	Government of Canada

Canada (contd)

NAME OF VESSEL	OWNERS/MANAGER
<i>Chebucto</i>	Government of Canada
<i>Chennai Nermai</i>	South India Shipping Corporation Ltd
<i>Chennai Okkam</i>	South India Shipping Corporation Ltd
<i>Chennai Polivu</i>	South India Shipping Corporation Ltd
<i>Citadel Hill</i>	Barber Ship Management Ltd
<i>Cygnus</i>	Government of Canada
<i>Dawson</i>	Government of Canada
<i>Des Groseillers</i>	Canadian Coast Guard
<i>Earl Gray</i>	Government of Canada
<i>Eastern Maid</i>	Indo-China S.N. Co. Ltd
<i>Edward Cornwallis</i>	Canadian Coast Guard
<i>Elso</i>	BCP Ship Management Co. Ltd
<i>Emerald Coast</i>	Alyaga Navigation Corp.
<i>F.C.G. Smith</i>	Government of Canada
<i>Federal Maas</i>	Federal Commerce Co. Ltd
<i>Fort Kamloops</i>	Canadian Pacific Steamships Ltd
<i>Fort Yale</i>	Canadian Pacific Steamships Ltd
<i>F.P. Clipper</i>	East Asiatic Co. Ltd
<i>Fuhwo Venture</i>	Indo-China S.N. Co. Ltd
<i>G.B. Reed</i>	Government of Canada
<i>George E. Darby</i>	Government of Canada
<i>George R. Parkes</i>	Government of Canada
<i>Goldensari Indah</i>	Government of Canada
<i>Great Jade</i>	World-wide Shipping Agency Ltd
<i>Great Pearl</i>	World-wide Shipping Agency Ltd
<i>Great Prize</i>	Wak Tung Shipping Co. Ltd
<i>Grena</i>	Jardine Ship Management Ltd
<i>Grenfell</i>	Government of Canada
<i>Harmac Dawn</i>	Man Cheung Yuen Services Ltd
<i>Henry Larsen</i>	Canadian Coast Guard
<i>Hudson</i>	Government of Canada
<i>Irving Arctic</i>	Kent Lines Ltd
<i>Irving Canada</i>	Kent Lines Ltd
<i>Irving Eskimo</i>	Kent Lines Ltd
<i>Irving Ocean</i>	Kent Lines Ltd
<i>Island Princess</i>	P. & O. Lines Ltd
<i>J.C. Phillips</i>	Sofati Soconau
<i>J.E. Bernier</i>	Canadian Coast Guard
<i>Jackman</i>	Canadian Coast Guard
<i>James Douglas</i>	Canadian Coast Guard
<i>James Sinclair</i>	Government of Canada
<i>John A. Macdonald</i>	Canadian Coast Guard
<i>John Cabot</i>	Government of Canada
<i>John P. Tulley</i>	Government of Canada
<i>Joseph-Clara Smallwood</i>	Marine Atlantic Inc.
<i>Kemano Saga</i>	Jardine Ship Management Ltd
<i>Leonard J. Cowley</i>	Government of Canada
<i>Limnos</i>	Government of Canada
<i>Lofines</i>	Jebsen Ship Management Ltd
<i>Louis M. Lauzier</i>	Navmar Corp.
<i>Louis S. St Laurent</i>	Canadian Coast Guard
<i>Louisburg</i>	Government of Canada
<i>Lucien Paquin</i>	Logistic Navigation Co. Ltd
<i>Martha L. Black</i>	Government of Canada
<i>Mary Hichens</i>	Government of Canada
<i>Maxwell</i>	Government of Canada
<i>Nahidik</i>	Government of Canada
<i>Namao</i>	Government of Canada
<i>Nandu Arrow</i>	Jardine Ship Management Ltd
<i>New Zealand Alliance</i>	New Zealand Line
<i>Nomadic Mermaid</i>	Rederiet Co. Ltd
<i>Nordglimt</i>	Norden Steamship Co. Ltd
<i>Nordkyn</i>	Norden Steamship Co. Ltd
<i>Norman McLeod Rogers</i>	Canadian Coast Guard
<i>Pacific Princess</i>	P. & O. Lines Ltd
<i>Pandora II</i>	Government of Canada
<i>Panther</i>	Unique Shipping Agencies Ltd
<i>Parizeau</i>	Government of Canada
<i>Pierre Radisson</i>	Canadian Coast Guard
<i>Portland Carrier</i>	Northeastern Offshore Services
<i>Practician</i>	Ocean Tramping Co. Ltd
<i>Princess of Acadia</i>	Canadian National (Marine)

Canada (contd)

NAME OF VESSEL	OWNERS/ MANAGER
<i>Quedoc</i>	Halco Inc.
<i>Queen of Prince Rupert</i>	British Columbia Ferry Corp.
<i>Queen of the North</i>	British Columbia Ferry Corp.
<i>Raven Arrow</i>	Indo-China S.N. Co. Ltd
<i>Rimba Maranti</i>	Malaysian International Shipping Corp.
<i>Royal Princess</i>	P. & O. Lines Ltd
<i>Samuel Risley</i>	Canadian Coast Guard
<i>Sauniere</i>	Algoma Central Railway Inc.
<i>Sea Princess</i>	Beaufort Shipping Agency
<i>Simon Fraser</i>	Government of Canada
<i>Sir Humphrey Gilbert</i>	Canadian Coast Guard
<i>Sir James Douglas</i>	Government of Canada
<i>Sir John Franklin</i>	Canadian Coast Guard
<i>Sir Wilfred Grenfell</i>	Canadian Coast Guard
<i>Sir Wilfred Laurier</i>	Canadian Coast Guard
<i>Sir William Alexander</i>	Government of Canada
<i>Skeena</i>	Reardon Smith Lines Ltd
<i>Sky Princess</i>	P. & O. Lines Ltd
<i>Star Dover</i>	Man Cheung Yuen Services Ltd
<i>Star Everwin</i>	Man Cheung Yuen Services Ltd
<i>Star Florida</i>	Univan Ship Management Co. Ltd
<i>Star Fraser</i>	Univan Ship Management Co. Ltd
<i>Star Hong Kong</i>	World-wide Shipping Co. Ltd
<i>Star Magnate</i>	Marine Navigation Co. Ltd
<i>Star Sulu</i>	Vinta Maritime Co. Ltd
<i>Summerfield</i>	Buries Markes (Ship Management) Ltd
<i>Sun Maya</i>	Fuji Shipping Co. Ltd
<i>Sun Princess</i>	P. & O. Lines Ltd
<i>Tanu</i>	Government of Canada
<i>Thomas Carleton</i>	Government of Canada
<i>Thor I</i>	Thor Dahl Lines
<i>Thorscape</i>	Thor Dahl Lines
<i>Trudy</i>	Souter Shipping Ltd
<i>Tsekoa II</i>	Government of Canada
<i>Tupper</i>	Government of Canada
<i>Vector</i>	Government of Canada
<i>W.E. Ricker</i>	Government of Canada
<i>Wilfred Templeman</i>	Government of Canada
<i>William</i>	Government of Canada
<i>W.M. Vacyash</i>	Shell Canadian Tankers Co. Ltd
<i>Yankee Clipper</i>	Hapag-Lloyd Shipping Co. Ltd

Auxiliary Ships:
Canada has 174 ocean-going Auxiliary Ships and 114 Auxiliary Ships operating on the Great Lakes and inland waters.

HONG KONG (Information dated 16.3.90)

NAME OF VESSEL	OWNERS/ MANAGER
Selected Ships:	
<i>Acacia</i>	Mercury Shipping Co. Ltd
<i>Als Prosperity</i>	Ahrenkiel Shipping (H.K.) Ltd
<i>Anna</i>	Barber Ship Management Ltd
<i>Arrow Pride</i>	Jardine Ship Management Ltd
<i>Asian Jade</i>	Mercury Shipping Co. Ltd
<i>Asian Pearl</i>	China Navigation Co. Ltd
<i>Avelona Star</i>	Concordia Marine Co. Ltd
<i>Boonkrong II</i>	Chin Seng Hong Ltd
<i>Brooklyn Bridge</i>	'K' Line Kawasaki (H.K.) Ltd
<i>Bunga Kantan</i>	Mak Shui Cho & Son Ltd

Hong Kong (contd)

NAME OF VESSEL	OWNERS/MANAGER
<i>Bunga Suria</i>	Mak Shui Cho & Son Ltd
<i>C.R. Abidjan</i>	Wallem Shipping (H.K.) Ltd
<i>C.R. Douala</i>	Wallem Shipping (H.K.) Ltd
<i>C.R. Pointe Noire</i>	Wallem Shipping (H.K.) Ltd
<i>Chengtu</i>	China Navigation Co. Ltd
<i>Coral Princess</i>	China Navigation Co. Ltd
<i>Eastern Harmony</i>	Mitsui O.S.K. Lines (H.K.) Ltd
<i>Eriskay</i>	China Navigation Co. Ltd
<i>Fair Bridge</i>	Ocean Tramping Co. Ltd
<i>Gallantry</i>	China Merchants Shipping & Enterprises Co. Ltd
<i>General Tirona</i>	Kristian Jebsens Ltd
<i>Gonosan</i>	Unique Shipping Agencies Ltd
<i>Hallder</i>	Thoresen Shipping Ltd
<i>Hawk Arrow</i>	Jardine Ship Management Ltd
<i>Hunan</i>	China Navigation Co. Ltd
<i>Kamaleverett</i>	Everett Steamship Corp. S/A
<i>Kwangtung</i>	China Navigation Co. Ltd
<i>Kweilin</i>	China Navigation Co. Ltd
<i>Maersk Semakau</i>	Maersk Line (H.K.) Ltd
<i>Mah IV</i>	Chin Seng Hong Ltd
<i>Maritime Bravery</i>	International Maritime Carriers Ltd
<i>Maritime Champion</i>	International Maritime Carriers Ltd
<i>Maritime Express</i>	International Maritime Carriers Ltd
<i>Maritime Gardenia</i>	International Maritime Carriers Ltd
<i>Maritime Goliath</i>	International Maritime Carriers Ltd
<i>Maritime Grace</i>	International Maritime Carriers Ltd
<i>Maritime Hibiscus</i>	International Maritime Carriers Ltd
<i>Maritime Joy</i>	International Maritime Carriers Ltd
<i>Maritime Loyalty</i>	International Maritime Carriers Ltd
<i>Maritime Noble</i>	International Maritime Carriers Ltd
<i>Maritime Star</i>	International Maritime Carriers Ltd
<i>Maritime Success</i>	International Maritime Carriers Ltd
<i>Maritime Wisdom</i>	International Maritime Carriers Ltd
<i>Morning Grace</i>	Wing Tak Shipping Agency Ltd
<i>Musing</i>	Ocean Tramping Co. Ltd
<i>New Oasis</i>	Wing Tak Shipping Agency Ltd
<i>Ocean Centaurus</i>	Wing Tak Shipping Agency Ltd
<i>Ocean Elite</i>	Wing Tak Shipping Agency Ltd
<i>Ocean Pearl</i>	Pearl Cruises Catering (H.K.) Ltd
<i>Ocean Sincerity</i>	Wing Tak Shipping Agency Ltd
<i>Ocean Sirius</i>	Wing Tak Shipping Agency Ltd
<i>Ocean Strength</i>	Wing Tak Shipping Agency Ltd
<i>OOCL Advance</i>	Orient Overseas Container Line Ltd
<i>OOCL Alliance</i>	Orient Overseas Container Line Ltd
<i>OOCL Ambition</i>	Orient Overseas Container Line Ltd
<i>OOCL Charity</i>	Orient Overseas Container Line Ltd
<i>OOCL Executive</i>	Orient Overseas Container Line Ltd
<i>OOCL Exporter</i>	Orient Overseas Container Line Ltd
<i>OOCL Fair</i>	Orient Overseas Container Line Ltd
<i>OOCL Faith</i>	Orient Overseas Container Line Ltd
<i>OOCL Fortune</i>	Orient Overseas Container Line Ltd
<i>OOCL Freedom</i>	Island Navigation Corporation International Ltd
<i>OOCL Honour</i>	Orient Overseas Container Line Ltd
<i>OOCL Hope</i>	Orient Overseas Container Line Ltd
<i>Oriental Expert</i>	Orient Overseas Container Line Ltd
<i>Oriental Explorer</i>	Orient Overseas Container Line Ltd
<i>Osprey Arrow</i>	Jardine Ship Management Ltd
<i>R.R. Raina</i>	Orient Overseas Container Line Ltd
<i>Raya Happiness</i>	Ocean Tramping Co. Ltd
<i>Red Sea Pioneer</i>	Barber Ship Management Ltd
<i>Sea Architect</i>	Interocean Shipping Co. Ltd
<i>Shensi</i>	Jardine Ship Management Ltd
<i>Talabot</i>	Barwill Agencies Ltd
<i>Tampa</i>	Barwill Agencies Ltd
<i>Willine Orient</i>	Jardine Shipping Agencies (H.K.) Ltd
Supplementary Ships:	
<i>General Delgado</i>	Kristian Jebsens Ltd
<i>General Villa</i>	Kristian Jebsens Ltd
<i>Hallvard</i>	Thoresen Shipping Ltd
<i>Johneverett</i>	Everett Steamship Corp. S/A
<i>Maersk Tauro</i>	Maersk Line (H.K.) Ltd

Hong Kong (contd)

NAME OF VESSEL	OWNERS/MANAGER
<i>Maritime Faith</i>	International Maritime Carriers Ltd
<i>Maritime Triumph</i>	International Maritime Carriers Ltd
<i>Maritime Victory</i>	International Maritime Carriers Ltd
<i>Oriental Knight</i>	Orient Overseas Container Line Ltd
<i>Oriental Patriot</i>	Orient Overseas Container Line Ltd
<i>Roseeverett</i>	Everett Steamship Corp. Ltd
<i>Seamaster I</i>	Interocean Shipping Co. Ltd
<i>Shaplaeverett</i>	Everett Steamship Corp. S/A
<i>Silver Clipper</i>	Valles Steamship Co. Ltd
<i>Success Bulker</i>	Valles Steamship Co. Ltd
<i>Thomaseverett</i>	Everett Steamship Corp. S/A
<i>World Ranger</i>	World-wide Shipping Agency Ltd

Auxiliary Ships:

Hong Kong also has 1 Auxiliary Ship currently reporting.

INDIA (Information dated 1.1.90)

NAME OF VESSEL	OWNERS/MANAGER
Selected Ships:	
<i>Akbar</i>	Shipping Corporation of India Ltd
<i>Andamans</i>	Shipping Corporation of India Ltd
<i>B.R. Ambedkar</i>	Shipping Corporation of India Ltd
<i>Bharatendu</i>	Shipping Corporation of India Ltd
<i>Gaveshani</i>	National Institute of Oceanography
<i>Harshavardhan</i>	Shipping Corporation of India Ltd
<i>Jala Jyoti</i>	Scindia Steam Navigation Co. Ltd
<i>Jala Yamini</i>	Scindia Steam Navigation Co. Ltd
<i>Lokmanya Tilak</i>	Shipping Corporation of India Ltd
<i>Ratna Nandini</i>	Ratnakar Shipping Co.
<i>Sagar Kanya</i>	Shipping Corporation of India Ltd
<i>Sagar Sampada</i>	Shipping Corporation of India Ltd
<i>Samudra Manthan</i>	Geological Survey of India
<i>State of Andhra Pradesh</i>	Shipping Corporation of India Ltd
<i>State of Nagaland</i>	Shipping Corporation of India Ltd
<i>Vishnu Sagar</i>	Parekh Ocean Carriers
Supplementary Ships:	
<i>A.B. Tarapore</i>	Shipping Corporation of India Ltd
<i>APJ Anand</i>	APJ Lines Ltd
<i>APJ Angad</i>	APJ Lines Ltd
<i>APJ Anjali</i>	APJ Lines Ltd
<i>APJ Priti</i>	APJ Lines Ltd
<i>APJ Priya</i>	APJ Lines Ltd
<i>APJ Shalin</i>	APJ Lines Ltd
<i>APJ Sushma</i>	APJ Lines Ltd
<i>Aditya Usha</i>	Century Shipping Co.
<i>Alakanda</i>	Shipping Corporation of India Ltd
<i>Arunachal Pradesh</i>	Shipping Corporation of India Ltd
<i>Lt Arun Khetrapal PVC</i>	Shipping Corporation of India Ltd
<i>Aurohindo</i>	Shipping Corporation of India Ltd
<i>Bhagat Singh</i>	Shipping Corporation of India Ltd
<i>Bharat Seema</i>	Shipping Corporation of India Ltd
<i>Bhavbhuti</i>	Shipping Corporation of India Ltd
<i>Chandidas</i>	Shipping Corporation of India Ltd
<i>Chennai Jayam</i>	South India Shipping Co. Ltd
<i>Chennai Muryarchi</i>	South India Shipping Co. Ltd
<i>Chennai Polivu</i>	South India Shipping Co. Ltd
<i>Chennai Sadhanai</i>	South India Shipping Co. Ltd

India (contd)

NAME OF VESSEL	OWNERS/MANAGER
Chennai Valarchi	South India Shipping Co. Ltd
Chennai Veeram	South India Shipping Co. Ltd
Chhatrapati Shivaji	Shipping Corporation of India Ltd
Dadabhai Naoroji	Shipping Corporation of India Ltd
Dakshineswar	Shipping Corporation of India Ltd
Diglipur	Shipping Corporation of India Ltd
Dweep Setu	Shipping Corporation of India Ltd
FONJ Shekon PVC	Shipping Corporation of India Ltd
Ganga Sagar	Shipping Corporation of India Ltd
Guru Bachhan Singh	Shipping Corporation of India Ltd
Hardwar	Shipping Corporation of India Ltd
Harkishan	Shipping Corporation of India Ltd
Har Govind	Shipping Corporation of India Ltd
Har Rai	Shipping Corporation of India Ltd
Havildar Abdul Hamid	Shipping Corporation of India Ltd
Homi Bhabha	Shipping Corporation of India Ltd
Indian Endurance	India Steamship Co.
Indian Explorer	India Steamship Co.
Indian Faith	India Steamship Co.
Indian Fame	India Steamship Co.
Indian Fraternity	India Steamship Co.
Indian Freedom	India Steamship Co.
Indian Goodwill	India Steamship Co.
Indian Grace	India Steamship Co.
Indian Industry	India Steamship Co.
Indian Progress	India Steamship Co.
Indian Prosperity	India Steamship Co.
Indian Triumph	India Steamship Co.
Indian Valour	India Steamship Co.
Indian Venture	India Steamship Co.
INS Kripan	Naval ship
Jag Anjali	Great Eastern Shipping Co. Ltd
Jag Dharma	Great Eastern Shipping Co. Ltd
Jag Doot	Great Eastern Shipping Co. Ltd
Jag Jeevan	Great Eastern Shipping Co. Ltd
Jag Krishi	Great Eastern Shipping Co. Ltd
Jag Manek	Great Eastern Shipping Co. Ltd
Jag Pari	Great Eastern Shipping Co. Ltd
Jag Prabhat	Great Eastern Shipping Co. Ltd
Jag Prakesh	Great Eastern Shipping Co. Ltd
Jag Preeti	Great Eastern Shipping Co. Ltd
Jag Rekha	Great Eastern Shipping Co. Ltd
Jag Shakti	Great Eastern Shipping Co. Ltd
Jag Shanti	Great Eastern Shipping Co. Ltd
Jag Vijay	Great Eastern Shipping Co. Ltd
Jag Vivek	Great Eastern Shipping Co. Ltd
Jagat Samrat	Dempo Steamship Co. Ltd
Jagat Swamini Priyamvada	Dempo Steamship Co. Ltd
Jagat Vijeta	Dempo Steamship Co. Ltd
Jala Bala	Scindia Steam Nav. Co. Ltd
Jala Gauri	Scindia Steam Nav. Co. Ltd
Jala Godavari	Scindia Steam Nav. Co. Ltd
Jala Mohan	Scindia Steam Nav. Co. Ltd
Jala Mokambi	Scindia Steam Nav. Co. Ltd
Jala Mudra	Scindia Steam Nav. Co. Ltd
Jala Murugan	Scindia Steam Nav. Co. Ltd
Jala Tapi	Scindia Steam Nav. Co. Ltd
Jala Vallabh	Scindia Steam Nav. Co. Ltd
Jala Vijaya	Scindia Steam Nav. Co. Ltd
Jameela	M/s. Ghosh & Co.
Jana Priya	Shipping Corporation of India Ltd
Jay Ambika	Jayshree Shipping Co.
Jay Luxmi	Jayshree Shipping Co.
Jay Narayan Uvas	Shipping Corporation of India Ltd
Kabirdas	Shipping Corporation of India Ltd
Kalidas	Shipping Corporation of India Ltd
Kanchan Junga	Shipping Corporation of India Ltd
Kanpur	Shipping Corporation of India Ltd
Kolandia	Shipping Corporation of India Ltd
Lance Naik Albert Ekka	Shipping Corporation of India Ltd
Lok Maheshwari	Shipping Corporation of India Ltd
Lok Manya	Shipping Corporation of India Ltd
Lok Prakash	Shipping Corporation of India Ltd

India (contd)

NAME OF VESSEL	OWNERS/MANAGER
Lok Pratima	Shipping Corporation of India Ltd
Lok Preeti	Shipping Corporation of India Ltd
Lok Rajeshwari	Shipping Corporation of India Ltd
Lok Vikas	Shipping Corporation of India Ltd
Lok Vinya	Shipping Corporation of India Ltd
Lok Vivek	Shipping Corporation of India Ltd
MMP Wealth	MMP Lines
Maharshi Dayanand	Shipping Corporation of India Ltd
Maharshi Karve	Shipping Corporation of India Ltd
Mandakini	Shipping Corporation of India Ltd
Maratha Elegance	Chowgule Shipping Co.
Maratha Melody	Chowgule Shipping Co.
Maratha Prudence	Chowgule Shipping Co.
Meghdoot	Varun Shipping Co.
Meghrab	Indo Oceanic Shipping Co.
Mizoram	Shipping Corporation of India Ltd
Murshidabad	Shipping Corporation of India Ltd
Naik Jadunath Singh PVC	Shipping Corporation of India Ltd
Nand Hari	Essar Bulk Carriers
Nand Kala	Essar Construction & Essar Bulk Carriers
Nand Kavita	Essar Construction & Essar Bulk Carriers
Nand Kishore	Essar Construction & Essar Bulk Carriers
Nand Nidhi	Essar Construction & Essar Bulk Carriers
Nand Kishore	Essar Construction & Essar Bulk Carriers
Nand Rati	Essar Construction & Essar Bulk Carriers
Netaji Subhash Bose	Shipping Corporation of India Ltd
Nirvan Vishnu	Nirvan Shipping Co.
Nitya Amar	Maini Shipping Co.
Onge	Shipping Corporation of India Ltd
Patliputra	Shipping Corporation of India Ltd
Prabhu Das	Tolani Shipping Co.
Prabhu Daya	Tolani Shipping Co.
Prabhu Gopal	Tolani Shipping Co.
Prabhu Puni	Tolani Shipping Co.
Prabhu Satram	Tolani Shipping Co.
Rafi Ahmed Kidwai	Shipping Corporation of India Ltd
Ramdas	Shipping Corporation of India Ltd
Ratna Shobhana	Ratnakar Shipping Co.
Ratna Vandana	Ratnakar Shipping Co.
Ravidas	Shipping Corporation of India Ltd
Sagar Deep	Shipping Corporation of India Ltd
Sagar Samrat	Shipping Corporation of India Ltd
Sai Nanak	TPS Shipping Co.
Samarat Ashok	Shipping Corporation of India Ltd
Samudra Jyoti	Paint Ocean Carriers
Sarojini Naidu	Shipping Corporation of India Ltd
Satva Murti	Shipping Corporation of India Ltd
Skandy Surveyor	Dept. of Ocean Development
State of Gujarat	Shipping Corporation of India Ltd
State of Haryana	Shipping Corporation of India Ltd
State of Madhya Pradesh	Shipping Corporation of India Ltd
State of Manipur	Shipping Corporation of India Ltd
State of Orissa	Shipping Corporation of India Ltd
Subhedar Joginder Singh	Shipping Corporation of India Ltd
Teesta	Mackinnon & Mackenzie Co.
Tulsidas	Shipping Corporation of India Ltd
Unihaksh	Universal Shipping Co.
Uttar Kashi	Shipping Corporation of India Ltd
Vallabhbhai Patel	Shipping Corporation of India Ltd
Varanasi	Shipping Corporation of India Ltd
Varuna Adhur	Thakur Shipping Co.
Vishva Abha	Shipping Corporation of India Ltd
Vishva Ajay	Shipping Corporation of India Ltd
Vishva Ambar	Shipping Corporation of India Ltd
Vishva Asha	Shipping Corporation of India Ltd
Vishva Bandhan	Shipping Corporation of India Ltd
Vishva Karuna	Shipping Corporation of India Ltd
Vishva Kaumudi	Shipping Corporation of India Ltd
Vishva Madhuri	Shipping Corporation of India Ltd
Vishva Mamta	Shipping Corporation of India Ltd
Vishva Mohini	Shipping Corporation of India Ltd
Vishva Nandini	Shipping Corporation of India Ltd

India (contd)

NAME OF VESSEL	OWNERS/ MANAGER
Vishva Nayak	Shipping Corporation of India Ltd
Vishva Pallav	Shipping Corporation of India Ltd
Vishva Pankaj	Shipping Corporation of India Ltd
Vishva Parag	Shipping Corporation of India Ltd
Vishva Parijat	Shipping Corporation of India Ltd
Vishva Parimal	Shipping Corporation of India Ltd
Vishva Shakti	Shipping Corporation of India Ltd
Vishva Shobha	Shipping Corporation of India Ltd
Vishva Siddhi	Shipping Corporation of India Ltd
Vishva Tarang	Shipping Corporation of India Ltd
Vishva Umang	Shipping Corporation of India Ltd
Vishva Vikram	Shipping Corporation of India Ltd
Vishva Yash	Shipping Corporation of India Ltd
Vishwesharayya	Shipping Corporation of India Ltd
Vivekananda	Shipping Corporation of India Ltd
Yerawa	Shipping Corporation of India Ltd
Zakir Hussain	Shipping Corporation of India Ltd

Auxiliary Ships:

India also has a fleet of 35 Auxiliary Ships currently reporting.

NEW ZEALAND (Information dated 1.2.90)

NAME OF VESSEL	OWNERS/ MANAGER
Selected Ships:	
ACT3	New Zealand Line
ACT4	New Zealand Line
ACT5	New Zealand Line
Amokura	Union Maritime Services Ltd
Aotea	Crusader Swire Container Service
Auckland Express	Tasman Express Line
California Star	New Zealand Line
Canterbury Express	Tasman Express Line
Capricornia	Sofrana Unilines (N.Z.) Ltd
Cotswold Prince	Reef Shipping Agencies
Daniel Solander	Solander Fisheries Ltd
Forum New Zealand II	Pacific Forum Line
Forum Samoa	Pacific Forum Line
Golden Bay	Golden Bay Shipping Co.
Gondwana	Greenpeace N.Z. Inc.
Holmdale	Union Maritime Services Ltd
James Cook	N.Z. Government (Fisheries Research)
Kaharoa	Fisheries Research Division
Kotuku	Union Maritime Services Ltd
Kuaka	Union Maritime Services Ltd
Mandama	New Zealand Line
N.Z. Mariner	New Zealand Line
N.Z. Pacific	New Zealand Line
Pacific Ariki	Swire Pacific Offshore Marine/SBPT
Rapuhia	DSIR/ Union Maritime Services Ltd
Spirit of Competition	Pacifica Shipping Co.
Spirit of Freedom	Pacifica Shipping Co.
Swan Tide	Wendell Offshore Services Ltd
Taiko	Union Maritime Services Ltd
Tarahiko	New Zealand Line
Tasman Enterprise	Tasman Pulp & Paper Co. Ltd
Tasman Venture	Tasman Pulp & Paper Co. Ltd
Tui Cakau III	Sofrana Unilines (N.Z.) Ltd
Union Auckland	Union Maritime Services Ltd
Union Endeavour	Union Maritime Services Ltd

New Zealand (contd)

NAME OF VESSEL	OWNERS/ MANAGER
<i>Union Rotoiti</i>	Union Maritime Services Ltd
<i>Union Rotorua</i>	Union Maritime Services Ltd
<i>Westport</i>	N.Z. Cement Holdings Ltd
Supplementary Ships:	
<i>Arahanga</i>	New Zealand Railways
<i>Arahura</i>	New Zealand Railways
<i>Aratika</i>	New Zealand Railways

Auxiliary Ships:
New Zealand has a fleet of 13 Auxiliary Ships currently reporting.



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