

Met.O. 870

# The Marine Observer

*A quarterly journal of Maritime  
Meteorology*



Volume XLIV    No. 245

July 1974

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Met.O. 870

# THE MARINE OBSERVER

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

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VOL. XLIV

No. 245

JULY 1974

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*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*

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## Excellent Awards 1973

On pages 89 to 92 of this issue of *The Marine Observer* appears the list of ships, masters and officers who have gained Excellent Awards for the quality of the meteorological logbooks which they have sent us during the year ended 31st December 1973 and once again we have the pleasant task of congratulating those who are named therein. Once more we must commiserate with the much larger number of masters and officers whose meteorological logbooks have indeed reached the 'Excellent' quality (and whose personal record cards will therefore be noted accordingly) but at the same time lack that little something extra which brings them into the award class.

This is the 'short list' of those ships who sent us the best meteorological logbooks in the year:

1. *Fourah Bay* (Ocean Transport & Trading Ltd.), Captain W. E. Bellamy.  
*Kohinur* (P. & O. S.N. Co.), Captain M. J. Charlesworth.  
*City of Worcester* (Ellerman Lines Ltd.), Captain P. S. Morrison, O.B.E.
2. *Benwrackie* (Ben Line Steamers Ltd.), Captain J. D. Pryde.  
*Clan Macindoe* (Clan Line Steamers Ltd.), Captain S. Hagan.
3. *Bransfield* (British Antarctic Survey), Captain S. J. Lawrence.  
*Manchester Quest* (Manchester Liners Ltd.), Captain D. P. Humphrey.  
*Liverpool Bay* (Ocean Transport & Trading Ltd.), Captain R. Moore.  
*Cape Howe* (Lyle Shipping Co. Ltd.), Captain D. S. Gordon.  
*Essex* (P. & O. S.N. Co.), Captain J. M. Burn.  
*Tokyo Bay* (Ocean Transport & Trading Ltd.), Captain D. T. MacLachlan.  
*Hinakura* (P. & O. S.N. Co.), Captain H. J. D. Sladen.  
*Flinders Bay* (Container Fleets Ltd.), Captain J. Cosker.  
*Kowloon Bay* (Ocean Transport & Trading Ltd.), Captain J. A. Dougall.

The customary photographs of the three top ships, the *Fourah Bay*, the *Kohinur* and the *City of Worcester* appear opposite page 106. We must congratulate two of the above ships on appearing in a short list for the second time; the *Liverpool Bay* was named in last year's list and, indeed, also had her photograph published as being one of the top three and the *Hinakura* appeared on the 1959-60 short list.

The awards to Trawler Skippers and Radio Officers whose observations do not entail the use of any Meteorological Office instruments, together with the awards which are being made to the four Marid ships (vessels in the short sea trades whose observations are normally of sea temperatures only, though wind and weather are added when they are reporting from the North Sea), are listed on pages 91-92.

The recipients of the awards will, as in past years, be individually notified by letter and asked for an address to which they would like us to send it. Letters sometimes take a long time to reach ships and therefore if any Master or Officer sees his name in the list in this journal, or in a similar list which some shipping companies are publishing in their house journals, before the official letter reaches him, we would be glad if he would write to us, claiming the award and giving us his forwarding address.

We still find that the world atlas is the most popular award, closely followed by the dictionary. For some years, therefore, it has been our endeavour to send an atlas to every officer whose name appears in the list for the first time and to make his second award a dictionary but this year, because of printing difficulties, *Pears Cyclopaedia* will be the second award. The book selected for the third award is *The Reader's Digest/A.A. Book of the Road*.

L.B.P.

## EXCELLENT AWARDS (Year ended 31st December 1973)

SHIP	MASTER	PRINCIPAL OBSERVING OFFICER	RADIO OFFICER	OWNER/MANAGER
<i>Apollo</i>	G. V. Barnes	W. R. Kays	E. Foley*	Bristol S.N. Co. Ltd.
<i>Beechbank</i>	P. J. Elder	C. C. W. Towne	M. A. Scott	Bank Line Ltd.
<i>Bellerophon</i>	P. J. Broomfield, R.D.	S. P. Walakulpola	R. MacGowan	Ocean Transport & Trading Ltd.
<i>Bencairn</i>	R. McPhee	W. F. P. Cargill	J. Gilhooly	Ben Line Steamers Ltd.
<i>Benledi</i>	O. Tucker	J. C. Thomson	E. H. R. Dickson	Ben Line Steamers Ltd.
<i>Benlomond</i>	A. Burnett	W. J. Anderson	W. C. Cumming	Ben Line Steamers Ltd.
<i>Benrinnes</i>	W. C. Watson	T. D. Corbett	W. Parkinson, M.B.E.	Ben Line Steamers Ltd.
<i>Benvennoch</i>	T. P. Barr	M. E. Harris	J. J. Daly	Ben Line Steamers Ltd.
<i>Benwrackie</i>	J. D. Pryde	W. Sinclair	G. R. Kerr	Ben Line Steamers Ltd.
<i>Bransfield</i>	S. J. Lawrence	N. A. Beer	H. M. O'Gorman	British Antarctic Survey
<i>British Liberty</i>	G. S. Willis	A. R. Duggins	P. J. Trant	B.P. Tanker Co. Ltd.
<i>British Maple</i>	A. A. Beattie	R. D. Giltjes-Vincent	A. Williams	B.P. Tanker Co. Ltd.
<i>California Star</i>	A. J. Cheshire	A. Frost	N. Maclean	Blue Star Line Ltd.
<i>Cape Howe</i>	D. S. Gordon	W. A. Andersen	W. Macleod	Lyle Shipping Co. Ltd.
<i>City of Worcester</i>	P. S. Morrison, O.B.E.	H. C. Thorburn	J. D. Hearne	Ellerman Lines Ltd.
<i>Clan Macindoe</i>	S. Hagan	M. W. H. Williams	D. M. Rutter	Clan Line Steamers Ltd.
<i>Clan Macleair</i>	R. S. Olden	D. E. Hughes	C. J. Daniel	Clan Line Steamers Ltd.
<i>Clan Macnair</i>	I. A. W. Williamson	A. G. Papworth	D. W. Abbey	Clan Line Steamers Ltd.
<i>Clan Ross</i>	R. M. Bessant	M. T. McGown	J. L. Spanner	Clan Line Steamers Ltd.
<i>Collin</i>	P. J. Sullivan	I. G. Williams	C. J. Shaughnessy	Jardine Matheson & Co. Ltd.
<i>Crystal Diamond</i>	G. H. Griffiths	I. C. Gravatt	P. A. Braxton	Sugar Line Ltd.
<i>Crystal Sapphire</i>	D. Patrickson	E. Kanijo	R. D. Jenkins	Sugar Line Ltd.
<i>Dart America</i>	A. F. Ashton	P. A. Waldron	P. A. Cross	Bibby Line Ltd.
<i>Dart Atlantic</i>	J. J. Butterworth	C. E. Walford	G. Troupe	Bibby Line Ltd.
<i>Donegal</i>	R. J. Ogilvy	B. J. Wright	L. O'Dwyer	Trinder Anderson & Co. Ltd.
<i>Donga</i>	W. E. Bowden	G. A. Bateman	T. J. Smith	Ocean Transport & Trading Ltd.
<i>Ebani</i>	R. Wild	M. S. Brown	R. A. Knight	Ocean Transport & Trading Ltd.
<i>Echo</i>	J. L. Jenkins	E. Evans	J. S. Earlt	Bristol S.N. Co. Ltd.
<i>Edinburgh Clipper</i>	J. D. Hook	D. C. Rone	R. M. Byrne	Whitco Marine Services Ltd.
<i>Encounter Bay</i>	M. Champneys	J. R. Penson	S. J. Braithwaite	Container Fleets Ltd.
<i>Essex</i>	J. M. Burn	R. J. Ayers	I. R. Smith	P. & O. S.N. Co.
<i>Esso Warwickshire</i>	I. D. Grigor	J. N. O'Dowd	J. Gardhouse	Esso Petroleum Co. Ltd.
<i>Flinders Bay</i>	J. Cosker	D. G. Sinclair	R. J. Parkinson	Container Fleets Ltd.
<i>Flintshire</i>	J. T. Knox	M. F. Tomlinson	D. H. Storar	Ocean Transport & Trading Ltd.
<i>Fourah Bay</i>	W. E. Bellamy	B. J. Kay	R. A. Browne	Ocean Transport & Trading Ltd.
<i>Fresno City</i>	A. L. G. Gosset, R.D.	B. T. Hernaman	C. G. Macey	Sir Wm. Reardon Smith & Sons Ltd.
<i>Galle Bridge</i>	D. Dickson	G. D. Morris	I. H. Thomas	J. & J. Denholm Ltd.

### Excellent Awards (contd.)

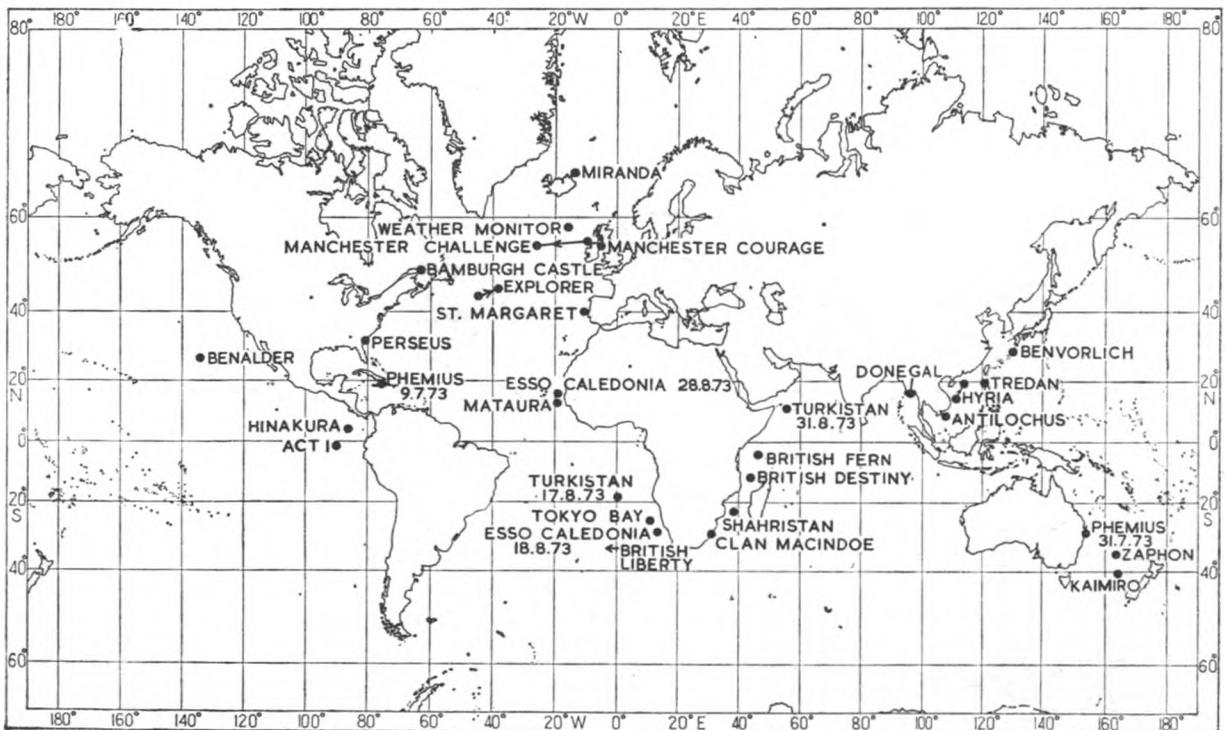
SHIP	MASTER	PRINCIPAL OBSERVING OFFICER	RADIO OFFICER	OWNER/MANAGER
<i>Glensalmond</i>	I. R. Atkinson	P. J. Wood	J. V. Morgan	Ocean Transport & Trading Ltd.
<i>Glensfalloch</i>	A. Mackenzie	R. I. Smart	G. Scullion	Ocean Transport & Trading Ltd.
<i>Glenogle</i>	R. G. Williams	P. Johnson	B. Fraser	Ocean Transport & Trading Ltd.
<i>Gloxinia</i>	W. R. Hunter	R. Sutherland	A. McDougall	Stag Line Ltd.
<i>Haparangi</i>	P. Lay	A. J. Wilson	W. H. Johnson	P. & O. S.N. Co.
<i>Hazelmoor</i>	J. Swan	J. C. Priest	R. Wade	Walter Runciman & Co. Ltd.
<i>Hector Heron</i>	R. P. Royan	T. G. Whittaker	J. N. Duckworth	Hector Whaling Ltd.
<i>Hertford</i>	A. Britain	A. R. Davidson	C. Adkin	P. & O. S.N. Co.
<i>Hinakura</i>	H. J. D. Sladen	A. Wymark	A. J. Rose	P. & O. S.N. Co.
<i>Illyric</i>	M. E. Musson	C. H. B. Bailey	H. A. Sirett	Shaw Savill & Albion Co. Ltd.
<i>Yamaica Planter</i>	M. C. Harper	J. Warwick	M. Pearson	Kaye, Son & Co. Ltd.
<i>Yamaica Producer</i>	G. A. Foulds	G. W. H. Tennant	I. MacDonald	Kaye, Son & Co. Ltd.
<i>Jervis Bay</i>	P. J. Clark	S. D. Smith	W. F. Shepherd	Container Fleets Ltd.
<i>John Biscoe</i>	E. M. S. Phelps	M. L. Shakesby	C. Christiansen	British Antarctic Survey
<i>John Murray</i>	P. H. Maw	M. J. Coventry	B. A. Chapman*	Natural Environment Research Council
<i>King Alfred</i>	F. G. King	D. P. Colley	J. Gray	Cayzer Irvine & Co. Ltd.
<i>Kohinur</i>	M. J. Charlesworth	I. W. Crane	D. Rogers	P. & O. S.N. Co.
<i>Kohistan</i>	D. M. Foster	M. J. Stares	M. E. Bradfield	P. & O. S.N. Co.
<i>Kowloon Bay</i>	J. A. Dougall	S. Brown	M. R. Palmer	Ocean Transport & Trading Ltd.
<i>Laomedon</i>	C. V. Windsor	D. J. Baily	R. A. Wakeley	Ocean Transport & Trading Ltd.
<i>Laurentic</i>	D. T. Mouldley	P. Costalas	E. Barnes	Shaw Savill & Albion Co. Ltd.
<i>Liverpool Bay</i>	R. Moore	P. M. Watt	W. J. Lloyd	Ocean Transport & Trading Ltd.
<i>Losiebank</i>	P. Simpson	I. N. Conabear	S. O'Callaghan	Bank Line Ltd.
<i>Lylinge</i>	J. W. Stone	C. J. Line	D. Wade	Constants Ltd.
<i>Manapouri</i>	J. D. Guyler	T. D. Hogg	D. W. Hirons	P. & O. S.N. Co.
<i>Manchester Quest</i>	D. P. Humphrey	M. Broadhead	W. Williams	Manchester Liners Ltd.
<i>Mataura</i>	F. C. Taylor	B. Kay	W. F. Law	P. & O. S.N. Co.
<i>Methane Progress</i>	C. B. Oxley	H. A. Johnson	G. Houlihan	Shell Tankers (U.K.) Ltd.
<i>Miranda</i>	D. Y. Roberts	S. L. Moorby	R. E. Vinall	Dept. of Trade & Industry
<i>Moreton Bay</i>	L. E. Howell	C. C. Woodward	W. J. R. Davenport	Container Fleets Ltd.
<i>Nevasa</i>	I. K. Bowerman	J. Reynolds	J. C. Furlong	P. & O. S.N. Co.
<i>Nicolas Bowater</i>	J. B. Caley	L. Robbins	J. R. Tomlinson	Cayzer Irvine & Co. Ltd.
<i>Nigaristan</i>	R. L. Cain	D. P. Ploughman	J. S. Wallace	P. & O. S.N. Co.
<i>Northern Reward</i>	W. Harris	—	S. B. Barr	Northern Trawlers Ltd.
<i>Orsino</i>	K. Neilson	G. W. Patrick	E. Willey	Hellyer Bros. Ltd.
<i>Otaio</i>	F. G. Bevis	J. G. Melrose	D. R. Houghton	P. & O. S.N. Co.

<i>Otaki</i>	..	J. H. B. Weston..	..	D. H. Moorhouse	..	G. H. Williams	..	P. & O. S.N. Co.
<i>Othello</i>	..	J. A. Jennings ..	..	M. E. Spurgeon	..	J. A. Thompson	..	Hellyer Bros. Ltd.
<i>Patroclus</i>	..	A. M. Blackburn	..	P. Fielding ..	..	I. K. G. Walsh	..	Ocean Transport & Trading Ltd.
<i>Pesander</i>	..	D. K. Dunlop, R.D.	..	N. W. Hunt ..	..	M. S. McLaren	..	Ocean Transport & Trading Ltd.
<i>Phemius</i>	..	A. S. Thompson	..	J. Othman ..	..	B. W. J. Peters	..	Ocean Transport & Trading Ltd.
<i>Port Brisbane</i>	..	M. L. Coombs ..	..	W. B. Wheeler	..	J. C. Roberts ..	..	Port Line Ltd.
<i>Port New Plymouth</i>	..	G. Carling ..	..	I. F. Gosden ..	..	B. Forde ..	..	Port Line Ltd.
<i>Ross Orion</i>	..	L. Whur ..	..	—	..	R. R. N. Laing	..	Hudson Bros. Trawlers Ltd.
<i>St. Jason</i>	..	A. T. Blenkin ..	..	—	..	R. T. Murphy	..	T. Hamling & Co. Ltd.
<i>St. Jasper</i>	..	R. Ellis ..	..	—	..	H. G. Pask ..	..	T. Hamling & Co. Ltd.
<i>Santona</i>	..	F. R. N. Best ..	..	W. Pollock ..	..	A. P. G. Gray	..	G. Heyn & Sons Ltd.
<i>Scotspark</i>	..	D. T. Jackson ..	..	J. D. Morrison	..	S. W. Morris ..	..	J. & J. Denholm Ltd.
<i>Shahristan</i>	..	M. H. Wilson ..	..	D. A. Hunter ..	..	P. G. Chadwick	..	P. & O. S.N. Co.
<i>Somerset</i>	..	S. W. Lambrick..	..	L. J. Hesketh ..	..	M. J. Ellis ..	..	P. & O. S.N. Co.
<i>Somerset Maugham</i>	..	B. Taylor ..	..	—	..	J. S. Hallam ..	..	Newington Trawlers Ltd.
<i>Summity</i>	..	W. G. Hunt ..	..	A. MacIntyre ..	..	L. Dollin ..	..	F. T. Everard & Sons Ltd.
<i>Sussex</i>	..	J. Reid ..	..	R. C. Palmer ..	..	R. J. Harris ..	..	P. & O. S.N. Co.
<i>Tairea</i>	..	T. E. Kelso ..	..	C. F. Balaporia	..	D. P. Hammond	..	P. & O. S.N. Co.
<i>Titan</i>	..	D. R. Hayward ..	..	M. L. M. Smith	..	P. D. Stapleton	..	Ocean Transport & Trading Ltd.
<i>Tokyo Bay</i>	..	D. T. MacLachlan	..	R. I. Blackburn	..	D. MacKay ..	..	Ocean Transport & Trading Ltd.
<i>Tongariro</i>	..	J. A. North ..	..	C. J. Price ..	..	J. Whiteley ..	..	P. & O. S.N. Co.
<i>Trewidden</i>	..	L. J. Annett ..	..	R. Ley ..	..	N. Sturgeon ..	..	P. & O. S.N. Co.
<i>Troll Park</i>	..	W. Tawse ..	..	C. W. Harvey	..	J. Smith ..	..	J. & J. Denholm Ltd.
<i>Turakina</i>	..	A. Dorkins ..	..	W. F. Harris ..	..	—	..	P. & O. S.N. Co.
<i>Turkistan</i>	..	A. W. Jones ..	..	J. W. Bird ..	..	J. Bell ..	..	P. & O. S.N. Co.
<i>Westminster Bridge</i>	..	J. W. Waldie ..	..	S. E. H. Wrigley	..	J. C. Cottier ..	..	Britain S.S. Co. Ltd.
<i>Zaphon</i>	..	G. E. Bennison ..	..	P. F. Gill ..	..	A. Young ..	..	Shell Tankers (U.K.) Ltd.
<b>'MARID' SHIPS†</b>								
<i>Ferryhill II</i>	..	J. G. Innes ..	..	J. Smith	..	—	..	Aberdeen Coal & Shipping Co. Ltd.
<i>Hamble</i>	..	N. Macleod ..	..	N. Alabaster ..	..	T. A. Hall*	..	Shell-Mex & B.P. Ltd.
<i>Malling</i>	..	A. Gardner ..	..	A. Calvert ..	..	C. B. Walton*	..	Stephenson Clarke Shipping Ltd.
<i>Sarnia</i>	..	H. W. Walker ..	..	J. O. Atwood ..	..	G. A. Robinson	..	British Rail

\* Deck Officer. † Relief Master. ‡ Vessels recruited for the purposes of observing and transmitting sea temperatures together with non-instrumental observations when in the North Sea.

## TRAWLERS (non-instrumental)

SKIPPER	RADIO OPERATOR				TRAWLER OWNERS
J. C. Gibson .. ..	—				T. Hamling & Co. Ltd.
A. V. Meech .. ..	—				Northern Trawlers Ltd.
J. R. Nelson .. ..	—				T. Hamling & Co. Ltd.
R. Pepper .. ..	—				Northern Trawlers Ltd.
C. H. Pitts .. ..	—				Boyd Line Ltd.
D. Platten .. ..	—				T. Hamling & Co. Ltd.
J. A. Williams .. ..	—				Boyd Line Ltd.
—	J. Beasty .. ..	..	..	..	Firth Steam Trawling Ltd.
—	C. Bird .. ..	..	..	..	Boyd Line Ltd.
—	P. R. Hickson .. ..	..	..	..	Northern Trawlers Ltd.
—	K. H. Massey .. ..	..	..	..	T. Hamling & Co. Ltd.
—	A. J. Nettleship .. ..	..	..	..	Hudson Bros. Trawlers Ltd.
—	B. Rowbotham .. ..	..	..	..	B. A. Parkes
—	K. Ward .. ..	..	..	..	T. Hamling & Co. Ltd.



Position of ships whose reports appear in "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.

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

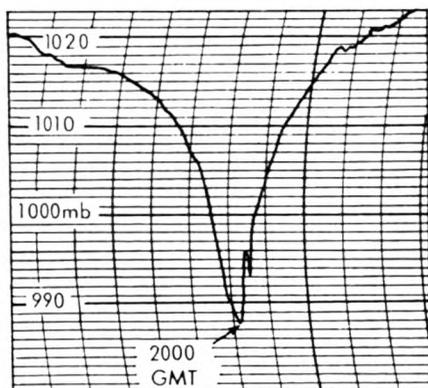
### HURRICANE 'ELLEN'

#### North Atlantic Ocean

m.v. *Explorer*. Captain E. Sherlock. Wilmington, N.C. to Liverpool. Observers, the Master and ship's company.

22nd–23rd September 1973. At 1430 GMT on the 22nd, in position  $44^{\circ} 29'N$ ,  $41^{\circ} 31'W$ , pressure had fallen rapidly to 1010.5 mb and the wind had increased to SSE, force 6–7. Wind waves 5 m, s'ly swell of 6 m. At 1600, as the wind continued to increase and back, and the pressure continued its rapid fall, the vessel was thought to be in the navigable semicircle of the fast-approaching Hurricane Ellen. The wind was placed on the starboard quarter and, as the wind continued to back, the course of the vessel was adjusted accordingly.

At 1800, in position  $44^{\circ} 54'N$ ,  $40^{\circ} 54'W$ , the wind was ESE, force 8 and pressure had fallen to 995.9 mb. The vessel was hove-to in rough seas, continuous moderate rain and winds increasing to N'W, force 11–12. At about 2000 the rain stopped, the skies cleared, the pressure stopped falling and the vessel was thought to be in the eye of the storm. These conditions continued for about an hour before the sky clouded over again and the pressure continued to rise.



By 0001 on the 23rd, in position  $45^{\circ} 06'N$ ,  $41^{\circ} 36'W$ , the pressure had risen to 1011.0 mb and the wind had backed to NW, force 8. There was still a heavy swell and it was not until 0930 that the vessel was able to resume her normal course and speed.

Position of ship at 0600 on 23rd:  $44^{\circ} 54'N$ ,  $41^{\circ} 18'W$ .

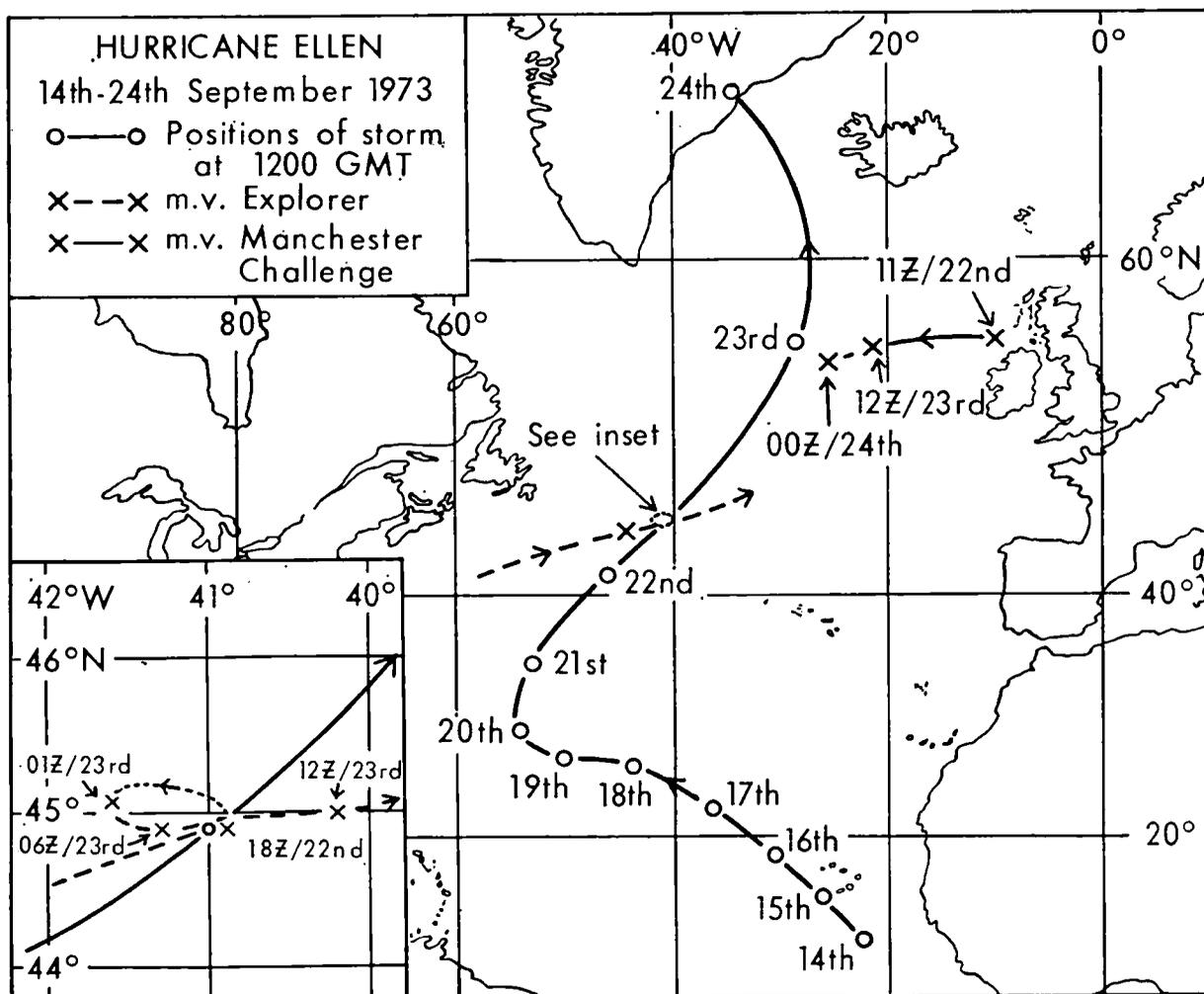
m.v. *Manchester Challenge*. Captain N. W. Cockshoot. Manchester to Montreal. Observers, the Master and ship's company.

22nd–24th September 1973. At 1100 GMT on the 22nd, when the vessel was in position  $55^{\circ} 47'N$ ,  $09^{\circ} 43'W$  on a course of  $277^{\circ}T$ , Hurricane Ellen was reported in position  $42^{\circ}N$ ,  $46^{\circ}W$ , moving NNE at 40 kt. At 1900 we altered course to  $260^{\circ}T$  to avoid the centre of the storm. The wind was N'ly, force 2 and the pressure 1020.3 mb, falling.

By 0600 on the 23rd the wind had backed to ssw, force 3 but by 0800 the wind was s'ly, force 7 with frequent squalls and confused sea and swell. Pressure was 1013.3 mb, still falling. At 1200, in position  $55^{\circ} 15'N$ ,  $21^{\circ} 19'W$ , the wind was SSE, force 8 in fierce squalls, rough seas and a heavy s'ly swell. Pressure was 1001.3 mb, falling rapidly.

We had reached our nearest position to the centre of the storm by 1400 and the pressure had fallen to 986.0 mb. The wind increased and veered from SSE, force 9–10 to wsw, force 11 at 1500 with high seas and a steep sw'ly swell. Pressure started to rise unsteadily and, by 0001 on the 24th, had risen to 1008.0 mb and the wind had eased to wsw, force 7.

Position of ship at 0001 on 24th:  $54^{\circ} 55'N$ ,  $25^{\circ} 25'W$ .



Note. Ellen moved west into the Atlantic from the West African coast as a tropical disturbance on 11th September and became a depression on the 14th south of the Cape Verde Islands.

It continued to move northwest and then west (see chart) at 15–20 kt and deepened rapidly on the 19th to become a hurricane. The storm then recurved and continued to deepen. By the 21st pressure had fallen to 962 mb and winds had increased to 100 kt near the centre but by the next day, over cooler water, the storm became extra-tropical and central pressure rose to 980 mb. The storm covered a large area, with gales extending 300 miles to the east and 200 miles to the west. By 1200 on the 23rd central pressure had risen to 984 mb but by midnight had fallen to 968 mb when the centre was west of Reykjavik. After moving over the Greenland coast at Angmagssalik, travelling down the coast to Cap Farvel, the storm curved north-eastward and gradually disintegrated.

## TYPHOONS 'BILLIE' AND 'DOT'

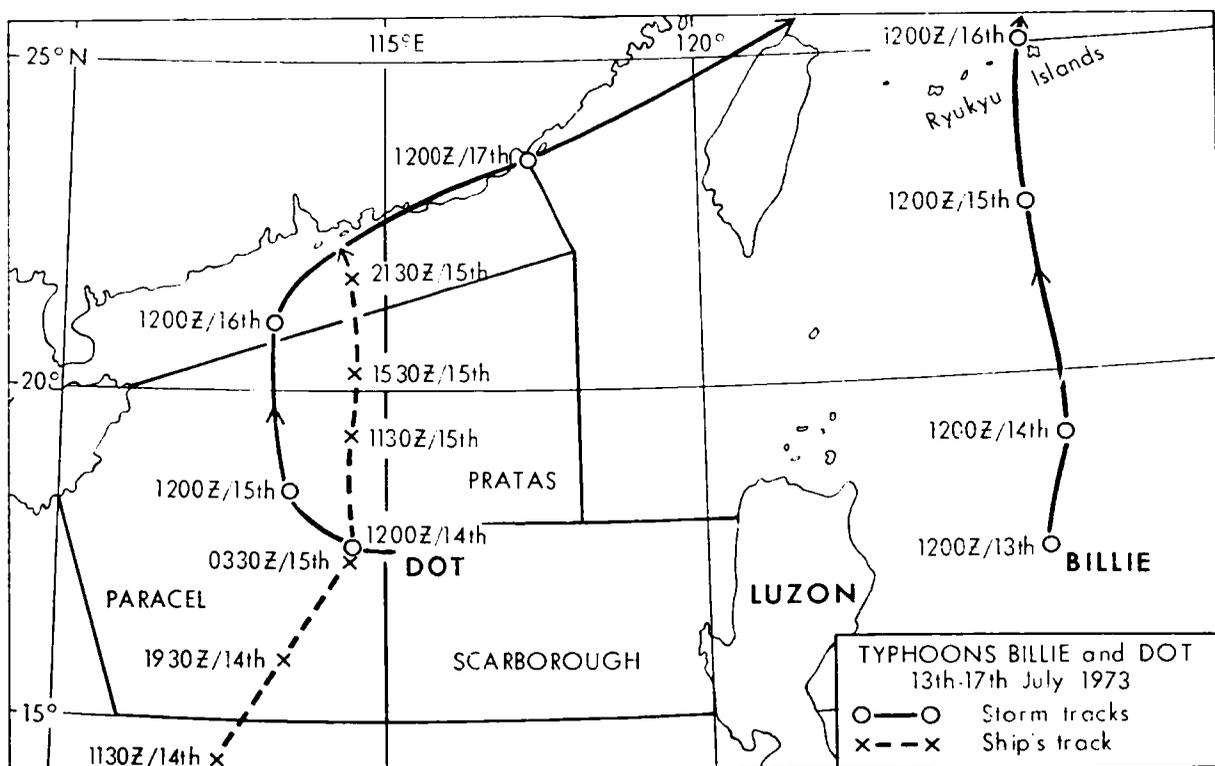
### South China Sea

s.s. *Hyria*. Captain E. H. Phillips. Singapore to Hong Kong. Observers, Mr. R. Firth, Chief Officer, Mr. L. K. Pringle, 2nd Officer and Mr. C. Woodnutt, 3rd Officer.

13th–16th July 1973. The vessel had left Singapore at 1800 GMT on the 11th with a cargo of fuel oil, diesel oil and L.P.G. The first report of tropical storm Billie [developing east of Luzon] came in at 1224 on the 13th when the vessel's position was  $9^{\circ} 18' N$ ,  $109^{\circ} 42' E$  in moderate weather during the sw monsoon. Gale warnings were received from Hong Kong for areas Paracel, Pratas and Scarborough [see chart], with reports for Pratas getting worse. Billie was expected to move NW at 6 kt.

At 0525 on the 14th the first report of a tropical depression over the South China Sea was reported, centred at  $17^{\circ} 30' N$ ,  $115^{\circ} 12' E$ . We started to plot this storm and at 1224 further reports indicated that it would move NW at 4.5 kt. By 1530 the centre was 130 miles NNE of the vessel and the wind was W'N, force 5–6 and increasing steadily. Pressure 1001.3 mb, falling rapidly.

By 0029 on the 15th the vessel was 50–60 miles south of the storm centre and the wind was then SW, force 10 with the pressure down to 991.9 mb. It was decided to keep the vessel on a course of  $029^{\circ} T$  to avoid passing too near to the storm which later intensified into a tropical cyclone named Dot. Throughout most of the period the wind was astern of the vessel but seas did break over the main and fore decks, causing only slight damage to deck fittings.



At 0300 the vessel altered course to  $355^{\circ}\text{T}$  to proceed to Hong Kong. The weather slowly decreased in intensity as we headed away from Dot which, at 0445, was centred at  $17^{\circ} 48' \text{N}$ ,  $113^{\circ} 36' \text{E}$ . However, after our arrival in Hong Kong Bay at 0010 on the 16th, the full force of the storm was felt as it passed close to Hong Kong during the night of 16th/17th July.

We on the *Hyria* gratefully acknowledge the reports sent to shipping but we feel that more information could be given, such as estimated pressure and wind speeds. Only in one report was the wind speed given and that was one of 55 kt sent in by us.

Position of ship at 1130 on 14th:  $14^{\circ} 24' \text{N}$ ,  $112^{\circ} 24' \text{E}$ .

Position of ship at 1130 on 15th:  $19^{\circ} 24' \text{N}$ ,  $114^{\circ} 30' \text{E}$ .

*Note 1.* Typhoons Billie and Dot developed as tropical depressions on 13th July on either side of Luzon (see chart) and quickly reached typhoon strength by the 14th. Billie moved due north, reaching her peak intensity on the 15th with winds of 120 kt near the centre and gusts of 160 kt. She weakened a little thereafter, crossing the Ryukyu Islands on the 17th and eventually ended up in the Yellow Sea. Dot was of much lesser intensity, with maximum wind speeds of about 80 kt at her peak on the 15th. She recurved north-east on the 16th, passing close to Hong Kong through Formosa Strait and then due north into the Yellow Sea.

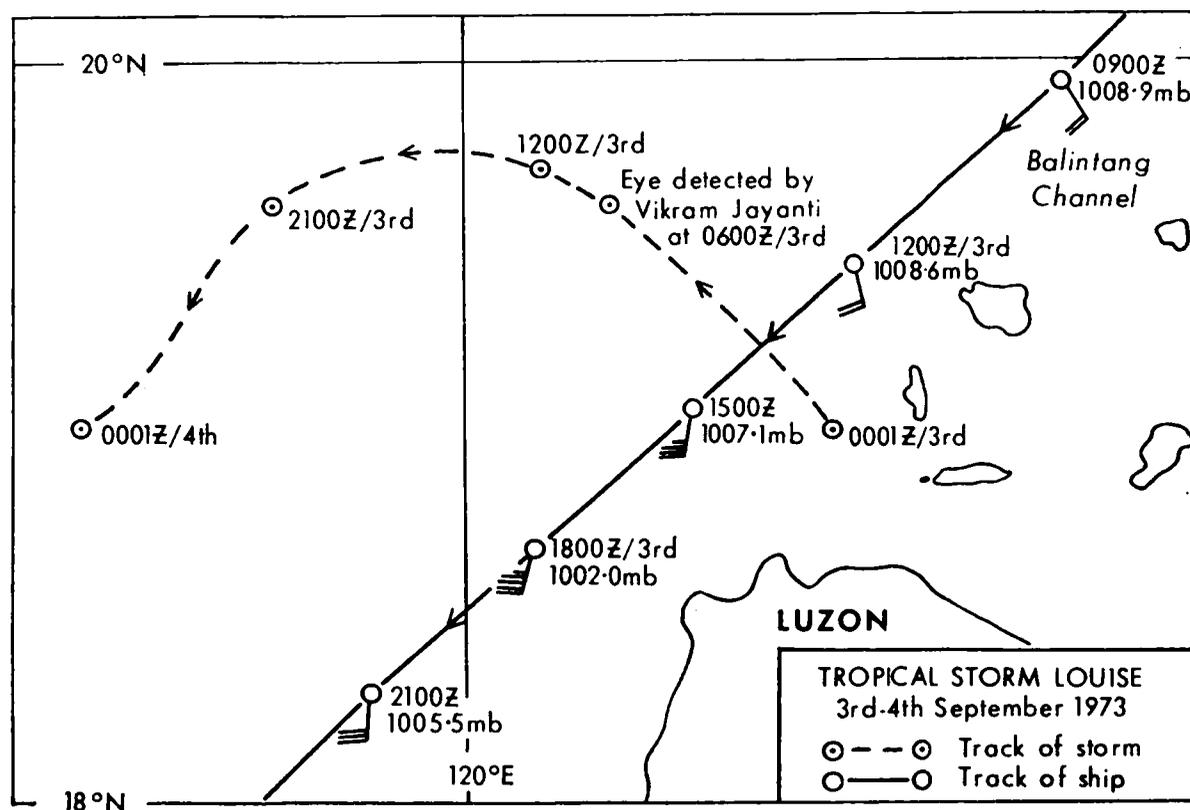
*Note 2.* The *Hyria* is a Hong Kong Observing Ship.

## TROPICAL STORM 'LOUISE'

### South China Sea

m.v. *Tredan*. Captain R. G. Macdonald. Nagoya to Singapore. Observers, the Master, Mr. A. Ebelthite, Chief Officer and Mr. I. R. Mir, 2nd Officer.

3rd-4th September 1973. The first notification of the development of tropical storm Louise was when it was a depression centred at  $13^{\circ}\text{N}$ ,  $134^{\circ}\text{E}$ . The first indication we observed was a growing swell from  $170^{\circ}$  at 0001 GMT on the 3rd. A track of Louise's movements was kept and indications were that it was a compact storm. The 0844 message from the *Vikram Jayanti* (VWTW) giving the eye position at 0630 (see chart) was invaluable as we could see little indication of the storm other than rain in the area.



By 1400 we encountered heavy rain and freshening winds and by 1800 the vessel was being lashed by force 9 winds, often gusting to over 50 kt, torrential rain and heavy seas. Being deeply laden, the vessel had a comfortable passage across the track of the storm, apart from shipping heavy seas. By 0001 on the 4th conditions had moderated, although the wind was still fresh, and the vessel continued on passage away from the storm's influence.

Position of ship at 1200 on 3rd (approx.): 19° 29'N, 121° 05'E.

*Note 1.* Louise intensified into a tropical storm in the Luzon Strait on the 3rd and moved erratically westward. Two days later, near 20°N, 115°E, she turned north-west as a typhoon with maximum winds near the centre of 80 kt, gusting occasionally to 100 kt. Crossing Hainan, and finally North Vietnam on the 7th, she weakened to a tropical storm in the process.

*Note 2.* The *Tredan* was a Hong Kong Observing Ship at the time of this report.

## SQUALLS

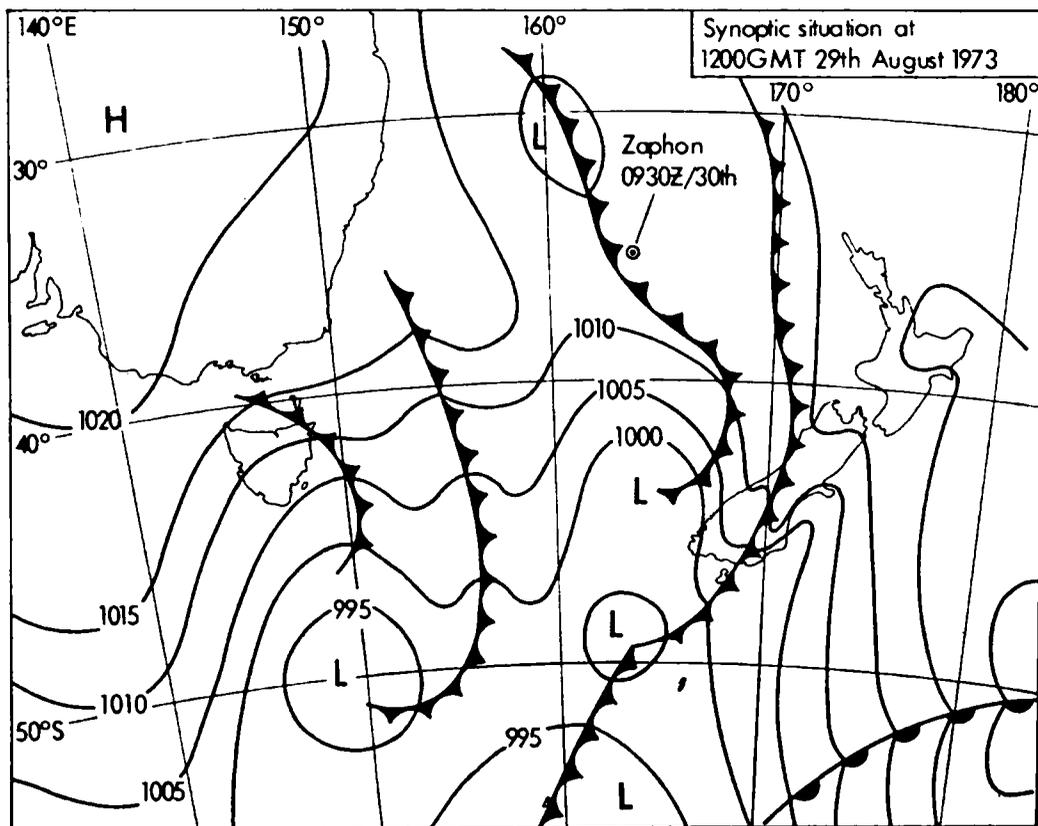
### Tasman Sea

s.s. *Zaphon*. Captain N. Coull. Whangarei, N.Z. to Mina' al Ahmadi. Observer, Mr. D. J. Seabrooke, 3rd Officer.

30th August 1973. The pressure had been rising slowly but at 0900 GMT there was a sharp drop of 1 mb. At the same time C<sub>L</sub>7 started to invade the sky, where there had only been  $\frac{3}{8}$  of C<sub>L</sub>9, and had completely covered it by 0920. At 0930 there was a sudden increase in wind speed from force 4 to 10, and a noticeable drop in the air temperature from 15° to 11°C. Very heavy rain started at the same time and lasted for 15 min.

By 0950 the wind speed had decreased to a steady force 5, the air temperature had risen to 13° and there were breaks in the cloud. There was also a change in the sw'ly swell: the period increased from 7 to 10 sec and increased in height from 3 to 4.5 m.

At 1020 the sky again clouded over and there was heavy rain between 1030 and 1040, accompanied by a rapid increase in wind speed to force 10. When the rain



had passed the wind dropped to force 4 again but there was no change in air temperature.

Throughout the whole period the wind direction was wsw and the swell was sw'ly. There were frequent flashes of lightning but no thunder was heard. Course 257°T at 14.5 kt.

Position of ship at 0900: 35° 10'S, 163° 40'E.

*Note.* Unsettled weather prevailed over the Tasman Sea (see chart) towards the end of August. The squalls encountered by the *Zaphon* would be consistent with crossing a cold front and then a trough behind the front.

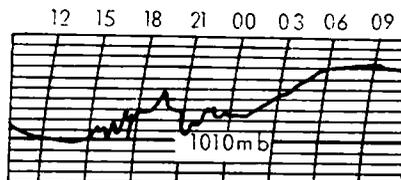
## PRESSURE VARIATIONS

### off Durban

m.v. *Clan Macindoe*. Captain S. Hagan. At anchor. Observers, the Master and Mr. M. W. H. Williams, 3rd Officer.

21st September 1973. Just after anchoring off Durban in Natal Roads at 1515 GMT, until almost midnight the same day, the erratic changes in pressure, as shown below, took place between 1010 and 1015 mb. Air temp. 20.0°C. Wind s'ly, decreasing from force 5 to force 2.

Position of ship: 29° 51'S, 34° 04'E.



*Note.* The synoptic situation at 1200 GMT on the 21st reveals a generally s-sw'ly airstream over coastal south-east Africa, with a 'heat low' over northern Cape Province. The circulation of this heat low would oppose the general air flow over coastal Durban, and the pressure changes give a rough idea as to how this conflict went during late afternoon and early evening. The temperature of the air mass in the circulation of the heat low was of the order of 30°C, whereas the air-mass temperature of the general flow was about 20°. Thus the barograph trace is the result of this diurnal variation superimposed by changes of pressure due to events on a synoptic scale.

## SHIP STRUCK BY LIGHTNING

### at Savannah, Georgia

m.v. *Perseus*. Captain D. M. Belk. In port. Observers, the Master and ship's company.

15th August 1973. At 2115 GMT, just prior to the vessel sailing, a thunderstorm broke over Savannah with continuous sheet and fork lightning together with heavy rain. At 2130 the vessel was struck by lightning on the upper superstructure, a large report being heard throughout the ship. The barograph showed an almost instantaneous rise of 1.8 mb. There was no effect on the radar or chronometers but the standard compass was found to have a maximum deviation of 27°. At the time the vessel was struck, the ship's head was 230°T, making an angle of approximately 77° with the isogonic lines.

It was thought that the effect on the compass would be only temporary but after two weeks there was no noticeable change so it was decided by the Master to adjust the compass. The polarity of the athwartship magnets was reversed and the bucket adjusted slightly. The vessel was swung off Savannah Light Tower on 3rd September and a good deviation curve obtained. The D/F was also recalibrated. No noticeable change in deviation was noticed throughout the rest of the voyage.

Position of ship on 15th August: 32° 05'N, 81° 06'W.

Note. The Head of the Admiralty Compass Observatory comments:

"Thank you for forwarding the report of the incident when the *Perseus* was struck by lightning. This is interesting as few reports of such occurrences are received nowadays.

"It is noted that the Master, by his action, confirms the truth of the seamen's well-tried rough-and-ready rule that, when a ship is struck by lightning, the athwartship magnets should be reversed. It is seldom that the ship's fore-and-aft magnetism is markedly affected on these occasions and it is interesting that the change in the ship's polarity appears to have no connection with the direction of the ship's head when she is struck.

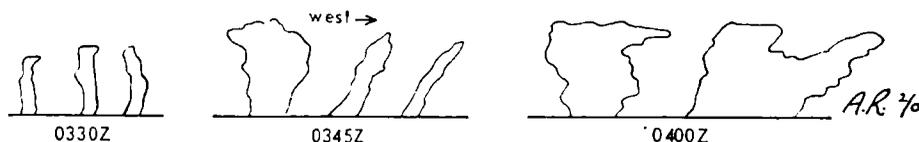
"It would be interesting to know how the ship's magnetism behaves over the next twelve months."

## UNUSUAL CLOUD FORMATION

### Caribbean Sea

m.v. *Phemius*. Captain A. S. Thompson. Savannah to Kingston, Jamaica. Observer, Mr. A. R. Reynolds, 2nd Officer.

9th July 1973. At 0330 GMT three separate and distinct Cu clouds were seen to form near the horizon; the cloud coverage at the time was about 2/8 small Cu below an altitude of 10°. The three clouds formed quite rapidly, being equally spaced and narrow. After 15 minutes the centre and right-hand clouds started to show sheering



from the vertical to the west, while the cloud on the left continued to extend upwards and increased slightly in width. After 20 minutes this cloud produced a flash of lightning internally and continued to do so at approx. 20-sec intervals. After 30 minutes this ceased and the cloud top started to form an anvil. Meanwhile the other two clouds had reached a 60° sheer and started to fill out. After 35 minutes they had joined and reached the same vertical extension as the cloud on the left and started producing flashes, the frequency of which were greater than in the previous cloud; this continued for about 20 minutes. By 0430 the sky had reached 4/8 coverage and the specimen clouds had merged with other Cu clouds invading the sky. Rain was observed on the radar in the direction of the clouds at 32 miles. The base formation was indistinguishable.

Position of ship at 0330: 18° 15'N, 75° 30'W.

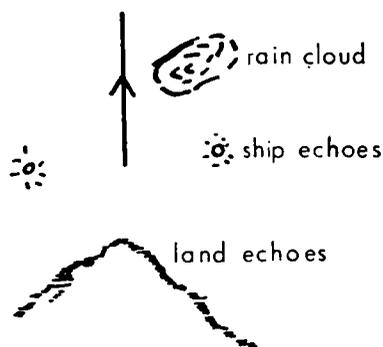
## RADAR ECHOES

### Eastern North Atlantic

m.v. *St. Margaret*. Captain B. Ditchburn. Glasgow to Nouadhibou. Observers, the Master, Mr. P. Nieschmidt, 3rd Officer and Mr. J. Newman, Radio Officer.

10th July 1973. At 2130 GMT about a dozen echoes resembling rain clouds were seen moving north to south on the radar. They appeared to be isolated from one another. As the first one approached the vessel the wind freshened rapidly from the north but no rain was experienced until 2200 when thunder and lightning occurred close by. There was slight rain and then the wind dropped from force 5 to force 3. During this time the barograph trace had risen rapidly by 2 mb to 1018 mb and then had gradually fallen to 1015 mb until the rain had passed. The air was very humid at the time, the dry and wet bulb both reading 19°C. Shortly afterwards, at 2230, an echo astern, which was quite pronounced and resembled a land echo, appeared on the 24- and 48-mile range. Other ships were seen to pass through this. Visibility for the previous two days had been reduced by haze to 3 miles.

Position of ship at 2130 (approx.): 40° 06'N, 11° 00'W.



*Note.* There was an almost stationary anticyclone centred at about  $45^{\circ}\text{N}$ ,  $25^{\circ}\text{W}$  at 1200 that day, with a 'heat low' over the centre of the Iberian Peninsula where thunderstorms developed. They moved west and then due south off the coast of Portugal during the evening. The general tendency over the *St. Margaret's* route was a gradual fall of pressure, and the temporary rise of pressure was almost certainly due to a 'thunderstorm pressure surge' where the downdraught from a Cb cloud is of colder and therefore denser air.

Since the surface airflow was NE'ly and then N'ly off the coast of Portugal, the very warm air mass cooling over the sea would have produced a sharp low-level inversion of temperature and thus the abnormal radar echoes.

## INSECTS

### Irish Sea

s.s. *Manchester Courage*. Captain D. G. Thomas. Montreal to Manchester. Observers, Mr. J. P. McKenna, 2nd Officer and Mr. J. White, Chief Engineer.

6th September 1973. At 1345 GMT when the vessel was 6 miles north of Mew Island lighthouse a small cloud of black flies (specimen enclosed) hit the vessel. They could be seen on the decks, hatch tops and on the accommodation. To give an idea of the area they occupied on the accommodation, fore-part: there was a black mass of them about 15 by 5 m so dense that the white paintwork could hardly be seen. Some of these flies were caught by the wind and blown off the fore-part and up over the bridge down on to the after-deck. They were approx. 6 mm long and 28 mm wide. There were so many of them that the accommodation and deck had to be hosed down to remove them. Air temp.  $16.4^{\circ}\text{C}$ , wet bulb  $15.4^{\circ}$ . Pressure 1016.6 mb. Wind s'ly, force 4.

Position of ship:  $54^{\circ} 48'\text{N}$ ,  $5^{\circ} 30'\text{W}$ .

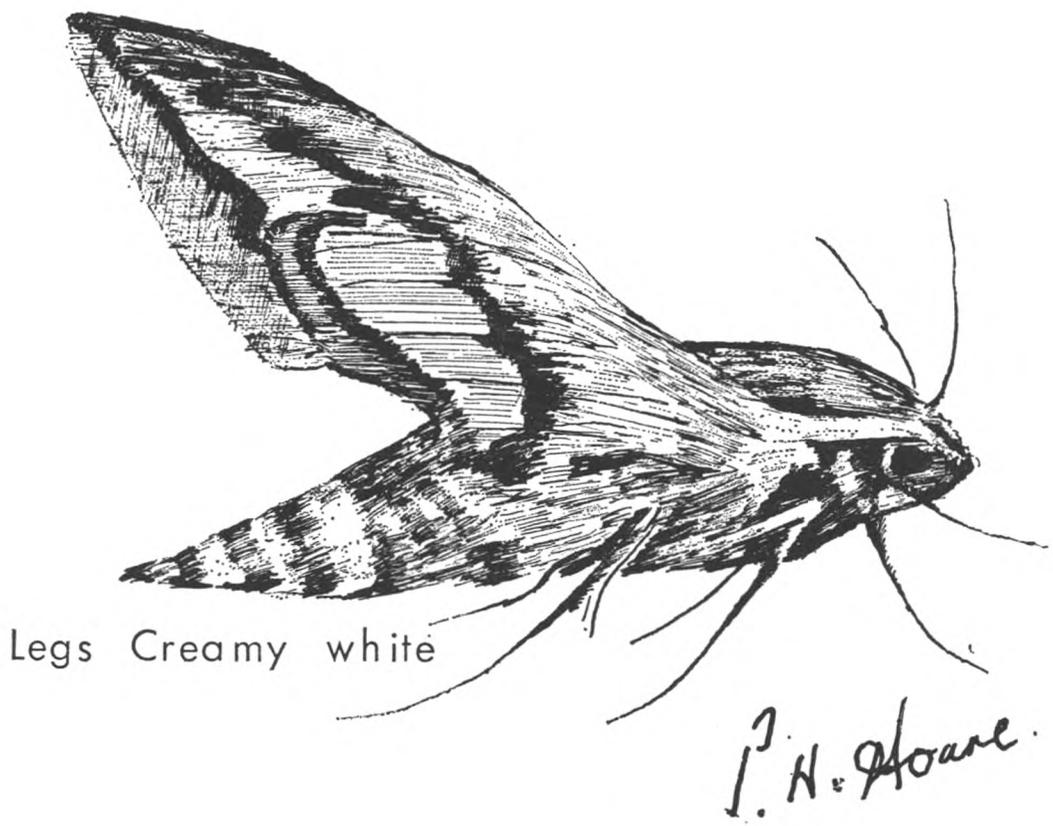
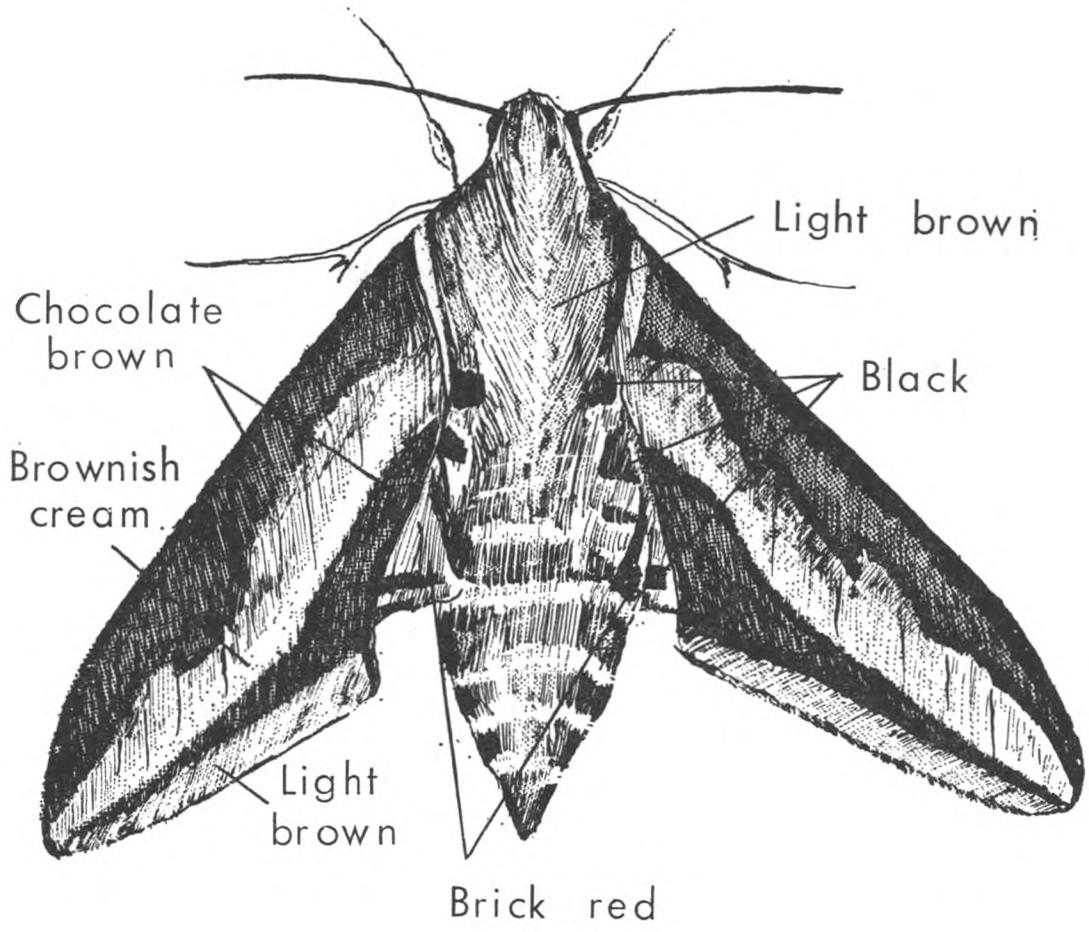
*Note.* Mr. R. W. Crosskey of the Department of Entomology, Natural History Museum, comments:

"The specimen sent was *Dilophus febrilis* Linnaeus. This is a common species round the British Isles. It belongs to the family Bibionidae which are thick-set, most black flies which are found especially in meadows and grassy hillsides, often appearing in great numbers. The adult flies are frequently seen flying up and down in the sun or sitting on foliage. They are completely harmless and in fact may be of importance in pollinating fruit trees. There are two common species, neither with any public health significance. The larger is the St. Mark's Fly (*Bibio marci*). *Dilophus febrilis* is much smaller, common in spring and again in late summer. The larvae are found in groups in turf which they may damage, causing brown patches to appear where they are feeding on the roots."

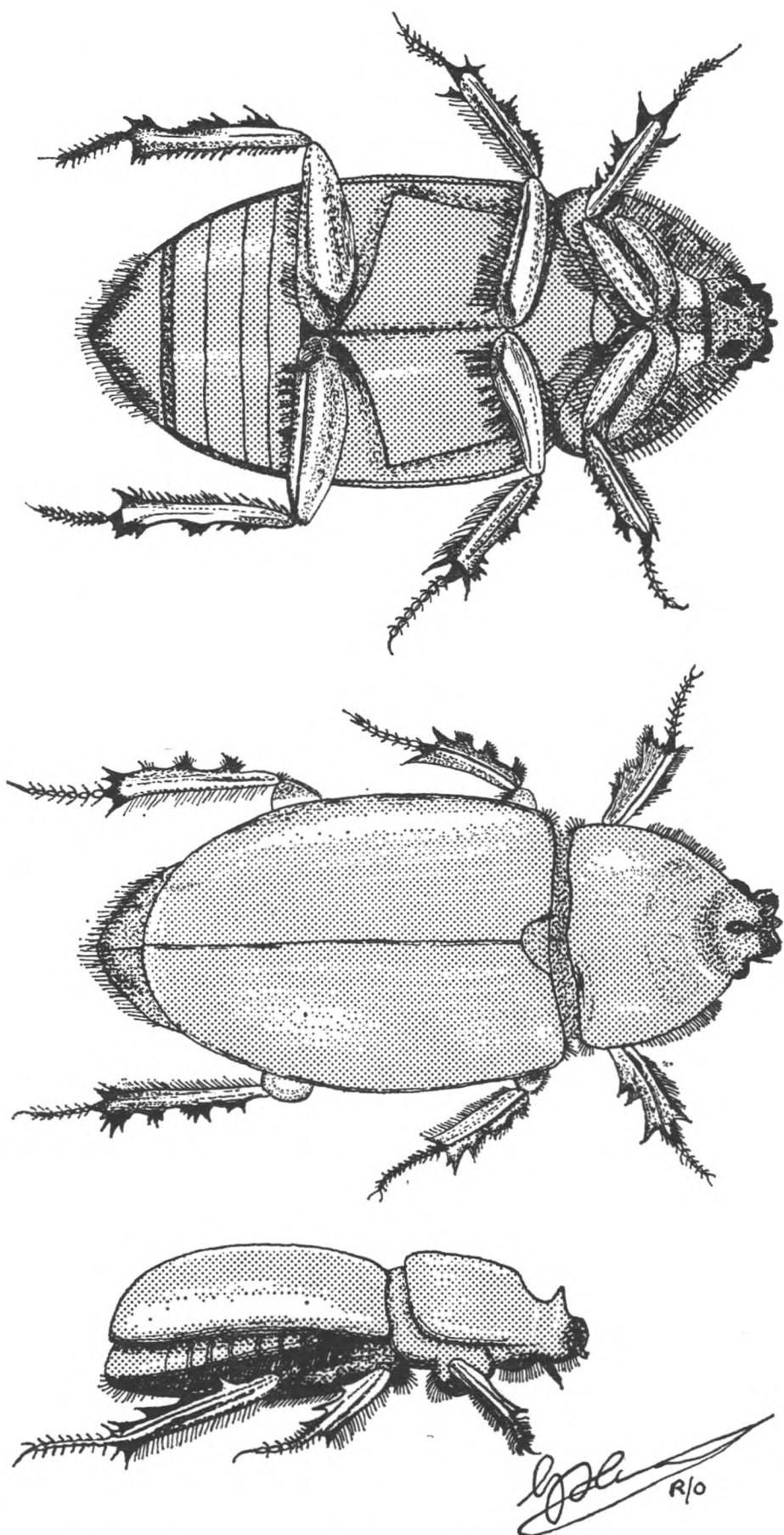
### North Atlantic Ocean

o.w.s. *Weather Monitor*. Captain K. R. H. Wem. Observer, Mr. P. H. Hoare, Meteorologist.

15th July 1973. At 1525 GMT the moth shown in my sketch [shown opposite] was seen to land on the deck of our vessel while we were taking over Station 'India' and the *Weather Reporter* was just leaving. I would be pleased if it could be identified;



**The Bedstraw Hawk Moth found on o.w.s. Weather Monitor.**



**The Rhinoceros Beetle found on m.v. *British Liberty*.**

the specimen is being forwarded. Air temp. 11.8°C, dew-point 11.1°, sea 11.8°. Wind N'ly, force 3. Pressure 1015.7 mb.

Position of ship: 58° 16' N, 15° 42' W.

*Note.* Dr. R. A. French of the Entomology Department, Rothamsted Experimental Station, comments:

"The moth found on the *Weather Monitor* was a Hawk Moth. It was *Celerio galii*, the Bedstraw Hawk Moth; it gets this name from the fact that the caterpillar feeds on the plant Bedstraw. It is a well-known, but comparatively rare migrant to the British Isles.

"I have six other records of this moth in the latter half of July from Sussex, Worcestershire, Oxfordshire, Clackmannanshire and Argyllshire. This suggests quite an immigration about mid-July which coincides well with the record from the *Weather Monitor*. I have sent out an appeal to the amateur lepidopterists for any other records of this moth and if I can acquire sufficient information I shall try to trace the track of these migrants back to their source, probably in southern Europe."

### South Atlantic Ocean

m.v. *British Liberty*. (Captain not named.) Bandar-e Māhshahr, Persian Gulf to Buenos Aires. Observer, Mr. G. T. Lamb, Radio Officer.

1st August 1973. Two days after the vessel passed Cape Town the beetle in my sketch [shown opposite] was found on board dead. It was 4.2 cm long, had a dark mahogany-coloured body which was quite hairy on the underside, especially round the outer edges of its thorax and abdomen, as were its legs. Unfortunately one of its middle legs was missing otherwise it was a very good specimen.

Whilst passing the South African coast the wind varied between a moderate and strong breeze blowing from shore and, with the exception of a short call off-limits at Cape Town for mail and stores, at no time did we approach closer than 12 miles to the coast.

Position of ship (estimated): 34° S, 00°.

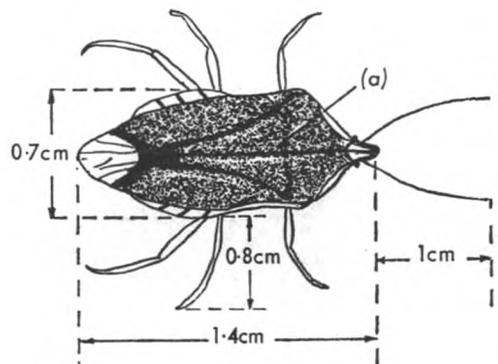
*Note.* Mr. A. Watson of the Department of Entomology, Natural History Museum, comments:

"This beetle is almost certainly a female of the very common African species *Oryctes boas* (L.) (Scarabaeidae, Dynastinae), one of the 'Rhinoceros Beetles'. The males have a much longer horn on their heads. Both larvae and adults live in rotting compost and dungheaps but the adults also cause damage to palm trees by boring into the crowns and leaf bases. They are often attracted to light."

### Moçambique Channel

m.v. *Shahristan*. Captain M. H. Wilson. Durban to the Persian Gulf. Observers, the Master, Mr. G. F. Lack, Chief Officer and Mr. D. A. Hunter, 3rd Officer.

29th July 1973. At 0615 GMT, whilst the Chief Officer was on his morning rounds of the deck, he noticed a small insect on the ship's superstructure. The insect was caught and sketched and the following characteristics were noted. The wings when



spread were a bright orange with four distinctive black stripes on them. The top of the body was a mottled brownish-orange. The ridge (*a*) shown on the sketch was quite prominent, having risen sharply from its fox-like head, then falling away to its tail which was a rather dull shade of orange with black veins. The insect had a fairly large protruding abdomen of a fawn shade. Dimensions of the insect are given in the sketch. Although some attempt was made to identify the creature we have as yet been unable to do so and would therefore be pleased to hear from you on the matter.

Position of ship:  $23^{\circ} 06'S$ ,  $37^{\circ} 30'E$ .

*Note.* Mr. C. H. C. Lyal of the Department of Entomology, Natural History Museum, comments:

"The insect in question is of the order Hemiptera: Heteroptera, family Pentatomidae [Shield-bugs or Stink-bugs], genus *Agonoscelis*. From the data given the species itself cannot be definitely identified, although the probability is that it is *A. versicolor* (Fabricius)."

### at Rangoon

m.v. *Donegal*. Captain R. J. Ogilvy. Rangoon to Antwerp. Observer, Mr. B. J. Wright, 3rd Officer.

15th July 1973. Whilst the vessel was moored to the buoys, awaiting departure from Rangoon, a beetle was found loitering with obvious intent in the engineers' alleyway. It was subdued by the electrician with liberal doses of fly-spray from a discreet distance. When alive its forelegs, now crossed over its chest in suitable fashion, were held in front of it, hooked similar to a crab's claws. Movement on the remaining two pairs of legs was extremely swift. Length 70 mm, breadth of 'shell' 32 mm; its colour was dark green/black and it had conspicuous eyes and a beak. We were assured by the Burmese watchman that these are extremely tasty when fried but I can offer no personal opinion on this subject. Air temp.  $27.5^{\circ}C$ . Pressure 1005.0 mb. Wind NW'ly, force 2, with frequent rain.

Position of ship:  $16^{\circ} 45'N$ ,  $96^{\circ} 20'E$ .

*Note.* Mrs. M. L. Cook of the Department of Entomology, Natural History Museum, comments:

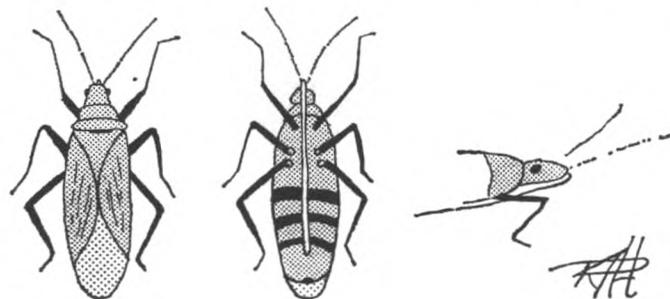
"The insect is a Giant Water Bug, *Lethocerus indicus* (family Belastomatidae). It is, as its name suggests, an aquatic insect, but it often flies from one body of water to another, and during its flight may be attracted to artificial light.

"It is sometimes called the Toe-biter because, although its normal prey is other insects and small fish, it does occasionally accidentally attack swimmers. However, apart from the immediate pain caused by the bite, it has no harmful effect on humans."

### South China Sea

m.v. *Antilochus*. Captain R. M. Simpson. Labuan to Manila. Observers, Mr. P. J. Walley, 2nd Officer and Mr. R. T. Hughes, Cadet.

28th September 1973. At about 0330 GMT a small insect was seen crawling up the wheelhouse window. It was about 23 mm long and 8 mm wide. The insect had six legs and, strangely enough, three feelers. The third feeler extended from its mouth to under its body (see sketch) for almost the entire length. The upper side



of its body was red tinged with orange; the underside was all red except for three black stripes. It had wing-like accoutrements on its back although these were never extended so we wondered whether it could fly at all. The sketch was made by Mr. Hughes and the insect was placed in a specimen box.

Position of ship:  $8^{\circ} 50'N$ ,  $118^{\circ} 40'E$ .

*Note.* Mrs. M. L. Cook, Department of Entomology, Natural History Museum, comments:

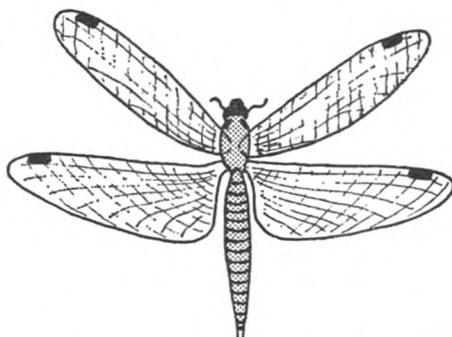
"The insect collected from the *Antilochus* is *Dysdercus mesiostigma*, a bug (Order Hemiptera) of the family Pyrrhocoridae. This species is quite widespread in Asia. Pyrrhocorids are plant-feeders, and species of *Dysdercus* are, in particular, pests of cotton crops although they will feed on a variety of plants. They do not attack man.

"The 'third feeler' mentioned is in fact the rostrum or 'beak' through which the insects suck the plant juices. This species is quite capable of flying, even though this particular specimen appeared reluctant to do so."

### East China Sea

m.v. *Benworlich*. Captain J. S. Schofield. Mizushima to Singapore. Observers, the Master, Mr. J. N. Macnish, 2nd Officer and ship's company.

23rd–25th September 1973. Whilst in the vicinity of the islands between Japan and Okinawa the ship was invaded for three days by a swarm of dragonflies; a sketch of one is shown. The body was dark brown and the wings transparent with faint lines making up small square sections all over the wing. Near the extremities



of each wing, on the leading edge, there was a small brown rectangle. The tail of the insect had two short attachments rather like stings, but as nobody complained of being stung whilst the insects were on board it is doubtful if they were that. Like most insects they showed great affinity for light and the chart table and chart lamp were great attractions. As soon as the ship was clear of the islands the dragonflies disappeared.

Position of ship (approx.):  $29^{\circ}N$ ,  $130^{\circ}E$ .

*Note.* Mr. P. Ward of the Department of Entomology, Natural History Museum, comments:

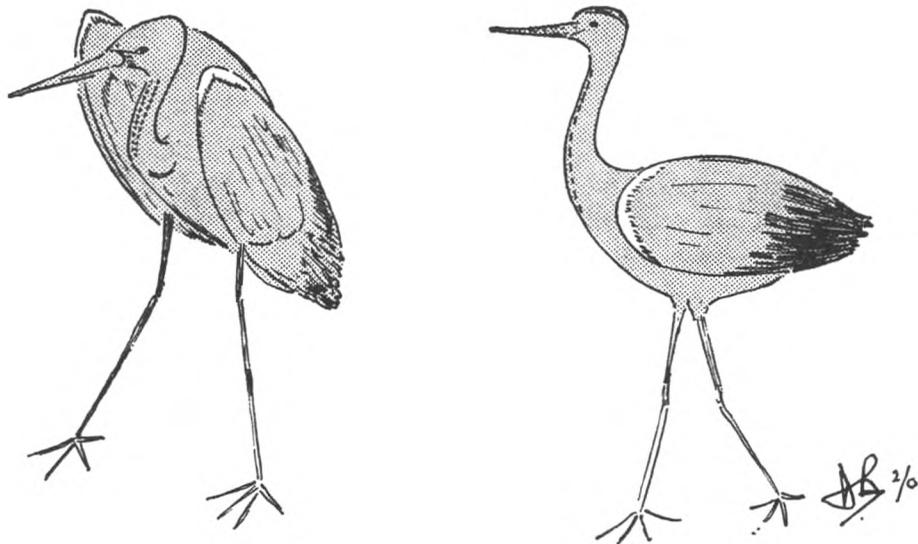
"The insect described is a dragonfly (Odonata) as you suggest. I regret that the description and drawing do not allow for a more positive identification as there are a number of species of these insects likely to occur in similar situations. There are several records of migrational swarms being caught up in strong off-shore winds and carried fair distances out to sea. It is also fairly definite that inter-island migration occurs in the area specified."

## BIRDS

### Eastern North Atlantic

m.v. *Mataura*. Captain F. C. Taylor. Rio de Janeiro to Dakar. Observers, the Master, Mr. D. Bell, 2nd Officer and ship's company.

4th September 1973. At 0700 GMT a large bird was seen sheltering behind a winch on the masthouse forward of the bridge. The main colouring was grey with black stripes running down the front of the neck and with white edges on the fore part



of the wings, the back part being black. The neck was extremely long and the head was a lighter grey, almost blue, with a long beak, having a yellow flash near the eye. The legs were long and thin, four-toed but not webbed. The bird was thought to be a member of the heron family. It finally flew off in the general direction of West Africa.

Position of ship:  $13^{\circ} 10'N$ ,  $18^{\circ} 15'W$ .

*Note.* We think that this was an immature Grey Heron (*Ardea cinera*) which is generally the commonest of the large herons. It is a native of Europe but is also found in Africa.

### Moçambique Channel

s.s. *British Destiny*. Captain W. V. Frost. Das Island to Cape Town. Observers, the Master, Mr. P. A. O'Donovan, 2nd Officer and ship's company.

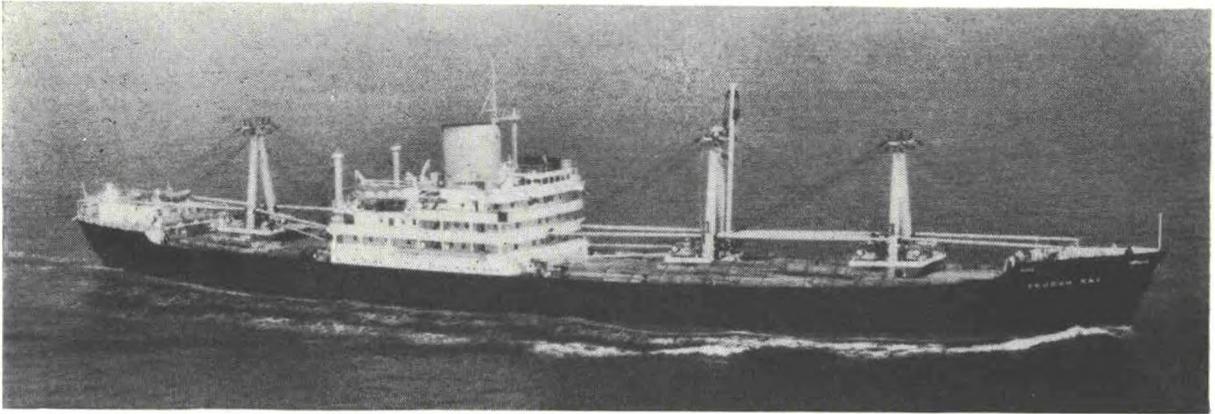
26th August–2nd September 1973. On 26th August George was first brought to our attention as we passed the Comoro Islands in the Moçambique Channel. He, or even she for that matter, lay where he had fallen—an obvious victim of a night-time mid-air collision with the midships TV aerial. Further inspection of our feathered friend, a black-backed tern, revealed a nasty wound in the chest and a broken wing. The chest wound we unfortunately could do little about, but if we rigged up a J-cloth it was found that a suitable sling could be made for the wing. However, it became more than apparent that George, despite his incapacities, was having no nonsense with regard to medical attention administered by our intrepid apprentice David Crabtree, whose only other previous experience was with birds of a different feather! In fact George should have been named Houdini, having remarkable capacities for struggling off slings.

So, with George disregarding attention and not having eaten for several days, his condition began to cause grave concern amongst his adopted seafarers. If only we could keep him alive, but just what do terns eat? Fish, eggs and bread were all waved aside, the patient partaking only of a few snorts of tap-water per day. Time was running out and the day after leaving Cape Town, 2nd September, saw the end of the vigil for 8 days and nights.

During his stay George brought many a hard-hearted man to his knees with offers of help, saddened by his plight, so when I break the sad news of his passing it can only be expected that there will be more than a few tears shed as his body, suitably weighted, is committed to the deep, with thanks for the combined attention of all bridge watches.

Position of ship on 26th:  $11^{\circ} 54'S$ ,  $43^{\circ} 36'E$ .

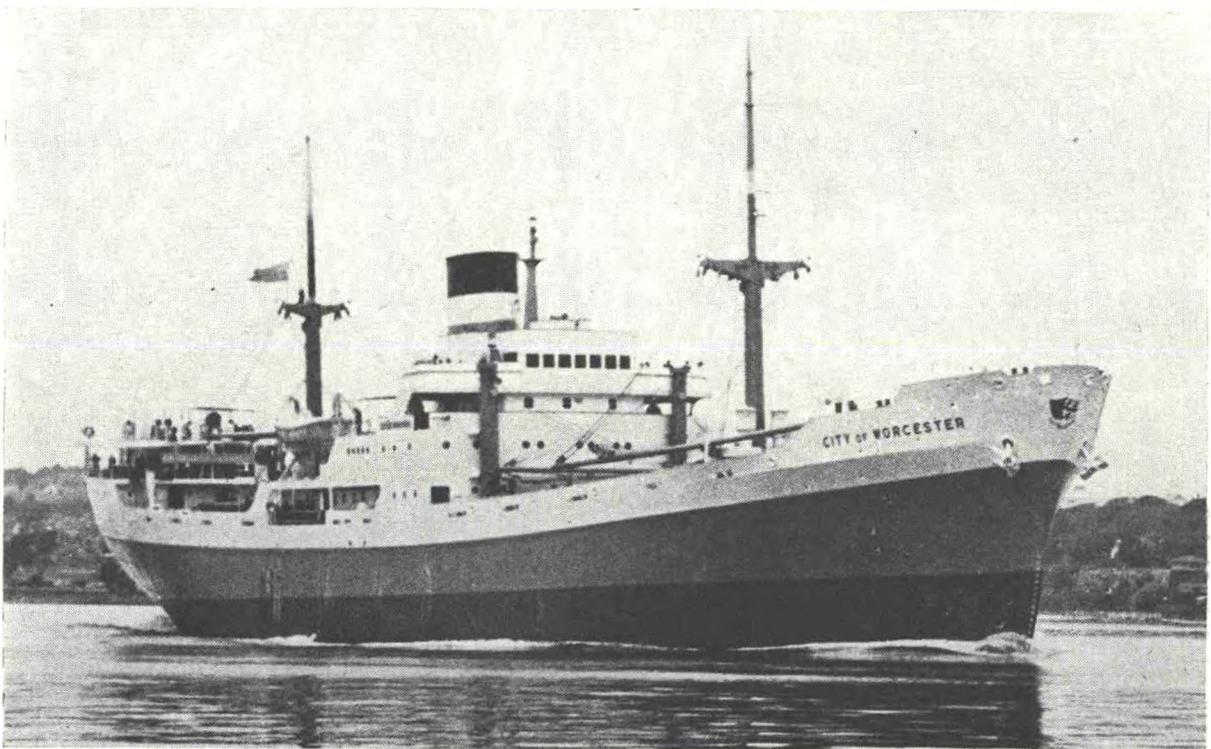
*Note.* Terns eat fish which they catch after plummeting into the water. They fly with head and



*Fourah Bay* (Ocean Transport & Trading Ltd.), Captain W. E. Bellamy



*Kohinur* (P. & O. S.N. Co.), Captain M. J. Charlesworth



*City of Worcester* (Ellerman Lines Ltd.), Captain P. S. Morrison, O.B.E.

THE THREE SHIPS WHICH GAINED THE HIGHEST MARKINGS FOR THEIR METEOROLOGICAL LOGBOOKS DURING THE YEAR 1973 (see page 88).

(Opposite page 107)



Presentation of barographs at Bracknell on 28th January 1974; left to right: Captain and Mrs. P. N. Fielding, Dr. B. J. Mason, Captain and Mrs. W. F. Joyce (see page 120).

tail curved downwards when hovering with rapidly-beating wings over a shoal of fish. They then fold their wings and dive after their prey, surfacing almost immediately. Many birds used to live prey are difficult to feed artificially.

## Indian Ocean

m.v. *British Fern*. Captain R. M. Knight. Luanda to Bandar-e Māhshahr. Observers, the Master and Mr. P. J. Wild, 2nd Officer.

21st September 1973. At about 1100 GMT a light-brown speckled bird with a long downward-curving beak was observed circling the ship. At first sighting it was thought to be a member of the Curlew family. After a few unsuccessful attempts to land on a handrail, our visitor just managed to land on No. 6 centre tank lid. After a great deal of flapping of wings and whoops, nearly falling off, he eventually got his balance on the edge of the open lid and there seemed happy to remain, oblivious to all the noise and activity going on all round him. After about an hour he dropped on to the deck itself and started to inspect and explore his surroundings. He eventually wandered up and down the deck on both sides (one of the wives on board likened his walk to that of a woman in high-heeled shoes), inspecting all the various protuberances sticking up from the deck and having the occasional dab at a spot of rust which obviously was not to his taste for he flicked them all away. Finally he neared the accommodation and obligingly stood still, allowing us on the bridge to scrutinize him and make a possible identification with the aid of binoculars and a book entitled *The Birds of Britain and Europe with North Africa and the Middle East*. We determined that our visitor was a Whimbrel. After a close study of Chippy working on the packing of a tank lid, he decided that enough was enough and off he flew into the sunset, well westwards anyway. Length of stay was about 2 hours.

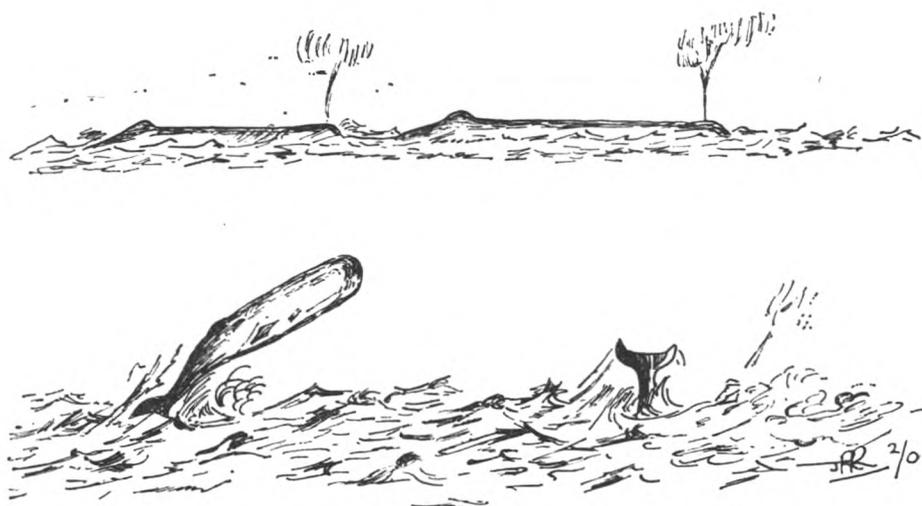
Position of ship at 1100: 4° 08'S, 46° 48'E.

## WHALES

### South and North Atlantic

s.s. *Esso Caledonia*. Captain E. R. Gulwell. Ra's Tannūra to Rotterdam. Observers, the Master, Mr. J. R. Rose, 2nd Officer and ship's company.

18th August 1973. Between 1300 and 1330 GMT the vessel passed through a widely scattered school of whales, apparently moving in a NW'ly direction. There were maybe a dozen or so swimming on the surface in pairs, one to the left of and slightly behind the other. A small alteration of course was, in fact, necessary to avoid running one pair down. This pair turned and were gone as soon as they detected the presence of the ship moving up behind them. The whole fore half of the body was seen to heave up and turn right around to the left in one massive



movement and double its speed instantly. This shows just how agile they are in spite of their bulk. Unfortunately a good close look at one was not possible and all that could be seen at any time was the top part of the back, as shown in the accompanying sketch. They were possibly Sperm whales but this is by no means certain. Wind sw'yly, force 3. Course 322°T at 15.5 kt. Slight sea.

Position of ship at 1300: 29° 07'S, 13° 43'E.

28th August. At 1220 GMT more of these fantastic beasts were observed milling about on the surface and heaving themselves well out of the water. Some were observed jumping completely clear of the water to land sideways again in a welter of foam and spray. Their antics revealed to me their shape and size quite clearly and I saw that they were indeed Sperm whales. I would presume that the display of jumping is to rid themselves of parasites although later discussions with a seaman revealed that the jumping whales could be males attracted to a female and showing off in front of her. This is an interesting aspect of their behaviour and any elaboration from expert sources would be of interest and value to others who may witness similar spectacles.

The sketches are an attempt to record and convey the scenes as I saw them. Considering the size of the beasts, it would appear from the second sketch that a considerable sea was running at the time. In fact, the conditions were: wind N'yly, force 4, gradually increasing; sea moderate with a low, distinct swell.

Position of ship: 15° 50'N, 17° 55'W.

*Note.* The above reports were sent to the Whale Research Unit, Institute of Oceanographic Sciences.

The Sperm whale is the most easily identifiable of all whales because it throws a single spout, about the same length as a Fin whale (vertical spout 5–6 m) but directed forward from the single blowhole at an angle of 45°. We have received several accounts of the frolicsome behaviour of Sperm whales but it is still uncertain whether it is mere play or whether it is an attempt to rid the body of whale lice and barnacles.

## MARINE LIFE

### Greenland Sea

m.v. *Miranda*. Commander C. P. Adams, R.N. Trawler support duties. Observers, the Master and Mr. D. J. George, Meteorologist.

28th September–3rd October 1973. During this period jellyfish were seen quite frequently, some near the surface, others some 2–3 m down in clear water. They resembled raw eggs in colour with yellow/orange centres and translucent outer parts with tentacles hanging down underneath. Some seemed to have scalloped edges. Sizes varied between 15 and 30 cm in diameter. Mean sea temp. 7°C.

Position of ship (approx.): 66° 30'N, 13° 30'W.

*Note.* Dr. P. F. S. Cornelius, Head of the Coelenterate Section, Department of Zoology, Natural History Museum, comments:

“The jellyfish reported by the *Miranda* were possibly *Cyanea capillata*, a common North Atlantic form. An interesting book on this subject is *The Open Sea: I. The World of Plankton*, by A. Hardy. This is available from Collins in paperback.”

## LUMINESCENCE

### South Atlantic Ocean and Arabian Sea

m.v. *Turkistan*. Captain A. W. Jones. Falmouth to Abu Dahbi. Observers, Mr. G. A. Bridge, 3rd Officer and Mr. D. F. Gates, 2nd Officer.

17th August 1973. At 1815 GMT some vivid examples of marine bioluminescence were observed in the water adjacent to the ship. They were most vivid in the wake

of the ship but still very bright and prominent at some distance away on account of the intensity of the light emitted. Each example was observed to well up from beneath the surface, becoming a very bright-green colour and brightening until the surface was reached where a vivid flash would occur. The intensity was such that the night vision of the eyes was affected. The light emitted at this instant was white, becoming more green as it faded away again. Each 'blob' rising to the surface was of a considerable size, an average estimated diameter being 30 cm, the largest examples I have ever seen.

I thought I could see an occasional example jump from the surface of the water but then decided that I must have imagined this effect. However, the look-out pointed this same effect out to me a short while later, which would seem to confirm what I have seen. The more normal speckled examples of bioluminescence were present at the time. Course SE'ly at 16 kt.

Position of ship at 1815:  $13^{\circ} 54' S$ ,  $00^{\circ} 37' E$ .

31st August. At 2320 the vessel entered an area in which the sea appeared to be lit by subdued under-sea lighting, causing it to glow an opaque grey-green colour. The wind was SSW, force 4 at the time, causing the sea to break, apart from which the surface appeared rather dead as if covered by ice-rind. The lighted areas stretched from horizon to horizon without any discontinuity. Normal bright speckles of marine bioluminescence continued to appear in the water disturbed by the ship's movement.

Prior to arriving in the area, an indication of its existence was given by a haze over the horizon like an aurora. This became gradually brighter as we reached the area, the water changing from a glowing silver-green colour to grey-green as we entered.

There was at the same time a noticeable salty smell in the air. At 2340 the vessel cleared the area. Sea temp.  $24.1^{\circ} C$ .

Position of ship at 2320:  $11^{\circ} 10' N$ ,  $55^{\circ} 30' E$ .

## FOG-BOW

### Jacques Cartier Passage

m.v. *Bamburgh Castle*. Captain D. A. B. Walker. Glasgow to Seven Isles. Observers, the Master, Mr. R. D. Mountney, Chief Officer and Mr. D. Crammond, 2nd Officer.

18th September 1973. At 1130 GMT in Jacques Cartier Passage, St. Lawrence River, the vessel was proceeding in fog when an arc in the shape of an archway appeared over the ship, meeting the surface at either side. The arc appeared to be a denser fog than the surrounding atmosphere, and lasted for about 10 minutes before slowly fading. At the same time the fog lifted and within 2 minutes visibility was up to 12 miles. Air temp.  $15.3^{\circ} C$ , sea  $14.7^{\circ}$ . Sky cloudless.

Position of ship (approx.):  $50^{\circ} N$ ,  $63^{\circ} W$ .

## LUNAR RAINBOWS

### Eastern South Pacific

s.s. *Act 1*. Captain W. A. Davidson. Auckland to Panama. Observers, Mr. A. R. P. Geels, 3rd Officer, Mr. J. Copland, Cadet and Mr. G. Lawson, A.B.

6th September 1973. From 0456 to 0500 GMT a perfect 'moon-bow' (a bright semi-circle arc of light) was seen, at first ahead of and then over the ship. It looked as if the ship was steaming under the Sydney Harbour bridge! The altitude of the moon was approx.  $26^{\circ}$  and its bearing was  $250^{\circ} T$ . Light drizzle was falling ahead of the ship at the time of observation. The moon was not visible at the time of the bow

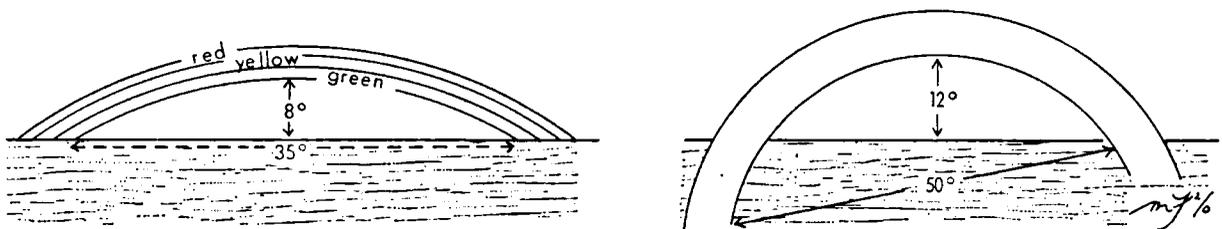
but was seen shortly afterwards through a break in the clouds. A fainter, not so perfect bow was seen about an hour later in roughly the same position. The colours of the bow in both cases was darkish-grey and the altitude of the top of the bow was about  $18^\circ$ . Air temp.  $19.3^\circ\text{C}$ , wet bulb  $18.1^\circ$ . Course  $047^\circ\text{T}$ .

Position of ship at 0500:  $01^\circ 20'\text{S}$ ,  $89^\circ 00'\text{W}$ .

### Tasman Sea

m.v. *Kaimiro*. Captain J. Evans. Melbourne to Wellington. Observers, Mr. M. Falconer, 2nd Officer and Mr. H. Hubbard, A.B.

10th August 1973. At 1415 GMT a lunar rainbow was sighted dead ahead of the vessel. About half an hour previously rain had passed over the ship and moved ahead. The lunar rainbow was distinctly visible for approx. half an hour then it disappeared as the sky cleared to  $2/8$  cloud. At first the rainbow appeared whitish-grey then faint colouring could be seen as indicated in the first sketch. The moon



was bearing  $260^\circ\text{T}$  at an altitude of  $32^\circ$ . Air temp.  $11.6^\circ\text{C}$ , wet bulb  $10.4^\circ$ , sea  $14.5^\circ$ . Wind WNW, force 3. Pressure  $1015.8$  mb. Sea slight. Low sw'ly swell. Course  $093^\circ\text{T}$  at  $11.5$  kt.

At 1500 another lunar rainbow was sighted on the port side and ahead of the vessel. State of sea unchanged but light rain had begun to fall. No colouring was observed this time.

Position of ship at 1430:  $40^\circ 41'\text{S}$ ,  $164^\circ 50'\text{E}$ .

*Note 1.* Fog-bows and lunar rainbows are formed in a similar manner to the ordinary rainbow. Both tend to be colourless or whitish, or at best to be tinted at the edges because, in the case of fog-bows, large water droplets are not usually available in fog and, in the case of lunar rainbows, light of sufficient intensity and 'whiteness' is not available. Lunar rainbows are encountered more often in lower latitudes, especially over the sea, as large water droplets are more readily available in these latitudes from shower clouds at night-time.

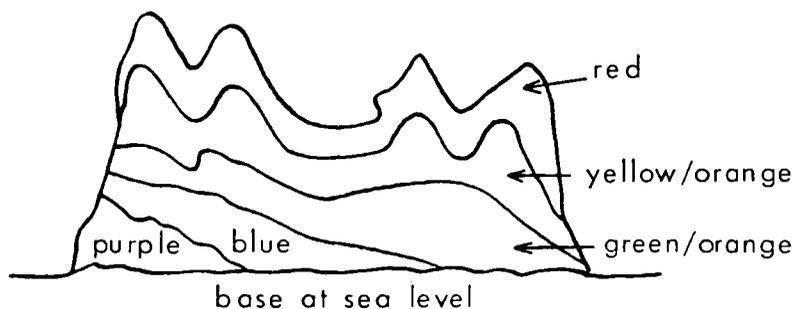
*Note 2.* The *Kaimiro* is a New Zealand Selected Ship.

## RAINBOW EFFECTS

### Coral Sea

m.v. *Phemius*. Captain A. S. Thompson. Balboa to Brisbane. Observer, Mr. A. R. Reynolds, 2nd Officer.

31st July 1973. At 0250 GMT a horizontal distribution of the spectrum of colours was observed as shown in the diagram, the base of the phenomenon being at sea-level. The sky was completely clouded over with Sc and Cu. The ship's course was



191°T while the phenomenon bore 170°T; the sun bore about 360°T. There were showers of rain visible near the vessel but no precipitation at the time of observation.

Position of ship: 29° 36'S, 153° 38'E.

*Note.* This appears to be a case of a reflection rainbow. Here sunlight is reflected from the (smooth) sea surface on to the shower cloud and the rainbow produced. The deformation of the rainbow is caused by the undulation of the water surface by a smooth swell. With a perfectly calm and flat expanse of water the reflection rainbow is formed as an arc, similar to a normal rainbow, but with the centre of the rainbow being at the same elevation as that of the sun.

## RESCUE AT SEA

### North Pacific Ocean

s.s. *Benalder*. Captain A. McKenzie. Balboa to Tokyo. Observers, the Master and ship's company.

22nd–26th September 1973. At 0100 GMT on the 22nd, when the vessel was about 900 miles south-west of San Francisco, we stopped to pick up two survivors from the capsized yacht *Triton* of Tacoma, State of Washington. The yacht, a trimaran, had capsized off Eureka, California on 11th July. It is interesting to note how far the yacht had been carried by the wind and currents. The two survivors had lived almost entirely on rainwater and a small amount of food left in the boat. During their 72 days adrift many yellow-tailed fish and sharks were seen.

The survivors were landed at Midway Island at 0001 on the 26th.

Position of ship at 0001 on 22nd: 27° 00'N, 134° 36'W.

*Note.* The two survivors were Robert Tininenko and James Fisher, Seventh Day Adventist teachers who had set sail in their home-made vessel from Tacoma on 2nd July. They were accompanied by Robert's wife and hoped to reach Costa Rica to join a church mission there. The American Coast Guard conducted an intensive search after the yacht capsized but failed to find the small craft. About a month later Mrs. Tininenko died. The two men huddled under a canvas shelter rigged between the main hull and one of the side pods, subsisting on canned sardines, peanut butter and rainwater. From Midway Island the survivors were flown to San Francisco for medical treatment but one of them died on 2nd October.

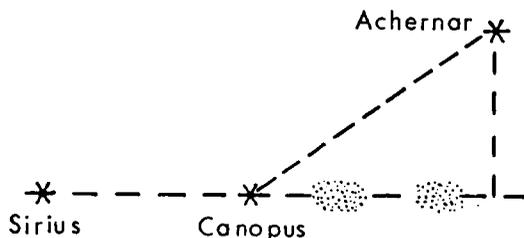
## MAGELLANIC CLOUD

### South Atlantic Ocean

s.s. *Tokyo Bay*. Captain D. T. Maclachlan. Southampton to Port Kelang. Observer, Mr. A. J. Palmer, Chief Officer.

27th July 1973. Two patches of what is thought to be Magellanic Cloud were seen this morning. Both patches were on the base line of a triangle formed by a line between Sirius and Canopus, and beneath Achernar (see sketch). A similar patch was noted last voyage. An explanation of Magellanic Cloud would be much appreciated as this is thought to be somewhat of a guess.

Position of ship: 26° 00'S, 11° 12'E.



*Note.* Mr. Palmer's request sent us searching through reference books because we had never heard of Magellanic Cloud! With our new-found knowledge we can attempt an explanation.

Lying far beyond the Galaxy there are separate stellar systems known as external galaxies. Only three are visible to the naked eye, the Andromeda Spiral in the northern hemisphere of the sky and the two Magellanic Clouds, Nubecula Major and Nubecula Minor, in the southern. The two Nubeculae seem to be in the nature of satellites of the Galaxy and are the nearest of the external systems. To the naked eye they look rather like detached portions of the Milky Way. They seem to be irregular and contain objects of all kinds, including globular clusters, gaseous nebulae and Cepheid variables (a type of star whose luminosity changes markedly over relatively short periods). The irregular variable known as S. Doradus, in Nubecula Major, is over one million times as bright as the Sun.

On only one star chart could we find mention of Magellanic Clouds and they were shown in approximately the same position as in Mr. Palmer's sketch.

## AURORA

The following notes have been received from Mrs. Mary Hallissey of the Aurora Survey:

"Auroral displays recorded by observers in British ships during the three months July-September 1973 and received at the Balfour Stewart Auroral Laboratory of the University of Edinburgh are listed briefly in the accompanying table. The many excellent and detailed reports, often illustrated by sketches, and the work of all involved in supplying us with these data, are most gratefully acknowledged.

"While reluctant to ask for more, we would point out how much the value of the sketches is enhanced when the angle of elevation of the lower border of the form is given, even roughly estimated or related to star positions. We work on the assumption of a height of 106 km for the forms, so that with an angle of elevation of  $5^\circ$ , for instance, the overhead position of the arc or band is estimated to be  $6^\circ$  (geomagnetic latitude) distance from the observer; with an angle of  $10^\circ$ ,  $4\frac{1}{2}^\circ$  distance; and with an angle of  $20^\circ$ ,  $2\frac{1}{2}^\circ$  distance: an elevation angle in excess of  $60^\circ$  is considered to mark the zenith. Such data are helpful when an estimate is made of the southwards spread of a particular display.

"The geomagnetically disturbed periods during July, August and September were prolonged rather than severe, and the repetition of many of the ships' names in this list indicates that the observers were a captive audience for the auroral displays, as the ships in many cases followed routes roughly parallel to the zone of greatest activity. Observers in some ships refer to displays on nights following those for which details are given. We have noted these for our records, but they are not entered in the list when insufficient detail is available.

"Points of origin of the reports for the activity at the end of August are widespread. The displays were associated with geomagnetic disturbance of recurrent type which reached minor storm intensity on 24th/25th August and lasted until the 30th. The disturbance never measured more than 6 in the 10-point scale, but resulted in a series of bright, sometimes only short-lived displays. The rayed band seen by observers in the *Perseus*—the most southerly-positioned ship—around 0300 GMT on 24th August, would be overhead at the latitude of Anticosti Island. Mainly cloudy skies hampered observations in the British Isles, breaking the continuity of any displays.

"In early September solar activity increased to a higher level than for some months and a report from the Skylab scientists mentioned that the sun was "producing an unusual and awesome number of medium and small flares and sunspots"—noted too by some ships' observers. The planetary geomagnetic field, however, was only disturbed to any marked degree in the second half of 9th September, when there was an increase to a figure of 8—. Cloudy conditions over parts of the Atlantic and the British Isles prevented observation of the southern extension of associated aurora. Further east, observers in the *Lindisfarne* reported that the focal point of rays was directly overhead in geomagnetic latitude  $65^\circ$  during the display which lasted all the hours of darkness, while a land-based observer reported rays showing red coloration to be overhead in southern Norway from 2120 to midnight.

"At the risk of labouring the point and for any who may not have seen the aurora notes in the last issue of *The Marine Observer*, we hopefully bring to your notice once again the fact that from the end of May to early August is the optimum viewing season for noctilucent clouds between latitudes (geographic)  $50^\circ$ - $60^\circ$ —hopefully, because we have only rarely had reports from ships' observers of these clouds which form at around 80 km and provide evidence of meteorological conditions at that height. The clouds are thought to recede polewards in late summer, so that for ships sailing at higher latitudes the possible viewing period continues later, e.g. until end-August in latitudes  $63^\circ$ - $65^\circ$ ."

DATE (1973)	SHIP	GEOGRAPHIC POSITION	$\Lambda$	$\Phi$	I	TIME (GMT)	FORMS
19th Oct. (1972)	<i>Alert</i>	46°40'N 55°30'W	020	58	+72	0730	RA
23rd July	<i>Buccleuch</i>	47°49'N 60°51'W	360	59	+74	0530-0540	RA, RR, P
19th Aug.	<i>Weather Adviser</i>	58°43'N 18°45'W	070	65	+72	0030-0200	HA, RB, P
	<i>Lindisfarne</i>	58°30'N 33°30'W	060	65	+74	0100-0300	RA
22nd	<i>Manchester Quest</i>	48°15'N 69°06'W	360	60	+76	0200	HA, RA
	<i>Monksgarth</i>	63°17'N 04°04'E	100	64	+74	1915-2000 2130-2400	HA, HB, RA, RR
23rd	<i>Miranda</i>	66°55'N 17°17'W	080	72	+77	2300-2305	RA
	<i>Cape Franklin</i>	67°00'N 11°36'E	110	66	+76	2300-0100	HB, RB, P, N
24th	<i>Perseus</i>	44°30'N 66°30'W	360	56	+74	0200-0400	RB, RR, N
	<i>Lindisfarne</i>	50°02'N 65°04'W	010	62	+76	0300-0530	RB
	<i>Manchester Quest</i>	50°00'N 67°00'W	360	61	+77	—	RA, RB
25th	<i>Weather Adviser</i>	59°06'N 19°10'W	070	65	+72	0120-0220	RA, RB, RR, V
	<i>Lindisfarne</i>	50°00'N 67°00'W	360	62	+76	0400-0500	RB, RR
	<i>Manchester Quest</i>	50°01'N 66°25'W	360	62	+76	—	HB, P, N
27th	<i>Lindisfarne</i>	49°57'N 63°00'W	010	61	+75	0001-0630	RB, RR
	<i>C.P. Voyageur</i>	49°57'N 62°14'W	010	61	+75	0100-0500	HA, HB, RB, RR, N
	<i>Manchester Quest</i>	50°01'N 66°25'W	360	62	+76	0100, 0500	RA
	<i>Weather Adviser</i>	59°06'N 19°06'W	070	65	+72	0120-0240	HA, RA, RB, RR, P
28th	<i>Challenger (R.R.S.)</i>	60°12'N 08°54'W	080	64	+73	2250-2310	HA, RA, N
	<i>Lindisfarne</i>	51°34'N 56°17'W	020	63	+75	0200-0630	RR, V
	<i>Weather Adviser</i>	59°12'N 18°56'W	070	65	+72	2300	N
29th	<i>Manchester Quest</i>	50°01'N 66°25'W	360	62	+76	0200	RA
	<i>Buccleuch</i>	57°52'N 21°10'W	060	64	+73	0305-0315	N
	<i>Miranda</i>	66°18'N 18°55'W	080	72	+77	2315-2325	HB
31st	<i>Lindisfarne</i>	55°47'N 33°26'W	050	64	+74	0400-0430	N
2nd Sept.	<i>Weather Adviser</i>	58°54'N 19°30'W	070	65	+72	0200-0500	N
		58°42'N 17°38'W	070	64	+72	2300	N
3rd	<i>Weather Adviser</i>	58°30'N 17°36'W	070	64	+72	0001	N
4th	<i>Manchester Concept</i>	51°50'N 46°54'W	030	62	+73	0204-0400	HA
	<i>Challenger (R.R.S.)</i>	60°18'N 09°12'W	080	64	+73	2215-2315	RA, RB
	<i>Weather Monitor</i>	57°30'N 14°32'W	070	63	+71	2250-0100	N
5th	<i>Challenger (R.R.S.)</i>	60°18'N 09°12'W	080	64	+73	0100-0215	R
6th	<i>Weather Monitor</i>	58°50'N 18°48'W	070	65	+72	0250-0400	N
9th	<i>Lindisfarne</i>	64°12'N 05°36'E	100	65	+74	2100-0530	RA, RR
	<i>Weather Monitor</i>	58°55'N 19°28'W	070	65	+72	2210-2235	RR
11th	<i>Lindisfarne</i>	68°11'N 15°36'E	110	67	+77	—	RR, N
16th	<i>Lindisfarne</i>	67°30'N 13°26'E	090	71	+76	0030-0035	RB
		64°30'N 06°00'E	100	65	+74	2200-2220	RA, RR
17th	<i>Lindisfarne</i>	64°11'N 05°37'E	100	65	+74	0010-0015	HA
	<i>Weather Monitor</i>	59°11'N 19°26'W	070	75	+72	0015-0025	RR, N
21st	<i>King Alfred</i>	58°55'N 29°41'W	060	67	+75	0045-0130	HA, RA, RR, N
	<i>Cotswold</i>	58°55'N 57°00'W	020	70	+78	2300-0200	RB
	<i>Weather Monitor</i>	59°02'N 18°51'W	070	65	+72	2330-2400	N
22nd	<i>Edenmore</i>	65°20'N 07°40'E	100	66	+75	2000-0210	All forms
	<i>Cotswold</i>	58°55'N 57°00'W	020	70	+78	2300-0200	RB
23rd	<i>Weather Adviser</i>	53°32'N 15°43'W	070	59	+69	0001-0150	RB
	<i>Miranda</i>	—	080	71	+77	2100	N
	<i>Cotswold</i>	58°55'N 57°00'W	020	70	+78	2300-0200	RB
24th	<i>Cotswold</i>	58°20'N 28°35'W	060	66	+73	0320-0435	RB
	<i>Weather Monitor</i>	58°38'N 19°13'W	070	65	+72	0350-0435	RB, RR, P, V, N
	<i>Miranda</i>	—	080	71	+77	2050	All forms
	<i>Weather Monitor</i>	58°46'N 18°43'W	070	65	+72	2130-2305	RR, P, V, N
25th	<i>Miranda</i>	—	080	71	+77	2200	N
	<i>Weather Monitor</i>	58°58'N 18°25'W	070	65	+77	2235-0150	HA, HB, RA, RB, P, N
26th	<i>Weather Monitor</i>	58°00'N 14°28'W	070	63	+72	2100-0022	HB, RR, P, N
	<i>Miranda</i>	66°00'N 15°00'W	080	71	+77	2145-2215	RB
	<i>Weather Reporter</i>	58°30'N 17°08'W	070	64	+72	2300-0100	HA, P
27th	<i>Miranda</i>	66°30'N 13°50'W	080	71	+76	2050-2300	RB, RR
	<i>Ross Orion</i>	66°40'N 13°30'W	080	71	+76	2300-2328	HB, RR, P
	<i>Weather Reporter</i>	59°01'N 18°52'W	070	65	+72	2300-0100	HA
28th	<i>Weather Reporter</i>	59°02'N 18°36'W	070	65	+72	0230-0312	HA

KEY:  $\Lambda$  = geomagnetic longitude;  $\Phi$  = geomagnetic latitude; I = inclination; HA = homogeneous arc; HB = homogeneous band; RA = rayed arc; RB = rayed band; R(R) = ray(s); P = Patch; V = veil; N = unidentified auroral form.

## The Search for New Species of Edible Fish

(This article is reproduced from the *Trawling Times*, No. 174, December 1973, by kind permission of the Editor.)

During 1973 various deep-water fishing trials were undertaken. Now that the scientists have made their first objective assessment it seems increasingly likely that British trawlermen will soon be commercially fishing for unfamiliar deep-water species. This report by the Ministry of Agriculture, Fisheries and Food's Torry Research Station in Aberdeen concentrates on the consumer acceptability of these new species. More than 20 species have been caught and examined and the most interesting ones are listed below [see also photographs opposite pages 114 and 115, kindly provided by the Torry Research Station].

SCIENTIFIC NAME	COMMON NAME
<i>Coryphaenoides rupestris</i>	Grenadier
<i>Alepocephalus bairdii</i>	Smoothhead
<i>Aphanopus carbo</i>	Black Scabbardfish, or simply Scabbard
<i>Chimaera monstrosa</i>	Rabbitfish
<i>Mora moro</i>	—
<i>Gephyroberyx darwinii</i>	—
<i>Trachyscorpia cristulata</i>	—
<i>Deania calcea</i>	Shark (one of several species)

At best, deep-water fish are generally unprepossessing to look at and most are downright ugly. Large eyes protrude, skins are rough or scaly and some have very sharp spines. Nevertheless the flesh is often good to eat.

### Deep-water catches

All of the fish came from deep water to the west of the British Isles, mainly at depths of 800–1,100 metres, on grounds ranging from Bill Bailey's Bank in the north-west to Porcupine Bank in the west; some of the best shots came from west of Tory Island and in the vicinity of Hatton and Rosemary Banks.

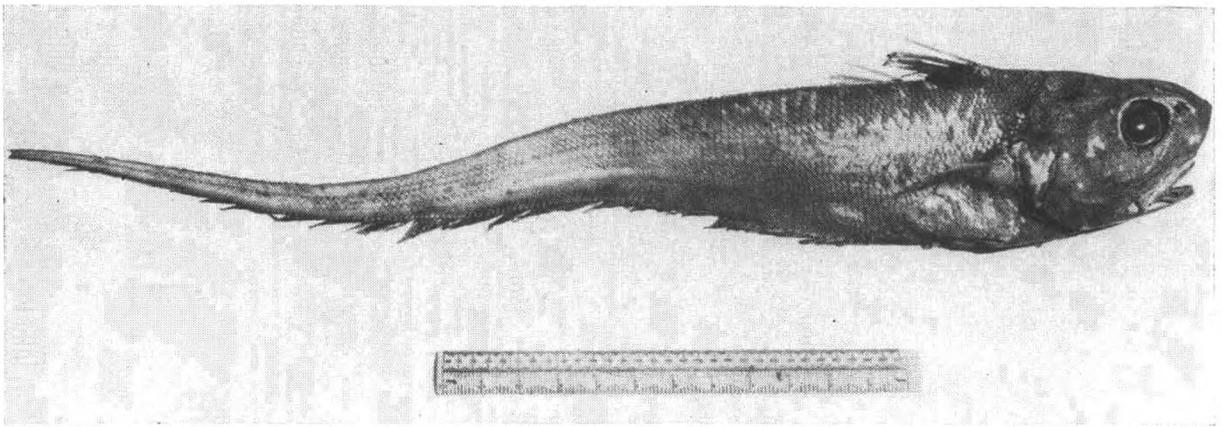
Interest in the deeper waters was sparked off in April 1973 when the M.A.F.F. research vessel *Cirolana* had a surprisingly large haul of Smoothheads, a species never encountered in quantity before. The White Fish Authority (W.F.A.) then chartered the Fleetwood trawler *Jacinta* for a few days in May to have a closer look at the commercial prospects on the more likely spots to the west of Tory Island.

The resulting catch of Smoothheads, together with other likely species, was taken in ice to Aberdeen for assessment. First reactions to Smoothheads were not very favourable, but some of the other species looked promising, and the Government decided to augment the continuing research work of the *Cirolana* in the area by chartering the Hull stern trawler *Swanella* for six weeks in August and September.

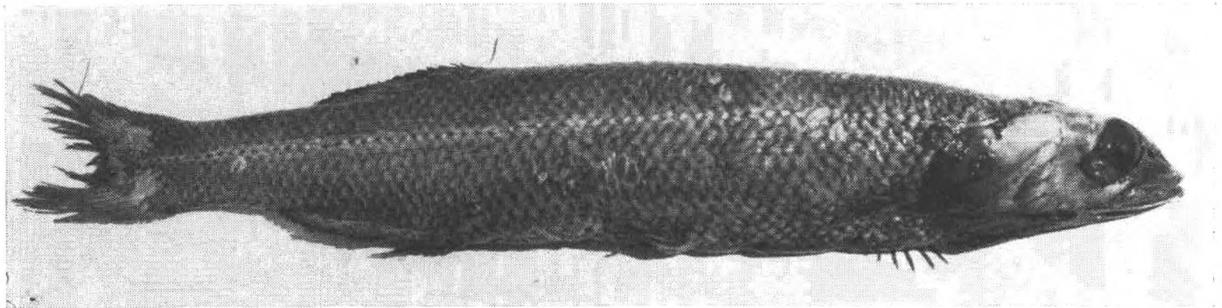
On board were scientists and engineers from the Fisheries Laboratory, Lowestoft, the W.F.A. Industrial Development Unit, Hull, the Marine Laboratory, Aberdeen and the Torry Research Station, Aberdeen. The whole of the *Swanella*'s catch was saved, apart from some of the sharks, some chilled but mainly frozen, and brought back for experiments ashore. Sufficient quantities of the more promising fish have also been kept in cold store for trade demonstrations.

### Catch rates

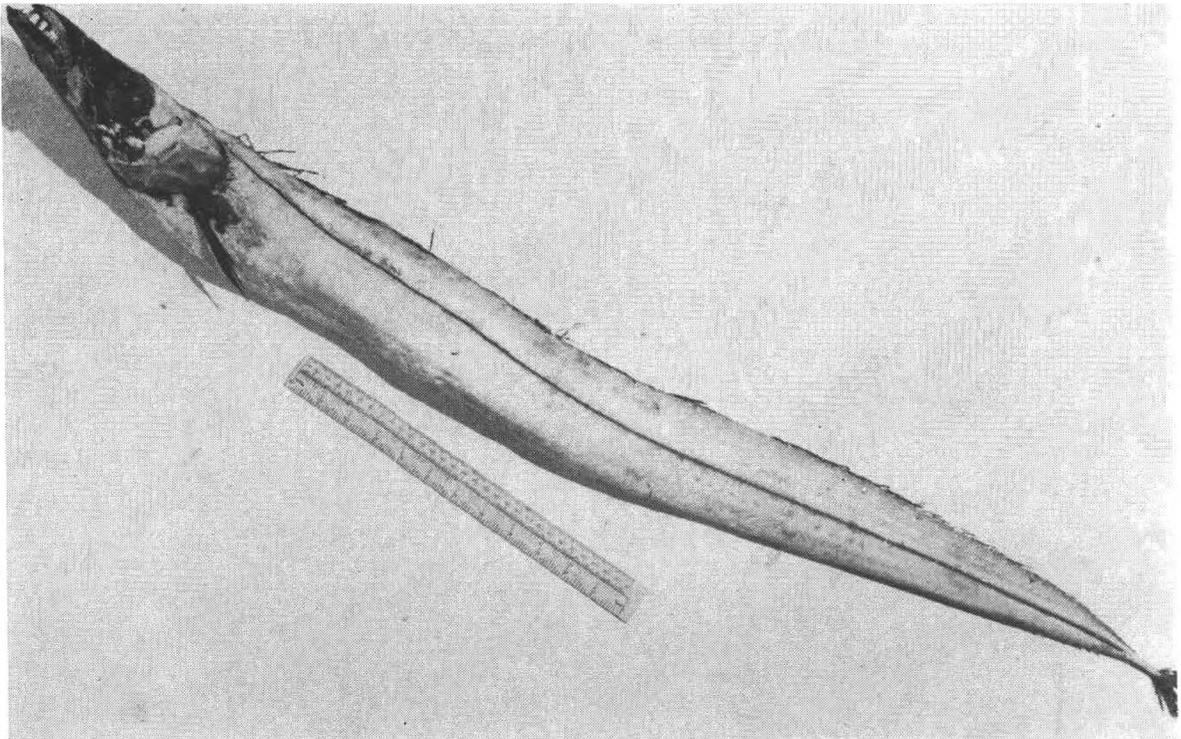
Although the main purpose of this report is to describe the suitability of deep-water fish for processing as food, some indication of the likely size of the resource is necessary to put the individual species in perspective.



Grenadier (*Coryphaenoides rupestris*)—resembling cod in texture and flavour



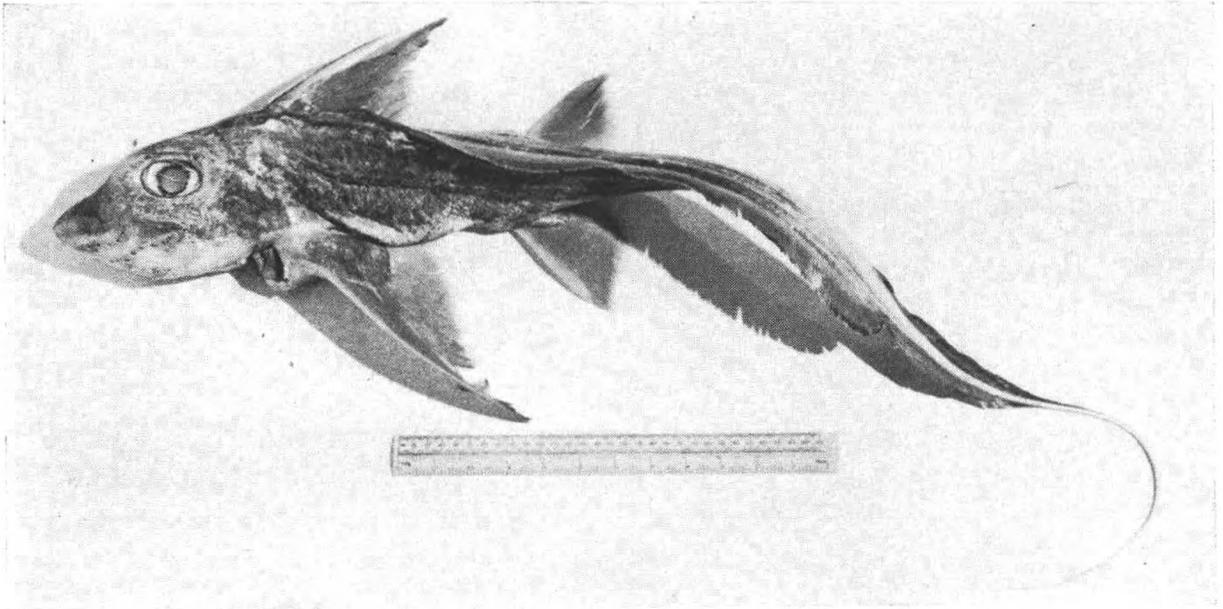
Smoothhead (*Alepocephalus bairdii*)—unacceptable because of its sloppy texture



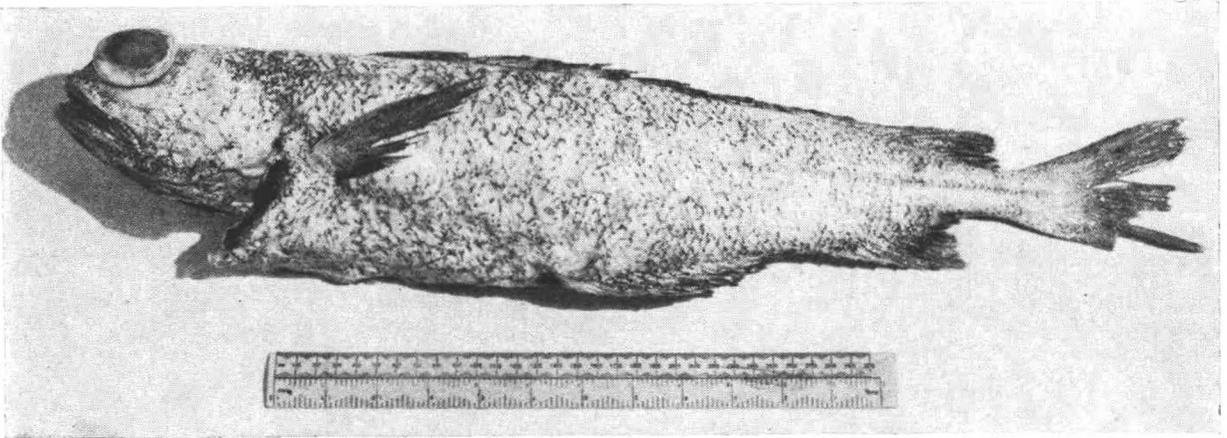
Scabbardfish (*Aphanopus carbo*)—flavour not unlike plaice

THREE OF THE UNFAMILIAR DEEP-WATER SPECIES (see page 114).

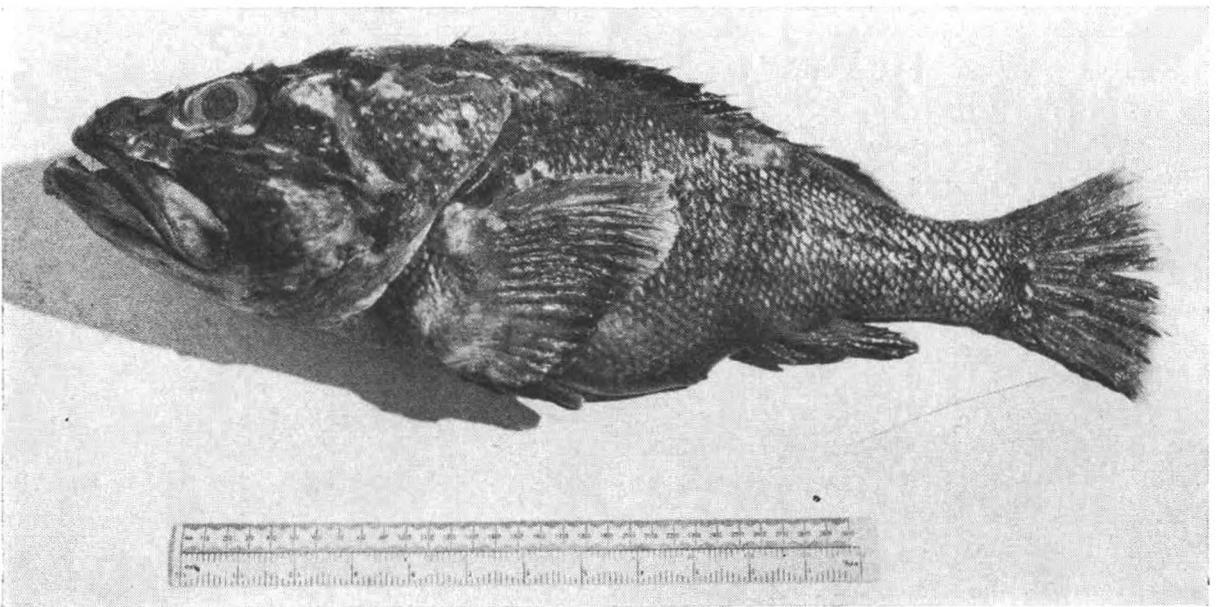
(Opposite page 115)



Rabbitfish (*Chimaera monstrosa*)—bitter flavour



*Mora moro*—flavour and texture similar to cod



*Trachyscorpia cristulata*—pleasant flavour

MORE OF THE DEEP-WATER SPECIES (see page 114).

For a little under five days the *Swanella* fished commercially at the likeliest spots so far encountered in order to give some idea of possible catch rates. During that time she caught and saved just under 30 tonnes of fish, made up of 9 tonnes of Grenadier, 8 tonnes of Smoothhead, 8 tonnes of assorted sharks, about 1 tonne each of Scabbard, Rabbitfish and *Gephyroberyx*, and 1–2 tonnes of other species. The catch rate of fish that might be useable was 6–7 tonnes a day. [A tonne is a metric ton = 0.984 ton.]

When the *Jacinta* fished commercially earlier in the year Grenadiers, Smoothheads and sharks were caught in roughly the same proportion, and together comprised about three-quarters of the catch.

### Texture, flavour and keeping qualities

The Smoothhead, the fish that first aroused interest in deep-water catches, must be ruled out as a commercial proposition; although it has a mild pleasant flavour and keeps well, its very sloppy texture, variously described as like junket or custard, would make it unacceptable to the consumer. It was thought that its wateriness was perhaps seasonal, but the water content of over 90 per cent seems constant, and the protein content is less than half that of other fish. A variety of processing techniques applied to Smoothheads has failed to produce any acceptable products.

Of the other species that have been caught in quantity, the Grenadier seems the most likely starter; this fish is already eaten in some countries, notably Russia. It resembles cod in flavour and texture, and keeps a little better at chill temperature than most traditional white-fish species, up to 17 days in ice before off flavours appear.

The flesh of the Rabbitfish usually has a strong bitter flavour which is unlikely to be very acceptable, although it is possible that some treatment might be devised that would reduce the bitterness.

Of the species encountered in smaller quantities, the Scabbard makes good eating, with a flavour not unlike plaice; again this fish keeps well, up to 20 days in ice. The Scabbard is already eaten in Portugal.

The best of the species that as yet has no common name is *Gephyroberyx*; the flesh is very palatable, with a pleasant sweet flavour and a firm shellfish-like texture. This and another pleasantly flavoured red fish called *Trachyscorpia* both keep well in ice.

The sharks encountered are not much different in flavour and texture from those that already figure in the British catch; *Deania calcea*, for example, has a typical slightly bitter dogfish flavour that is acceptable to some consumers, and could probably be marketed in the same way as existing supplies of dogfish.

*Mora moro* has a flavour and texture similar to cod, and keeps well, but it has not been found in quantity in any of the catches so far.

### Handling and storage

Deep-water fish are not very easy to handle at sea; fishermen who have handled big hauls of red fish or dogfish will appreciate the problems. Rough skins prevent the fish from flowing or sliding easily, so that codends are difficult to empty, and fish do not move easily into pounds or holding bins without much pushing and pulling.

Sharp spines and teeth make the fish unpleasant and sometimes dangerous to handle when gutting, and the change in pressure from deep water causes guts to go up into the mouth of the fish where they are difficult to remove. Species like the Grenadier, with a tapering body and a thin ratlike tail, easily get trapped in mechanical handling equipment, so that on a factory deck designed for cod and haddock there are frequent jams and pile-ups that can hamper processing operations.

The wide range of species caught in any one haul would make it difficult to provide a comprehensive range of gutting or filleting equipment, and it might be

necessary to consider dispensing with gutting altogether; many of the fish have very little blood in them, and stomachs are mostly empty, so that the need to gut might be less important.

Whole fish from deep water are, in general, difficult to freeze in blocks at sea; contact with freezer plates is poor so that freezing takes longer, and the frozen blocks break too easily, either during stowage or during discharge. Stowage rate of frozen blocks is poorer than for cod; Grenadiers, for example, which make moderately good blocks, work out at about 27 blocks to the tonne compared with 21–22 to the tonne for cod. Sharks make poor blocks and some of the larger ones, too big for existing designs of freezer, would require special freezing equipment if they were being processed in quantity.

## Processing

In the shore factory, Grenadiers would almost certainly require to be descaled before filleting. Fillet yield without skin is about 35 per cent of the whole gutted weight, but this might be less when some jellylike flesh occurs around the belly and has to be trimmed away. The initial cuts through the skin of most of the species when filleting can be hard on knives, whether hand or machine, and final skinning of the fillet is difficult, but not impossible. Most of the fish yield fillets of good appearance, white and smooth with little or no discoloration, although the shapes of the fillets are often unconventional.

It seems unlikely that any of the deep-water species would be marketable as whole fish, or even as fillets, but those of good flavour and texture could fairly readily be used in the manufacture of a range of fish products. Laminated blocks for finger and portion production have been made successfully from fillets of all the species except the Smoothhead, which has too many small bones throughout the fillet; fish fingers made from the Grenadier or Scabbard in particular could be commercially acceptable.

Cold-smoked products made from the Grenadier, Scabbard or *Gephyroberyx* are good to eat, and even the Rabbitfish when cold-smoked might be acceptable. The appearance of hot-smoked products from all but *Gephyroberyx* was unacceptable, some of the cold-smoked fish have been canned successfully, and some experimental products made from minces have turned out well.

## Marketing

Initial trials have shown that the Grenadier, Scabbard, *Gephyroberyx*, *Trachycorpiia* and *Mora moro* should all be marketable in some form or other, and *Deania*, as representative of the sharks, could also be acceptable for a number of outlets.

The Rabbitfish is of doubtful commercial value, and the Smoothhead is most unlikely to be accepted in any form by the trade or the consumer. Torry is well aware that before any of these species could become established in the commercial fish industry the potential trade buyers have first to see and taste the fish and the products made from them; they then have to take into account all those other factors which help them to decide what is marketable, in particular how much they would be prepared to pay for it.

Then the catching side has to decide whether deep-water fish can be caught and landed economically, either chilled or frozen at sea, to meet the demand, bearing in mind the likely size of the resource as predicted by the marine biologists, possible changes in handling practice, and the cost of working deep-water trawling gear in the western approaches.

## Addendum

To help both sides of the industry to assess the value of deep-water fish, Torry

demonstrated samples of all the important species, both as whole fish and as fillets, together with as wide a range of products as possible, at Hull and Fleetwood in early January.

Five types of deep-water fish were prepared for sampling: the Grenadier, Black Scabbard, Rabbitfish, Smoothhead and *Gephyroberyx*. The first two were made into fish fingers and fish cakes, the others were steamed or smoked. The scientists' verdict on the junket-like texture of the Smoothhead and the bitter taste of the Rabbitfish was confirmed. The Grenadier is indeed very like cod and the Black Scabbard like plaice with just a hint of herring in the taste. The little-known red fish *Gephyroberyx* turns out to be very tasty with a white flesh, perhaps faintly tinged with pink, and a texture not unlike lobster. While the Grenadiers and Scabbards would be eminently suitable for processing into products such as fish fingers it is not impossible that the red fish, if found in quantity, might develop into a fish in the hake class.

At the demonstration everyone was plainly impressed with the taste of the three most promising species, the Grenadier, Black Scabbard and *Gephyroberyx*. Not unnaturally, both trawler owners and processors are only cautiously optimistic about sustaining catch rates on a normal commercial fishing basis in view of the gear development work still required. The main difficulty is the steep angle of the warps when the gear is down in such deep water. With the warp lengths involved it takes a long time to get the gear out and a long time to get the gear back again. This is acceptable if there is a bulging codend every time, but long hauls might not be commercially acceptable without correspondingly high catch rates.

## The *Weather Adviser* Aids a Vessel in Distress

BY CAPTAIN P. B. SWIFT  
(Master, Ocean Weather Ship *Weather Adviser*)

During the early hours of Friday, 11th January 1974, Ocean Weather Ship *Weather Adviser* was on Station 'Juliett' in position  $52^{\circ} 12' N$ ,  $20^{\circ} 30' W$  (21 miles south-west of the centre of the grid), shipping water over all in a heavy sea and swell of 12–15 metres, a westerly wind of 50 knots, poor visibility and hail showers. At 0206 (all times are GMT) a distress message was received from the Greek m.v. *Despina* (SVZR) reporting her rudder out of action in position  $50^{\circ} 40' N$ ,  $20^{\circ} 00' W$  and requiring assistance urgently. [The chart in Fig. 1 shows the 0001 synoptic situation.]

The D/F bearing of the *Despina's* transmission indicated  $105^{\circ} T$  from the *Weather Adviser*, thus giving rise to doubts and misgivings regarding the accuracy of the distress position which, as given, lay about 120 miles to the south whereas the D/F bearing indicated an easterly direction. It was obviously necessary to establish with some certainty whether the *Despina* lay east or south before setting off at high speed, and it must be here confessed that the prospect of steaming south at full speed in heavy seas and a 15-metre swell on the starboard beam was viewed with some trepidation. Therefore communication was established by w/T (with some delay and difficulty owing to the intense amount of traffic) with the Israeli ship *Elat*, which had also responded to the call, requesting her position and to obtain and pass to the *Weather Adviser* a D/F bearing which would enable the *Despina's* position to be verified. While this was being done the opportunity was taken to notify Bracknell of the situation and of our intention to proceed to the distressed ship.

After an excruciating but unavoidable delay the *Elat* finally emerged from beneath the welter of w/T traffic with the desired information from which it soon became apparent that the position given by the *Despina* was in error—it being established by the D/F cross-bearings that she lay about 125 miles on a bearing of  $105^{\circ} T$  and not 120 miles to the south. This was much more satisfactory from the point of view of the *Weather Adviser* which would now have the weather astern. No further time was lost in setting the correct course and working up to full speed, using the D/F to check on further transmissions from the *Despina*.

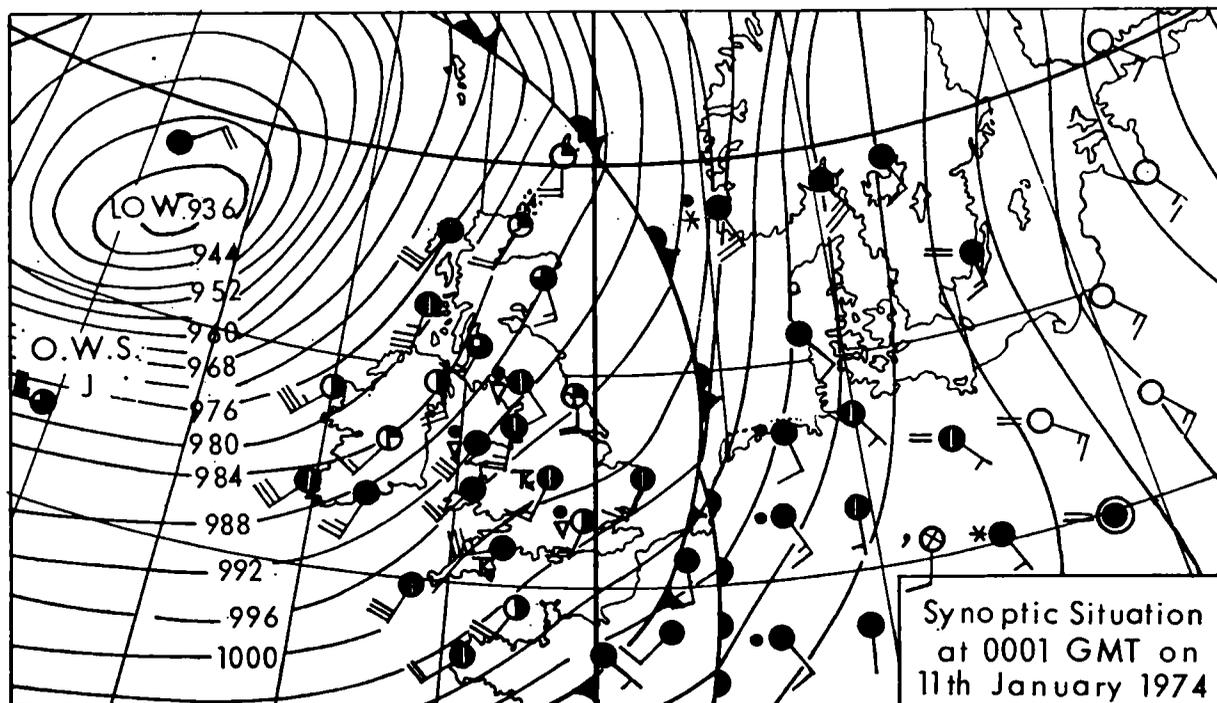


Fig. 1. Synoptic chart for 0001 GMT on 11th January 1974.

At 0318 we commenced steaming for the distress position, then fixed as  $51^{\circ} 53'N$ ,  $16^{\circ} 20'W$ . Engine revolutions were worked up to 140 which seemed sufficient, taking into consideration the 15-metre following swell. At 0332 a message was received from Bracknell expressing approval and encouragement to our endeavours.

By 0800 the weather conditions had moderated to some degree and use could be made of a little extra speed. The second boiler had been prepared and was now brought into use, increasing revolutions to 160, this being the absolute maximum considered consistent with safety by the Chief Engineer, a good deal of racing taking place with the following seas and swell. A conference was held with all departments, including the Bos'n, at which the situation was explained and examined from all angles. It was assumed that it would be necessary to disembark all hands from the *Despina* (which numbered 29, including the Master's wife and young son). Drawing on Captain Ford's notable example of 20 years ago in connection with the m.v. *Argobeam*, the method and manner of disembarkation was described and a note made of the necessary equipment to be prepared. Details of extra accommodation were arranged and all departments went to work to prepare all in readiness.

At 1045 the RAF Nimrod aircraft 'Rescue 11' reached the *Despina* and assisted us by locating her while we proceeded on the same course,  $105^{\circ}T$ , at 160 revolutions and over 12 knots. 'Rescue 11' was requested to orbit the distressed ship at 2,000 feet so that the aircraft could be located by the air-search radar and an approximation be made of the remaining distance between ships, the direction not being in doubt. The aircraft performed these duties and then flew to the *Weather Adviser*, circled a few times and then flew off in the direction of the *Despina*—straight ahead. We established clear VHF D/F contact with the *Despina* at 1330 (distance 27 miles) and made radar contact with her at 1355 (distance 21 miles).

At 1400 we left the extreme limit of the Station 'Juliett' grid and informed the appropriate authorities. At 1446 the distress was cancelled by the *Despina* as they had managed to effect temporary repairs to the rudder and were proceeding to Cork; we were requested to escort her on passage. After steaming 148 miles we made visual contact at a distance of 3 miles. At 1500 we caught up with the *Despina*, which appeared to be losing no time in getting to port, and took up station 9 cables astern, thus proceeding in company and maintaining R/T communication on Channel 16. A cordial conversation ensued from then on, during which Loran position fixes were passed and the latest weather forecasts from Bracknell relayed. Several special area forecasts were received from the Central Forecasting Office and passed to the *Despina* and mention must be made that they were of the greatest benefit. Being absolutely spot-on in accuracy, I got the impression that they were received aboard the *Despina* with the reverence accorded Holy Writ and with no little awe!

The 'Rescue 11' aircraft intimated at 1549 that it intended to leave the area and return to base, whereupon thanks were expressed on behalf of the *Weather Adviser* and also grateful thanks from the Master of the *Despina* were relayed to the Nimrod crew whose performance was fully in accordance with the traditional effortless and immaculate RAF style.

Throughout the night of 11th/12th we maintained station on the *Despina* which was obliged to heave to on one occasion to secure cargo (steel plates, bars, tractors). Conditions were very unpleasant: southerly winds of 40–60 knots, high seas and heavy swell, intense rain squalls. By 0700 the wind had veered to west by south and had moderated to 25 knots but there was a heavy following swell, causing the ship to roll and pitch heavily.

At 0751 the situation report was transmitted to Bracknell whilst keeping station close astern of the *Despina*. I refrained from calling her Master until later, or until she called us, as it appeared that he had the best command of English and was doubtless exhausted and probably sleeping, so I did not want to disturb him unnecessarily. However, within the hour the Master called on R/T, requested and received the latest position and the Fastnet area forecast which had just come to hand.

The *Weather Adviser* was released from further duties at 0845 on the 12th by the Master of the *Despina*. Our position was then 51° 10'N, 11° 30'W, and we had covered a distance of 390 miles. Expressions of mutual regard were exchanged and with no further delay the *Weather Adviser* put about and set course for Station 'Juliett' at 100 revolutions. The appropriate authorities, including Bracknell, were notified, as was Land's End Coastguard. [The *Despina* arrived safely in Cork at midnight.]

On Sunday, 13th January at 1100 we regained the Station 'Juliett' grid after a round trip of 600 miles and continued towards the centre. End of operation; no damage or casualties aboard. The signal received from the Marine Superintendent upon completion of escort duties was posted with appreciation and was heartening after a hard slog during which no one got much rest. The sentiments expressed therein were interpreted to all hands in a more tangible form later in the day and again no voice was heard in dissent.

It is a pleasure to record the splendid efforts made by each and every member of the ship's company in this emergency and the relish with which they performed their particular duties. To be fair, no one can be singled out but the radio staff coped with a tremendous amount of traffic without confusion and the galley staff kept hot food coming from a galley which whirled around.

## PRESENTATION OF BAROGRAPHS

The Meteorological Office Headquarters at Bracknell, on 28th January 1974, was again the scene of one of those pleasant nautical occasions which gladden the hearts of us office-bound sailor-men, the occasion being the presentation of barographs to two shipmasters.

Of the four Masters who were nominated for this award for periods ending in the year 1972, only Captain W. F. Joyce of the Head Line was able to attend on this day but fortunately Captain P. N. Fielding of Manchester Liners, who had been nominated in the previous year, was at last available. Each shipmaster was accompanied by his wife and the presentations were made by the Director-General of the Meteorological Office, Dr. B. J. Mason who remarked that both of these shipmasters had given us many years of devoted voluntary service on the North Atlantic routes, covering an area which was vital to the British Meteorological Service. Our requirement for observations from this Ocean would go on for many years yet; perhaps it would even increase in view of the recent decision of the United States to withdraw their Atlantic Ocean Weather Ships; the meteorological satellite could perhaps satisfy their requirements in the western half of the North Atlantic but, for us in the eastern basin, ships' observations were vital and would continue to be, even beyond the foreseeable future.

After the presentations luncheon was taken with the Director-General and senior officers of the Meteorological Office and later the party was shown the workings of the Office, especially the use which is made of ships' observations.

A photograph taken at the presentation is reproduced opposite page 107.

The barographs awarded to Captain J. E. Askew, Captain W. MacVicar, M.B.E. and Captain J. A. North, as announced in the January 1974 number of *The Marine Observer*, remain to be presented at some later date.

L.B.P.

## ICE CONDITIONS IN AREAS ADJACENT TO THE NORTH ATLANTIC OCEAN FROM JANUARY TO MARCH 1974

The charts on pages 122 to 124 display the actual and normal ice edges (4/10 cover), sea-surface and air temperatures and surface-pressure anomalies (departures from the mean) so that the abnormality of any month may be readily observed. (The wind anomaly bears the same relationship to lines of equal pressure anomaly as wind does to isobars. Buys-Ballot's law can therefore be applied to determine the direction of the wind anomaly.) Southern and eastern iceberg limits will be displayed during the iceberg season (roughly February to July). In any month when sightings have been abnormally frequent (or infrequent) this will be discussed briefly in the text.

The periods used for the normals are as follows. Ice: Eurasian sector, all data up to 1956,<sup>1</sup> North American sector, 1952-56 (for north of 68°N)<sup>1</sup> and all data up to 1963 (for south of 68°N).<sup>2</sup> Surface pressure: 1951-66.<sup>3</sup> Air temperature: 1951-60.<sup>4</sup> Sea-surface temperature: area north of 68°N, 1854-1914 and 1920-50,<sup>5</sup> area south of 68°N, 1854-1958.<sup>6</sup>

### JANUARY

This month saw the reversal of the trends during the autumn. The Icelandic low was deeper than usual with its centre further east. The resulting strong north-westerly wind anomaly brought about an excess of sea ice over the Davis Strait and off Labrador and Newfoundland. Even over the St. Lawrence River and Gulf, where ice was slow to form in late December, a large excess had accrued by the end of January. The strong easterly winds over the Denmark Strait and the change of wind direction from northerly to easterly over the Greenland Sea resulted in a very substantial reduction of pack-ice in these areas. For example, the pack-ice edge which reached Jan Mayen in December retreated rapidly, though erratically, to 100-120 miles north-west of the island during the first fortnight. The strong south-south-westerly wind anomaly also brought about a large deficit of ice over the Barents Sea and the Baltic.

### FEBRUARY

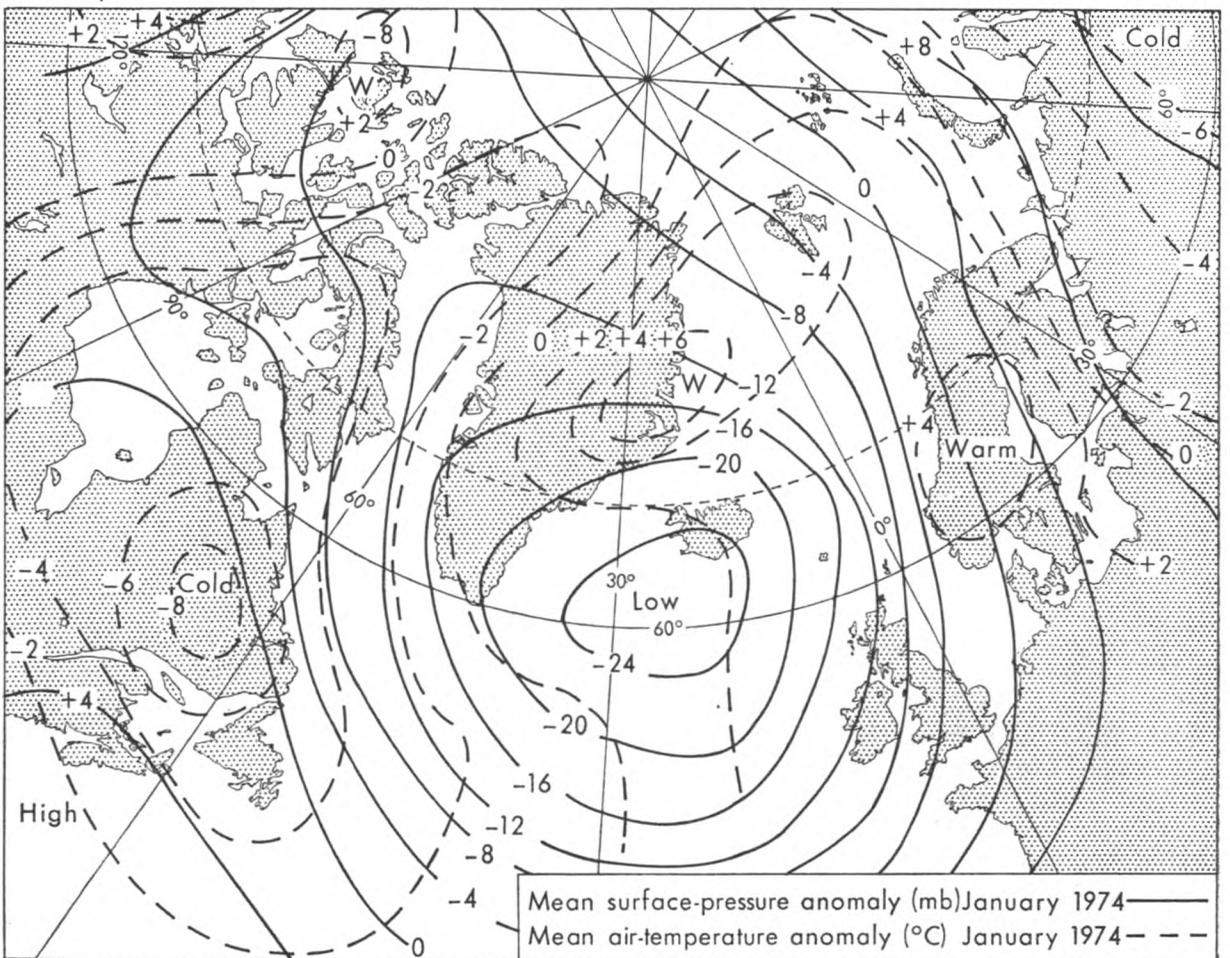
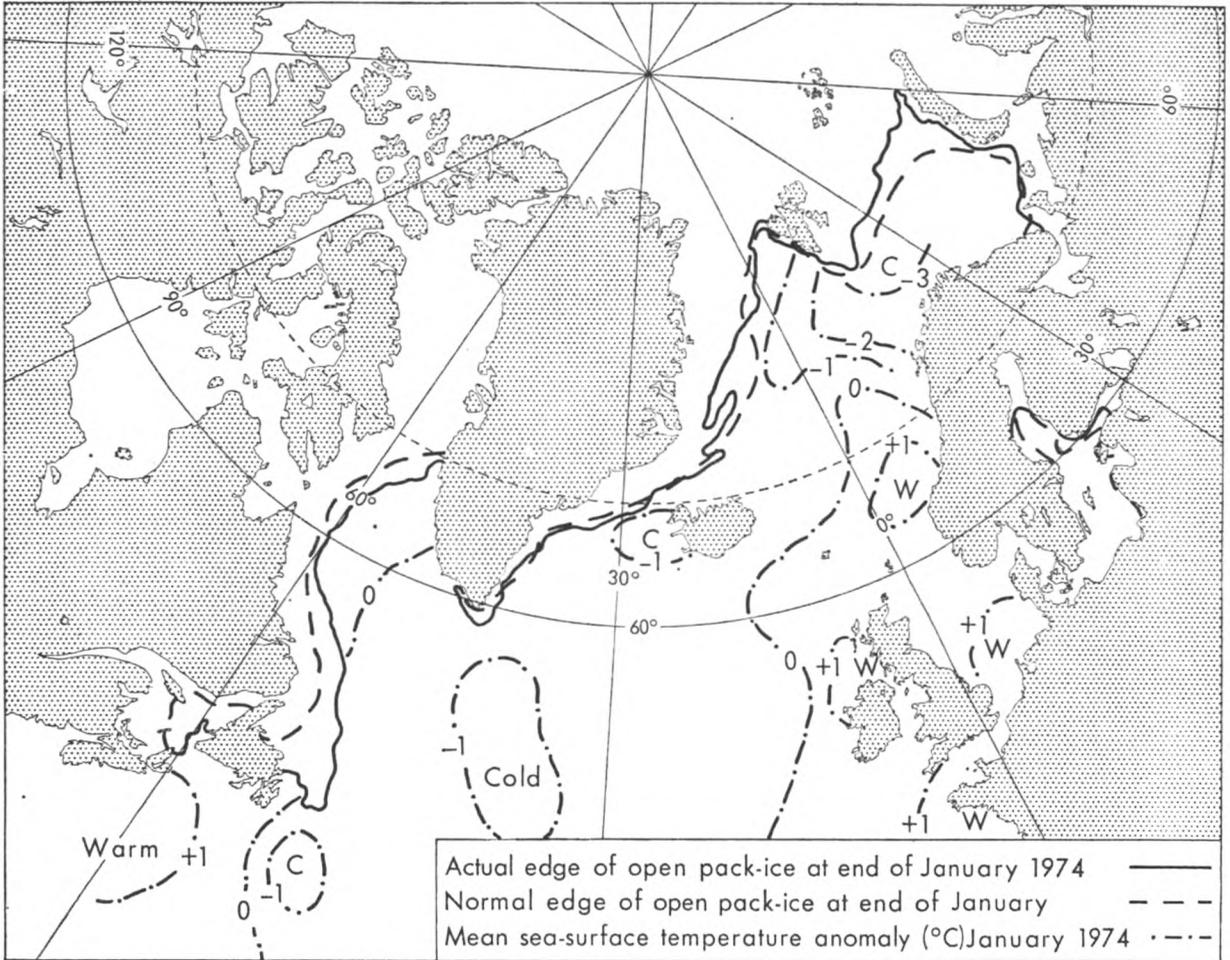
The Icelandic low continued to be deeper than usual and more elongated, from about 50°W to 20°W, with a trough running north-east towards the Greenwich meridian. The resultant north-north-easterly winds over the Davis Strait and the coast of Labrador caused the extent of pack-ice to return to normal in these areas. However, a strong south-south-westerly wind anomaly off Newfoundland ensured an excess there. Normal ice conditions prevailed over the Denmark Strait but a north-easterly wind anomaly ensured a deficit over the Greenland Sea. A strong south-easterly wind anomaly maintained the large deficit over the Barents Sea and the Baltic continued to have a deficit under the influence of milder south-westerlies.

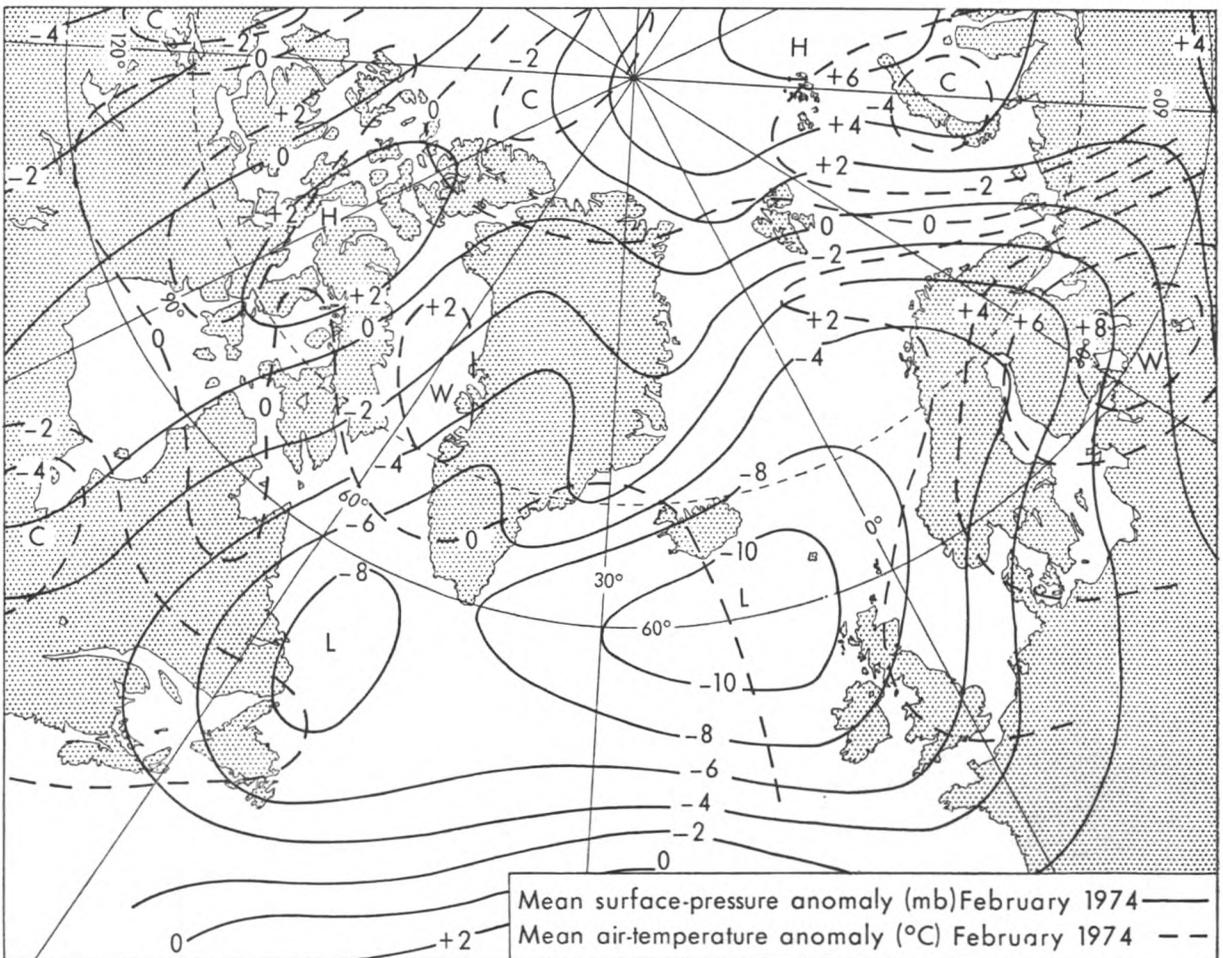
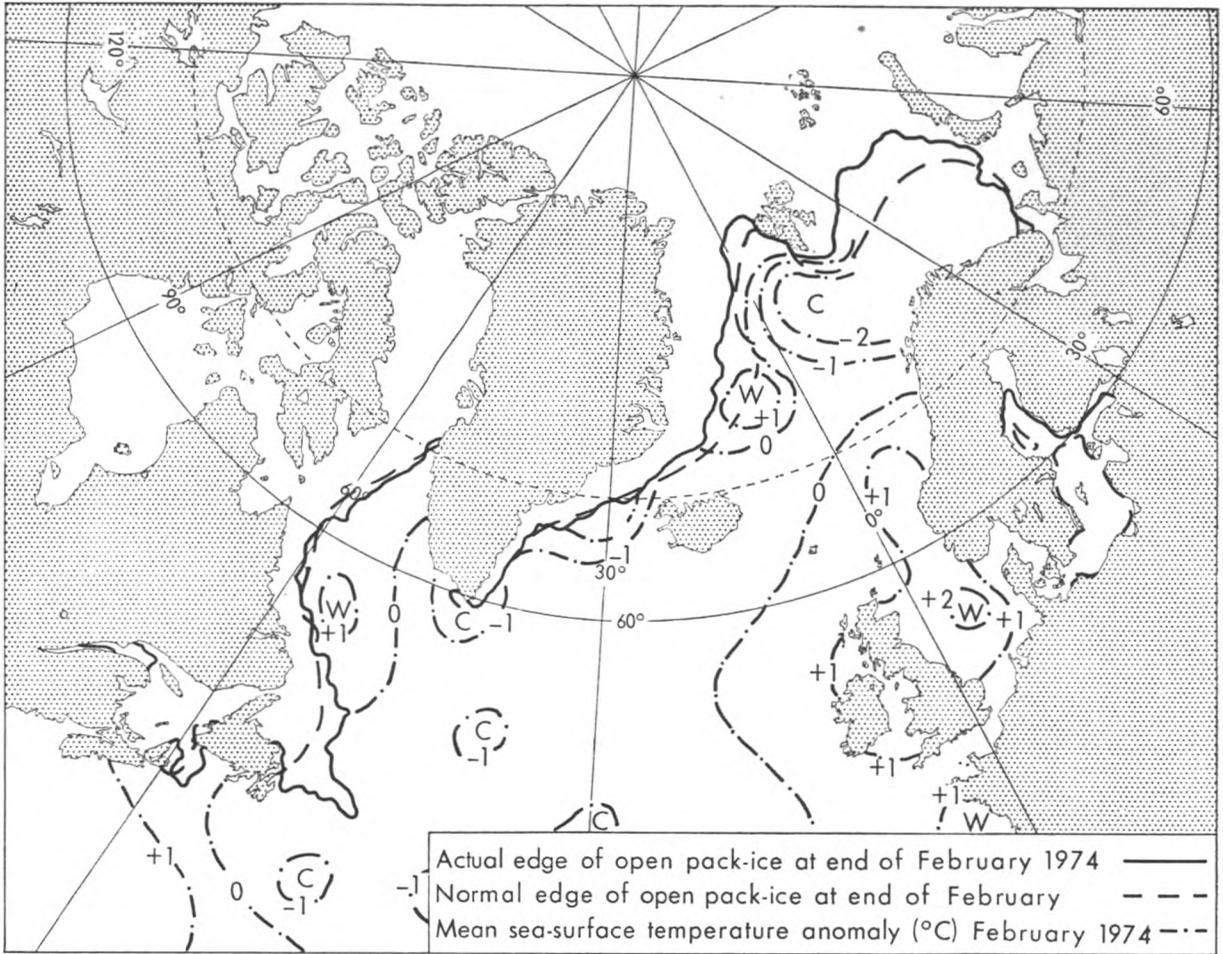
### MARCH

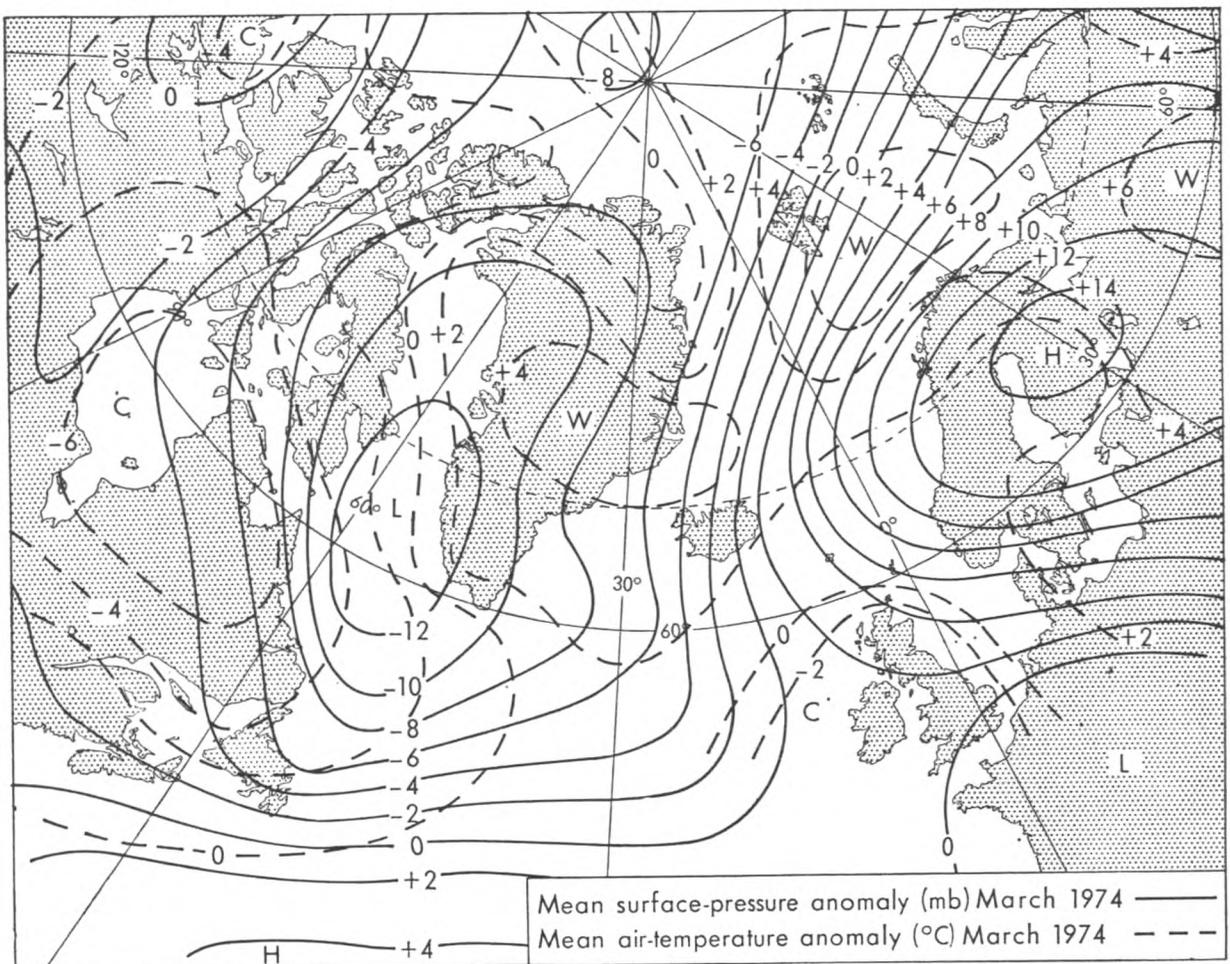
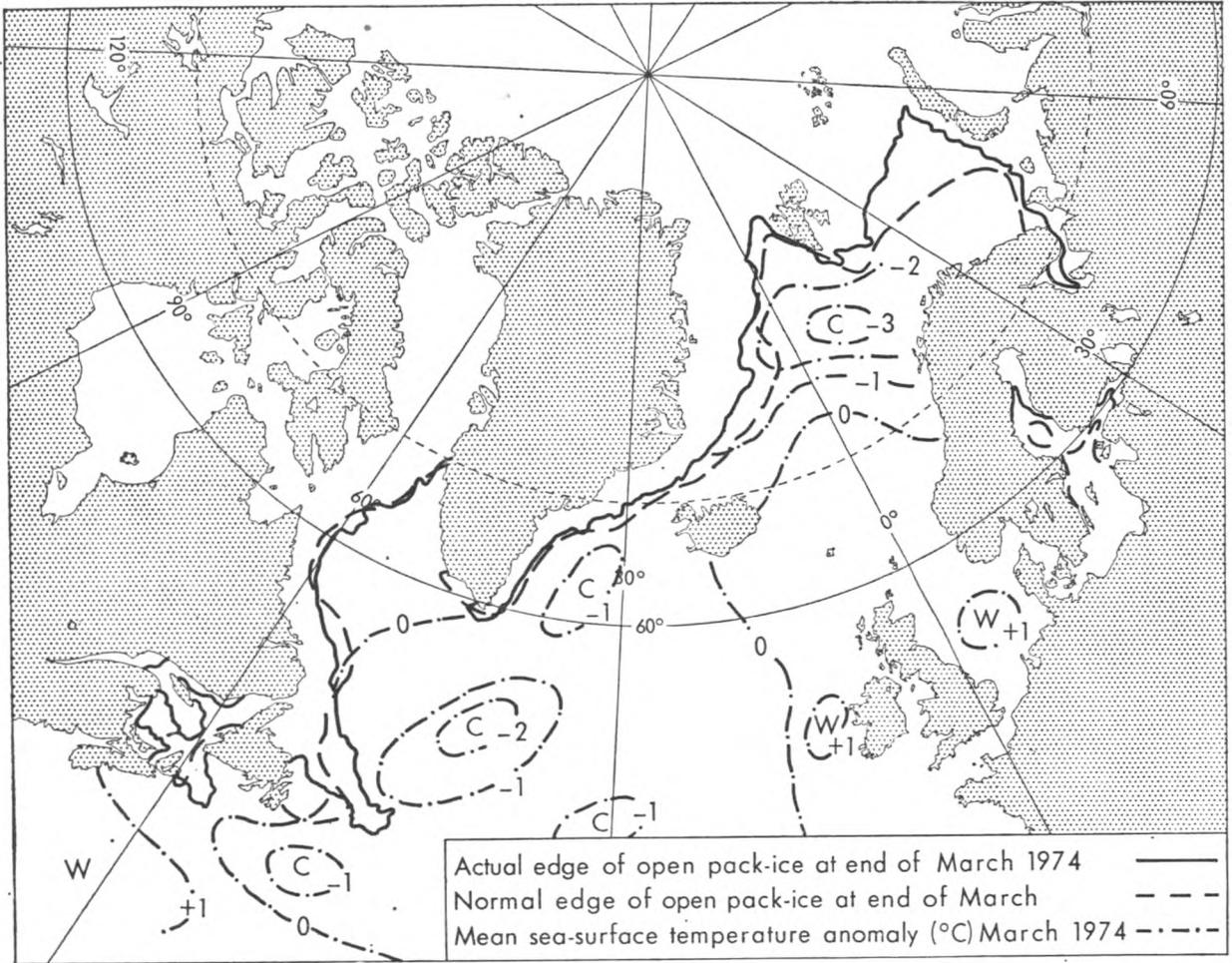
The Icelandic low was again deeper than normal but with the centre further to the west than usual. Ice conditions were normal over the Davis Strait with a slight deficit off the Labrador coast. The extent of pack-ice fluctuated sharply off the Newfoundland coast as storms moved into the Atlantic, generally south of 50°N. However, the net effect of a south-westerly wind anomaly produced an excess of ice eastwards. The strong south-south-west to west-south-west wind anomaly from the Denmark Strait to the Barents Sea maintained a large deficit in these areas. Temperatures were above normal in the Baltic and the deficit of sea ice continued.

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### Baltic Ice Summary: January-March 1974

No ice was reported at the following stations during the period: Ventspils, Mariehamn, Kalmar, Göteborg, Visby, Emden, Lübeck, Hamburg, Bremerhaven, Kiel, Flensburg, Stettin, Gdansk, Stalsund, Rostock, Aarhus, Copenhagen, Oslo, Kristiansandfjord.

STATION	JANUARY						FEBRUARY						MARCH														
	LENGTH OF SEASON		ICE DAYS		NAVIGATION CONDITIONS		ACCUMULATED DEGREE DAYS		LENGTH OF SEASON		ICE DAYS		NAVIGATION CONDITIONS		ACCUMULATED DEGREE DAYS		LENGTH OF SEASON		ICE DAYS		NAVIGATION CONDITIONS		ACCUMULATED DEGREE DAYS				
	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I
Leningrad ..	1	31	31	27	4	3	28	0	557	1	28	28	0	14	26	1	1	573	1	31	31	6	14	19	11	1	593
Riga ..	0	0	0	0	0	0	0	0	184	21	28	3	0	0	1	0	0	175	1	31	21	12	1	18	0	0	—
Pyarnu ..	1	31	31	31	0	0	19	12	—	1	28	28	28	0	0	0	28	—	1	31	31	31	0	0	3	28	—
Viborg ..	1	31	31	31	0	8	0	22	—	1	28	28	28	0	0	0	28	—	1	31	31	31	0	0	0	31	—
Klaipeda ..	3	21	14	1	10	11	0	0	—	12	28	10	0	0	2	0	0	—	1	13	12	0	0	10	0	0	—
Tallin ..	0	0	0	0	0	0	0	0	—	0	0	0	0	0	0	0	0	—	12	25	7	0	1	3	0	0	—
Helsinki ..	1	31	31	0	11	27	0	0	369	1	28	28	5	22	28	0	0	380	1	31	24	0	21	21	0	0	408
Turku ..	2	1	31	11	9	11	0	0	347	1	16	16	16	0	16	0	0	344	10	20	20	0	0	18	0	0	375
Mantyluoto ..	1	26	14	0	1	3	11	0	—	0	0	0	0	0	0	0	—	0	0	0	0	0	0	0	0	0	—
Vaasa ..	1	31	31	31	0	0	31	0	523	1	28	28	28	0	0	28	0	558	1	31	31	31	0	0	31	0	623
Oulu ..	1	31	31	31	0	0	31	0	—	1	28	28	28	0	0	28	0	—	1	31	31	31	0	0	31	0	—
Roytaa ..	1	31	31	4	26	0	31	0	—	1	28	28	28	0	0	28	0	—	1	31	31	31	0	0	31	0	—
Lulea ..	1	31	31	31	0	0	31	0	801	1	28	28	28	0	0	28	0	971	1	31	31	31	0	0	31	0	1114
Bredskar ..	2	31	30	2	11	9	20	0	—	1	28	27	0	6	3	24	0	—	1	30	22	0	1	1	21	0	—
Sundsvall ..	3	31	17	0	0	5	0	0	—	1	28	21	0	0	13	0	0	—	11	21	5	0	0	5	0	0	—
Stockholm ..	1	31	31	16	0	31	0	0	126	1	28	28	0	0	28	0	0	102	1	31	31	0	0	31	0	0	—
Skellefteå ..	1	31	27	20	0	0	31	0	—	1	28	28	28	0	0	28	0	—	1	31	31	31	0	0	31	0	—

**CODE:**

A First day ice reported. C No. of days that ice was reported. E No. of days of pack-ice. G No. of days assistance required.  
 B Last day ice reported. D No. of days continuous land-fast ice. F No. of days dangerous to navigation, but assistance not required. H No. of days closed to navigation.  
 I Accumulated degree-days of air temperature (°C) where known.\*

\* These figures give a rough measure of first the probability of the formation of sea ice, and later the progress of the growth and of its thickness. They are derived from daily averages of temperature (00 + 06 + 12 + 18 GMT) and are the sum of the number of the degrees Celsius below zero experienced each day during the period of sustained frost.

## Book Reviews

*Radar Watchkeeping*, by Captain W. D. Moss. 224 mm × 156 mm, pp. 128, *illus.*  
The Maritime Press Ltd., 12-14 Long Acre, London WC2E 9LP, 1973.  
Price: £1.50.

In this second and revised edition of his book, Captain Moss presents us with an up-to-date, non-technical and easily readable work on this much discussed subject of Radar Watchkeeping.

Somewhere, someone penned the words "Let the ship-wrecks of others be your sea-marks. Without mistakes there can be but little progress. Every failure teaches a man something if he will but learn"—how true these words are when one reflects on the much publicized subject of 'radar-assisted collisions' and the subsequent findings of the inevitable Courts of Enquiry . . . "speed too great in fog" . . . "radar operating but no plot kept" . . . "misinterpretation of radar information" . . .

In the ten short chapters of this book Captain Moss deals with the practical subject of the use of radar, not only during conditions of restricted visibility, but its use in clear weather for position finding.

The author describes the various types of radar PPI displays and deals in a short but very informative chapter with the miscellaneous effects and errors which mariners encounter, in one form or another, each time a radar watch is maintained. Problems such as multiple, indirect and side-lobe echoes are explained in a non-technical but easily understood manner, as he similarly deals with those vexing radar maladies of bearing and range errors.

Chapters 4, 5 and 6 contribute a most welcome and refreshing review of the subject of radar plotting, together with some very good examples, with illustrations, of the all-too-familiar and dangerous pitfalls due to inaccurate plotting or dangerous assumptions. "A single fact is worth a shipload of argument" is a maxim not to be forgotten in this context. At the end of Chapter 5 Captain Moss has set 26 problem exercises on plotting, commencing with the "simple plot" and progressing to the more complex when "own ship" has to alter course and set and drift are added complications. Fortunately the author has supplied the answers to his exercises, so that those who have become somewhat rusty on this aspect of watch-keeping may correct that omission.

Captain Moss has some interesting comment to make in regard to the various types of radar beacons which the modern bridge-watch officer is likely to encounter. His submission that there is a case for ships to carry Racon-type beacons which would produce different coded signals on the port and starboard sides, with a combined signal for right ahead, raises a very interesting and thought-provoking subject. As he says, it is undoubtedly true that many collisions in fog could have been avoided by radar-using ships if each vessel had been able to determine which side light the other vessel was presenting.

The final chapter deals with the many and varied plotting aids which are on the market these days and, with the very clear illustrations and photographs of the plotting displays, is both interesting and informative.

At the end of the book the author has thoughtfully included Merchant Shipping Notice No. M.535—Radar in Merchant Ships: Siting Precautions. This appendix is most useful to refresh and remind those of us who have probably all read it before but have long since stowed it away in the bulky file of M Notices berthed somewhere in the chartroom!

Captain Moss has produced an excellent, down-to-earth (or should it be sea?) book which is definitely a reading must for all who partake in Radar Watchkeeping. Although the author points out, very sensibly, at the beginning of his book, that radar is little better than the blind man's stick, and we all know that even today there are those (albeit a minority) who hotly consider radar plotting and training so

much eye-wash, they would be well advised to remember that standing on your dignity will not help you to see over the heads of the crowd.

G.V.M.

*Electrical and Electronic Equipment for Yachts*, by John French. 252 mm × 177 mm, pp. 238, *illus.* Granada Publishing Ltd., 3 Upper James Street, London W1R 4BP, 1973. Price: £5.50.

The knowledge and experience required by boat-skippers will be based, to no small extent, on the navigational aids within the individual's experience. As more and more equipment becomes available, the task of selecting the best-suited aids becomes more difficult.

This book lists, by chapters, the main aids to navigation such as the compass, echo-sounder, direction-finding and communications equipment, together with more sophisticated aids for larger craft such as radar, electronic navigation systems and automatic pilots. Within each chapter the general working principles, installation, inherent errors, calibration, operation and interpretation are described in terms which the yachtsman should easily be able to understand. Each chapter also promises a comparison between the various types now marketed.

This authoritative book is produced in double-column page format which, in this instance, accommodates most of the excellent illustrations on the same page as their descriptions.

The appeal will be wide-ranging, for the equipment described varies from the basic needs of the day-boat, a compass and echo-sounder, to the full range of navigation and safety aids fitted to a well-found ocean-going cruiser. At £5.50 it provides excellent value to the owner fitting out a new yacht who has to decide on the equipment best suited to his needs and so ensure greater safety for his crew.

R.M.S.

## Personalities

OBITUARY.—It is with great regret that we record the death of CAPTAIN E. IRISH which took place whilst he was on leave shortly before he was due to retire.

Edward Irish was born in 1913 and, from July 1928 to July 1932, was serving his time with Sir William Reardon Smith & Sons of Cardiff. After passing for 2nd Mate he rejoined the company and remained with them until September 1941 having attained the rank of Chief Officer. He had passed for Master in March 1940.

From September 1941 to January 1942 he was employed in Admiralty salvage work. He then joined H. Hogarth & Sons as Chief Officer though he was with them for only part of one ill-starred voyage, his ship being lost in March 1942. From June 1942 until March 1944 he served as Chief Officer with Messrs. Constants (South Wales). He joined the Bristol City Line as Chief Officer in May 1944 and was appointed to temporary command in December of that year, alternating between Master and Chief Officer until August 1954 when he was confirmed as permanent Master. Virtually the whole of his service in the Bristol City Line and, latterly, the Bibby Line, which had taken over management of the Company in March 1972, was spent on the North Atlantic run and in recent years he had commanded alternately the container vessels *Dart America* and *Dart Atlantic*.

We are indebted to Captain H. L. P. King, who was Marine Superintendent of the Bristol City Line from 1950 to 1970, for this story of one of Captain Irish's exploits during World War II which was received verbally from him some twenty-three years ago.

The Hogarth s.s. *Baron Newlands*, in which Irish was serving as Chief Officer, was torpedoed on 16th March 1942 off the west coast of Africa. After some days of sailing and rowing his boat, with about a dozen crew in it, they made a landfall on

“an inhospitable coast”. They rested on a sandy beach, building up their strength for a day or two and then set out on foot for Freetown, taking what provisions they could from the boat. They had already begun to live off the land—shellfish, fruit and nuts, etc. They walked mostly by night, on the beach, over rocks, on top of cliffs and in the jungle, and at every stream they had to strike inland until they found a place where they could cross. The Admiralty Chart 594 can only give a minimal idea of how often this must have happened. They fell in with native villages whose people “as uncivilized as in Dr. Livingstone’s day” were amazed to see them and, though there was no possibility of verbal communication, laid aside their spears as soon as they realized that the travellers were unarmed. They fed them and cared for them until they were strong enough to proceed; Captain Irish spoke appreciatively of the meals that they prepared and especially of the fact that there was never any suggestion that they should be on their way when their immediate needs had been attended to.

Only a few of the crew eventually made Freetown with Captain Irish after a journey which lasted many weeks and is thought to have been more than 200 miles as the crow flies. Reference to the Admiralty Chart again may give some idea of the actual distance that was covered. Captain Irish told his Superintendent that the most satisfactory part of the whole adventure was when the authorities allowed each man to send a cable home, for they realized that after all the elapsed time their people would then know that they were safe.

In his letter which recounted this adventure, Captain King wrote also, “Captain Irish was a man of tremendous courage. Twice he was strongly advised by his doctor that he was unfit for further sea service, once in 1949 after a most serious kidney operation and again about 1963 or 64 when he suffered a coronary thrombosis, but his sheer will prevailed.”

As a voluntary marine observer for us, Captain Irish had a record going back to 1954 when he sent us a meteorological logbook from the *New York City*; thereafter, in 17 years, he had sent us 33 meteorological logbooks and had gained Excellent Awards in 1966, 1967, 1969 and 1970.

We extend our very sincere sympathy to his widow and two adult sons. We shall miss him too.

L.B.P.

**RETIREMENT.**—CAPTAIN J. M. A. J. W. SMIT has retired from the post of Port Meteorological Officer in Cape Town.

Johannes Marinus Anna Jacobus Wilhelm Smit was born in 1913 in Semarang, Java. He was educated in High School and the Nautical Academy in Java and joined the Shell Oil Company in 1931 as an apprentice. He continued in their employ throughout his seagoing career, rising to command in due course.

During World War II he served in many of their ships in the Atlantic, Mediterranean and Far Eastern waters.

He left the Shell Company in 1946 and a year later took up a post under the Dutch Government in Indonesia as under-Harbourmaster. In 1948 he was promoted to Harbourmaster, Examiner and Surveyor. He emigrated to South Africa in 1952 and joined the South African Weather Bureau.

During his time at the port, Captain Smit saw the closure of the Suez Canal and the consequent vast increase of traffic through his area. Stocks of U.K. Meteorological Office stationery had been kept in Cape Town for some years but it was this increase in traffic which led Captain Smit to suggest that he should carry a stock of thermometers, the most frequently required replacement, as well. For the last four years, therefore, these have been available in Cape Town and we are very much indebted to Captain Smit for his help.

We wish him health and happiness in his retirement.

L.B.P.





**FLEET LISTS**  
**1974**

# Fleet Lists

**GREAT BRITAIN** (Information dated 31.3.74)

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 received 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 Senior 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 Ships

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Acavus</i>	28.2.74	T. G. Wormald	S. Galloway, D. R. Lake, K. Jupp	K. Matthews	Shell Tankers (U.K.) Ltd.
<i>Act 1</i>	16.1.74	W. A. Davidson	D. E. Sayle, R. B. Tilley, N. J. Barr	D. Owens	Associated Container Transportation Ltd.
<i>Act 2</i>	28.2.74	J. R. dit-Leschery	E. W. Green, M. J. L. Williams	D. Taylor	Associated Container Transportation Ltd.
<i>Act 6</i>	25.1.74	P. E. Packwood	D. J. Balderston, N. Hogg, R. G. Livingstone	J. D. Boardman	Associated Container Transportation Ltd.
<i>Adelaide Star</i>	6.2.74	P. W. Hunt	R. S. Downie, P. Hurllock, A. R. P. Geels	G. Rees	Blue Star Line Ltd.
<i>Adventurer</i>	22.11.73	H. S. Bladon	K. M. McDermott, R. H. Jones, D. MacLeod	D. Daly	T. & J. Harrison Ltd.
<i>Albright Explorer</i>	31.12.73	J. H. Kitching	R. T. Berry, B. Perkins, N. Brette	W. D. Brown	James Fisher & Sons Ltd.
<i>Albright Pioneer</i>	17.1.74	J. Wood	M. Rossiter, M. Wardle, D. Hall	W. P. Edmunds	James Fisher & Sons Ltd.
<i>Alert</i>	24.1.74	J. P. Ruddock, O.B.E.	D. R. Ellis, M. R. Donaghy, R. Bell	E. Robinson	Post Office
<i>Alinda</i>	27.6.72	P. I. Blackshaw	R. L. Cheshire, W. T. Selby, D. T. Kirkwood	C. G. Macaulay	Shell Tankers (U.K.) Ltd.
<i>Amalric</i>	14.3.74	C. G. Earl	D. J. Morrison, A. Ross, H. A. S. Palmer	M. F. Lavan	Shaw Savill & Albion Co. Ltd.
<i>Amarna</i>	23.7.73	E. J. Plater	A. C. Brooks, F. P. Gunning	J. Lamb	P. & O. S.N. Co.
<i>Amastra</i>	29.10.73	T. G. Wormald	D. F. Cammish, A. Gardiner, G. Wilkinson	B. Mullally	Shell Tankers (U.K.) Ltd.
<i>America Star</i>	23.1.74	R. Brownbill	D. Tyler, G. S. Copley, C. E. Elms	K. A. Hardy	Blue Star Line Ltd.
<i>Amoria</i>	27.9.73	G. C. Turnbull	I. S. Mercer, S. E. Taylor, G. I. T. Drummond	A. S. Green	Shell Tankers (U.K.) Ltd.
<i>Anadara</i>	17.1.74	G. A. Ramsden	W. E. E. Lake, J. V. Cook, M. E. Schollar	P. G. Peckham	Shell Tankers (U.K.) Ltd.
<i>Annuitiy</i>	24.1.74	D. G. Munro			F. T. Everard & Sons Ltd.
<i>Antiochus</i>	6.2.73	R. M. Simpson	P. J. Walley, F. T. Bullen, E. J. Williams	D. P. Stoker	Ocean Transport & Trading Ltd.
<i>Antrim</i>	24.10.73	A. C. R. Murray	S. P. Scott, A. Betts, A. Peter	D. Randall	P. & O. S.N. Co.
<i>Argyllshire</i>	24.10.73	R. D. Lofis	D. Fardo, K. A. MacLeod, J. Macaulay	M. MacLeod	Clan Line Steamers Ltd.
<i>Armada</i>	22.3.73	F. J. Adams	K. D. Kordt, A. Peter, W. Kimberley	J. Newman	Trinder Anderson & Co. Ltd.
<i>Armanistan</i>	28.2.74	L. Seddon	K. McGrath, C. R. Turry, R. C. Avenin	T. C. Baldwin	P. & O. S.N. Co.
<i>Arya Bod</i>	25.9.73	M. J. Horn	R. I. Taylor, N. H. Malpass		Bibby Line Ltd.
<i>Asafreighter</i>	3.10.73	G. E. Mayne	H. Davies, H. Holmes, P. Yates, J. Naismith	R. J. Lawrence	J. & J. Denholm Ltd.

<i>Asialiner</i> .. .. .	14.2.74	G. E. Mayne	H. Holmes, H. Davies, A. Southworth	R. J. Lawrence	J. & J. Denholm Ltd.
<i>Asprella</i> .. .. .	6.2.74	R. L. Hunter	G. Talbot, K. J. Loffstadt, A. McE. Dunn	C. Akyeampong	Shell Tankers (U.K.) Ltd.
<i>Atelcheif</i> .. .. .	25.1.74	R. G. Gray	I. R. Ward, P. Morrisey, J. P. Mahony, J. Lewis	K. J. Grant	Athel Line Ltd.
<i>Atlantic Causeway</i> .. .. .	20.3.74	A. Bull	J. K. Brocklehurst, R. Lloyd, R. F. Fitch	F. A. Dunn	Cunard-Brocklebank Ltd.
<i>Atlantic Conveyor</i> .. .. .	17.1.74	I. H. North	J. K. Brocklehurst, P. D. Dunford, C. H. Denny	A. D. Marsden	Cunard-Brocklebank Ltd.
<i>Auckland Star</i> .. .. .	31.10.73	G. Stubbings	N. P. Colling, J. Clayton	T. Philips	Blue Star Line Ltd.
<i>Aureol</i> .. .. .	28.2.74	M. Murphy	D. H. Bichan, A. P. Minns, M. G. Fennell	R. E. Seward	Ocean Transport & Trading Ltd.
<i>Australind</i> .. .. .	9.1.74	P. D. Guerrier	D. Caplain, P. D. Thackstone, A. F. Biles	D. More	Trinder Anderson & Co. Ltd.
<i>Author</i> .. .. .	25.1.74	I. M. Proctor	A. C. McMillan, K. A. Ellis, K. A. McGeorge	S. A. Anderson	T. & J. Harrison Ltd.
<i>Avon Forest</i> .. .. .	14.3.74	N. C. Kerr	N. C. Stark, M. M. Lindsay, D. Mannering	S. A. White	Harrisons (Clyde) Ltd.
<i>Avonfield</i> .. .. .	17.1.74	J. I. Sharp	L. T. Cairns, S. K. Rashid	D. G. Gavin	Hunting & Son Ltd.
<i>Baharstan</i> .. .. .	26.9.73	G. L. Andrews	W. J. S. Burr, A. Gordon, J. G. Jackson	I. W. Field	P. & O. S.N. Co.
<i>Bamburgh Castle</i> .. .. .	6.11.73	D. A. B. Walker	T. A. Pringle, R. D. Mountney, D. Crammond	R. Marshall	W. A. Souter & Co. Ltd.
<i>Baron Ardrossan</i> .. .. .	8.5.73	J. A. Roberts	A. R. Neil, C. D. McCurdy, G. Dobbie	F. A. McNulty	Scottish Ship Management Ltd.
<i>Baron Canador</i> .. .. .	1.1.73	M. Turton	J. S. Houston, N. D. Battersby, R. I. Mackenzie	C. A. Adamson	Scottish Ship Management Ltd.
<i>Baron Renfrew</i> .. .. .	21.5.73	C. Maclean	P. Clements, J. M. Newby, I. Davis	C. A. G. Cope	Scottish Ship Management Ltd.
<i>Barrister</i> .. .. .	20.3.74	C. Carew	C. C. W. Towne, F. Hunter, T. John	M. A. Scott	T. & J. Harrison Ltd.
<i>Beechbank</i> .. .. .	16.5.73	P. J. Elder	G. Berry, N. Harris, J. Sabourne	P. Brennan	Bank Line Ltd.
<i>Beechwood</i> .. .. .	20.9.73	J. S. Cunningham	R. N. F. Hagerly, A. E. J. Coates, P. D. Rooksby	R. MacGowan	Ocean Transport & Trading Ltd.
<i>Bellerophon</i> .. .. .	24.10.73	M. Furlong	D. D. Sutherland, S. A. Walker	J. R. Crockett	Ben Line Containers Ltd.
<i>Benalder</i> .. .. .	28.2.74	K. H. Hardie	D. J. Bremner, J. Main	J. Kelly	Ben Line Steamers Ltd.
<i>Benarty</i> .. .. .	28.2.74	J. R. Rodger	C. J. A. Cladingbow, R. V. Mackenzie, J. U. Steel	G. W. Dickson	Ben Line Steamers Ltd.
<i>Benatow</i> .. .. .	28.2.74	A. S. Hamilton	D. Walker, A. Milligan, C. A. Swanson	A. Gordon	Ben Line Steamers Ltd.
<i>Benavon</i> .. .. .	14.3.74	I. R. Morrison	D. A. Gunn, F. I. Hogg, B. A. Hammett	J. Gilhooly	Ben Line Steamers Ltd.
<i>Bencairn</i> .. .. .	14.2.74	O. Henderson	C. A. Swanson, G. McDonald, B. C. Spaven	R. Sadler	Ben Line Steamers Ltd.
<i>Bencruachan</i> .. .. .	13.8.73	D. S. Sinclair	J. E. Atkinson, I. Greig, M. Faulkner	T. Drummond	Ben Line Steamers Ltd.
<i>Bendearg</i> .. .. .	7.3.74	R. E. Cowie	S. C. Lee, A. S. Rankin, M. Roberts	J. W. Campbell	Ben Line Steamers Ltd.
<i>Bendoran</i> .. .. .	11.2.74	R. Griffiths	N. B. Hesketh, J. Dwyer, R. Morris	D. R. Woods	T. & J. Harrison Ltd.
<i>Benefactor</i> .. .. .	3.9.73	I. A. Mitchell	J. M. Ferguson, A. J. M. Wilson, G. McDonald	H. E. Brookfield	Ben Line Steamers Ltd.
<i>Benlawers</i> .. .. .	28.3.74	R. C. Thomas	J. C. Thomson, I. A. Hamilton, K. Donaldson	N. A. Lawrence	Ben Line Steamers Ltd.
<i>Bentled</i> .. .. .	12.10.73	O. Tucker	R. J. Lynch, G. Byers, G. W. Day	W. C. Cumming	Ben Line Steamers Ltd.
<i>Benlomond</i> .. .. .	28.3.74	A. Burnett	W. J. Lindsay, R. Coles, A. Campbell	I. J. Lacey	Ben Line Steamers Ltd.
<i>Bennoch</i> .. .. .	30.1.74	C. P. Browne	K. Kennedy, D. S. Collins, R. O. Dundas	P. C. Tolcher	Ben Line Steamers Ltd.
<i>Benstac</i> .. .. .	28.2.74	A. Addison	A. H. Glen, N. M. Wight, I. Grant	J. J. Daly	Ben Line Steamers Ltd.
<i>Benwarloch</i> .. .. .	6.11.73	T. P. Barr	J. N. Mackenzie, N. C. Reid	J. C. Breslin	Ben Line Steamers Ltd.
<i>Bemurlich</i> .. .. .	4.12.73	I. S. Schofield	W. Sinclair, R. I. Roberts, P. D. Cowie	G. R. Kerr	Ben Line Steamers Ltd.
<i>Bemurackie</i> .. .. .	31.12.73	J. D. Fryde	C. C. Ang, B. N. Jones, T. D. MacKay	T. T. Stidston	Ben Line Steamers Ltd.
<i>Bhama</i> .. .. .	28.2.74	S. F. Garside	E. E. Currie, M. Rowe, C. H. J. Allister	A. P. Moss	Ocean Transport & Trading Ltd.
<i>Booker Vanguard</i> .. .. .	26.10.73	R. McKechnie	P. A. Southworth, S. Monk, M. Rowe	D. T. Blockley	Booker Line Ltd.
<i>Booker Venture</i> .. .. .	31.12.73	J. A. Carter	D. J. MacLellan, W. Hill, C. Lambert	D. C. Macrae	Booker Line Ltd.
<i>Booker Viking</i> .. .. .	28.2.74	J. Hogg	C. H. James, P. J. Donnelly, H. M. Bates	G. Minay	Common Bros. Ltd.
<i>Border Castle</i> .. .. .	12.9.72	C. L. Southcombe	T. D. Johnson, K. W. S. MacMillan, W. E. Davies	J. Ryan	Container Fleets Ltd.
<i>Border Shepherd</i> .. .. .	3.2.72	T. W. Y. Dowson	J. D. Thomson, T. Banton	C. E. Hughes	Warwick Tankers Ltd.
<i>Botany Bay</i> .. .. .	24.1.74	R. A. Wilson	J. Gray, R. Sankey, T. Banton	B. P. Clarke	British Antarctic Survey
<i>Brandon Priory</i> .. .. .	7.3.74	D. W. Luff	N. A. Beer, C. P. Baker, E. Dewhurst	H. M. O'Gorman	Blue Star Line Ltd.
<i>Bransfield</i> .. .. .	30.5.73	T. Woodfield	L. D. J. Llewellyn, R. D. Henderson, T. A. Wilson	D. O'Shaughnessy	S. William Coe & Co. Ltd.
<i>Brasilia Star</i> .. .. .	5.7.74	E. C. Smith	J. Mair	S. Kelly	Sir R. Ropner & Co. Ltd.
<i>Brathorn</i> .. .. .	6.2.74	R. Alderice	J. Sheldon, P. Ramm, F. Fineron	E. Ruddick	B.P. Tanker Co. Ltd.
<i>Bridgepool</i> .. .. .	31.12.73	F. A. Carter	R. Friar, P. J. Fowler	G. M. Evans	B.P. Tanker Co. Ltd.
<i>British Ambassador</i> .. .. .	21.8.73	C. A. Byrne	P. J. Matten, T. Robinson	G. Burras	B.P. Tanker Co. Ltd.
<i>British Avon</i> .. .. .	19.12.73	D. H. J. Henderson	M. Gearing, K. Peacock, C. A. Hardiker	A. K. Woodward, R. R. Franks, C. J. Spink	B.P. Tanker Co. Ltd.
<i>British Beech</i> .. .. .	7.3.74	E. W. Twemlow	A. K. Roberts, B. Cooper, J. Hutchinson	E. G. Thorp	B.P. Tanker Co. Ltd.
<i>British Bombarrier</i> .. .. .	28.2.74	W. J. Lightfoot	D. Lumb, D. Maund, P. A. Yorke	V. S. Cullinen	B.P. Tanker Co. Ltd.
<i>British Commodore</i> .. .. .	31.12.73	G. B. Sinclair			
<i>British Confidence</i> .. .. .	11.1.74	F. E. Preece			
<i>British Cormorant</i> .. .. .	5.11.73	J. Horner			

**Selected Ships (contd.)**

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>British Cygnet</i>	24.1.74	J. S. Allen	R. S. Morton, C. Steele, I. R. Couper	J. MacDonald	B.P. Tanker Co. Ltd.
<i>British Esk</i>	11.2.74	R. D. Weston	J. D. Smelley, D. Coombs, J. Marr	D. J. Busvetsids	B.P. Tanker Co. Ltd.
<i>British Forth</i>	7-3-74	R. A. Othick	P. N. Duffield, G. J. Blamey, M. J. Gordon	P. Dalton	B.P. Tanker Co. Ltd.
<i>British Fulmar</i>	24.1.74	R. A. Holmes	P. Thomson, S. G. B. Elder, J. E. Howe	D. Ferguson	B.P. Tanker Co. Ltd.
<i>British Guardsman</i>	1.6.73	H. F. Scott-Dickens	D. Wilson, D. Thomas, T. V. Watkins	D. E. Dale	B.P. Tanker Co. Ltd.
<i>British Hazel</i>	6.2.74	P. R. Waller	H. Griffin, M. I. Keiller, R. M. Bertenshaw	T. J. Warburton	B.P. Tanker Co. Ltd.
<i>British Holly</i>	21.3.74	E. F. Henderson	P. A. Edwards, C. J. Coxhead, C. J. Sherwood	N. S. Bradley	B.P. Tanker Co. Ltd.
<i>British Ivy</i>	12.2.74	D. C. Goodwin	E. Todd, A. C. Yates, T. L. Hall	R. C. Williamson	B.P. Tanker Co. Ltd.
<i>British Kennet</i>	7-3-74	C. J. Kelly	D. Avenell, R. F. A. Batt, R. S. Cartwright	P. J. Trant	B.P. Tanker Co. Ltd.
<i>British Kiwi</i>	10.1.73	C. O. Picken	A. A. Smith, D. H. Maerer, G. M. Hopkins	J. L. Pearson	B.P. Tanker Co. Ltd.
<i>British Liberty</i>	10.1.73	G. S. Willis	A. R. Duggins, P. W. Hillier, R. D. Wallace	P. J. Trant	B.P. Tanker Co. Ltd.
<i>British Maple</i>	7-2-74	I. Black	W. H. Patterson, G. N. Gaunt, P. A. Terry	C. Kelly	B.P. Tanker Co. Ltd.
<i>British Mariner</i>	31.12.73	A. Phillips	M. A. Gough, R. D. Wallis, J. C. Gillespie, N. F. Johnstone	I. MacLeod	B.P. Tanker Co. Ltd.
<i>British Swift</i>	10.12.73	P. I. Burleigh	J. McGurr	C. R. Allen	B.P. Tanker Co. Ltd.
<i>British Tamar</i>	14.2.74	D. N. Peck	B. V. Kemp, C. Maclean, P. W. Hillier	J. Lillie	B.P. Tanker Co. Ltd.
<i>British Trust</i>	7-3-74	K. H. Lewis	D. J. Baker, D. J. Pengelly, D. M. Phillips	D. Edgar	B.P. Tanker Co. Ltd.
<i>British Vine</i>	9.1.74	I. K. Miller	A. Bielawski	A. W. Dixon	Blue Star Line Ltd.
<i>Buenos Aires Star</i>	18.1.74	J. W. Hooley	A. C. Hitchen, M. J. Howden, P. A. Chadwick	E. R. Dowlman	Canadian Pacific Steamships Ltd.
<i>C.P. Discoverer</i>	28.3-74	G. E. Gambin	C. Riches, P. C. Adair, P. J. Fowler	D. A. Drummond	Canadian Pacific Steamships Ltd.
<i>C.P. Trader</i>	5.12.73	P. J. Roberts	J. S. Partridge, J. A. Dunlop, W. A. McCall	D. A. Drummond	Canadian Pacific Steamships Ltd.
<i>C.P. Voyager</i>	14.3-74	D. McPhail	J. E. Chitty, P. M. Hutchinson, M. J. Power	J. V. Horsburgh	Blue Star Line Ltd.
<i>California Star</i>	9-4-73	I. S. M. Condie	T. R. Noonan, R. Mimmack, D. Bird	S. Williams	Shaw Savill & Albion Co. Ltd.
<i>Canopic</i>	22.5-73	C. Knight	J. A. Thomas, A. Morgan, A. Tinsley	V. Gosling	Druidstan Ltd.
<i>Canthaloup</i>	4-6-73	P. A. Stevens	J. H. Turner, P. M. Stacey, P. M. C. Sanderson	P. S. Henderson	Blue Star Line Ltd.
<i>Canterbury Star</i>	31.5-73	J. Tattersall	B. D. Ellis, D. L. Cole, I. C. McLean	B. G. Breslin	Lyle Shipping Co. Ltd.
<i>Cape Horn</i>	28.2-74	D. S. Gordon	W. A. Andersen	W. Macleod	Lyle Shipping Co. Ltd.
<i>Cape Howe</i>	26.9-73	W. G. Gator	D. A. Clarke, A. Weir, A. C. Henderson	J. Trotter	Lyle Shipping Co. Ltd.
<i>Cape Leeuw</i>	11.10-73	A. C. Hunter	P. V. Flynn, T. H. Quirk, B. Mylchreest	C. C. Houston	Lyle Shipping Co. Ltd.
<i>Cape Nelson</i>	25.10-73	M. Turton	R. Mullen, J. Wood, A. C. Henderson	D. Gudgeon	Lyle Shipping Co. Ltd.
<i>Cape Wrath</i>	17.1-74	A. MacLeod	A. R. Lanfeer, A. C. Henderson, R. Cullen	A. MacKinnon	Lyle Shipping Co. Ltd.
<i>Cape York</i>	24.1.74	T. P. Edge	J. Johnston, R. Kincaid	R. H. Boatman	Lyle Shipping Co. Ltd.
<i>Carchester</i>	22.10-73	A. Hamill	J. Goodlet, A. T. Cousin, F. Pirie	P. Evans	Christian Salvages (Shipping) Ltd.
<i>Cardigan Bay</i>	11.10-73	J. Banna	G. K. Thomson, D. Atkin, J. G. Jackson	A. E. Holman	Ocean Transport & Trading Ltd.
<i>Carrel</i>	14.9-73	C. A. Morrison	J. N. Burton, M. Wright, Chan Shui Hoi	M. G. Rayner	Jardine Matheson & Co. Ltd.
<i>Cast Beaver</i>	15.10-73	R. A. Maxwell	D. J. House, A. Chapple, P. Breslin	J. S. Dent	G. Heyn & Sons Ltd.
<i>Cedric</i>	29.3-74	R. J. Bland	J. Hunter, M. A. Hooper, T. B. Miller	J. MacFarland	Shaw Savill & Albion Co. Ltd.
<i>Challenger</i>	19.9-73	C. M. Bowen	J. D. Noden, A. G. Marsh, J. J. Moran	D. E. Brown	Natural Environment Research Council
<i>Cheviot</i>	4.12-73	I. W. James	T. Plummer, I. Boulton	P. Carroll	W. A. Souther & Co. Ltd.
<i>Civrolana</i>	5-7-73	T. H. Finn	D. J. Dunkley, W. J. Saxby, F. Brown	R. B. Cooper	Ministry of Agriculture, Fisheries & Food
<i>City of Auckland</i>	20.12-73	T. Rigg	J. A. Gray, J. Harrison-Naves	A. W. T. Camp	Ellerman Lines Ltd.
<i>City of Cape Town</i>	11.9-73	D. B. Williams	G. Webb, P. A. Woodgate, A. R. Lucas	C. R. Brown	Ellerman Lines Ltd.
<i>City of Colombo</i>	11.9-73	D. Brown	T. Gwynne, A. McClintock, C. Hainsworth	W. R. Henderson	Ellerman Lines Ltd.
<i>City of Dundee</i>		D. B. A. Roe	P. M. Sumpton, I. D. Foley, M. J. Main	W. Paterson	Ben Line Containers Ltd.
<i>City of Edinburgh</i>		S. Murray	A. A. Davidson, F. G. Anderson, S. I. Barbour		



**Selected Ships (contd.)**

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Dart Atlantic</i>	27.11.73	J. J. Butterworth	C. E. Walford, D. H. Thomas, B. P. Philip	G. F. Glover	Bibby Line Ltd.
<i>Degema</i>	18.1.74	I. D. Bease	W. J. Martin, S. O. Chua Say Ong, H. B. Woods	J. Noonan	Ocean Transport & Trading Ltd.
<i>Delido</i>	10.5.73	E. Woosey	S. H. Barnett, C. D. Warren	R. J. P. Williams	Ocean Transport & Trading Ltd.
<i>Derbyshire</i>	2.5.73	D. R. Clayton	S. A. McClure, R. A. Morris, R. Q. Palmer	S. W. A. Stenton	Bibby Line Ltd.
<i>Discoverer</i>	14.9.73	C. D. Wilde	T. J. Hunter, O. M. Owen, A. McMillan	G. A. Ferrand	T. & J. Harrison Ltd.
<i>Discovery</i>	31.12.73	A. W. J. Justen	J. A. Hamilton, D. A. Pye		Natural Environment Research Council
<i>Discovery Bay</i>	8.1.74	L. E. Howell	C. A. Sheffield, J. Hutson, P. Wilson, S. Hayward	R. B. Redhead	Container Fleets Ltd.
<i>Donegal</i>	21.3.74	I. Blake	A. P. Lowe, G. K. Milne, C. d'Souza	P. F. E. Kuchenbecker	Trinder Anderson & Co. Ltd.
<i>Donga</i>	16.5.73	W. E. Bowden	G. A. Bateman, S. T. Houldsworth	T. J. Smith	Ocean Transport & Trading Ltd.
<i>Drina</i>	14.3.74	J. Rutter	P. C. Cockcroft-Oliver, R. Brinkworth, J. Huddleston	R. D. Dingley	Shaw Savill & Albion Co. Ltd.
<i>Duhallona</i>	8.1.74	G. Marshall, O.B.E.	P. K. Casement, G. Hepple, S. K. Wadhawan	B. I. Bicknell	P. & O. S.N. Co.
<i>Dukesgarth</i>	14.2.74	N. Richardson	G. Gordon, G. Taylor, J. Main	M. F. Leeney	Ocean Transport & Trading Ltd.
<i>Dumbaia</i>	31.12.73	B. M. Ketchen	V. W. Dundas, B. D. Noble, K. Hughes-Jones	K. Hyland	Ocean Transport & Trading Ltd.
<i>Dunkwa</i>	12.9.73	F. M. Howe	J. M. Pringle, D. B. Meikle, W. Jemson	D. Chalmers	Elder Dempster Lines Ltd.
<i>Dunstanburgh Castle</i>	14.2.74	J. MacVean	K. Henderson, K. Wilcox, W. Hanley	G. Smith	W. A. Souther & Co. Ltd.
<i>Durango</i>	30.1.74	I. D. A. Statham	J. R. Sutcliffe, C. A. Gill, D. Petty	S. McGee	Shaw Savill & Albion Co. Ltd.
<i>Eagle</i>	7.3.74	I. H. Leggart	J. P. Morton, B. E. Peck, R. Fearnley	R. A. Knight	Southern Ferries Ltd.
<i>Eban</i>	7.9.73	R. Wild	S. P. Wakulipola, P. Noonan		Ocean Transport & Trading Ltd.
<i>Edenstein</i>	29.11.73	I. Fjeldstad		M. W. Kirk	Marine Exploration Ltd.
<i>Edenmore</i>	9.11.73	W. Lewis	C. J. Langdon, J. Betsoe, L. D. George	F. Sharp	Furness Withy & Co. Ltd.
<i>Edinburgh Castle</i>	26.11.73	J. S. Catterall	A. J. A. Aston, L. Martin	P. J. Linnett	Union-Castle Mail S.S. Co. Ltd.
<i>Edinburgh Clipper</i>	14.3.74	S. D. Mayl	B. C. Preece, G. W. Morrison, T. B. Miller		Whitco Marine Services Ltd.
<i>Edward Forbes</i>		P. J. MacDermott	S. Sykes, D. J. Flower		Natural Environment Research Council
<i>Edward Wilshaw</i>	11.6.68	N. H. Smith	R. M. Keyzor, K. Brammer, A. F. Wilson	J. Otley	Cable & Wireless Ltd.
<i>Egton</i>	14.9.73	S. Ward	J. Mallam, A. Legg, R. Green	D. Prescott	Roland & Marwood S.S. Co. Ltd.
<i>El Lobo</i>	18.1.74	I. H. Russell	J. C. Morris, P. A. Fryer	A. Hope	Bowring S.S. Co. Ltd.
<i>Elmbank</i>	29.5.73	D. G. McCaffery	M. T. Lindley, J. Brooks, F. J. Rogers	P. L. McKay	Bank Line Ltd.
<i>Encounter Bay</i>	21.3.74	G. A. Gibbons	C. D. Smith, C. T. Dampier, D. Sinclair	A. Titley	Container Fleets Ltd.
<i>Erawan</i>	11.5.73	H. G. Reid	C. S. Moir	Wai Fung-Man	John Swire & Sons Ltd.
<i>Ernebank</i>		C. B. Davies	N. Teal, S. Hockley, S. R. Matthews		Bank Line Ltd.
<i>Essex</i>	30.1.74	J. M. Burn	I. Cookson, C. Marrayat, P. Clegg	J. Whiteley	P. & O. S.N. Co.
<i>Esso Caledonia</i>	28.2.74	J. A. Phillips	D. F. Waler, D. S. Thetford, A. Ryan	D. Leeson	Esso Petroleum Co. Ltd.
<i>Esso Cambria</i>	28.2.74	J. W. Borrowdale	B. Pickaver, P. Farmer, R. D. Izatt	J. Hartshorn	Esso Petroleum Co. Ltd.
<i>Esso Hampshire</i>	4.9.73	E. W. Christian	M. Russell, M. Halle	I. Morgan	Esso Petroleum Co. Ltd.
<i>Esso Mercia</i>	23.11.73	W. McMasters	B. D. Pollock, M. G. Spratt, D. Ling	D. Hunter	Esso Petroleum Co. Ltd.
<i>Esso Pembrokehire</i>	21.3.74	C. E. Daykin	G. Wright, D. W. Gale		Esso Petroleum Co. Ltd.
<i>Esso Ulidia</i>	7.3.74	K. MacKenzie	J. F. Pykett, T. J. F. Welch, A. Ryan	T. A. Verling	Esso Petroleum Co. Ltd.
<i>Esso Warwickshire</i>	12.2.74	I. D. Grigor	G. Bruce, A. Sargeant, G. F. Thomas	R. F. Gaul	Esso Petroleum Co. Ltd.
<i>Eucadia</i>	24.7.73	W. MacVicar, M.B.E.	A. Johnson, L. McKenzie, J. McKinnon	A. J. Blaydes	Walter Runciman & Co. Ltd.
<i>Europaighter</i>	15.11.73	N. A. Macdonald	A. R. Bowring, J. Davidson	C. W. Needham	J. & J. Denholm Ltd.
<i>Euroliner</i>	10.1.74	W. R. Williamson	J. MacEwan, D. R. Perry, D. H. Wright, E. L. Lewis	S. S. Burford	T. & J. Harrison Ltd.
<i>Explorer</i>	18.1.74	E. Sherlock	M. S. Brooks, M. R. Bell, J. A. Cook		Dept. of Agriculture & Fisheries for Scotland
<i>Explorer (F.R.S.)</i>	31.12.73	D. L. Rattray	J. Ross		
<i>Faristan</i>	24.1.74	D. Calvert	V. L. Cox, R. Dutta, P. B. Young	R. Milner	P. & O. S.N. Co.



**Selected Ships (contd.)**

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Inverbank</i> ..	7.2.74	D. L. Young	H. Macdonald, M. K. McLeod	P. N. Draper	Bank Line Ltd.
<i>Ionic</i> ..	22.11.73	H. Nixon	J. G. Sapsford, J. C. Stanier	J. A. Brown	Shaw Savill & Albion Co. Ltd.
<i>Irisbank</i> ..	22.11.73	I. Townsley			Bank Line Ltd.
<i>Jamaica Producer</i> ..	22.1.74	G. A. Foulds	A. C. W. Lipscombe, C. F. Browning, D. S. Olden	J. McCarthy	Kaye, Son & Co. Ltd.
<i>Jervis Bay</i> ..	1.3.74	M. R. Ryan, O.B.E.	D. P. Venning, R. T. Wood, C. H. C. Knight	A. McInnes	Container Fleets Ltd.
<i>John Biscoe</i> ..	17.4.73	E. M. S. Phelps	M. L. Shakesby, S. T. Culshaw, D. J. Bray	C. Christiansen	British Antarctic Survey
<i>John Murray</i> ..	12.11.73	M. A. Harding	P. J. MacDermott, J. M. Bradley, J. D. Noden	P. J. MacDermott	Natural Environment Research Council
<i>Jomi</i> ..	15.3.74	S. Olsen	A. Haldorsen	J. Kelleher	Marine Exploration Ltd.
<i>Jumna</i> ..	1.11.73	G. A. Hankin	C. J. Flanagan, D. T. Hughes, W. V. Venning		P. & O. S.N. Co.
<i>Jura</i> ..	30.1.74	D. R. Corse	B. H. Henderson, G. G. Cunningham, D. K. Dickson		Dept. of Agriculture & Fisheries for Scotland
<i>Kano Palm</i> ..	31.12.73	R. Vinton	D. W. Fleming-Miller, R. K. Stubbs, P. Kapoor	M. M. Garrett	Palm Line Ltd.
<i>King Alfred</i> ..	22.3.74	F. G. King	C. Parkinson, D. Morris, D. P. Colley	J. N. Wright	Cayzer Irvine & Co. Ltd.
<i>King William</i> ..		D. Lockhart	D. Narey, J. Third, A. Cruickshank	J. Gray	Cayzer Irvine & Co. Ltd.
<i>Kinnaird Castle</i> ..	15.3.74	T. R. Halliday	P. A. Laurie, A. Hodges, T. Cairns	C. J. Nicholson	Union-Castle Mail S.S. Co. Ltd.
<i>Kohinar</i> ..	4.12.73	M. J. Charlesworth	I. W. Crane, D. J. Pratt, F. Garfitt	D. Rogers	P. & O. S.N. Co.
<i>Kohistan</i> ..	30.11.73	D. M. Foster	T. J. Shone, R. A. M. Leighton, R. W. Madden	G. T. Daly	P. & O. S.N. Co.
<i>Kouloon Bay</i> ..	7.2.74	J. A. Dougal	P. F. Foster, G. M. Cameron	W. J. Lloyd	Ocean Transport & Trading Ltd.
<i>La Loma</i> ..		W. O. Armstrong	K. Dearlove, A. P. Tucker, G. B. Lukehurst	L. W. Edgecombe	Burien Marks Ltd.
<i>Langstone</i> ..	7.3.74	R. Carr	S. W. Conn, A. Mullaney, N. E. Blythe	C. J. Shaughnessy	Shaw Savill & Albion Co. Ltd.
<i>Laomedon</i> ..	9.11.73	C. V. Windsor	D. J. Baily, P. J. Burden, A. H. D. McIntosh, C. H. Bird	K. A. Wakeley	Ocean Transport & Trading Ltd.
<i>Laurentian Forest</i> ..	29.3.74	N. C. Kerr	P. C. Haysom, M. M. Lindsay, A. G. Clements	R. T. Bisby	Harrisons (Clyde) Ltd.
<i>Laurentic</i> ..	1.3.74	M. Larrive	B. G. Appleby, J. B. Fowler, C. D. R. Poole	D. C. Stephen	Shaw Savill & Albion Co. Ltd.
<i>Letchworth</i> ..	31.12.73	J. S. Wisden	S. N. Marshall, E. Curling, D. Owen	D. M. Chalmers	Bank Line Ltd.
<i>Lindenbank</i> ..	30.10.73	R. A. Brant	K. Corcoran, F. D. Harron, R. Claridge	D. J. Elmer	W. A. Souter & Co. Ltd.
<i>Lindisfarne</i> ..	5.11.73	H. Dishman	I. G. Robertson, I. D. Patterson, R. McAdam	W. D. G. Mackay	Ocean Transport & Trading Ltd.
<i>Liverpool Bay</i> ..	24.1.74	J. Bentley	R. Middleton, P. M. Watt, P. V. O'Neill	E. B. Stephenson	London & Overseas Freighters Ltd.
<i>London Harmony</i> ..	15.10.73	G. F. Jacobs	I. L. Atkins, P. D. J. Green, R. C. Mortimer	E. Crowley	London & Overseas Freighters Ltd.
<i>London Pioneer</i> ..	9.1.74	J. K. H. Munday	B. J. Rogers, C. Davidson, G. J. Smith, F. Nesbitt	J. S. Fee	W. A. Souter & Co. Ltd.
<i>Longstone</i> ..	26.1.73	A. Clish	K. Stewart, C. A. Smith	J. Lawrie	Canadian Pacific (Bermuda) Ltd.
<i>Lord Strathcona</i> ..	26.10.72	M. H. Scott	A. J. Malgarin, P. C. H. Adair	K. R. G. D. Mackintosh	Bank Line Ltd.
<i>Lossiebank</i> ..	15.3.74	P. Simpson	C. M. Brown, G. S. Rolls, R. G. Whisker		Oregon S.S. Co. Ltd.
<i>Lutetian</i> ..	23.1.74	A. W. Leyland			Constants Ltd.
<i>Lyminge</i> ..	29.8.73	A. L. Wood	J. W. Vandierendock, N. Brett, N. M. Williams	D. A. Williams	Houlder Bros. & Co. Ltd.
<i>Mabel Warwick</i> ..	20.12.73	R. Jackson	W. F. R. Whiting, D. M. Welsh, L. C. Horsfield	W. C. Doyle	Cunard-Brocklebank Ltd.
<i>Mahout</i> ..	14.6.73	S. Baxter	E. H. Honareau, D. Stone, N. N. A. Elias	C. Hooson	Cunard-Brocklebank Ltd.
<i>Mahronda</i> ..	24.7.73	G. D. Symonds	R. W. Musafir, P. A. Carter, D. J. Hampson	M. K. Cook	Cunard-Brocklebank Ltd.
<i>Mahseer</i> ..	20.9.73	G. D. B. Thomas	K. Bretherick, W. Whiston, B. Luke	J. Ringrose	Cunard-Brocklebank Ltd.
<i>Makaria</i> ..		J. Pascoe	T. D. Hogg, R. Chester, J. Ayers	G. G. Graham	Moss Hutchison Line Ltd.
<i>Manapouri</i> ..	20.12.73	J. D. Guyler	M. Broadhead, G. Dodsworth, J. L. Mitchell	G. H. Williams	P. & O. S.N. Co.
<i>Manchester Challenge</i> ..	7.3.74	N. W. Cockshoot	J. A. Williams, W. Moss	W. F. Stirling	Manchester Liners Ltd.
<i>Manchester Concept</i> ..	1.3.74	K. Lehepuu	P. M. Morgan, J. P. Miller, J. McKay, W. H. Jackson	J. Green	Manchester Liners Ltd.
<i>Manchester Concorde</i> ..	11.1.74	J. E. Askew	W. Lowe, D. Falaise, J. P. McKenna, J. McKay	P. J. Johnson	Manchester Liners Ltd.
<i>Manchester Courage</i> ..	5.11.73	K. W. Rourke	C. Livingstone, D. Smith, A. G. Quinn	R. Leatham	Manchester Liners Ltd.
<i>Manchester Crusade</i> ..	19.11.73	D. S. Millard	G. T. Chapman, C. R. Darnley, J. Williamson	W. G. Harrison	Manchester Liners Ltd.
<i>Manchester Quest</i> ..	26.9.73	J. E. Askew		D. R. Uglow	Manchester Liners Ltd.



**Selected Ships (contd.)**

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Partula</i> ..	23.1.74	N. S. Sloan	B. R. Wratten, F. M. Stewart	N. M. Fenton	Shell Tankers (U.K.) Ltd.
<i>Patonga</i> ..	8.2.74	G. S. Savage	K. Milnes, P. Horner	I. K. G. Walsh	P. & O. S.N. Co.
<i>Patroclus</i> ..	2.10.73	I. R. Atkinson	P. Fielding, P. Young, W. R. Sinclair	S. J. Yates	Ocean Transport & Trading Ltd.
<i>Pegu</i> ..	1.3.74	D. Graham	R. Robinson, S. P. Walakulpola, C. Galbraith	M. S. McLaren	Ocean Transport & Trading Ltd.
<i>Peisander</i> ..	31.12.73	D. K. Dunlop, R.D.	N. W. Hunt, J. M. MacKenzie, D. J. B. Jones	D. G. Bristow	Union-Castle Mail S.S. Co. Ltd.
<i>Pendennis Castle</i> ..	7.12.73	P. St. O. Beadon	B. W. Burton, B. Owen, R. Crowther	P. J. Robertson	Ocean Transport & Trading Ltd.
<i>Persus</i> ..	8.2.74	D. M. Belk	I. S. Cairns, A. Sinclair, M. G. Brown	R. F. Walsh	Ocean Transport & Trading Ltd.
<i>Phenius</i> ..	15.3.74	C. H. F. Hill	I. Othman, A. Hulme	T. & J. Harrison Ltd.	
<i>Philosopher</i> ..	17.10.73	R. Bell	I. Mathison, J. A. Fletcher, D. C. Tinton	E. J. Davies	Stag Line Ltd.
<i>Photinia</i> ..	23.1.74	A. P. Collins	B. Rowlings, R. Sutherland, S. J. Andrucci	D. G. Holmes	Ocean Transport & Trading Ltd.
<i>Phrontis</i> ..	20.12.73	I. Bold	D. Morrison, D. L. Cockin, R. J. Dakin	R. K. Kristiansen	P. & O. S.N. Co.
<i>Piako</i> ..	3.10.73	S. W. Lambrick	J. P. Laycock, M. A. Hill, M. H. Davidson	J. Buchanan	T. & J. Harrison Ltd.
<i>Plainsman</i> ..	18.7.73	R. H. Williams	G. A. Walter, P. B. Mimmack, H. Traynor	D. Edge	Sir Wm. Reardon Smith & Sons Ltd.
<i>Port Alberni City</i> ..	11.2.74	J. D. Lloyd	A. K. Smith, A. A. McCalmont, B. J. Bartlett	C. J. Lamb	Port Line Ltd.
<i>Port Alfred</i> ..	15.2.74	J. St. H. Webber	I. D. Tranter, R. A. Harvey, I. F. Gosden	M. Winn	Port Line Ltd.
<i>Port Auckland</i> ..	10.1.74	D. Sinclair	R. M. Hillier, D. F. John, D. Ray	R. Woodman	Port Line Ltd.
<i>Port Brisbane</i> ..	31.5.73	M. H. C. Twomey	A. W. Kitchin, T. May, M. L. Read	A. P. Handley	Port Line Ltd.
<i>Port Caroline</i> ..	3.8.73	F. M. Barton	M. M. Collins, J. H. Corse, D. Corrie	C. J. Lamb	Port Line Ltd.
<i>Port Chalmers</i> ..	24.1.74	V. A. Hunt	B. A. Argent, D. Atkinson, A. Pritchard	M. Bushnell	Port Line Ltd.
<i>Port Launceston</i> ..	5.7.73	J. M. Read	C. D. Valance, J. J. Gladstone, R. B. Lloyd	L. J. Climo	Port Line Ltd.
<i>Port New Plymouth</i> ..	31.12.73	M. L. Coombs	M. P. Parkes, R. Soames, K. Wassing	G. P. Rouse	Port Line Ltd.
<i>Port Nicholson</i> ..	17.7.73	R. A. Wight	G. Freeman, J. Lewis, W. V. Rowlinson	S. T. Smith	Panocean Shipping & Terminals Ltd.
<i>Post Champion</i> ..		B. Hammond	A. G. Rothery, P. Turner, J. Burns	C. Silo	Panocean Shipping & Terminals Ltd.
<i>Post Runner</i> ..	*	R. R. Crump	R. Lee, T. Maxwell, M. Kerimiah, F. Ainscough	C. W. Hodgson	Ocean Transport & Trading Ltd.
<i>Priam</i> ..	5.3.73	H. O. Williams	P. T. Evans, M. S. Browning, N. Bolland	D. C. Short	Sir Wm. Reardon Smith & Sons Ltd.
<i>Prince Rupert City</i> ..	31.12.73	W. D. Jones	S. D. L. Lloyd-Jones, M. A. Gater, M. C. Ingram	R. D. Cause	Ocean Transport & Trading Ltd.
<i>Prometheus</i> ..	20.7.73	D. L. Emery	R. D. Cresswell, W. Stobie, A. G. Murray	E. E. Milburn	Ocean Transport & Trading Ltd.
<i>Proteslaus</i> ..	10.1.74	R. G. Rippon	G. J. Roberts, P. J. Poval, A. S. Jackson	D. Butterworth	Cunard S.S. Co. Ltd.
<i>Queen Elizabeth 2</i> ..	31.10.73	M. Hehir	F. Quick	J. S. Mathers	Ocean Transport & Trading Ltd.
<i>Queen Elizabeth</i> ..	24.1.74	L. Kruzins	T. E. Naughton, T. W. Cameron, J. Pritchard	G. N. Burk	Blue Star Line Ltd.
<i>Raeburn</i> ..	22.3.74	N. L. Mylchreest	G. D. H. Wilson, R. F. Loraine, J. Hunter	L. P. Thurston	Lampport & Holt Line Ltd.
<i>Rapallo</i> ..	26.1.73	I. E. Wray	C. Williams, G. E. Round, J. Hunter	N. Lofthouse	P. & O. S.N. Co.
<i>Raphael</i> ..	23.1.74	W. A. Wilson	K. S. Lumbers, C. A. Baker, D. K. MacCorquodale	E. Marks	P. & O. S.N. Co.
<i>Registrar</i> ..	15.3.74	P. W. Filcek	R. R. Williams, R. J. Doman, P. W. Cordiner	H. Harris	Lampport & Holt Line Ltd.
<i>Remuera</i> ..	28.3.74	K. Barnett, R.D.	S. G. Willis, A. Bounvino, D. Ganderton	C. S. Currie	Lampport & Holt Line Ltd.
<i>Rockhampton Star</i> ..	11.9.73	J. Hunter	F. W. Dainty, D. G. Jones, J. Hunter	R. Prole	F. T. Everard & Sons Ltd.
<i>Roland</i> ..	22.3.74	W. A. Sparks	R. R. N. Laing	R. R. N. Laing	Hudson Bros. Trawlers Ltd.
<i>Romney</i> ..	23.10.72	M. J. MacNeil	J. Harris, A. MacMillan, C. Bunyan	R. A. Maxfield	Union-Castle Mail S.S. Co. Ltd.
<i>Rosnard</i> ..	25.10.73	J. I. Jones	F. G. Mealyer, D. M. Macleod, T. A. Hollows	R. C. Shrimpton	Bank Line Ltd.
<i>Rosemary Everard</i> ..	12.11.73	J. P. Skinner	C. T. Jamieson, B. F. Middleton, J. Smith	J. Newman	Sir R. Ropner & Co. Ltd.
<i>Ross Orion</i> ..	1.3.74	A. Osler	P. J. Russi, R. H. Lancaster, G. Broome		Houlder Bros. & Co. Ltd.
<i>Rothsay Castle</i> ..	1.3.74	A. T. Campbell			
<i>Roumbank</i> ..	6.11.73	W. Ellarby			
<i>Rudby</i> ..	19.10.73	C. B. Tingle			
<i>St. Margaret</i> ..	7.3.74	R. Stephens			



**Selected Ships (contd.)**

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Temple Bar</i> ..	7.12.73	A. M. Fraser	H. Aitchinson, J. H. Jenkinson, J. J. Waters	G. Walker	Scottish Ship Management Ltd.
<i>Tenbury</i> ..	*	A. W. Cameron	R. Blake, D. H. Gittens, N. A. Manasir	L. Maher	Houlder Bros. & Co. Ltd.
<i>Tevoibank</i> ..	13.3.73	A. B. Osborne	D. J. Campbell, I. G. Booker, C. S. Collings	S. J. Ashcroft	Bank Line Ltd.
<i>Texaco Brussels</i>	25.10.73	G. M. Smith	M. J. Perry	..	Texaco Overseas Tankship (U.K.) Ltd.
<i>Texaco Durham</i> ..	10.11.70	J. Walker	J. W. Archbold, R. C. Cottam, A. J. C. Metcalfe	G. Rutherford	Texaco Overseas Tankship (U.K.) Ltd.
<i>Texaco Gloucester</i> ..	17.8.73	P. H. Morgan	A. J. C. Metcalfe, C. M. Moloney, R. A. R. Baddaloo	..	Texaco Overseas Tankship (U.K.) Ltd.
<i>Texaco Saigon</i> ..	9.7.68	R. G. A. Barnes	R. A. Russell, J. Campbell, R. R. Brooks	G. Cockburn	Texaco Overseas Tankship (U.K.) Ltd.
<i>Timaru Star</i>	26.6.73	J. Hutton	R. J. Cobban, W. R. Houghton-Boreham, P. Stacey	R. Perrin	Blue Star Line Ltd.
<i>Titan</i> ..	22.3.74	I. I. Laing	G. A. Jones, A. Temple, A. Searle	K. Bent	Ocean Transport & Trading Ltd.
<i>Tokyo Bay</i> ..	12.2.74	M. Lees	R. A. Gill, J. B. Hughes, M. J. Casey	J. B. Carr	Ocean Transport & Trading Ltd.
<i>Tongariro</i> ..	24.1.74	D. Blackman	L. Uden, M. J. Charlesworth, K. N. Metcalfe	I. R. Smith	P. & O. S.N. Co.
<i>Townsville</i> ..	10.8.73	H. K. Dyer	A. Boyes, R. Murch, J. T. Mackereth	D. Caws	Blue Star Line Ltd.
<i>Trader</i> ..	11.2.74	A. F. Perry	M. Hudson, P. B. Mimmack, J. A. Northam	K. Alexander	T. & J. Harrison Ltd.
<i>Trebartha</i> ..	25.10.73	J. W. Cole	T. L. Leury, R. J. Smith, A. K. Rashid	D. A. Keohane	P. & O. S.N. Co.
<i>Trefusis</i> ..	22.1.74	W. Alexander	J. N. Woolley, M. J. Ball, P. R. Owen	M. Breathack	P. & O. S.N. Co.
<i>Treneglos</i> ..	10.1.74	B. G. McKerrill	C. T. Watson, K. Brook, H. Thiede, J. Houston	M. L. Foulkes	International Ore Carriers Ltd.
<i>Trentwood</i> ..	22.1.74	C. E. M. Graham	R. Ley, D. C. Guthrie, M. Saleh	J. D. Rennie	P. & O. S.N. Co.
<i>Trevidden</i> ..	1.3.74	L. E. Quigley	G. D. Bowie, F. R. McNeilly	W. Donaldson	I. & J. Denholm Ltd.
<i>Troll Park</i> ..	30.1.74	H. McDonald	A. J. Saunders, P. Weldon	R. Glasson	Furness Withy & Co. Ltd.
<i>Tropic</i> ..	17.10.72	S. D. Gibson	N. R. Barnes, G. Stalker, J. Walker	P. Harris	P. & O. S.N. Co.
<i>Turakina</i> ..	11.1.74	H. C. Hynard	G. A. Bridge, P. Young, D. F. Gates	R. Hogan	P. & O. S.N. Co.
<i>Turkistan</i> ..	24.1.74	A. W. Jones	R. J. A. Brook-Hart	J. F. Mennell	P. & O. S.N. Co.
<i>Uganda</i> ..	26.9.73	R. Baker	J. S. Franklin	..	Blue Star Line Ltd.
<i>Ulster Star</i> ..	14.9.73	H. W. McNeil	G. A. Collins, J. J. Kainins, P. C. Julian	..	Sir Wm. Reardon Smith & Sons Ltd.
<i>Vancouver City</i>	20.7.73	T. R. McNulty	W. D. Blincon, R. V. James, W. Coull	K. H. Sellar	Blue Star Line Ltd.
<i>Vancouver Forest</i>	22.3.74	A. M. Blair	A. K. Macdonald, T. R. J. Popplewell, D. Forsyth	M. Atkinson	J. & J. Denholm Ltd.
<i>Vancouver Island</i>	12.11.73	I. McVicar	J. Jolley, W. G. Wheeler, D. M. Carmichael	D. J. Matson	J. & J. Denholm Ltd.
<i>Vancouver Trader</i>	12.11.73	I. R. Haldane	K. Gelly, J. Henderson, D. J. Smith	T. J. Rousfield	I. & J. Denholm Ltd.
<i>Varda</i> ..	11.2.74	G. Carmichael	E. Southworth, D. J. Hall	D. Wilkinson	Haverton Shipping Ltd.
<i>Venasa</i> ..	20.9.73	D. G. T. Daniel	T. G. Tobiasassen, I. P. T. Mathias, R. Bancroft	J. F. Fitzgerald	Shell Tankers (U.K.) Ltd.
<i>Victore</i> ..	22.1.74	J. A. McCulloch	M. R. Underwood, R. Davis, E. W. Walmsley	R. Cunningham	Mavroleon Bros. Ltd.
<i>Victoria City</i>	15.2.73	J. Vaughan	A. Cumpstey, F. Adams, D. Wallace	C. G. Macey	Sir Wm. Reardon Smith & Sons Ltd.
<i>Volatella</i> ..	31.12.73	H. Miller	J. McNamara, M. A. Marshall, P. R. Eamer	J. G. Boyle	Shell Tankers (U.K.) Ltd.
<i>Volatella</i> ..	12.2.74	C. J. H. Ennion	S. Schooledge, K. Whitting, P. Dixon	Leung Kok Man	China Navigation Co. Ltd.
<i>Wanitu City</i> ..	26.11.73	A. L. G. Gossett	A. C. K. Rawson	L. M. Campbell	Sir Wm. Reardon Smith & Sons Ltd.
<i>Welsh City</i> ..	11.2.74	W. Knight	J. Blattman, W. J. Woodward, L. Hesketh	C. W. Murray	Welsh Ore Carriers Ltd.
<i>Welsh Herald</i>	2.11.71	R. E. Lowther	A. McDonald	C. McCann	P. & O. S.N. Co.
<i>Westmorland</i>	28.3.74	J. P. McKeown	T. R. Bennett, T. E. McLaren, P. Scott	..	S. William Coe & Co. Ltd.
<i>Whitethorn</i> ..	9.8.73	E. T. Rowland	M. H. Pritchard, W. Killackey, D. MacDonald	R. Comrie	P. & O. S.N. Co.
<i>Wild Auk</i> ..	5.12.73	J. F. Milner	J. R. Mace, G. Dixon	L. A. Sutton	P. & O. S.N. Co.
<i>Wild Avocet</i> ..	11.2.74	A. Dorkins	M. Waight, A. Brodie, K. A. Archer	C. J. Alfred	P. & O. S.N. Co.
<i>Wild Cormorant</i>	10.12.73	I. D. Lowans	J. Mercer, M. G. Ward, A. Papworth	E. Connell	Bank Line Ltd.
<i>Willowbank</i> ..	31.12.73	R. J. Miller	..	R. Hough	Union-Castle Mail S.S. Co. Ltd.

<i>Woosung</i> ..	..	23.1.73	J. H. Gomersall ..	..	C. S. Moir, J. L. Simpson, K. Strudwick ..	..	U. Chun Yee ..	..	China Navigation Co. Ltd.
<i>Worcestershire</i> ..	..	29.11.73	J. R. Woodfield ..	..	R. A. Morris, D. Wood, R. I. Taylor ..	..	W. Ormrod ..	..	Bibby Line Ltd.
<i>Yewbank</i> ..	..	26.10.72	G. F. Smith ..	..	D. Carmichael, J. Bryan, F. J. Rogers ..	..	R. J. MacDonald ..	..	Bank Line Ltd.
<i>Zaphon</i> ..	..	1.3.74	N. Coull ..	..	I. E. Thornhill, E. Roberts, J. Sharp ..	..	E. Artingsstoll ..	..	Shell Tankers (U.K.) Ltd.
<i>Zealandic</i> ..	..	10.12.73	F. G. Boize ..	..	W. J. Barclay, D. Milburn, D. C. Clark ..	..	M. P. Elliot ..	..	Shaw Savill & Albion Co. Ltd.

# Supplementary Ships

NAME OF VESSEL	LAST RETURN RECEIVED	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Apollo</i>	4.12.73	G. V. Barnes	W. R. Kays, G. Young, A. J. Swift	B. Holdsworth	Bristol S.N. Co. Ltd.
<i>Arcadian</i>	12.11.73	A. S. Matheson	T. Wood, S. Bearn, G. D. Atkinson	A. Lafond	Ellerman Lines Ltd.
<i>Baltic Star</i>	*	H. C. Thoms	D. M. Healey, J. Telfer, C. Starr	J. Masterman	United Baltic Co. Ltd.
<i>Baltic Vanguard</i>	17.10.72	I. C. Collins	A. Hood, P. W. Rowe, B. Bowden	P. J. Fensome	United Baltic Co. Ltd.
<i>Baltic Venture</i>	19.7.72	R. Kreamer	I. Chester, D. Saunders	G. F. Cummings	Ben Line Steamers Ltd.
<i>Bengloe</i>	*	H. H. MacIntosh	I. M. Lindsay	C. Ferris	B.P. Tanker Co. Ltd.
<i>British Destiny</i>	11.12.73	R. H. Bell	J. Plummer, F. A. Smith, R. J. Munro	N. S. Bradley	B.P. Tanker Co. Ltd.
<i>British Energy</i>	31.12.73	A. G. Smith	D. M. Macdonald, O. O'Hagan, T. Gordon	P. L. Mason	B.P. Tanker Co. Ltd.
<i>British Fern</i>	19.11.73	J. W. Bruce	P. J. Wild, I. D. Walker, E. C. Howes	W. Jeffries	B.P. Tanker Co. Ltd.
<i>British Kestrel</i>	*	N. A. Roberts	N. Shepherd, C. Shirer, I. Storie, C. Watson	A. P. Hilder	B.P. Tanker Co. Ltd.
<i>British Mallard</i>	15.11.72	D. O. W. Jones	W. Hopkins, J. N. Macdonald	J. Noonan	B.P. Tanker Co. Ltd.
<i>British Robin</i>	12.11.73	D. C. Dalton		P. Griffin	Ellerman Lines Ltd.
<i>City of Delhi</i>	21.5.73	K. G. MacLean	J. A. Fraser, D. Walker, M. G. Robertson		British S.N. Co. Ltd.
<i>Echo</i>	27.11.73	J. L. Jenkins	J. S. Earl, E. Evans, B. Richie, J. R. Boulton		Esso Petroleum Co. Ltd.
<i>Esso Lancashire</i>	10.10.72	I. Baskerville	R. W. Gott, R. N. Gardener		F. T. Everard & Sons Ltd.
<i>Ethel Everard</i>	5.8.70	H. O. Roberts	D. G. Green		Bank Line Ltd.
<i>Garrybank</i>	*	W. W. Davies	A. Roberts	J. W. Barry	Palm Line Ltd.
<i>Ilorin Palm</i>	26.10.73	E. Brawn	J. Stetch, W. Forsyth, J. McCardill	A. Ramsay	British United Trawlers Ltd.
<i>Invincible</i>	28.12.72	R. Waller	A. Ramsay	M. Riley	P. & O. S.N. Co.
<i>Yelunga</i>	17.2.72	P. G. Farrell	P. W. Bennett, D. Lewis, C. Bridges	J. S. Hallam	Newington Trawlers Ltd.
<i>Joseph Conrad</i>	3.1.73	E. R. Woodbridge	J. S. Hallam	G. W. Taylor	St. Andrew's Steam Fishing Co. Ltd.
<i>Lady Parkes</i>	29.8.73	P. E. Craven	C. Sheen	G. R. Smith	Hellyer Bros. Ltd.
<i>Lord Nelson</i>	3.9.73	N. E. Longthorp	G. W. Taylor	J. Marr & Son Ltd.	J. Marr & Son Ltd.
<i>Marbella</i>	26.3.71	R. Boughen	G. R. Smith	R. P. Philpott	Shell Tankers (U.K.) Ltd.
<i>Marella</i>	13.3.69	S. Christy	J. Hind	G. Houlihan	Shell Tankers (U.K.) Ltd.
<i>Methane Princess</i>	1.3.74	M. J. Goddard	M. Blight, H. J. Whichelow, H. Fitchett	A. B. Crossland	Mobil Shipping Co. Ltd.
<i>Methane Progress</i>	26.10.73	D. S. Nicol	M. H. Rich, G. Tigar	R. J. Thompson	Mobil Shipping Co. Ltd.
<i>Mobil Acme</i>	23.5.73	R. T. Watson	D. A. Platt, T. D. McArthur, D. N. Pritchard	S. B. Barr	Ocean Incape Ltd.
<i>Mobil Endurance</i>	1.3.74	H. M. Armitage	M. Cadman, W. M. Sabiston-Dunn	P. A. Metra	Whitco Marine Services Ltd.
<i>Mobil Energy</i>	23.7.73	R. D. Stevenson	L. M. Wright, M. Larkin	G. R. Smith	Gardline Ltd.
<i>Mobil Pegasus</i>	16.5.73	J. Millar	J. B. McGrath, G. Wrigley	Chan Chi Yuen	Ross Trawlers Ltd.
<i>Northern Reward</i>	4.4.73	W. Harris	S. B. Barr	J. T. Clare	Hudson Bros. Trawlers Ltd.
<i>Oil Supplier</i>	*	C. Cunningham	G. J. S. Ives, M. Kirk	H. G. Pask	Bank Line Ltd.
<i>Orchidea</i>	18.10.73	J. F. Adams	J. P. Warren, R. Upsdell, G. C. Hatcher	R. T. Murphy	T. Hamling & Co. Ltd.
<i>Primella</i>	29.12.72	D. Atkinson	G. R. Smith	H. G. Pask	T. Hamling & Co. Ltd.
<i>Researcher</i>	*	J. W. Dunn	J. E. Thornton	M. Winter	T. Hamling & Co. Ltd.
<i>Ross Immacable</i>	31.12.71	G. Whurr	Chan Chi Yuen	C. Watkins	Ellerman Lines Ltd.
<i>Ross Sirius</i>	*	G. Smith	W. Allison	G. L. Corner	W. A. Souter & Co. Ltd.
<i>Roybank</i>	11.2.74	L. H. Wigham	J. F. Barkley, N. K. MacDonald, A. E. Scales		F. T. Everard & Sons Ltd.
<i>St. Benedict</i>	11.1.74	K. Knox	H. C. Stone		
<i>St. Giles</i>	22.1.74	T. Sawyers	R. T. Murphy		
<i>St. Jason</i>	23.7.73	A. T. Blenkin	H. G. Pask		
<i>St. Jasper</i>	3.5.73	R. Ellis	M. Winter		
<i>St. Leger</i>	29.12.72	W. Gouldson	G. E. Shearer, K. Wildbore, P. Stephenson		
<i>St. Loman</i>	20.12.73	W. Gouldson	G. E. Shearer, T. Fugill, G. Tsanos		
<i>Salmo</i>	*	W. A. Brownlee	J. Brennan, P. Bennisson, C. J. Rolling		
<i>Sangro</i>	7.3.74	W. White	T. Brunnagh		
<i>Scottish Wasa</i>	8.11.72	J. Walker			
<i>Seremty</i>	*	H. Roberts			

## Trawlers

The following is a list of trawler skippers and radio operators who voluntarily observe and report those elements of the weather which do not entail the use of any meteorological instruments (irrespective of the vessel in which they sail).

SKIPPER	RADIO OPERATOR	OWNER/MANAGER
R. Ellis .. ..	C. Watkins .. ..	T. Hamling & Co. Ltd.
P. Grayburn .. ..	C. Watkins .. ..	T. Hamling & Co. Ltd.
A. Jagger .. ..	M. Stather .. ..	T. Hamling & Co. Ltd.
R. Pepper .. ..	P. R. Hickson .. ..	Northern Trawlers Ltd.

## Light-vessels

NAME OF VESSEL	MASTERS
<i>Dowsing</i> .. ..	R. Halfnight, A. Richards
<i>East Goodwin</i> .. ..	F. J. Shilling, B. E. Nobes
<i>Falls</i> .. ..	A. H. Robinson, W. Semple
<i>Galloper</i> .. ..	E. Jaeger, E. Marsden
<i>Humber</i> .. ..	F. W. Grice, S. F. Goose
<i>Newarp</i> .. ..	G. A. Harris, L. R. Long
<i>North Carr</i> .. ..	J. Leask, T. H. Henderson
<i>Royal Sovereign</i> (Lt. Tower) ..	A. T. Whiston, W. F. Fagg
<i>St. Gowan</i> .. ..	H. Warnes, S. Woolnough
<i>Seven Stones</i> .. ..	A. W. Allum, T. G. Northcott
<i>Shambles</i> .. ..	H. Price, J. Rudd
<i>Shipwash</i> .. ..	W. F. Dalby, R. Cadman
<i>Smith's Knoll</i> .. ..	F. Harrison, B. H. Holmes
<i>South Rock</i> .. ..	D. Hawkins, S. E. Griffin
<i>Varne</i> .. ..	J. Seller, G. Kozak

## ‘Marid’ Ships

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

NAME OF VESSEL	MASTER	OWNER/MANAGER
<i>Ashington</i> .. ..	R. Atkinson .. ..	Stephenson Clarke Shipping Ltd.
<i>Avalon</i> .. ..	R. Wild .. ..	British Rail
<i>Bardic Ferry</i> .. ..	C. K. Hughey .. ..	Atlantic S.N. Co. Ltd.
<i>Brenda</i> .. ..	J. A. Henderson .. ..	Dept. of Agriculture & Fisheries for Scotland
<i>Brian Boroime</i> .. ..	O. W. Jones .. ..	British Rail
<i>Caernarvonbrook</i> .. ..	—, Lightfoot .. ..	Comben Longstaff & Co. Ltd.
<i>Caesarea</i> .. ..	C. F. Creed .. ..	British Rail
<i>Cambria</i> .. ..	J. R. Rowlands .. ..	British Rail
<i>Cerdic Ferry</i> .. ..	A. D. Young .. ..	Atlantic S.N. Co. Ltd.
<i>Chesterbrook</i> .. ..	J. Bruun .. ..	Comben Longstaff & Co. Ltd.
<i>Claymore</i> .. ..	A. Campbell .. ..	David MacBrayne Ltd.
<i>Columba</i> .. ..	A. C. Free .. ..	David MacBrayne Ltd.
<i>Corbank</i> .. ..	T. J. Johnston .. ..	Cory Maritime Ltd.
<i>Doric Ferry</i> .. ..	R. Hockings .. ..	Atlantic S.N. Co. Ltd.
<i>Dorset Coast</i> .. ..	J. Spence .. ..	Coast Lines Ltd.
<i>Dragon</i> .. ..	W. H. Conway .. ..	Southern Ferries Ltd.
<i>Duke of Argyll</i> .. ..	L. C. Mills .. ..	British Rail
<i>Duke of Lancaster</i> .. ..	D. A. Ponting, M.B.E. .. ..	British Rail
<i>Duke of Rothesay</i> .. ..	D. O. Griffiths .. ..	British Rail
<i>Eileen M</i> .. ..	R. G. Ross-Turner .. ..	Metcalf Motor Coasters Ltd.
<i>Falaise</i> .. ..	W. P. Laity .. ..	British Rail
<i>Ferryhill II</i> .. ..	J. G. Innes .. ..	Aberdeen Coal & Shipping Co. Ltd.
<i>Fingal</i> .. ..	F. K. Davidson .. ..	Northern Lighthouse Board
<i>Framptondyke</i> .. ..	H. S. Upperton .. ..	Klondyke Shipping Co. Ltd.
<i>Hamble</i> .. ..	N. Macleod .. ..	Shell-Mex & B.P. Ltd.
<i>Hebrides</i> .. ..	J. Hodgson .. ..	David MacBrayne Ltd.
<i>Helmsdale</i> .. ..	A. F. Ross .. ..	Northern Trading Co. Ltd.
<i>Hibernia</i> .. ..	R. I. Griffiths .. ..	British Rail
<i>Ionic Ferry</i> .. ..	W. Close .. ..	Atlantic S.N. Co. Ltd.
<i>Kyndill</i> .. ..	J. R. Potter .. ..	Ball-Plumb Shipping Ltd.
<i>Lairdsfox</i> .. ..	A. Murchie .. ..	Burns & Laird Lines Ltd.
<i>Loch Carron</i> .. ..	J. McKinnon .. ..	David MacBrayne Ltd.
<i>Malling</i> .. ..	A. Gardner .. ..	Stephenson Clarke Shipping Ltd.
<i>Moyle</i> .. ..	N. McAskill .. ..	Shamrock Shipping Co.
<i>Navigator</i> .. ..	J. N. Cannock .. ..	Decca Navigator Co. Ltd.
<i>Penelope Everard</i> .. ..		F. T. Everard & Sons Ltd.
<i>Pharos</i> .. ..	M. Fraser .. ..	Northern Lighthouse Board
<i>Pointer</i> .. ..	—, Maddrell .. ..	Burns & Laird Lines Ltd.
<i>Pole Star</i> .. ..	G. Reid .. ..	Northern Lighthouse Board
<i>Portelet</i> .. ..	J. D. McFaul .. ..	Onesimus Dorey Ltd.
<i>Rhodri Mawr</i> .. ..	I. Pritchard .. ..	British Rail
<i>St. Clair</i> .. ..	J. Harvey .. ..	North of Scotland Shipping Co. Ltd.
<i>St. George</i> .. ..	M. Grigor .. ..	British Rail
<i>Sarnia</i> .. ..	H. Walker .. ..	British Rail
<i>Slieve Donard</i> .. ..	—, Carroll .. ..	British Rail
<i>Stormont</i> .. ..	E. Knight .. ..	Belfast S.S. Co. Ltd.
<i>Sussexbrook</i> .. ..	T. Hunter .. ..	County Ships Ltd.
<i>Ulster Queen</i> .. ..	P. Lynch .. ..	Belfast S.S. Co. Ltd.
<i>William J. Everard</i> .. ..	D. O’Leary .. ..	F. T. Everard & Sons Ltd.

# BRITISH COMMONWEALTH

The following lists give the name of Selected and Supplementary Ships, and the number of Auxiliary Ships where known (i.e., those which only report when in 'sparse areas'), which voluntarily co-operate with meteorological services of the British Commonwealth.

Information for these lists is required by 10th April each year. Information for the January corrective lists is required by 10th October each year.

## AUSTRALIA (Information dated 1.2.74)

NAME OF VESSEL	OWNER/MANAGER
Selected Ships	
<i>Abel Tasman</i> .. .. .	Abel Tasman Shipping Co. Pty. Ltd.
<i>Al-Kuwait</i> .. .. .	Kuwait S.S. Co. Ltd.
<i>Al-Mahrosa</i> .. .. .	Kuwait S.S. Co. Ltd.
<i>Andros</i> .. .. .	Australian West Pacific Line
<i>Arafura</i> .. .. .	Overseas Containers Pty. Ltd.
<i>Ariake</i> .. .. .	Overseas Containers Pty. Ltd.
<i>Ariana</i> .. .. .	Overseas Containers Pty. Ltd.
<i>Ataluma</i> .. .. .	Dept. of Urban & Regional Development
<i>Australian Endeavour</i> .. .. .	Australian National Line
<i>Australian Enterprise</i> .. .. .	Australian National Line
<i>Australian Exporter</i> .. .. .	Australian National Line
<i>Belle Isle</i> .. .. .	Karlander (Australia) Pty. Ltd.
<i>Beroona</i> .. .. .	Western Australian State Shipping Service
<i>Bogong</i> .. .. .	Associated S.S. Pty. Ltd.
<i>Boogalla</i> .. .. .	Western Australian State Shipping Service
<i>B.P. Endeavour</i> .. .. .	B.P. Tankers Pty. Ltd.
<i>B.P. Enterprise</i> .. .. .	B.P. Tankers Pty. Ltd.
<i>Cable Enterprise</i> .. .. .	Cable and Wireless Ltd.
<i>Cape Arnhem</i> .. .. .	Karlander (Australia) Pty. Ltd.
<i>Cape Don</i> .. .. .	Dept. of Shipping & Transport, Australia
<i>Cape Pillar</i> .. .. .	Dept. of Shipping & Transport, Australia
<i>Cape York</i> .. .. .	Karlander (Australia) Pty. Ltd.
<i>Carpentaria</i> .. .. .	P. & O. Lines of Australia
<i>Cathay</i> .. .. .	P. & O. Lines of Australia
<i>Cenpac Rounder</i> .. .. .	Nauru Pacific Shipping Line
<i>Centaur</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Chakdina</i> .. .. .	P. & O. Lines of Australia
<i>Chitral</i> .. .. .	P. & O. Lines of Australia
<i>Clutha Capricorn</i> .. .. .	Clutha Development Pty. Ltd.
<i>Clutha Oceanic</i> .. .. .	Clutha Development Pty. Ltd.
<i>Corabank</i> .. .. .	Bank Line Ltd.
<i>Coral Chief</i> .. .. .	New Guinea-Australia Line Pty. Ltd.
<i>Eigamoiya</i> .. .. .	Nauru Pacific Shipping Line
<i>Empress of Australia</i> .. .. .	Australian National Line
<i>Enna G</i> .. .. .	Nauru Pacific Shipping Line
<i>Eso Gippsland</i> .. .. .	Eso Petroleum (Australia)
<i>Forresbank</i> .. .. .	Bank Line Ltd.
<i>Guavacore</i> .. .. .	Maritime Fruit Carriers Pty. Ltd.
<i>Iron Cavalier</i> .. .. .	Broken Hill Pty. Co. Ltd.
<i>Iron Dampier</i> .. .. .	Broken Hill Pty. Co. Ltd.
<i>Iron Endeavour</i> .. .. .	Australian Iron and Steel Pty. Ltd.
<i>Iron Flinders</i> .. .. .	Broken Hill Pty. Co. Ltd.
<i>Iron Kimberley</i> .. .. .	Broken Hill Pty. Co. Ltd.
<i>Iron Yampi</i> .. .. .	Broken Hill Pty. Co. Ltd.
<i>Island Chief</i> .. .. .	New Guinea-Australia Line Pty. Ltd.
<i>John Burke</i> .. .. .	John Burke Pty. Ltd.
<i>Kanimbla</i> .. .. .	Union Bulkships Pty. Ltd.
<i>Kooringa</i> .. .. .	Union Bulkships Pty. Ltd.
<i>Lalandia</i> .. .. .	Scanaustral East Asiatic Shipping Co.
<i>Lemnos</i> .. .. .	Australian West Pacific Line
<i>Malaysia</i> .. .. .	Austasia Line Ltd.
<i>Manoora</i> .. .. .	Union Bulkships Pty. Ltd.
<i>Manora</i> .. .. .	P. & O. Lines of Australia
<i>Matthew Flinders</i> .. .. .	Flinders Shipping Co. Pty. Ltd.
<i>Meadowbank</i> .. .. .	Bank Line Ltd.
<i>Merkara</i> .. .. .	P. & O. Lines of Australia
<i>Milos</i> .. .. .	Australian West Pacific Line
<i>Morvada</i> .. .. .	P. & O. Lines of Australia
<i>Mulbera</i> .. .. .	P. & O. Lines of Australia
<i>Mundoora</i> .. .. .	Union Bulkships Pty. Ltd.
<i>New Guinea Chief</i> .. .. .	New Guinea-Australia Line Pty. Ltd.
<i>Nimos</i> .. .. .	Containers Pacific Express Line
<i>Nyanda</i> .. .. .	Western Australian State Shipping Service
<i>Ore Regent</i> .. .. .	Clutha Development Pty. Ltd.
<i>Papuan Chief</i> .. .. .	New Guinea-Australia Line Pty. Ltd.
<i>Rhexenor</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Rosie D</i> .. .. .	Nauru Pacific Shipping Line
<i>Salamaua</i> .. .. .	Karlander (Papua) Pty. Ltd.
<i>Sprucebank</i> .. .. .	Bank Line Ltd.
<i>Stentor</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Tauloto II</i> .. .. .	Pacific Navigation Co. Ltd.
<i>Temple Hall</i> .. .. .	British Phosphate Commissioners
<i>Tenos</i> .. .. .	Containers Pacific Express Line
<i>Thorsorient</i> .. .. .	Norse Orient Line
<i>Triadic</i> .. .. .	British Phosphate Commissioners
<i>Tri-Ellis</i> .. .. .	British Phosphate Commissioners

**Australia (contd.)**

NAME OF VESSEL	OWNER/MANAGER
<i>Wambiri</i> .. .. .	Western Australian State Shipping Service
<i>Weirbank</i> .. .. .	Bank Line Ltd.
<i>Wongala</i> .. .. .	Tucker Shipping Pty. Ltd.
<i>Wyvern</i> .. .. .	Karlander (Australia) Pty. Ltd.
Supplementary Ship:	
<i>Bass Trader</i> .. .. .	Australian National Line

## CANADA (Information dated 31.3.74)

NAME OF VESSEL	OWNER/MANAGER
<b>Selected Ships:</b>	
<i>Agamemnon</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Alert</i> .. .. .	Government of Canada
<i>Allunga</i> .. .. .	Australian National Line
<i>Antenor</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Arcadia</i> .. .. .	P. & O. S.N. Co.
<i>A. T. Cameron</i> .. .. .	Government of Canada
<i>Axel Heiberg</i> .. .. .	Federal Commerce & Navigation Co. Ltd.
<i>Baffin</i> .. .. .	Government of Canada
<i>Bluenose</i> .. .. .	Canadian National Railways
<i>Camsell</i> .. .. .	Government of Canada
<i>Canberra</i> .. .. .	P. & O. S.N. Co.
<i>Cape Grenville</i> .. .. .	Lyle Shipping Co. Ltd.
<i>Cornish City</i> .. .. .	Sir Wm. Reardon Smith & Sons Ltd.
<i>Dawson</i> .. .. .	Government of Canada
<i>d'Iberville</i> .. .. .	Government of Canada
<i>Dilkara</i> .. .. .	Empire Shipping Co. Ltd.
<i>Dumurra</i> .. .. .	Ocean Transport & Trading Ltd.
<i>Edward Cornwallis</i> .. .. .	Government of Canada
<i>G. B. Reed</i> .. .. .	Government of Canada
<i>Gulf Canada</i> .. .. .	Gulf Oil Canada Ltd.
<i>Harfleet</i> .. .. .	J. & C. Harrison Ltd.
<i>Hector</i> .. .. .	Ocean Transport & Trading Ltd.
<i>H. R. MacMillan</i> .. .. .	Canadian Pacific S.S. Ltd.
<i>Hudson</i> .. .. .	Government of Canada
<i>H 1060</i> .. .. .	Kent Line Ltd.
<i>H 1070</i> .. .. .	Kent Line Ltd.
<i>Imperial Acadia</i> .. .. .	Imperial Oil Ltd.
<i>Imperial Bedford</i> .. .. .	Imperial Oil Ltd.
<i>Imperial Quebec</i> .. .. .	Imperial Oil Ltd.
<i>Imperial St. Lawrence</i> .. .. .	Imperial Oil Ltd.
<i>Irving Glen</i> .. .. .	Irving Oil Ltd.
<i>Irving Stream</i> .. .. .	Irving Oil Ltd.
<i>Isia</i> .. .. .	Stag Lines Ltd.
<i>J. E. Bernier</i> .. .. .	Government of Canada
<i>John A. Macdonald</i> .. .. .	Government of Canada
<i>John Cabot</i> .. .. .	Government of Canada
<i>J. V. Clyne</i> .. .. .	Canadian Pacific S.S. Ltd.
<i>Labrador</i> .. .. .	Government of Canada
<i>Limnos</i> .. .. .	Government of Canada
<i>Louis S. St. Laurent</i> .. .. .	Government of Canada
<i>Martin Karlsen</i> .. .. .	Government of Canada
<i>Montcalm</i> .. .. .	Government of Canada
<i>N. B. McLean</i> .. .. .	Government of Canada
<i>Nego Anne</i> .. .. .	Wallem & Co. A/S
<i>Norman McLeod Rogers</i> .. .. .	Government of Canada
<i>Northern Shell</i> .. .. .	Shell Canada Ltd.
<i>N. R. Crump</i> .. .. .	MacMillan & Clyne Ltd.
<i>Ontario</i> .. .. .	Bornar Navigation Ltd.
<i>Oriana</i> .. .. .	P. & O. S.N. Co.
<i>Pacific Logger</i> .. .. .	Canadian Pacific S.S. Ltd.
<i>Ponza</i> .. .. .	Cia. Maritima Clavelina
<i>Porte Dauphine</i> .. .. .	Government of Canada
<i>Princess of Acadia</i> .. .. .	Canadian Pacific S.S. Ltd.
<i>Quebec</i> .. .. .	Messabec Ltd.
<i>Queen of Prince Rupert</i> .. .. .	British Columbia Ferry Authority
<i>Sedco H</i> .. .. .	Shell Canada Ltd.
<i>Sedco I</i> .. .. .	Shell Canada Ltd.
<i>Sedco J</i> .. .. .	Mobil Oil Canada Ltd.
<i>Silvercove</i> .. .. .	Silver Line Ltd.
<i>Simon Fraser</i> .. .. .	Government of Canada
<i>Sir Humphrey Gilbert</i> .. .. .	Government of Canada
<i>Sir William Alexander</i> .. .. .	Government of Canada
<i>Spirit of London</i> .. .. .	P. & O. Lines Ltd.
<i>Temple Inn</i> .. .. .	Scottish Ship Management Ltd.
<i>Thor I</i> .. .. .	Thor Dahl A/S
<i>Thorshope</i> .. .. .	Thor Dahl A/S
<i>Thorsisle</i> .. .. .	Thor Dahl A/S
<i>Thorsriver</i> .. .. .	Thor Dahl A/S
<i>Thorstream</i> .. .. .	Thor Dahl A/S
<i>Thorswave</i> .. .. .	Thor Dahl A/S
<i>W. C. Van Horne</i> .. .. .	Canadian Pacific S.S. Ltd.
<b>Supplementary Ships:</b>	
<i>Emerillon</i> .. .. .	Shell Canada Ltd.
<i>Maxwell</i> .. .. .	Government of Canada

**Auxiliary Ships:**

Canada has 62 ocean-going Auxiliary Ships and 65 Auxiliary Ships operating on the Great Lakes.

## INDIA (Information dated 1.4.74)

NAME OF VESSEL	OWNER/MANAGER
<b>Selected Ships:</b>	
<i>Akbar</i> .. .. .	Mogul Line Ltd.
<i>Andamans</i> .. .. .	Shipping Corporation of India Ltd.
<i>Dumra</i> .. .. .	British India S.N. Co. Ltd.
<i>Dwarka</i> .. .. .	British India S.N. Co. Ltd.
<i>Indian Reliance</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Renown</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Security</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Success</i> .. .. .	India S.S. Co. Ltd.
<i>Jag Kisan</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Vijay</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jaladhanya</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jaladharna</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jaladhruv</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jaladhuhita</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalaganga</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalagouri</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalajawahar</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalakanta</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalakrishna</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalapalaka</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalavikram</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalavishnu</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Jalazad</i> .. .. .	Scindia S.N. Co. Ltd.
<i>Karanja</i> .. .. .	British India S.N. Co. Ltd.
<i>Lok Sevak</i> .. .. .	Mogul Line Ltd.
<i>Maharaja</i> .. .. .	South East Asia Shipping Co. Ltd.
<i>Mohemmedi</i> .. .. .	Mogul Line Ltd.
<i>Mozaffari</i> .. .. .	Mogul Line Ltd.
<i>Rangat</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Assam</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Bihar</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Gujarat</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Haryana</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Kutch</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Maharashtra</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Orissa</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Tamilnadu</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Travancore Cochin</i> .. .. .	Shipping Corporation of India Ltd.
<i>State of Uttar Pradesh</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Maya</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Prabha</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Sudha</i> .. .. .	Shipping Corporation of India Ltd.
<b>Supplementary Ships:</b>	
<i>Akabar</i> .. .. .	Shipping Corporation of India Ltd.
<i>Akash Maru</i> .. .. .	New India Fisheries
<i>Apj Ambika</i> .. .. .	Surendra Overseas Ltd.
<i>Apj Anjali</i> .. .. .	Surendra Overseas Ltd.
<i>Apj Sushma</i> .. .. .	Surendra Overseas Ltd.
<i>Aradhana</i> .. .. .	Shipping Corporation of India Ltd.
<i>Bailadila</i> .. .. .	Shipping Corporation of India Ltd.
<i>Bande Nawaz</i> .. .. .	Hind Shipping Agencies
<i>Barauni</i> .. .. .	Shipping Corporation of India Ltd.
<i>Bellary</i> .. .. .	Shipping Corporation of India Ltd.
<i>Chennai Jayam</i> .. .. .	South India Shipping Corporation
<i>Chennai Selvam</i> .. .. .	South India Shipping Corporation
<i>Chidambaram</i> .. .. .	Shipping Corporation of India Ltd.
<i>Damodar Zuari</i> .. .. .	Shipping Corporation of India Ltd.
<i>Desh Bandhu</i> .. .. .	Shipping Corporation of India Ltd.
<i>Devaraya</i> .. .. .	Shipping Corporation of India Ltd.
<i>Gandhi</i> .. .. .	Shipping Corporation of India Ltd.
<i>Indian Endeavour</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Industry</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Resolve</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Resource</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Splendour</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Strength</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Tradition</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Tribune</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Triumph</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Trust</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Valour</i> .. .. .	India S.S. Co. Ltd.
<i>Indian Venture</i> .. .. .	India S.S. Co. Ltd.
<i>Jag Anand</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Anjali</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Arti</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Asha</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Dev</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Jawan</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Jwala</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Jyoti</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Laxmi</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Ravi</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jag Rekha</i> .. .. .	Great Eastern Shipping Co. Ltd.
<i>Jagat Neta</i> .. .. .	Dempo S.S. Ltd.
<i>Jagat Swamini</i> .. .. .	Dempo S.S. Ltd.
<i>Jagat Vijeta</i> .. .. .	Dempo S.S. Ltd.

INDIA (contd.)

NAME OF VESSEL	OWNER/MANAGER
Jaladharati .. .. .	Scindia S.N. Co. Ltd.
Jaladhir .. .. .	Scindia S.N. Co. Ltd.
Jaladurga .. .. .	Scindia S.N. Co. Ltd.
Jaladuta .. .. .	Scindia S.N. Co. Ltd.
Jalagirija .. .. .	Scindia S.N. Co. Ltd.
Jalagomati .. .. .	Scindia S.N. Co. Ltd.
Jalagopal .. .. .	Scindia S.N. Co. Ltd.
Jalajyoti .. .. .	Scindia S.N. Co. Ltd.
Jalakala .. .. .	Scindia S.N. Co. Ltd.
Jalakendra .. .. .	Scindia S.N. Co. Ltd.
Jalakirti .. .. .	Scindia S.N. Co. Ltd.
Jalamangala .. .. .	Scindia S.N. Co. Ltd.
Jalamani .. .. .	Scindia S.N. Co. Ltd.
Jalamatsya .. .. .	Scindia S.N. Co. Ltd.
Jalamayur .. .. .	Scindia S.N. Co. Ltd.
Jalamohan .. .. .	Scindia S.N. Co. Ltd.
Jalamorari .. .. .	Scindia S.N. Co. Ltd.
Jalamoti .. .. .	Scindia S.N. Co. Ltd.
Jalamokambi .. .. .	Scindia S.N. Co. Ltd.
Jalapankhi .. .. .	Scindia S.N. Co. Ltd.
Jalarajan .. .. .	Scindia S.N. Co. Ltd.
Jalarashmi .. .. .	Scindia S.N. Co. Ltd.
Jalaratna .. .. .	Scindia S.N. Co. Ltd.
Jalatarang .. .. .	Scindia S.N. Co. Ltd.
Jalaveera .. .. .	Scindia S.N. Co. Ltd.
Jalayamini .. .. .	Scindia S.N. Co. Ltd.
Jalayamuna .. .. .	Scindia S.N. Co. Ltd.
Jameela .. .. .	Karala Lines Ltd.
Jawaharlal Nehru .. .. .	Shipping Corporation of India Ltd.
Kanishka .. .. .	Shipping Corporation of India Ltd.
Krishna .. .. .	Shipping Corporation of India Ltd.
Lal Badahur Shastri .. .. .	Shipping Corporation of India Ltd.
Mahabharat .. .. .	South East Asia Shipping Co. Ltd.
Mahabhakti .. .. .	South East Asia Shipping Co. Ltd.
Mahabir .. .. .	South East Asia Shipping Co. Ltd.
Maratha Progress .. .. .	Chowgule Steamships Ltd.
Maratha Providence .. .. .	Chowgule Steamships Ltd.
Onge .. .. .	Shipping Corporation of India Ltd.
Prabhu Daya .. .. .	Tolani Private Ltd.
Rama .. .. .	Shipping Corporation of India Ltd.
Ratna Usha .. .. .	Ratnakar Shipping Co. Ltd.
Red Snapper .. .. .	Central Institute of Fisheries
Sagar Deep .. .. .	Shipping Corporation of India Ltd.
Sagar Sudha .. .. .	Africana Co. Private Ltd.
Sanchi .. .. .	Shipping Corporation of India Ltd.
Satya Kamal .. .. .	Seven Seas Transportation Ltd.
Shahjehan .. .. .	Shipping Corporation of India Ltd.
Shompen .. .. .	Shipping Corporation of India Ltd.
State of Kerala .. .. .	Shipping Corporation of India Ltd.
State of Madhya Pradesh .. .. .	Shipping Corporation of India Ltd.
State of Meghalaya .. .. .	Shipping Corporation of India Ltd.
State of Mysore .. .. .	Shipping Corporation of India Ltd.
State of Punjab .. .. .	Shipping Corporation of India Ltd.
State of Rajasthan .. .. .	Shipping Corporation of India Ltd.
State of West Bengal .. .. .	Shipping Corporation of India Ltd.
Varuna Kanchan .. .. .	Thakur S.S. Co. Ltd.
Varuna Yan .. .. .	Thakur S.S. Co. Ltd.
Vishva Aditya .. .. .	Shipping Corporation of India Ltd.
Vishva Bhakti .. .. .	Shipping Corporation of India Ltd.
Vishva Bindu .. .. .	Shipping Corporation of India Ltd.
Vishva Chetana .. .. .	Shipping Corporation of India Ltd.
Vishva Dharma .. .. .	Shipping Corporation of India Ltd.
Vishva Jyoti .. .. .	Shipping Corporation of India Ltd.
Vishva Kalyan .. .. .	Shipping Corporation of India Ltd.
Vishva Kanti .. .. .	Shipping Corporation of India Ltd.
Vishva Karuna .. .. .	Shipping Corporation of India Ltd.
Vishva Kaushal .. .. .	Shipping Corporation of India Ltd.
Vishva Kirti .. .. .	Shipping Corporation of India Ltd.
Vishva Lalita .. .. .	Shipping Corporation of India Ltd.
Vishva Mahima .. .. .	Shipping Corporation of India Ltd.
Vishva Mangal .. .. .	Shipping Corporation of India Ltd.
Vishva Marg .. .. .	Shipping Corporation of India Ltd.
Vishva Nayak .. .. .	Shipping Corporation of India Ltd.
Vishva Nidhi .. .. .	Shipping Corporation of India Ltd.
Vishva Pratap .. .. .	Shipping Corporation of India Ltd.
Vishva Pratiba .. .. .	Shipping Corporation of India Ltd.
Vishva Prayas .. .. .	Shipping Corporation of India Ltd.
Vishva Prem .. .. .	Shipping Corporation of India Ltd.
Vishva Raksha .. .. .	Shipping Corporation of India Ltd.
Vishva Sandesh .. .. .	Shipping Corporation of India Ltd.
Vishva Seva .. .. .	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 Suman .. .. .	Shipping Corporation of India Ltd.
Vishva Tej .. .. .	Shipping Corporation of India Ltd.
Vishva Tirth .. .. .	Shipping Corporation of India Ltd.
Vishva Umang .. .. .	Shipping Corporation of India Ltd.

**INDIA (contd.)**

NAME OF VESSEL	OWNER/MANAGER
<i>Vishva Usha</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vandana</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vibhuti</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vijay</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vikas</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vinay</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vir</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Vivek</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vishva Yash</i> .. .. .	Shipping Corporation of India Ltd.
<i>Vivekananda</i> .. .. .	Shipping Corporation of India Ltd.
<i>Yerewa</i> .. .. .	Shipping Corporation of India Ltd.

Auxiliary Ships:  
India has 29 Auxiliary Ships.

## NEW ZEALAND (Information dated 1.3.74)

NAME OF VESSEL	OWNER/MANAGER
<b>Selected Ships:</b>	
<i>Act 3</i> .. .. .	Blue Star Port Line Ltd.
<i>Act 4</i> .. .. .	Blue Star Port Line Ltd.
<i>Act 5</i> .. .. .	Blue Star Port Line Ltd.
<i>Athel Viscount</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Coastal Trader</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Erne</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Fijian Swift</i> .. .. .	Trans Pacific Marine
<i>Hamilton</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Havea</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Holmburn</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Holmdale</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Holmlea</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>James Cook</i> .. .. .	N.Z. Government (Fisheries)
<i>Kamiro</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Kaituna</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Karepo</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Karetu</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Katea</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Kawerau</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Koraki</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Koramui</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Lorena</i> .. .. .	Cook Is. Shipping Co.
<i>Luhesand</i> .. .. .	Omega Shipping Co.
<i>Maheno</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Marama</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Moana Roa</i> .. .. .	N.Z. Government
<i>Ngahere</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Ngakuta</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Ngapara</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Ngatoro</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Parera</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Pukeko</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Rangatira</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Tangaroa</i> .. .. .	New Zealand Government (Oceanographic)
<i>Tarawera</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Union Aotearoa</i> .. .. .	Maritime Carriers Ltd.
<i>Union Australia</i> .. .. .	Maritime Carriers Ltd.
<i>Union New Zealand</i> .. .. .	Maritime Carriers Ltd.
<i>Union South Pacific</i> .. .. .	Maritime Carriers Ltd.
<i>Union Trans Tasman</i> .. .. .	Maritime Carriers Ltd.
<i>Valetta</i> .. .. .	British Phosphate Commissioners
<i>Waikari</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Waimea</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Wanaka</i> .. .. .	Union S.S. Co. N.Z. Ltd.
<i>Wenchow</i> .. .. .	China Navigation Co. Ltd.
<i>Zaida</i> .. .. .	P. & O. (N.Z.) Ltd.
<i>Zira</i> .. .. .	P. & O. (N.Z.) Ltd.
<b>Supplementary Ships:</b>	
<i>Arahanga</i> .. .. .	N.Z. Railways Department
<i>Aramoana</i> .. .. .	N.Z. Railways Department
<i>Aramui</i> .. .. .	N.Z. Railways Department
<i>Golden Bay</i> .. .. .	Tarakohe Shipping Co. Ltd.
<i>Liger Bay</i> .. .. .	Tarakohe Shipping Co. Ltd.
<i>Milburn Carrier</i> .. .. .	N.Z. Cement Holdings Ltd.
<i>Puriri</i> .. .. .	Anchor Shipping & Foundry Co. Ltd.
<i>Titoki</i> .. .. .	Anchor Shipping & Foundry Co. Ltd.
<i>Totara</i> .. .. .	Anchor Shipping & Foundry Co. Ltd.

### Auxiliary Ships:

New Zealand also has a fleet of 7 Auxiliary Ships currently reporting.

*Editor's Note.* We apologize to the Masters and Observing Officers in the *Wenchow*, the *Zaida* and the *Zira* for omitting their vessels from the July 1973 list of Selected Ships.

HONG KONG (Information dated 14.3.74)

NAME OF VESSEL	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>American Main</i>	P. L. Ballantyne	P. Bruce, G. W. Boothby, P. A. Quimbo	Lee Wai-sun	Indo-China S.N. Co. Ltd.
<i>American Ming</i>	G. C. Taylor	G. W. Pereira, C. A. Lines, M. B. Bermudez	Choi Ming Leung	Indo-China S.N. Co. Ltd.
<i>American Mist</i>	F. L. Pickering	K. M. Lines, J. A. Cameron, R. Bernardo	Li Yiu Fai	Indo-China S.N. Co. Ltd.
<i>Asian Exporter</i>	F. Cunningham	D. H. Norcott, T. Tapungao, D. I. Stobie, A. Taino	Yau Ming Tak	China Navigation Co. Ltd.
<i>Aska</i>				British India S.N. Co. Ltd.
<i>Cape St. Mary</i>	Chan Hok Min	Kwok Yung Sing, Ngau Min-Sang	Wong Kam-Tim	Agriculture & Fisheries Dept., H.K. Govt.
<i>Cardross</i>	Cheung Hi Loi	Yeung Kin Shing, Lam Siu Wai, Sung Yim Wing, Cheung Wan Wah	Leung Ki On	Kian Hin Leong Enterprises Ltd.
<i>Carl Offersen</i>	H. Fallesen	J. G. Roekjaer, J. S. Petersen, G. Kuehl	W. G. McLaren	Jebsen & Co. Ltd.
<i>Chengtu</i>	L. Lough	D. R. Walker, Yeung Pui Lam, R. S. Cataulin	Chan Hak Wai	China Navigation Co. Ltd.
<i>Coral Princess</i>	M. T. Anderson	J. N. Edwards, R. J. Platt, A. G. Baudouy, A. M. Zuberi	Leung Kok Man	China Navigation Co. Ltd.
<i>Cree</i>	J. H. Pring	J. F. H. Welch, A. R. Anning	A. Hudson	Indo-China S.N. Co. Ltd.
<i>Evedine</i>	D. R. Groves	A. D. Hotchkiss, J. S. MacLeod, J. Smith	Tang Yuen	China Navigation Co. Ltd.
<i>Eristay</i>	T. J. Wilson	A. J. Davies, J. W. Madeley, A. Vata	J. A. McKay	China Navigation Co. Ltd.
<i>Foh Kim</i>	W. J. Davis	W. J. Windrim, S. P. A. Ali, G. C. Planta	S. C. Cheung	Hong Kong Borneo Shipping Co. Ltd.
<i>Hai Hing</i>	A. Gronvik	O. Haugen, G. Sandvik, T. Noren	Leung Ho Wah	Thoresen & Co. Ltd.
<i>Haitborg</i>	P. J. Haga	B. B. Nordgard, O. Ronning, L. K. Eigeland	Lo Yu Chiu	Thoresen & Co. Ltd.
<i>Haitford</i>	E. F. Andreassen	B. Vigulf P. Tolgensbakk, A. Tregaard, B. Thielfoldt	Lau Kam Pui	Thoresen & Co. Ltd.
<i>Hoi Kung</i>	O. Schibsted	R. E. Nilsen, H. P. Rogne, L. I. Randeberg	Lai Kwong Yin	Thoresen & Co. Ltd.
<i>Hupoh</i>	J. Wroldsen	O. Brun, R. Johansen, J. O. Vilhovde	C. H. Carney	Karsten-Larsen & Co. Ltd.
<i>Hyria</i>	J. B. H. J. Aldiss	D. W. Tucker, R. Goodwin, G. D. Rutherford	Leung Man Hin	China Navigation Co. Ltd.
<i>Kim Seng</i>	R. Codd	R. Stollery, D. Morris, S. Clark	N. Fenton	Jardine, Matheson & Co. Ltd.
<i>Kwangtung</i>	R. V. Pope	S. Muttoo, Yves F. Vaz, Hau Cheung Yan	Sun Yun Wing	China Navigation Co. Ltd.
<i>Manaloeverett</i>	B. A. Owen	Leung Lai Kit, M. A. Siddle, T. Riwata, H. Eusebio	T. Sarsfield	China Navigation Co. Ltd.
<i>Pabloeverett</i>	A. D. Roxas	E. P. Sumayo, S. G. Flores, O. G. Gaurana	L. Alcordo	Everett S.S. Corporation S/A
<i>Pampa Argentina</i>	F. P. Galvez	C. Avena, J. Bengoechea, J. C. Peluffo	A. Cabral	Everett S.S. Corporation S/A
<i>Shansi</i>	C. Bianchi	C. J. Pooley, P. Carey, D. R. Viray, A. Reynaldo	L. Bonilla	China Navigation Co. Ltd.
<i>Sinkiang</i>	J. H. Gomersall	T. S. Payne, D. J. Smith, A. C. Alegiojo	J. J. Stone	China Navigation Co. Ltd.
<i>Soochow</i>	R. J. Shipp	C. J. Walford, R. S. Rawlings, K. R. Hawkins, A. Cortina	Wong Chung Kuen	China Navigation Co. Ltd.
<i>Star Aldebaran</i>	J. M. Parker	M. G. Larsson, N. J. I. Augrell, B. O. Normark	W. E. Gell	China Navigation Co. Ltd.
<i>Star Altair</i>	G. Drake		S. L. B. Davidson	Everett S.S. Corporation S/A
<i>Star Antares</i>	A. F. Hageisrum		R. Dahl-Sather	Everett S.S. Corporation S/A
<i>Star Bellatrix</i>	I. Westerholm	B. Ronsen, I. Dannan, R. Havefjore	T. B. Ruden	Everett S.S. Corporation S/A
<i>Tailangshan</i>	S. R. Stormberg	H. B. Modig, A. T. Aleby, Mak Siu Kau	R. Reslow	Shun Cheong S.N. Co. Ltd.
<i>Taiipoosek</i>	B. Robertson	C. H. Lange, S. G. Stenson, S. Schlyter	C. S. Wong	Shun Cheong S.N. Co. Ltd.
<i>Taiipooshan</i>	N. B. Manning	C. H. Mok, L. W. Cheung, S. T. To	M. Aslam	Shun Cheong S.N. Co. Ltd.
<i>Thomasaverett</i>	K. D. Lam	H. Brown, P. V. Ganapathy, R. H. Morker	Y. L. Chuk	Shun Cheong S.N. Co. Ltd.
	W. M. Pearson	B. B. Culas, Y. H. Lui, K. L. Chak, H. M. Li	W. Yap	Everett S.S. Corporation S/A
	J. S. Vapor	P. T. Gepilane, B. N. Ordiz, A. T. Gran		

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