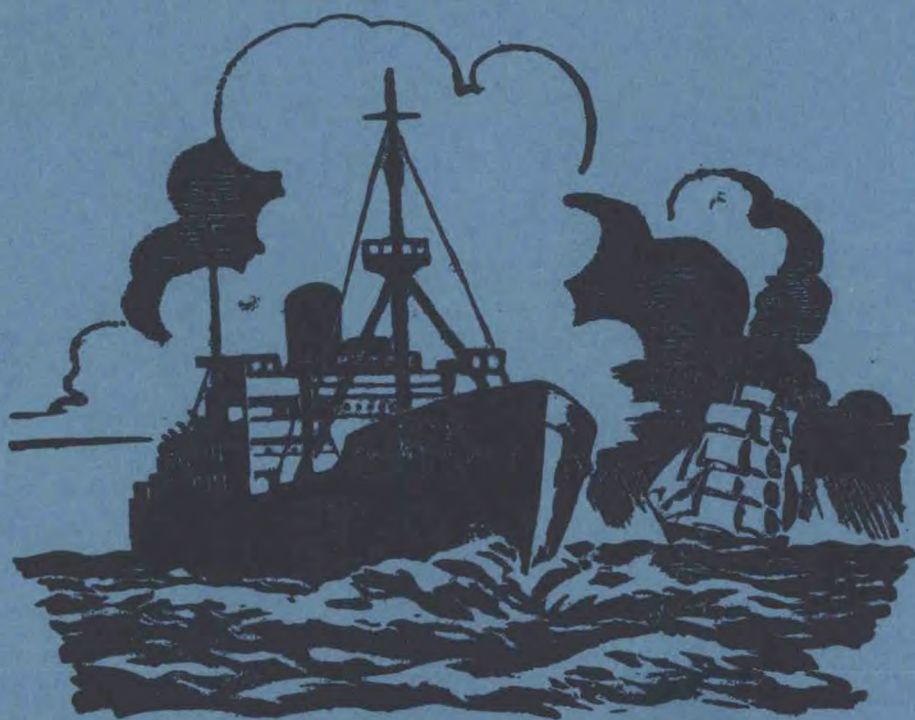


M.O. 608

The Marine Observer

*A quarterly journal of Maritime
Meteorology*



Volume XXVI No. 171

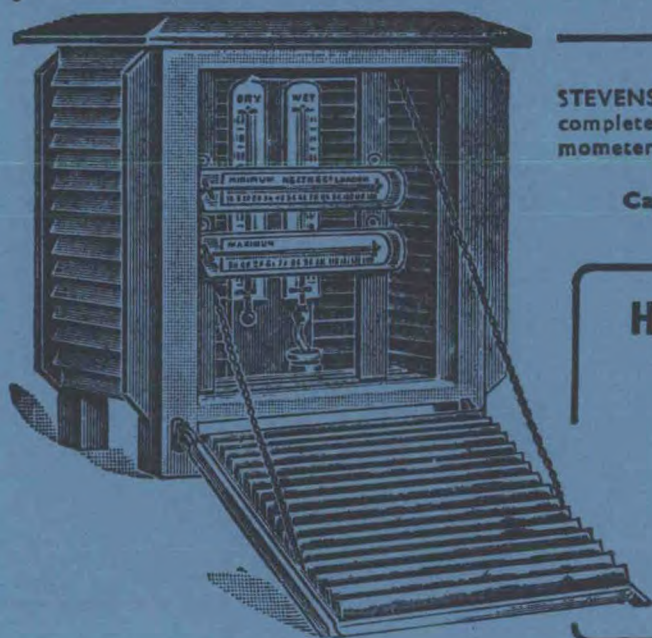
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THE MARINE OBSERVER

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

VOL. XXVI

No. 171

JANUARY, 1956

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*Letters to the Editor, and books for review, should be sent to the Editor, "The Marine Observer,"
Meteorological Office, Headstone Drive, Harrow, Middlesex*

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Editorial

For those who had the good fortune to be at home, there seems little doubt that, meteorologically, the summer of 1955 was outstandingly fine. Prior to the middle of June, the weather was not particularly good, and in fact one still heard comment as to the permanent adverse effect which the hydrogen bomb had had upon our climate, and that maybe we should never again have summers such as had been common in the earlier part of the century. And then, in the middle of June, a sudden change for the better took place and during July, August and September it was difficult for anybody to think of anything to complain about concerning the weather in Britain—an unusual circumstance even in summertime. It was perhaps fitting that such a lovely summer should have coincided with the centenary of the Meteorological Office.

Official statistics in the Climatological Division of the Meteorological Office show that July and August, 1955, rank as the driest July and driest August over Great Britain since before 1869. These two months were also the warmest July and warmest August in Great Britain since 1911, but it is worth mentioning that in 1911 the temperature exceeded the average during each month from May to September, so it seems that 1911 was outstanding for the length of its fine summer. Statistics show that 1933, 1947 and 1949 also provided very good summers in this country. The year 1955 also saw the sunniest July and sunniest August over Great Britain since 1911, but here again the sunny weather in 1911 lasted from May right through to September. It is noteworthy that the early part of 1955 (particularly January and February) was marked with extremely cold weather with very heavy snowfall and that snow fell as late as mid-May—a factor combined with the bad summer of 1954 which tended to accentuate the beauty of the summer which followed.

All this seems to show that with the weather, as with most other things, one has to take the rough with the smooth. Perhaps it tends to emphasise the complexity of some of the problems which face the meteorologist. It seems unlikely that he will ever do much to change the weather on the large scale—but there are obvious economic and social advantages if he can estimate what sort of weather will be experienced during a certain season of the year. For example, why is it that we had such an outstandingly fine and warm summer in 1955 after a very bad summer following a succession of relatively bad ones. The answer probably lies to some extent in the interaction between the atmosphere and the ocean surfaces—for example in the strength and temperature of the Labrador Current, and thus indirectly the ice extent on the Grand Banks; the strength and temperature of the Gulf Stream and North Atlantic Current; the distribution of temperature, pressure, wind and humidity in the surface and other layers of the atmosphere over the Atlantic or over the continents. Among other factors the pressure distribution over the north polar regions certainly has some effect on the summer weather of the British Isles, and it so happens that in July and August, 1955, there was a fairly well marked low-pressure area over north polar regions. It is even possible that the weather in the Antarctic may in some remote way have some effect on conditions occurring at a later date in the northern hemisphere. The problems of the meteorologist are world-wide and the modern tendency is to study the weather map of the whole hemisphere. Perhaps eventually it will prove desirable for research purposes to study such maps of the whole world in order to get the correct perspective. Which brings us again to the question, often discussed in these pages, of the importance of observations from merchant ships wherever their voyages take them.

During 1955 many voluntary observers aboard a large number of British ships have loyally continued to make meteorological observations and send radio weather messages to various meteorological centres. All this has undoubtedly helped the meteorologists of many countries towards the solution of many difficult problems. For example, as in contrast to the beautiful summer which Britain enjoyed, 1955

has provided some rather striking manifestations of Nature's more unpleasant moods in the form of hurricanes and typhoons in which lives have been lost, thousands rendered homeless and millions of pounds worth of property destroyed. The value of ship observations in connection with these is obvious.

On behalf of the Director of the Meteorological Office we thank the voluntary observers and radio officers aboard all British and Commonwealth selected ships for the observations they have made during the year. And as we reach the end of the old year we send our New Year greetings to all our readers whether they be afloat or ashore. We feel sure that our voluntary observers will continue to make their observations conscientiously and accurately and to send radio weather messages as regularly as they can throughout their voyages during 1956, as they have now done through more than 100 years.

June, 1956, is expected to produce an unusual and historical international maritime event in the form of an international race between sail training ships from Torbay to Lisbon. An organising committee, consisting largely of professional seamen connected with the training of cadets, has been formed under the chairmanship of Captain Illingworth, one of Britain's most distinguished yachtsmen. The objects of this race are "to promote further friendly international relations by fresh contacts among young seafarers; to promote a major international nautical event; and to create new interest in a seagoing career among the public generally and particularly among the younger generation from whom officers and men are recruited for the Royal and Merchant Navies. In their invitations the committee have expressed the hope that as many vessels as possible will take part, since the underlying idea of the race is not only participation in a very fine sporting sailing contest with its considerable training value, but the getting together of seafaring youth of the several countries in an atmosphere of sport and goodwill according with the tradition of the brotherhood of the sea".

The value of a lengthy sail training for ships' officers in this age of power-driven vessels is a perennial subject for discussion in the nautical press. But there seems no doubt that even a relatively short period aboard a sailing vessel, even if it is only around the coast, helps a young seaman to become self-reliant and observant and to develop a "sea sense" in a shorter time than aboard a steamship. The reason for this is fairly obvious when one considers how much the handling of any sailing vessel depends upon the skill of her master and his knowledge of wind and weather, as well as the agility of her crew. This fact was never better portrayed than in Alan Villiers's book *The Way of a Ship*. Whether it be good or not the fact is that we have no deep-sea sailing training ships at present in the United Kingdom, but fortunately, due to the foresight and courage of the directors of some of our navigation schools, a measure of sail training still figures in the training curriculum. The University College at Southampton thus has the 95-ft ketch *Moyana* and the Outward Bound Trust the *Prince Louis*, both of which will enter for this race. These vessels together with the yacht *Creole* owned by Mr. Stavros Niarchos are likely to be the British entries. Certain other countries, notably Norway, Sweden, U.S.A. Argentina, Denmark, Germany, Italy and Japan, have kept up with the tradition of sail training and will, it is hoped, enter sea-going training ships. The organisers hope that the following countries also will have entries: Belgium, Brazil, Canada, Chile, Finland, Yugoslavia, the Netherlands and Spain. It is intended that the vessels assemble at Dartmouth on 6th June and that the following week be devoted to pulling and sailing-boat regattas and other sports and that the vessels sail from Torbay on 13th June. The sponsors of the race say: "This should afford a unique opportunity for the cadets, apprentices and young seamen under training of the various nations to meet socially in a variety of sports." There is no doubt as to the important part that the weather will play in this original international event, and of the value of accurate meteorological information being available to the organisers during the planning stage as well as to the masters of the vessels during the contest. Had radio weather messages on an international scale been available in the days of

the commercial deep-water sailing ship, the shipmaster's problem would have been very much eased, with consequent practical and economic advantages to the ship, and sailing ships might well have remained in existence longer.

While on the subject of the New Year it is not inappropriate to think about prosperity, not only of individuals but of our country. Any connection between meteorology and finance might seem a bit obscure, but a British shipowner speaking recently at a local Chamber of Commerce meeting, about the present and future economic situation of the country, said:

"To use a nautical metaphor, a rise in the Bank Rate is equivalent to a fall in the barometer, and in sailing-ship days when the barometer fell it was customary to shorten sail. To use another nautical metaphor, 'don't overload the boat'. If you do and dirty weather comes along you may have to jettison part or even the whole of the deck cargo. The deduction I make from this is that at the present time all parties in industry should exercise moderation and restraint."

MARINE SUPERINTENDENT.

THE MARINE OBSERVERS' LOG



January, February, March

The Marine Observers' Log is a quarterly record of the most unusual and significant observations made by mariners.

The observations are derived from the logbooks of marine observers and from individual manuscripts. Photographs or sketches are particularly desirable.

Responsibility for each observation rests with the contributor.

TURTLE

North Atlantic Ocean

M.V. *Cambridge*. Captain P. P. O. Harrison. Curaçao to London. Observer, Mr. P. Bower, 2nd Officer.

22nd March, 1955, 1300 S.A.T. A turtle was seen about 3 ft long. A moderate gale was blowing with very rough seas and a heavy swell.

Position of ship: $37^{\circ} 10' N.$, $41^{\circ} 28' W.$

Note. Dr. H. W. Parker, Keeper of Zoology, Natural History Museum, writes:

"This observation is of interest because no one has yet found any turtle breeding ground in the Azores, and the turtle seen 150 miles wsw. of these islands must, therefore, have been a very long way (over 1,000 miles) from the nearest breeding ground. Turtles have been reported from the Azores before, but every additional observation, such as the present one, confirms that these reptiles do regularly wander over great distances of open sea. I regret that it is impossible to give an identification. It could have been any one of five species which occur in the North and South Atlantic."

LARGE SHOAL OF FISH

Atlantic equatorial waters

S.S. *Essex Trader*. Captain R. E. Bennett. Dakar to Durban. Observer, Mr. D. Milburn, 3rd Officer.

16th January, 1955, 2115 G.M.T. Phosphorescence in the water was extremely thick and bright and formed a continuous layer, colour brilliant turquoise. There was an abundance of fish, apparently frightened by the glow forward and jumping from the water. Sea smooth. Sea temp. 82°F.

Position of ship: 00° 49'S., 07° 41'W.

West African waters

M.V. *Trevince*. Captain B. George. Cape Town to Falmouth. Observer, Mr. E. A. Sprunks, 2nd Officer.

21st March, 1955, 0130 G.M.T. The vessel steamed through a large shoal of fish. It commenced in patches of phosphorescence and reached a maximum of one large shoal estimated to cover an area of at least 5 miles. Between 0250 and 0320 a strong odour of fish was noticed. The size of the fish was not determined because of darkness, but in the ship's floodlights they appeared to be between 6 in. and 1 ft in length and of a very active nature. Temperature, air 65°F, sea 68°. Moderate sea and swell.

Position of ship: 12° 45'N., 17° 25'W.

Note. Dr. H. W. Parker, Keeper of Zoology at the Natural History Museum, writes:

"There is insufficient information for any identification of the organisms involved. It seems probable, however, that there was a high concentration of plankton in the area and the larger fish were presumably attracted, as predators, to the area because of the abundance of other organisms feeding on the plankton.

"The position is in an area where upwelling of water from the depths is fairly common. This upwelling water is rich in nutrient salts which encourage plant growth and this in turn leads to an abundance of animal plankton. At times the process goes too far, for reasons not fully understood, with resulting overcrowding and an enormous mortality. This occurs round Dakar nearly every year during the period from February to April. For instance, in the year 1929 the mortality was so enormous that the public health services had to ask for help from the military authorities to clear away the dead *Sardinella* that were cast up in the region of Hann. Again, in March, 1946, at Goree, enormous masses of anchovies and other fishes—blennies, gobies, etc.—and worms, coelenterates, molluscs, crustacea, died in the small harbour. Again on 17th February, 1944, 150 tons of fish were found in the dry dock at Dakar after it had been pumped out. I think it likely that the phenomenon noticed was one of these periodic assemblages."

S.S. *Essex Trader*. Captain R. E. Bennett. Port Elizabeth to Dakar. Observer, Mr. E. Atkinson, Chief Officer.

24th March, 1955, 1821 A.T.S. During the afternoon and early evening an abundance of large fish was noticed on the surface. After the light had faded it was seen that the sea was brightly illuminated with phosphorescence, and the whole area surrounding the ship was alive with fish of a smaller type. The larger fish could be seen stirring up the sea for a considerable distance; these conditions lasted for almost two hours. Sea smooth, moderate swell.

Position of ship: 12° 17'N., 17° 21'W.

Note. Dr. Parker's remarks on the observation of M.V. *Trevince* apply also to that of S.S. *Essex Trader*, which was in almost the same position three days later. The phosphorescence observed, and also by S.S. *Essex Trader* close to the equator two months earlier, indicate concentrations of plankton.

LINE OF DEMARCATION

North Atlantic Ocean

S.S. *Walvis Bay*. Captain A. Donald. Norfolk (Va.) to Panama. Observer, Mr. W. E. Campbell, 2nd Officer.

9th February, 1955, 1100 L.T. A pronounced line of demarcation was observed on encountering the Gulf Stream. There was a strong change of colour, deep blue and grey-blue, and the vessel sheered 20° off course momentarily. There appeared to be considerable upwelling of water and swell increased considerably. Broken water and sea smoke lasted for about 20 min.

Position of ship: $35^\circ 31'N.$, $74^\circ 52'W.$

DISCOLOURED WATER

Malta Channel

M.V. *Patagonia Star*. Captain E. Jermyn. Haifa to Teneriffe. Observer, Mr. A. Chivers, 3rd Officer.

7th February, 1955, 0725 G.M.T. The colour of the sea suddenly changed from dark grey to pea green, with a distinct line of demarcation between the two colours running from horizon to horizon. The echo sounder was run continuously at this time but no change in soundings was observed. At 0743 the colour of the sea suddenly changed back to dark grey with another line of demarcation between the colours. There was still no change in soundings.

Position of ship: $36^\circ 06'N.$, $13^\circ 05'E.$ Course $284^\circ T.$

South Atlantic Ocean

S.S. *Clan Campbell*. Captain H. C. Simpson. Dakar to Durban. Observer, Mr. S. Young, 4th Officer.

8th February, 1955, 1615 G.M.T. Mustard-coloured streaks 2-3 ft wide extended for about 2 miles in a SE-NW. direction. The streaks appeared to reach a depth of several feet below the surface; they ended abruptly at 1630. Similar streaks were observed $\frac{1}{4}$ mile to port. Wind SE., force 5, sea moderate to rough.

Position of ship: $20^\circ 42'S.$, $7^\circ 20'E.$

South Indian Ocean

S.S. *Essex Trader*. Captain R. E. Bennett. Dakar to Durban. Observer, Mr. E. Atkinson, Chief Officer.

1st February, 1955, 1630 G.M.T. From a position (by radar) $6\frac{1}{4}$ miles from Green Point a large patch of pea-green water stretched out from the shore to about 1 mile ahead of the ship and extended further seawards (course 034°). The course was immediately altered to 074° as Aliwal Shoal was in the vicinity, and it was noted that the discoloured water ran almost parallel with this course for about 3 miles. Course was then altered to 024° and the ship kept about 1 mile from this discoloured area, but after a further $2\frac{1}{2}$ miles the sharp dividing line disappeared and the whole area ahead showed a trace of slight discoloration. Because of the fading light it could not be noted how far the pea-green water really extended, but it was seen that the fringe of the area was thick with weed, etc.

Position of ship: $30^\circ 15'S.$, $30^\circ 47'E.$

Gulf of Panama

S.S. *Corinthic*. Captain A. C. Jones. Auckland to Balboa. Observers, the Master, Mr. G. Lewis, 2nd Officer, and Mr. G. B. Broom, 3rd Officer.

21st March, 1955, 1830 G.M.T. A large patch of discoloured water, dark red, was observed to extend for about 14 miles. Temperature, air $80^\circ F$, sea 77° . Sea slight.

Position of ship: $5^\circ 37'N.$, $81^\circ 45'W.$

Note. Details of the above four observations were sent to Dr. Hart of the National Institute of Oceanography, who in reply said that such observations are useful in adding to our knowledge of the distribution of discoloured water. They would be much more valuable if accompanied by samples of the water, treated with preservative. He made suggestions as to what the organisms might be in the above observations, but said that it was little more than guessing. Observers are reminded that sample bottles with preservative and instruction for use are obtainable from the Port Meteorological Officers (see note on page 48 of the January, 1955, number of this journal).

CHANGE OF SEA COLOUR

South Atlantic Ocean

M.V. Highland Brigade. Captain T. Powell, London to River Plate. Observers, the Master and Mr. G. W. Harris, 3rd Officer.

31st March, 1955, 1335 G.M.T. A marked change in the colour of the water was observed east of Rio Grande del Sul. The line of demarcation was exceptionally well-defined; deep blue to the E. and olive-green to the W. The change back to the original colour of deep blue occurred 12 miles further S. Sea temperatures in the blue water, both N. and S., were 73°F; in the green water 64°. Air temp. 68°, wet bulb 57°, barometer 1016.8 and wind WSW., force 2.

Position of ship: 32° 10'S., 51° 08'W.

PHOSPHORESCENCE

North Atlantic Ocean

M.V. Cambridge. Captain P. P. O. Harrison. Curaçao to London. Observers, the Master and Mr. L. Fancett, 3rd Officer.

19th March, 1955, 2100 S.A.T. For half an hour the ship had been passing through an area of phosphorescent "blobs". They were scattered; passing sometimes singly and sometimes half a dozen grouped together. The smallest appeared to be about 1 ft in diameter, the largest 6 ft. They appeared to be about 6 ft below the surface of the water and seemed to be waxing and waning in luminosity, although this might have been an illusion caused by the refracted light passing through the swell of the bow wave. The light was blue, the "blobs" appeared to be inanimate. There was no glow from the bow wave or wake. The echometer, after half an hour's running, showed a faint trace at about 52 fm. The depth on the chart was over 3,000 fm. These "blobs" are unusual, at least at this size. They were not the fish-shaped phosphorescence seen by the *Cumberland* in the Pacific (see *Marine Observer*, Vol. XXV, No. 167, page 28). They lasted all the watch.

Position of ship: 27° 23'N., 54° 47'W.

South Indian Ocean

S.S. Umtata. Captain D. L. Weston. Port Elizabeth to East London. Observer, Mr. H. G. Swanson, 3rd Officer.

18th February, 1955, 2005 G.M.T. On the cessation of some fine drizzle, blue phosphorescence in the wave tops became very marked indeed. At 2025 four lines of pale-green phosphorescence were observed close to and parallel with the vessel's port side. Each line appeared to be about 3 ft in width and about 5 ft apart. They appeared to converge at a point a little astern of the vessel and fanned out while fading away a little ahead of the vessel. The lines appeared to be constantly undulating and waving but kept a constant distance apart; the colour varied a little as they moved. The phenomenon lasted until drizzle began again at 2040; at this time also the phosphorescence in the wave tops was greatly reduced. Temperatures, dry bulb 61°F, wet 60°, sea 65°. Wind WNW., force 3-4. Sky overcast.

Position of ship: 33° 52'S., 26° 32'E.

Gulf of Aden

M.V. *Bellerophon*. Captain A. R. McDavid. Aden to Penang. Observers, Mr. G. Fisher, 2nd Officer, and Mr. G. M. Evans, 3rd Officer.

18th March, 1955, 2100 G.M.T. Large round patches of phosphorescence were observed in the sea. These patches started as small bright circles about 2 ft in diameter which grew rapidly to circles about 80 ft in diameter. The phenomenon continued for about 30 min.

Position of ship at 1800: $11^{\circ} 30' \text{N.}$, $54^{\circ} 30' \text{E.}$

Arabian Sea

M.V. *Tarantia*. Captain R. S. Paton. Aden to Bombay. Observer, Mr. C. Boyle, 2nd Officer.

28th March, 1955, 2000–2015 G.M.T. At first the sea around the ship was observed to be light green in colour, which seemed to be in large patches. At 2005 several points of light appeared in the sea about 500 yd ahead of the ship. These points suddenly increased in size and formed circles about 300–400 ft in diameter. Within these circles the sea was a very bright milky-white, which faded to a faint glow as the ship passed by and disappeared as the patches fell astern. The last patch was seen at 2014 and disappeared at 2015. Sky cloudless, good visibility. Air temp. 79°F , sea 83° .

Position of ship: $15^{\circ} 55' \text{N.}$, $59^{\circ} 06' \text{E.}$

PASSAGE

Cape Town to Melbourne

The following account of a vessel running her easting down has been forwarded to us from the Hydrographic Department, Admiralty, to which it was sent by Captain F. W. Tector, master of M.V. *Daltonhall*.

"On sailing from Cape Town it had been my intention to make a composite great circle course on 53°s . However, the cyclone which blew from 10th March to 19th March and dogged my course from Cape Point to Marion Island, finally forced me to turn off on the 47th parallel, due to the very high sea that was running and poor visibility.

"Marion Island was passed on the port hand at a distance of 5 miles at 1600 hours on 15th March, when vessel passed out of the effects of the cyclone.

"Between Marion Island and Kerguelen Island, winds were found to be mainly light and variable, blowing from NW. through W. to SW., with moderate to heavy confused swells. From Kerguelen Island to long. 132° , winds blew between WSW. and WNW., force 5 to 6, and the swell moderate to heavy westerly. From long. 132°E . I turned off on the northern leg of the composite great circle made on 47°s ., but when three days off Melbourne I met another cyclone which spoilt what would have been a very excellent passage from Marion Island.

"From Marion Island to long. 132°E ., the current was fairly constant, running east at about 20 miles per day, except between meridians 55°E . to 67°E and 86°E . to 92°E ., where an adverse set was found running 279° at 15 miles per day.

"An unusual amount of kelp was sighted between long. 40°E . and 50°E .; it consisted of long strings some 50 and 60 ft long and 4 and 5 ft wide. Another unusual sight was the very large number of penguins which were in sight almost the whole way between Marion and Kerguelen Islands, even though land was many hundreds of miles away.

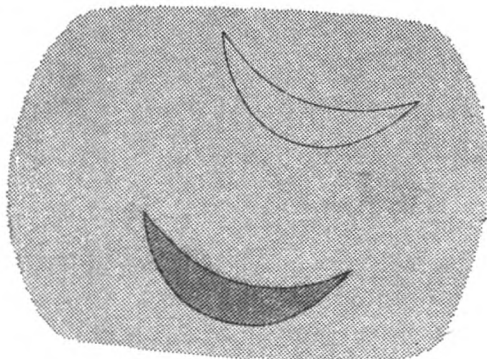
"As soundings are very scarce round about the 47th parallel, especially east of long. 75°E ., I had soundings taken every four hours on the echo sounder, from Marion Island to long. 132°E ., and at no time found bottom at 120 fm, my speed being $11\frac{1}{4}$ knots.

"No ice was sighted during the voyage."

DOUBLE MOON

Indian Ocean

S.S. *Clan Chisholm*. Captain V. W. Green. Aden to Colombo. Observers, Mr. J. K. Currie, Chief Officer, and Mr. J. Isbester, 3rd Officer.



28th March, 1955, 1300–1430 G.M.T. The crescent moon, with a faint hazy image close above it, was observed through patchy Cs through which the brighter stars were also visible. The phenomenon, which disappeared when viewed through a telescope, was unchanged in form during the whole of the period in which it was observed.

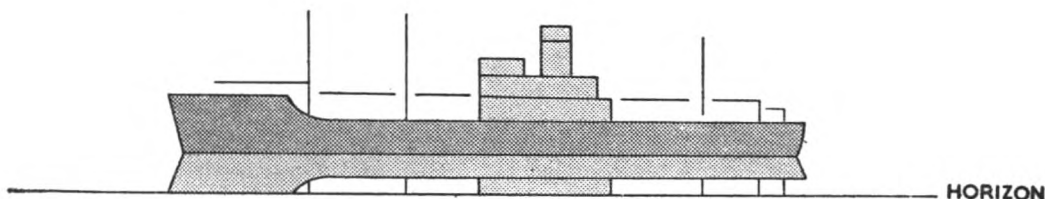
Position of ship at 1200: $7^{\circ} 36' \text{N.}$, $75^{\circ} 36' \text{E.}$

Note. This observation is very similar to that of M.V. *Cumberland*, published in the January, 1955, number, page 34, but in the present observation the moon and its image were more widely separated. This further observation gives additional confirmation of the reality of the phenomenon of the doubling of the moon at fairly high altitudes. As stated in the note on the page quoted above, no explanation can yet be given. The reason the image of the moon was not seen in the telescope is probably insufficient contrast between the light of the image and that of the neighbouring cloud; a telescope always reduces contrast of light spread over a considerable area.

ABNORMAL REFRACTION

English Channel

M.V. *Imperial Star*. Captain G. C. Goudie. Willemstad to London. Observer, Mr. K. S. Mann, 3rd Officer.



10th February, 1955, 0950 G.M.T. The image of a passing vessel took the form indicated in the sketch, with the object itself over the inverted image. Air temp. 42°F , wet bulb 39° .

Position of ship: $50^{\circ} 03' \text{N.}$, $03^{\circ} 34' \text{W.}$

Note. This appears to have been a superior mirage, in which an inverted image of the vessel is seen over the actual vessel, with an erect image above the inverted one. If so, the actual vessel was not seen at all, it and part of the inverted image being below the horizon.

Antarctic waters

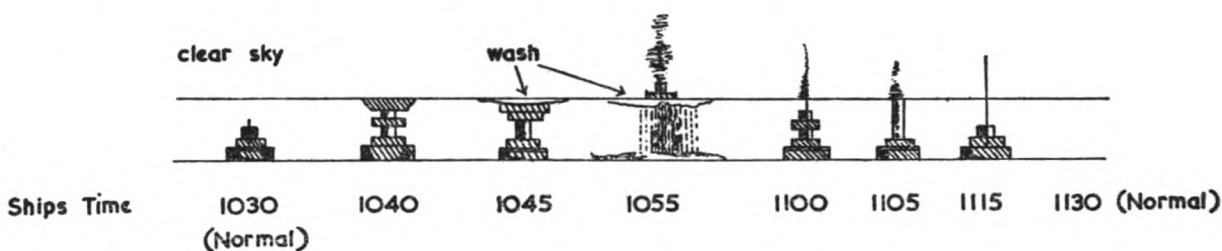
M.V. *Biscoe*. Captain S. K. Williams. Whaling grounds. Observer, Mr. C. T. Fellowes, 2nd Officer.

8th February, 1955, 1745 G.M.T. The moon was observed at bearing $050^{\circ}(\text{T})$, altitude $8^{\circ} 26'$, looking egg-shaped but much longer.

Position of ship: $64^{\circ} 02' \text{S.}$, $53^{\circ} 45' \text{E.}$

Tasman Sea

S.S. *Paringa*. Captain E. J. Kerridge. . Sydney to Melbourne. Observer, Mr. P. W. G. Everett, 3rd Officer.



13th February, 1955, 1030–1130 S.T. After passing through fog patches visibility increased and images were formed from a ship 7 miles ahead. A bank of fog appeared to be ahead of that ship, gradually dispersing. The top of the fog bank was at $0^{\circ} 13'$. The sun was astern at approx. 50° altitude. Temperatures: dry bulb 72.2°F , wet bulb 68.5° , sea 70.5° .

Position of ship: $37^{\circ} 40'\text{S}$, $150^{\circ} 00'\text{E}$.

South Atlantic Ocean

S.S. *Tenagodus*. Captain W. Broughton. Cape Town to Algiers. Observers, Mr. J. J. Diston, Chief Officer, and Mr. J. F. Gristwood, 2nd Officer.

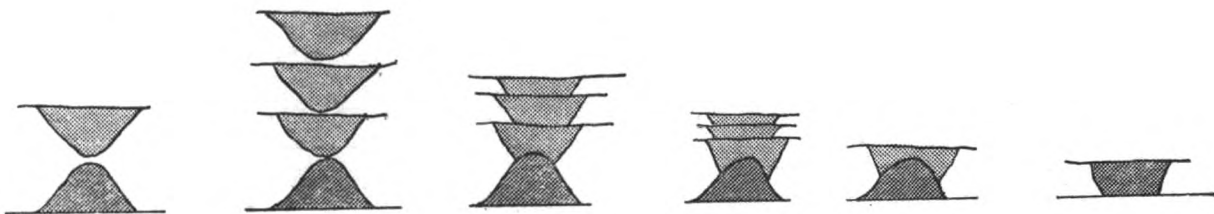
2nd March, 1955, 1730–1800 L.T. About one hour after leaving Cape Town



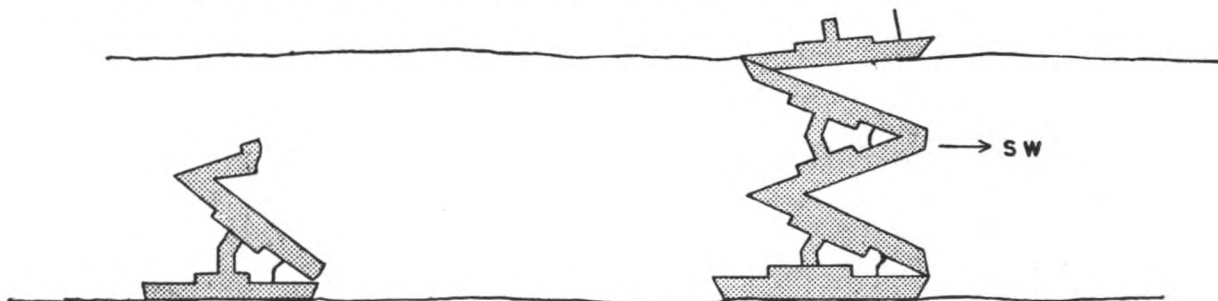
abnormal refraction was noticed around the horizon from SW. through N. to E. A large tanker, 8 miles distant on the port beam, was considerably distorted; the funnel was greatly elongated and appeared taller than the masts, and swayed occasionally. The radar scanner appeared suspended well above the ship. On

the starboard bow, 28 miles distant, a hill 280 ft high at Ysterfontein Point was observed to have an inverted image. A few minutes later there were three inverted images; these gradually telescoped until the hill appeared as a block. Temperatures: air 66°F , sea 59° . Slight sea, low swell.

Position of ship: $33^{\circ} 49'\text{S}$, $18^{\circ} 16'\text{E}$.



S.S. *Pretoria Castle*. Captain G. H. Mayhew. Cape Town to Madeira. Observers, the Master and Mr. P. J. O. Sheridan, 4th Officer.



25th March, 1955, 1800 S.A.S.T. Looking towards the west point of Cape Town, true and refracted horizons were observed; between them a vessel making a sw'ly coastal course was seen in five unusual images.

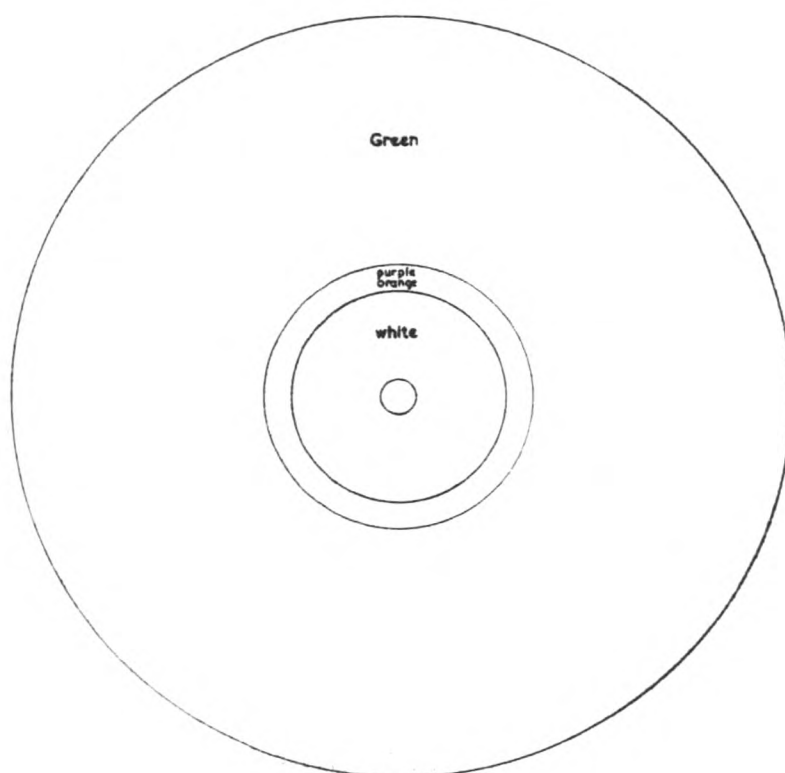
Position of ship: $33^{\circ} 50'S.$, $18^{\circ} 21'E.$

Note. This is a very interesting observation, the multiplication of tilted images being very unusual.

LUNAR CORONA

South Indian Ocean

M.V. *Port Dunedin*. Captain W. M. Clough. Cape Town to Adelaide. Observer, Mr. P. Beattie, 3rd Officer.



10th March, 1955, 2300 G.M.T. A lunar corona was observed. The area between the moon and the first band was milky-white; the first band was bright orange merging into purple on its outer limit. The outer band, which was much larger, was pale green. The corona persisted until 2307 when dense Ci covered the whole phenomenon. Moon's altitude was $40^{\circ} 10'$.

Position of ship: $40^{\circ} 52'S.$, $63^{\circ} 23'E.$

Note. The normal sequence of colour in a corona is that given in the observation of M.V. *British Endeavour* below, except that the yellow colour, which comes between the green and the red, was not seen. The observation of M.V. *Port Dunedin* is unusual, the colour of the outside of the aureole being orange instead of brownish-red and the green ring being expanded to a great width.

Gulf of Oman

M.V. *British Endeavour*. Captain R. M. Jary. Port Okha to Bahrein. Observer, Mr. N. O. Morrice, 3rd Officer.

5th January, 1955, 1920 G.M.T. A fully developed corona of the moon was observed. A brilliant bluish-white glow showed around the body and outside this a brown-red ring. Outside this again were, in order of sequence, blue-violet, green and red rings; all clearly defined for a period of 4 min when, due to breaks in cloud formation, the corona gradually disappeared.

Position of ship at 1800: $24^{\circ} 6'N.$, $62^{\circ} 24'E.$

SEA SMOKE

East China Sea

M.V. *Dilwara*. Captain M. C. Williams. Kure to Pusan. Observer, Mr. R. J. D. Elston, Extra 3rd Officer.

3rd January, 1955, sunrise. Twenty miles SE. of Pusan harbour clouds of vapour, resembling steam, were observed rising from the surface of the sea. The vapour could be seen extending to the horizon and persisted until the vessel made Pusan harbour two hours later. Wind NW., force 5. Air temp. 27°F, sea 51°.

Note. The phenomenon of sea smoke, also known as frost smoke or Arctic sea smoke, has not often been photographed, and the photograph sent is an excellent one. It is produced when very cold air from land or ice edge passes over relatively warm water; in the above observation the difference was as much as 24°F.

WATERSPOUT

Mediterranean Sea

S.S. *San Felix*. Captain J. Bright. Spezia to Mena-al-Ahmadi. Observer, Mr. J. D. Tomlinson, 2nd Officer.

16th March, 1955, 1500 G.M.T. A large waterspout was seen to form at the base of a Cb cloud about 4 miles SW. of the ship and lasted 5 or 6 min. Forming at first as an indefinite line from the cloud to a disturbed area on the water it gradually widened and became darker; then, bending about a third of the way down it slowly disappeared. Several smaller waterspouts were noticed at intervals around the same area and for about an hour the sea in that area appeared to be disturbed. Rain seemed to be rising from the water although it was away from the actual rain from the cloud. Sheet and forked lightning were frequently observed, accompanied by thunder. The cloud base, estimated to be about 1,500 ft, dropped to about half this height shortly after the main waterspout disintegrated. The Cb cloud was moving slowly against the wind, building up all the time, and by 1630 had caught up with the ship. Violent squalls were then experienced for two or three hours with very heavy rain, thunder and lightning.

Position of ship: off Gavdo Island, 34° 31'N., 23° 26'E.

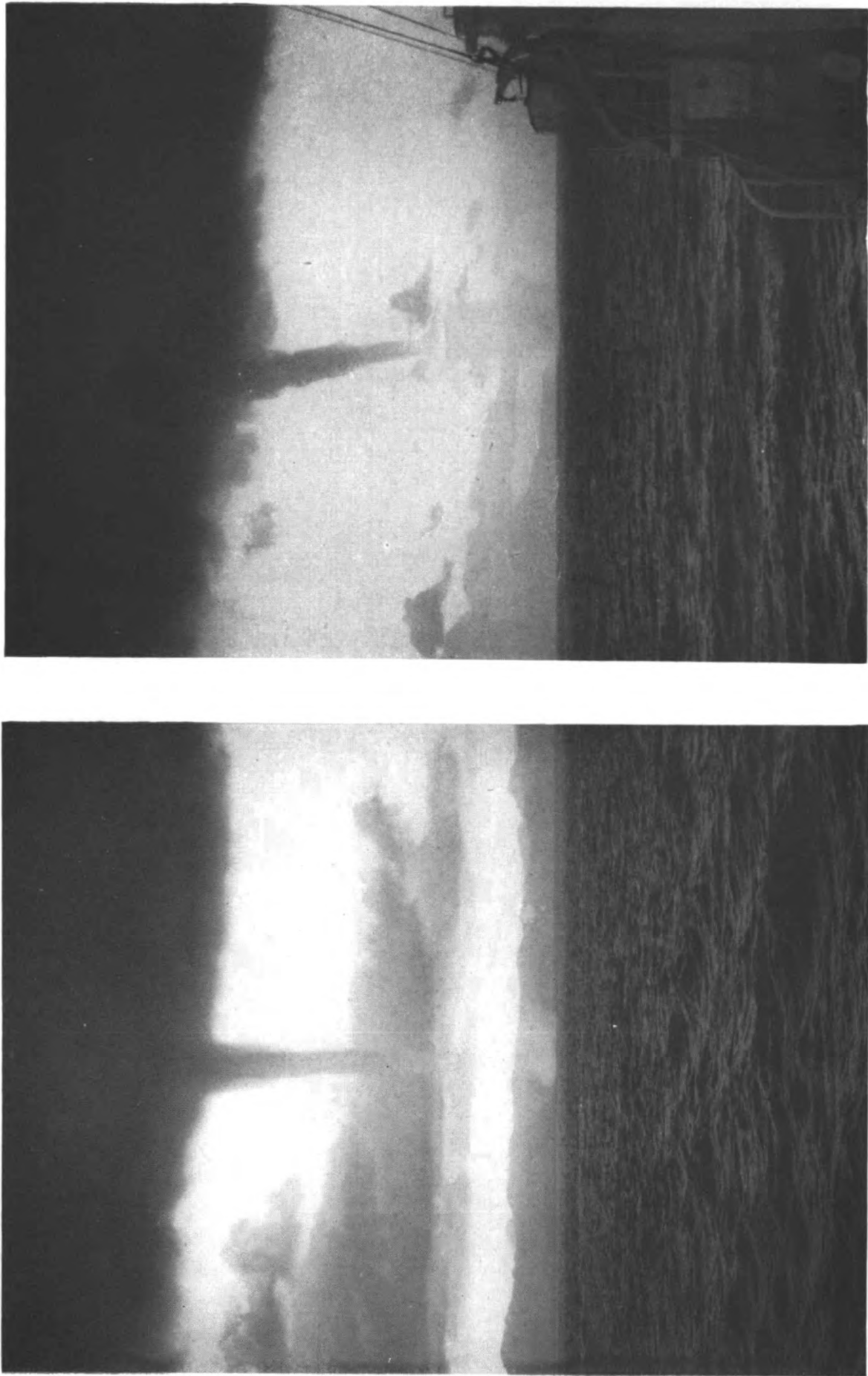
Strait of Hormuz

M.V. *British Consul*. Captain W. J. Davies. Mena-al-Ahmadi to Suez. Observers, the Master and Mr. A. C. Browne, Chief Officer.

1st January, 1955, 0215-0500 G.M.T. About 20 waterspouts were seen forming in the vicinity. The vessel passed close to some and had to alter course to avoid them. They appeared to be formed by turbulence and spray on the sea surface, gradually increasing and at times with no funnel from the clouds. At other times the funnel formed when the spray was whipped up to about 10 ft in height. A spout that passed closest to the ship (about $\frac{1}{4}$ mile) was travelling from SW-NE. at about 15 kt. Spray was being carried to a height of about 100 ft and was revolving counter-clockwise. The diameter of the disturbance was about 50 ft; the wind appeared to be very violent in this area. The funnel, also revolving counter-clockwise, tapered and became thinner until just above the top of the spray where it was almost invisible. On turning SE. when clear of the Strait the area of waterspouts was left behind. The barometer was rising steadily during the whole disturbance. Wind WSW., force 3. Cloud Cu and Cb 6/8. Thunder occasionally heard to NE.

Position of ship: 26° 12'N., 56° 48'E.

Note. The photographs accompanying this observation are exceptionally good. The slender light-coloured core of the waterspout is well shown in both, as also are the main part of the funnel and outer sheath, which was present on this occasion around the upper part of the waterspout. The cloud of spray above the sea surface is unusually well visible in the photograph where it is seen against the land as background.



Photographs by A. C. Broome

Photographs of waterspouts taken from M.V. *British Consul*, 1st January, 1955, at 26° 21' N.,
56° 48' E. (see page 12).

Opposite page 13



Sea smoke seen from M.V. *Dilwara*, 3rd January, 1955, 20 miles SE. of Pusan harbour (see page 12).

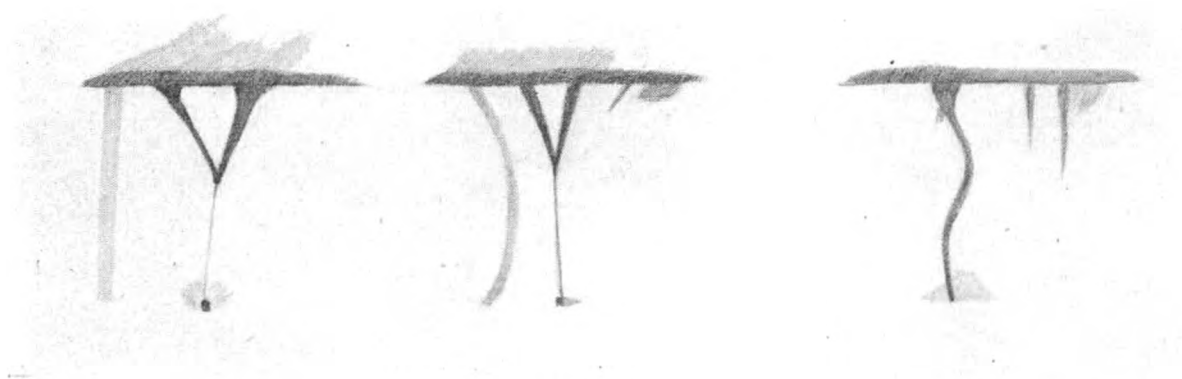


Fig. 1

Fig. 2

Fig. 3

Three stages of a waterspout seen from M.V. *Clan Maclean* (see page 13).

West African waters

M.V. *Clan Maclean*. Captain H. Whitehead. Dakar to Cape Town. Observer, Mr. E. T. Burke, 3rd Officer.

26th March, 1955. Sky 6/8 clouded with Cb, base at 600 ft, also Ac and Ci; barometer 1010.4 mb; air temp. 82°F, wet bulb 77°, sea 81.5°. Wind SE., force 3. At 1055 dark V-shaped projections were observed from the base of Cb, bearing 120, 6 miles. Immediately below this the sea surface appeared agitated and a faint fan-shaped cloud of spray formed (Fig. 1). This appeared to be faintly joined to the projections by a narrow column. At the same time a fully-formed waterspout was observed through more intense rain. At 1100 the appearance was as shown in Fig. 2. The spray at the sea surface had contracted. At the same time the waterspout in the background approached and curved towards it. A small bulbous cloud formed on the base of the cloud to the right of the waterspouts. Between 1100 and 1105 (Fig. 3) the two waterspouts amalgamated and moved away from the two new cloud projections, which had developed. The sea at the base of the combined waterspouts became extremely agitated with the formation of a hemispherical cloud of spray. The phenomenon was obscured by a heavy rain shower 10 min later. Sea temperature remained constant throughout while air temperature fell 3°. No appreciable change in barometric pressure.

Position of ship: 00° 24'N., 09° 28'W.

DOUBLE SOLAR HALO

Caribbean Sea

S.S. *Tamaroa*. Captain T. H. Davies. Curaçao to Colon. Observer, Mr. I. P. N. Cameron, 3rd Officer.

19th February, 1955, 1445 G.M.T. Two halos were observed, each of 22° radius. One had the sun as centre, but the other was slightly to one side. The width of each was $\frac{3}{4}$ °; the colouring of each was visible, and very brilliant at the two places where the halos appeared to cross one another. The sun was at altitude 48°. At 1515 the Cs was clearing and the halos slowly disappeared.

Position of ship: 12° 30'N., 72° 18'W.

Note. This is a very interesting observation. The halo centred on the sun is the ordinary 22° halo. The other one, centred comparatively close to the sun, is an abnormal one and it is difficult to see from what light source it could have been derived. The normal, but not often observed, secondary halos of 22° are centred on the mock suns, which are often seen on or outside the 22° halo in the same horizontal line as the sun, so that their centres cannot be less than about 11° from the true sun, and may be more, depending on the sun's altitude. (See Drawing opposite page 28)

LUNAR HALO

North Atlantic Ocean

M.V. *Rangitoto*. Captain C. R. Pilcher, O.B.E. London to Curaçao. Observers, the Master and Mr. N. Niblock, 4th Officer.

2nd January, 1955, 2330 G.M.T. A lunar halo was observed, radius 27° 30'. The altitude of the moon was 70° 30'.

Position of ship: 21° 33'N., 57° 00'W.

Note. This is a very rare halo the radius of which varies somewhat; the mean value is 28°. An observation of it by S.S. *Mandasor* was published on page 79 of the April, 1954, number of this journal.

Gulf of Guinea

S.S. *Twickenham*. Captain S. E. Hooper. Takoradi to Freetown. Observer, Mr. D. Dickson, 2nd Officer.

6th March, 1955. At 0215 G.M.T. a lunar halo was observed with radius 24° and

width 3° ; by 0330 the radius had extended to 30° and the width to 5° . Sky thinly overcast.

Position of ship: $4^\circ 26'N.$, $2^\circ 52'W.$

Western Mediterranean

M.V. *Gloucester*. Captain J. E. Bury. Liverpool to Port Said. Observer, Mr. B. W. Anstey, 3rd Officer.

7th January, 1955, 2015 G.M.T. Observed a bright white halo around the moon, radius of arc 25° . Inside was a much smaller halo of 7° arc, which contained all the colours of the spectrum. Cloud 6/8 Cc, visibility excellent. Air temp. $58^\circ F$, dew point 47° .

Position of ship: $36^\circ 02'N.$, $03^\circ 34'W.$

Note. It is presumed that the radii were measured to the inside of the halo, in which case the large halo was that of $24\frac{1}{2}^\circ$ radius. This is a rare halo, but three previous observations of it have been published in the journal since the war. The latest of these was the observation of S.S. *Clan Mackinnon*, published on page 152 of the July, 1955, number. This and the slightly smaller halo of $23\frac{1}{2}^\circ$ are not often seen because either of them cannot be distinguished from the ordinary 22° halo if this is present; their only effect is to broaden the 22° halo. The halo viewed by S.S. *Twickenham* might have been either that of $23\frac{1}{2}^\circ$ or $24\frac{1}{2}^\circ$. The halo of 7° is the smallest of the known halos and is still rarer, and we have had no previous observation of it from the sea. The hitherto observed radii vary from $7^\circ 30'$ to 9° .

North Pacific Ocean

S.S. *Table Bay*. Captain H. Gentles. Moji to Vancouver. Observer, Mr. W. F. R. Whiting, 2nd Officer.

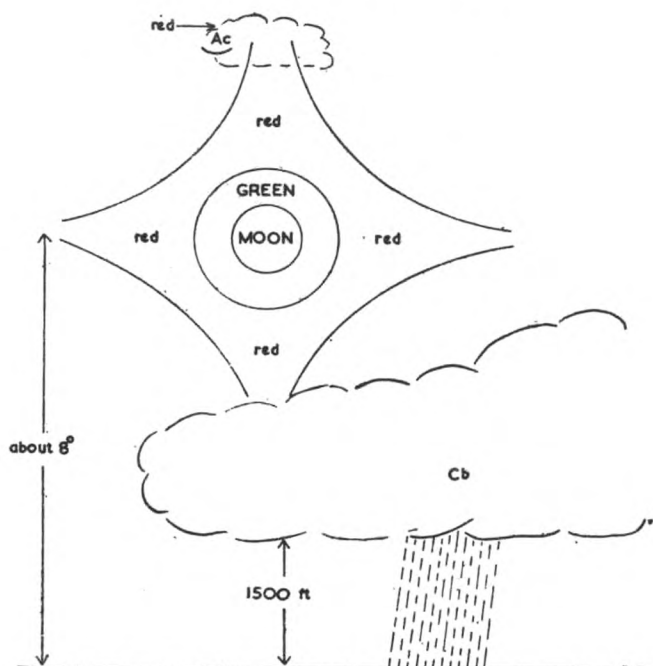
9th January, 1955, 1500 G.M.T. A complete lunar halo was observed with a radius of 16° . The halo was seen as a not very bright plain white ring. The altitude of the moon was 66° .

Position of ship: $40^\circ 46'N.$, $161^\circ 32'E.$

Note. Two previous observations of a halo of 16° radius have been published in this journal; by S.S. *Manistee*, page 15 of the January, 1954, number, and by S.S. *Perim*, page 79 of the April, 1954, number. Halos with radii of 17° to 18° have been observed more frequently.

LUNAR PHENOMENON

North Atlantic Ocean



S.S. *Beaverlodge*. Captain L. H. Johnston. Liverpool to St. John, N.B. Observer, Mr. B. Snell, 2nd Officer.

6th March, 1955, 0700 G.M.T. A phenomenon was observed around the moon, taking the form of a cross of a very bright orange colour. About 2 min later it was observed to change to a green central section with dull crimson border. The crimson and green were very distinct. The phenomenon was visible for about seven or eight minutes before being obscured by Cb. There were a few scattered patches of Ac above the moon. A slight but very definite reddish tinge was observed in the fibrous edges of the Ac.

A few minutes previous to this observation a very large towering Cb had passed over the ship, bringing with it rain and hail.

Position of ship: $47^{\circ} 43' \text{N.}$, $35^{\circ} 57' \text{W.}$

Note. It is difficult to attempt any explanation of this remarkable phenomenon. No mention is made of there being any Cs cloud in the region of the moon which might have provided a halo cross, such as is sometimes seen with the sun or moon at the centre. Furthermore such a cross is white, unless reddened to some extent by proximity to the horizon. The colours are more appropriate to a corona but some form of thin middle or lower cloud is required for its production. Also coronal rings are concentric true circles and could not give the concave-sided figure shown in the sketch.

RAINBOW

North Atlantic Ocean

M.V. *Cambridge*. Captain P. P. O. Harrison. Curaçao to London. Observers, the Master and Mr. S. Lambrick, Chief Officer.

25th March, 1955, 1615 S.A.T. Observed part of a rainbow, bearing between 078° and 110° (the sun bearing 255°), against a background of dark Cb cloud without anvil. The colours were very pronounced and were repeated in an inverted form. Altitude of sun $22\frac{1}{2}^{\circ}$. Cloud Cu and Cb $5/8$. Wind ENE., force 4.

Position of ship: $45^{\circ} 22' \text{N.}$, $23^{\circ} 07' \text{W.}$

Note. This interesting observation is of an abnormal rainbow. The colour sequence of the upper half of the combined bow corresponds in colour sequence to that of a primary bow. The lower half could not be a supplementary rainbow since the colour of this would be in the same order as in the primary bow, viz. red on top. Furthermore, a supplementary bow is much narrower than the primary bow and seldom shows more than two colours, green and red.

GREEN FLASH

East Pacific Ocean

M.V. *City of Johannesburg*. Captain R. J. Ricketts, O.B.E. Panama to Los Angeles. Observer, Mr. A. J. Lawrie, Junior 3rd Officer.

29th January, 1955, sunset, 1800 S.T. (30th, 0000 G.M.T.). A green spot appeared over the position of the sun setting, bearing $252^{\circ}(\text{T})$. At 1810 a tapered broad green band appeared, rising to an altitude of $2^{\circ} 8'$ before merging into the blue of the sky. This phenomenon lasted from 1810 to 1830.

Position of ship: $10^{\circ} 35' \text{N.}$, $88^{\circ} 39' \text{W.}$

Note. Previous observations of phenomena of this type, some form of green sky coloration above the setting sun or of the position of the sun just after setting, have been published in this journal. They are classed as varieties of the green flash at sunset. The green flash proper may or may not be seen on the same occasion.

RED FLASH AT SUNSET

West Indian waters

M.V. *Cambridge*. Captain P. P. O. Harrison. Curaçao to London. Observers, the Master, Chief Engineer, Mr. S. Lambrick, Chief Officer, and Mr. R. Pook, 4th Officer.

17th March, 1955. At approx. 1753 S.A.T. the sun emerged from behind Fc. There was a piercing brilliant red flash and as the sun continued to emerge the red

appeared to lengthen. The phenomenon lasted about $1\frac{1}{2}$ sec. At this time the sun's altitude was about $20'$ to the lower limb. The sun set behind a very low bank of Cu; as it did so there was a pale green flash.

Position of ship: $18^{\circ} 17'N.$, $63^{\circ} 49'W.$

RED FLASH AT MOONRISE

Indian Ocean

S.S. *Paringa*. Captain E. J. Kerridge. Melbourne to Aden. Observer, Mr. P. W. G. Everett, 3rd Officer.

19th March, 1955, 2219 S.T. The moon when rising was seen through a telescope to give a bright crimson flash, conical, and of similar size to the green flash of the sun. The moon appeared orange in colour (brightening to pale yellow at altitude $1\frac{1}{2}^{\circ}$), and the flash occurred as the lower limb parted from the small image left at the horizon. As the flash died the greater part of the lower limb was momentarily illuminated with a red glow spreading from the point at which the flash had been seen. Cloud Cu $1/8$.

Position of ship: $1^{\circ} 30'S.$, $63^{\circ} 42'E.$

Note. The observation of M.V. *Cambridge* is similar to one made by the same ship in the previous year (see the October, 1955, number of this journal, page 217). The altitude of the sun's lower limb on this previous occasion was $16'$, which is nearly the same as that of the present observation. While we have a total of only three observations of this phenomenon from the sea, it now seems likely that it is not the phenomenon itself which is so rare but the conditions which enable it to be seen, namely, the presence of a cloud with a well-defined lower edge very near the horizon at the time of sunset, in an otherwise clear sky. The observation of S.S. *Paringa* is in a different category and is of great interest. The red flash would not normally be seen at sunrise or moonrise as it occurs just as the lower limb clears the horizon, so that the red light would be masked by the general light of the sun or moon. The appearance of the flash on this occasion was in some way connected with a state of considerable refraction which caused the image of the moon to split in two, leaving a part on the horizon. Information about the appearance and duration of the part left on the horizon would have added further interest to this observation which, so far as we know, is a unique one.

SCINTILLATION

North Atlantic Ocean

S.S. *Tamaroa*. Captain T. H. Davies. Southampton to Curaçao. Observer, Mr. I. P. N. Cameron, 3rd Officer.

16th February, 1955, 0230 G.M.T. The star Canopus was observed to be changing colour through the entire spectrum, causing a consequent apparent increase and decrease in magnitude. The scintillation lasted for about 40 min, and when first observed Canopus was at altitude 11° . The phenomenon was plainly visible to the unaided eye. At the same time Sirius, at altitude 43° , appeared to be showing a steady blue or violet ray from one of its lower "points", which was visible only through binoculars. Sky cloudless.

Position of ship: $21^{\circ} 00'N.$, $58^{\circ} 49'W.$

Note. It is unusual for the scintillation of a star to show a steady ray, as described above for Sirius.

AURORA

South Indian Ocean

M.V. *Port Hardy*. Captain P. H. Potter, O.B.E. Melbourne to Dunkirk. Observer, Mr. J. Cushion, 3rd Officer.

22nd March, 1955, 2030-2340 S.T. Aurora first observed as a bright white segment, the centre of which bore $182^{\circ}(T)$ at 2030. By 2045 a brighter arc had formed with altitude approx. 8° . Stars could be seen under the arc but not through

it. The arc varied in size and shape until 2145 when it again became a segment. At approx. 2130 there was a vivid green flash which appeared over the whole southern sky; this was the only colour observed. From 2215 until 2300 rays of white light extended vertically to an altitude of about 10° . After 2300 the segment reappeared and slowly faded until 2340 when it was no longer visible.

Position of ship: $35^{\circ} 22'S$, $117^{\circ} 56'E$.

ZODIACAL LIGHT AND BAND

North Atlantic Ocean

M.V. *Cambridge*. Captain P. P. O. Harrison. Curaçao to London. Observer, Mr. S. Lambrick, Chief Officer.

18th March, 1955, 1915 S.T. Zodiacal light was observed between bearings 245° and 305° at the base, rising in conical form to altitude 30° approx. Above this the apex continued in a thin, narrow band approx. 1° wide, with a brilliance comparable with that of the cone of the light, and passing through Regulus in the eastern sky. The inner part of the cone appeared twice as bright as the Milky Way in the region of Betelgeuse. There was considerable reflection on the water.

Position of ship: $22^{\circ} 40'N$, $59^{\circ} 55'W$.

Note. The Zodiacal light observed in the evening after sunset extends to the eastward of the sun and that seen in the morning before sunrise extends to the westward of the sun. The morning Zodiacal light is therefore completely below the horizon when the evening one is observed, just after dark, and vice versa. The Zodiacal band joins the apices of the cones of the evening and morning Zodiacal lights but is not often seen, as it is usually extremely faint and often requires averted vision to detect it, even in a very transparent starlit sky. Any trace of moonlight blots it out. The remarkable features of the above observation are the brilliance and the narrowness of the band, which is normally several degrees wide.

METEOR

Indian Ocean

S.S. *City of Sydney*. Captain G. F. Sumpton. Calcutta to Suez. Observer, Mr. J. M. S. Gibson, 3rd Officer.

12th January, 1955, 1527 G.M.T. A meteor was observed at bearing 100° , altitude 55° , slightly above Sirius, oval in shape and magnitude comparable with that of the moon. The duration of flight was approx. 5 sec, and it disappeared at bearing 065° , altitude 45° , below Jupiter. The head was a bright blue in colour which changed to white and finally to a vivid orange. The last-named colour completely illuminated the vessel and all the eastern part of the horizon.

Position of ship: $8^{\circ} 08'N$, $73^{\circ} 19'E$.

South Pacific Ocean

M.V. *Port Napier*. Captain C. R. Townshend. Balboa to Lyttelton. Observer, Mr. G. W. Norris, 3rd Officer.

4th February, 1955, 0715 G.M.T. A large meteor was observed at bearing approx. 280° which fell in a shallow arc from about 40° altitude. It had a long trail which changed colour during flight from white to blue, then bluish-green to amber, before disappearing at approx. 20° altitude. The duration was about 4 secs.

Position of ship: $27^{\circ} 18'S$, $144^{\circ} 20'W$.

S.S. *Hororata*. Captain H. R. M. Smith. Balboa to Wellington. Observer, Mr. V. Seybold, 3rd Officer.

24th February, 1955, 0630 G.M.T. An exceedingly large and vivid meteor was observed at altitude 40° , bearing 070° , to the right of Alpherat. It was brighter than any planet, indeed bright enough to light up the vessel and surrounding sea. The phenomenon was visible for 2 sec and fell away to NE. with no visible trail.

The centre of the meteor appeared to be circular except for a dark patch about "two o'clock". No colour was observed other than intense whiteness.

Position of ship: $20^{\circ} 54'S$, $140^{\circ} 24'W$.

SHIP STRUCK BY LIGHTNING

Western Mediterranean

S.S. *Clan Chisholm*. Captain V. W. Green. Birkenhead to Port Said. Observer, Mr. R. B. Bullmore, 2nd Officer.

8th March, 1955. The vessel ran into a violent thunderstorm between midnight and 0100 G.M.T., and was struck by lightning on the foremast, causing no apparent damage. Showers of sparks cascaded down, but appeared to be extinguished on reaching the deck. All aerials were earthed during the storm. Air temperature dropped from $54^{\circ}F$ to 47° ; sea temperature remained steady at 58° .

Position of ship: $36^{\circ} 53'N$, $1^{\circ} 30'E$.

Note by Mr. Bullmore. I read with interest your comments following the reports made by *Gothic* and *Clan Buchanan* (*The Marine Observer*, Vol. XXV, page 29) concerning the proportion of vessels struck on the foremast to other parts of the structure. In 1948 the *Harmodius* (ex-*Clan Matheson*) was at Chittagong, Pakistan, when she also received the full charge of lightning down the foremast. The house flag was cut adrift and the wooden topmast split for about 3 or 4 ft from the truck.

UNIDENTIFIED PHENOMENON

Indian Ocean

M.V. *Gloucester*. Captain J. E. Bury. Aden to Fremantle. Observers, Mr. B. W. Anstey, 3rd Officer, and Mr. E. L. Hubbard, 4th Officer.

25th January, 1955, 0600 G.M.T. At an altitude of 27° there appeared a band of coloured light. Sextant readings were obtained as 91° in length and approx. 1° in width. This band contained all the colours of the spectrum and resembled a rainbow in every respect except that it appeared perfectly straight. The weather had been showery but at that time and for sometime previous the only precipitation sighted was distant (approx. 8 miles). Cloud Cu and Ac. Temperatures: air $83^{\circ}F$, wet bulb 78° , dew point 76° .

Position of ship: $10^{\circ} 48'S$, $73^{\circ} 47'E$.

Note. No explanation can be given of this interesting phenomenon observed in the daylight sky.

ERRATUM

The Marine Observer, Vol. XXV, No. 170, page 207. In the observation of M.V. *Hertford* the bearing $320^{\circ}(T)$ should read $230^{\circ}(T)$.

Hints on Observing

5. CLOUDS

By Cdr. C. H. WILLIAMS, R.D., R.N.R., and Capt. J. R. RADLEY

(Captain Radley is Port Meteorological Officer at Southampton; Commander Williams was formerly Port Meteorological Officer at London)

In this, the fifth* article of the series, we deal with clouds. While they are surely among the most beautiful of natural phenomena, they are probably one of the most difficult meteorological elements to observe with accuracy. The general appearance of the sky has always been a matter of interest to seamen, and few people have better opportunities for observing it. The seaman's interest is usually of a practical nature, for his daily work is much affected by changes in the weather. It is presumed here that readers have some knowledge of the 10 main types of cloud.

Variations in the amount and type of cloud may not only indicate probable weather changes but, as all navigators know, can be most frustrating and infuriating when one is trying to get a sight with a sextant. The old advice "keep your weather eye lifting" still has much to commend it, both at sea and in port. It is particularly important to the seaman in regions in which hurricanes or typhoons are common, where cloud changes may at times be the first indication of the existence of such disturbances.

Most important changes in the weather are preceded by a change in the appearance of the sky; hence the large number of weather maxims concerning clouds. They have been mentioned throughout recorded history and there are a number of references to them in the Bible. Few, if any, of the maxims are infallible; even the popular ones about halos and a "watery" sky being the forerunners of bad weather do not always prove to be correct.

Any sailor should keep a lookout for a growth of types of clouds which are likely to bring heavy rain or squalls while at sea, and also in port while cargo work is going on; hatches may have to be hurriedly covered and awnings attended to when a rain squall threatens. All this is obvious and in the "ordinary practice of seamen"; it is mentioned here to call attention to the need for careful observation of cloud changes, in the seaman's own interest as well as for the correct keeping of a meteorological log.

A brief explanation of the physical nature of clouds and the conditions needed for their formation is called for at this point. Clouds are composed of exceedingly minute droplets of water or of ice crystals; the water vapour from which the droplets or crystals are formed is itself invisible. Reduction in pressure of rising air, and its consequent cooling by expansion, whether on a large scale in association with fronts or on a smaller scale in convection clouds, brings about the condensation of vapour into droplets which become visible. For a given pressure the amount of water vapour which can be contained in the air increases rapidly with the temperature of the air.

The atmosphere comprises a mixture of gases and water vapour and also contains a variable number of dust, salt and smoke particles; the presence of these particles, many of which are hygroscopic nuclei, is essential for the formation of clouds and fog, for it is upon them that the water vapour condenses to form droplets. When condensation takes place in the free air, the droplets formed initially are very small and they remain suspended in the air, and then clouds are formed. When the same process takes place close to the ground it results in the formation of fog.

Although clouds formed one of the first meteorological phenomena to attract the attention of man, no classification of them was attempted until the beginning of the nineteenth century, the first classification being made by Lamarck, a French naturalist, in 1801. Two years later an Englishman, Luke Howard, F.R.S., set forth

* Earlier articles in this series appeared in the October, 1952, January and April, 1953, and April, 1954, numbers of this journal.

a classification which forms the basis of that in use today. Four fundamental types were named: (1) Nimbus, rain cloud. (2) Stratus, sheet cloud. (3) Cumulus, rounded type. (4) Cirrus, high, feathery clouds.

At various international meteorological conferences since 1853 minor alterations and modifications have been made, chief of these modifications being the abandonment of nimbus as a cloud type, it being recognised that the clouds from which rain falls are so varied in character and origin that the word nimbus would be better used as qualifying other cloud types than as a substantive type.

The three fundamental groups of cloud—stratus, cumulus and cirrus—are subdivided into the 10 main types which are in use today by observers all over the world, both ashore and afloat. There are further subdivisions to indicate varieties and special details, including such descriptive adjectives as “cumuliform”, to indicate a rounded appearance; “lenticular”, resembling a cross-section of a lens; “castellatus”, a turreted appearance; “mammatus”, a lower surface of cloud having the appearance of hanging rounded udders or pouches; and “fractus” for cloud broken up by the action of wind, stratus fractus and cumulus fractus, called “scud” by seamen*.

Although there are many kinds of clouds varying considerably in appearance and height, they fall into four main categories—high, medium, low and “heap clouds”, which show marked vertical development. The tops of heap clouds may extend upwards as high as the level of cirrus clouds, while the bases may be found as low as 1,000 feet or less above sea level.

In the International Ship Code, FM 21A, the groups which are concerned with clouds are the third, Nddff; sixth, N_hC_LhC_MC_H; and eighth, 8N_hCh_hh_g. This last group is not generally included in radio weather messages from selected ships, but for the keen observer at sea its inclusion would add interest to the work and would undoubtedly be welcomed by the meteorologists ashore.

In noting the clouds for entry in the meteorological logbook, three things must be considered: (1) form of cloud; (2) amount of cloud; and (3) height of cloud. An observer should try not to be influenced by what he knows of the general weather situation but should log just what he can see. He should be careful also to ensure that his entries of the Beaufort notation of weather agree with the type and amount of cloud recorded in the cloud column.

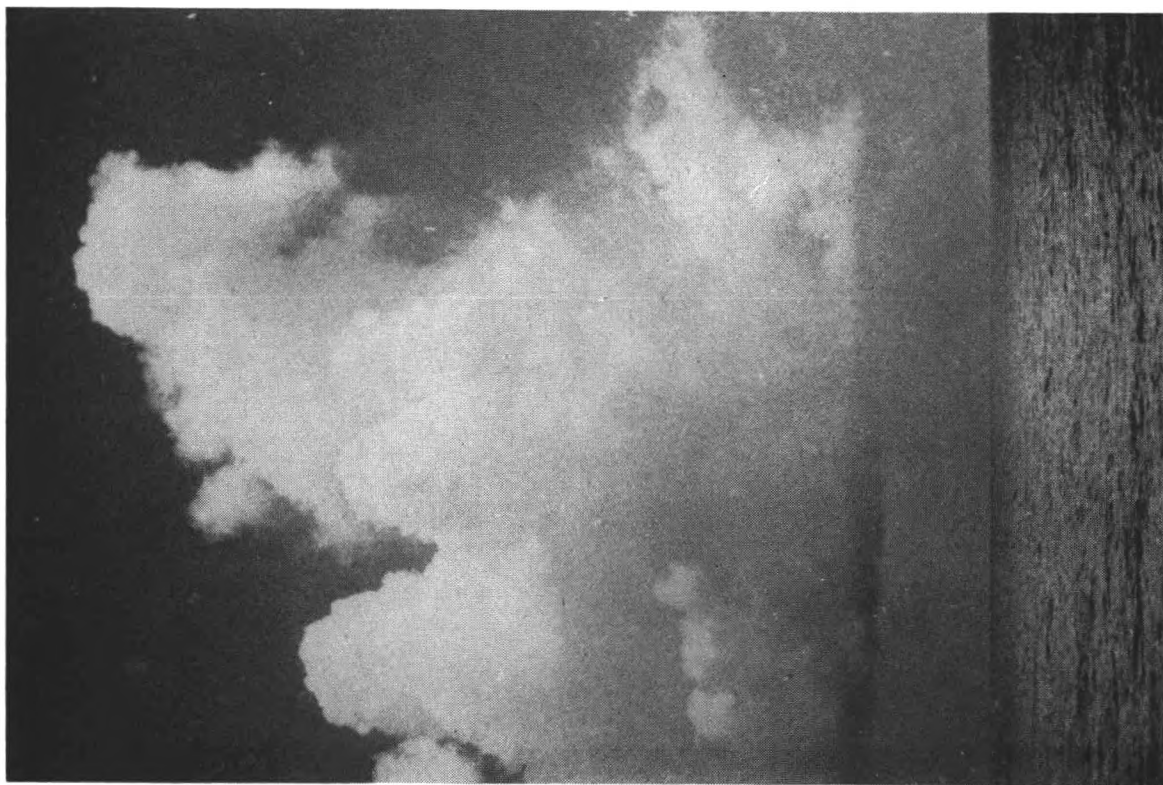
Descriptions of the types, with approximate heights of their bases, and hints on observing and estimating these, are contained in the *Marine Observer's Handbook* and the *Marine Observer's Guide*, and it is not necessary to repeat them here.

In the former publication there are some excellent photographs of clouds. There is also a pamphlet entitled *Cloud Forms* (M.O.233) and a large Cloud Plate (A.M. Form 2335) which are available to observing ships. These photographs are worth studying and comparing with the clouds which the observer actually sees. As in all things, practice makes perfect. The knowledge thus gained will add to the interest in the subject, just as a knowledge of the names of the stars and constellations gives greater interest to the contemplation of the night sky.

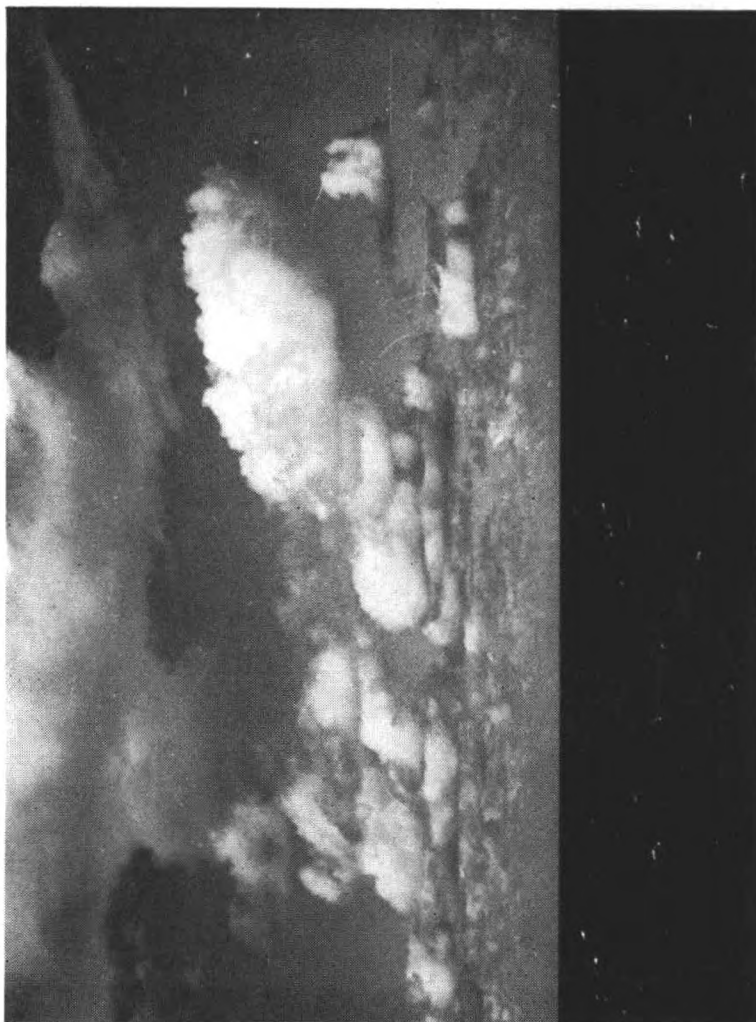
When the clouds are of a definite and readily recognisable type, the remarks given under “Observational Notes” in the *Marine Observer's Guide* will be found helpful, particularly so with regard to types of low cloud. Stratus, for instance, is usually below 4,000 feet and may at times be so low as to appear to be just clear of the masthead. With care and judgment a fair estimate of its height may be made. The effect of perspective must be taken into consideration. When cloud can be seen to be changing from one type to another, as, for instance, from cirrostratus to altostratus, the fact should be noted in the remarks column of the logbook.

When the observer has gained knowledge and experience, he will be able to

* The *Marine Observer's Handbook*, 1952, mentions three cloud groups under “scud”—fractonimbus, fractostratus and fractocumulus. It has now been agreed internationally (January, 1955) that the term fractonimbus be no longer used and that fractostratus and fractocumulus be called stratus fractus and cumulus fractus respectively.



Cumulonimbus cloud. Photograph taken in the Caribbean
Sea at 20°N , $68\frac{1}{2}^{\circ}\text{W}$.

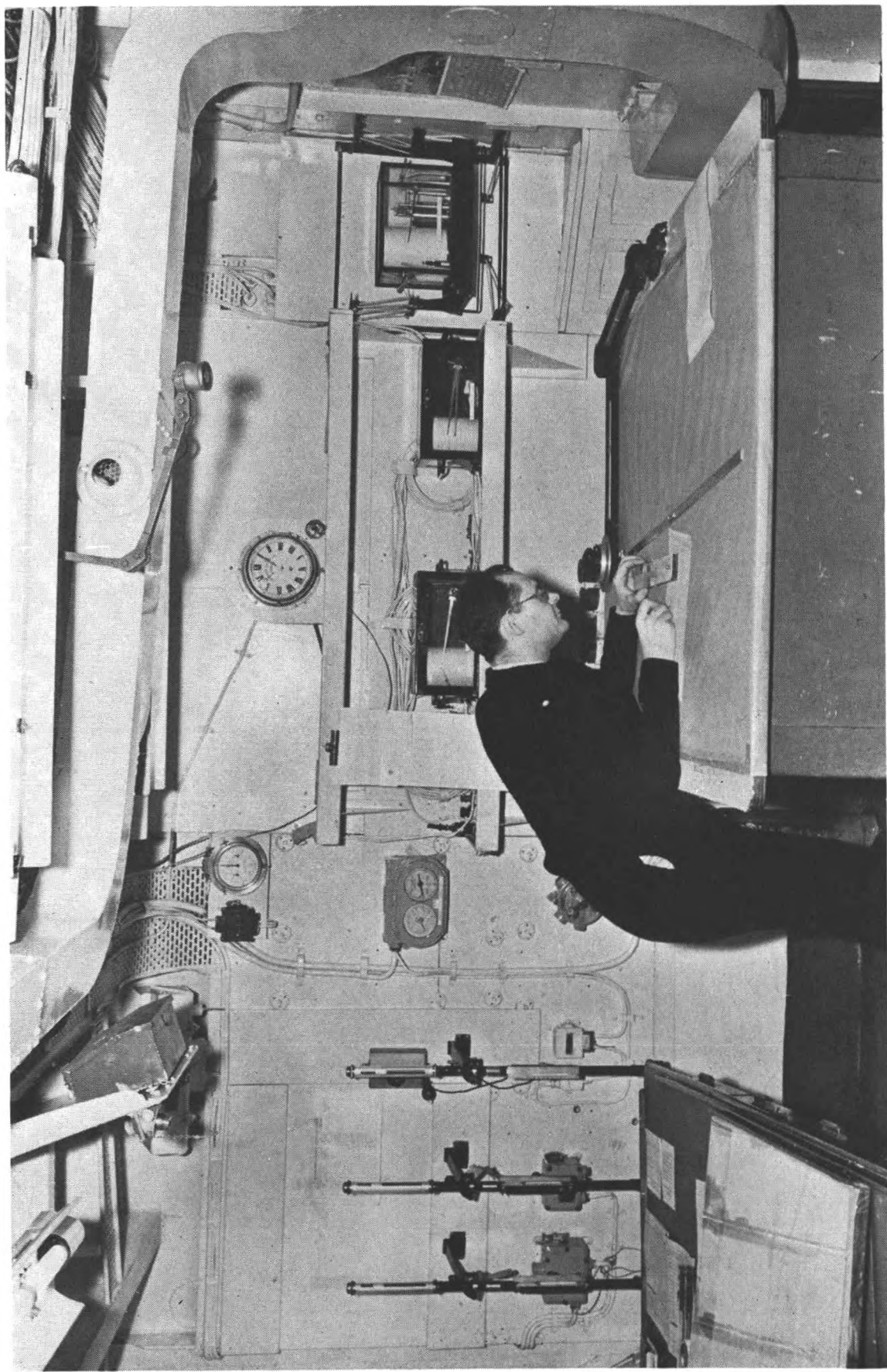


Fair-weather cumulus. Photograph taken aboard S.S. *Perim*.



Donald I. Innes

The Marine Division's exhibit at Hull Trinity House Navigation Schools (see page 38).



Photograph by Sperry Gyroscope Co.

The meteorological office aboard ocean weather ship *Weather Explorer*. It shows the meteorological officer calculating the upper winds from balloon ascents. Also can be seen the barometers (one in use, two spares); the wind speed and direction recorder; the sea temperature recorder; the dry and wet distant reading thermometer and the barograph in an anti-vibration mounting.



Cirrus cloud. From a photograph taken at sea.



Altocumulus. Photograph taken aboard S.S. *Eros* in 34°N., 45°W.

convey to the meteorologist, by means of the cloud groups in the radio weather message, an accurate description of the cloud development and general appearance of the sky even if it contains several types of cloud.

It is not always easy to distinguish correctly between all the varieties of clouds, although the high types, cirrus, cirrocumulus and cirrostratus, can usually be identified fairly readily.

Cirrus cloud is one of the easiest to recognise. It is worth remembering, however, that true cirrocumulus is comparatively rare. In deciding that a particular cloud sheet is cirrocumulus, account must be taken of the fact that it must have an evident connection with cirrus, or form a change from cirrus. If not thus associated the cloud is almost certainly altocumulus. Both of these, cirrocumulus and altocumulus, may have the beautiful mackerel-sky appearance.

Altocumulus often forms from the spreading out of cumulus clouds of sufficiently high summits; or it may assume an appearance of a thick, fairly regular layer, or perhaps more than one layer of smallish clouds, separated by clear sky or lighter spaces. Such layers do not change rapidly. The sun may appear surrounded by a corona through the lighter patches of these clouds.

Altostratus is usually of a grey colour, something like a thick cirrostratus, through which the sun shows as a vague blur of light. No halos are seen round the sun or moon when viewed through all varieties of this cloud. As its name implies, it is fairly high and in a distinct layer. Altostratus may gradually change to altocumulus and vice versa. The gradual thickening and changing of the clouds of an approaching depression, from the faint cirrostratus haze of its outer edge down to the low base of the nimbostratus near a warm front, can be an interesting and beautiful development to watch. The whole process is often experienced within the compass of a few hours.

Most ships' officers can distinguish the types of low cloud—nimbostratus, stratus and stratocumulus. Nimbostratus is easy to recognise as it is usually of a dark-grey colour and is nearly always, although not invariably, associated with continuous rain. Beneath this cloud there is often "scud".

Probably the best description of stratus is "a uniform layer of cloud resembling fog" but not resting on the ground (or sea). From below it is usually difficult to see markings or shape on stratus, except when it is being torn up by the wind, while the light underneath this cloud is usually weak and diffuse.

The clouds with strong vertical development, known as heap clouds (cumulus and cumulonimbus) are not difficult to distinguish. Cumulus clouds may vary a great deal in size and in vertical height from a small cloudlet to a massive heavy-looking cloud towering to great heights. If its top reaches a height at which a cirrus anvil forms, the upper parts having a fibrous texture, or if precipitation is taking place from its base, the cloud has then by definition become cumulonimbus. Fully developed cumulonimbus cloud (thunderclouds), when seen from a distance in profile, are unmistakable on account of their towering height and very solid appearance.

There is a great variety within each of the individual types of clouds, and for this reason a collection of cloud photographs can never be said to be complete. Fortunately cloud types remain essentially the same all over the world, although there are regions where some types are especially common, such as the beautiful fair-weather cumulus of the trade winds areas.

The international unit for reporting cloud amount is the Okta or eighth of the sky. The assessment of the total amount of cloud (N of the group Nddff) therefore consists in estimating how much of the total area of the sky, to the nearest eighth, is covered with cloud. In considering this assessment all types of cloud must be taken into consideration—low, medium and high clouds.

The amount of cloud is recorded as 0 only when the sky is completely cloudless, i.e. when not even a trace of cloud can be seen; the amount is recorded as 8 only

when the sky is completely overcast, i.e. when there are no openings of any kind through which the sky can be seen.

When making an assessment of the amount of low cloud (N_h of the group $N_h C_L h C_M C_H$), only that proportion of the sky, in eighths, covered by low clouds should be reported. When coding this group it should be remembered that if the sky is completely covered by low cloud (or very nearly so), then it is obvious that medium and high clouds cannot be seen, and the observer cannot know if they exist or not. In this case the last two figures of the sixth group ($C_M C_H$) should be coded as XX and not oo.

The new edition of M.O.509, *International Meteorological Code (Decode for the use of Shipping)*, as incorporated in the *Marine Observer's Guide*, has an added footnote under Table III as follows: "When no low cloud is present, N_h is used to describe the amount of medium cloud." The second and third figures of the group (C_L and h) would in that case be coded as 09.

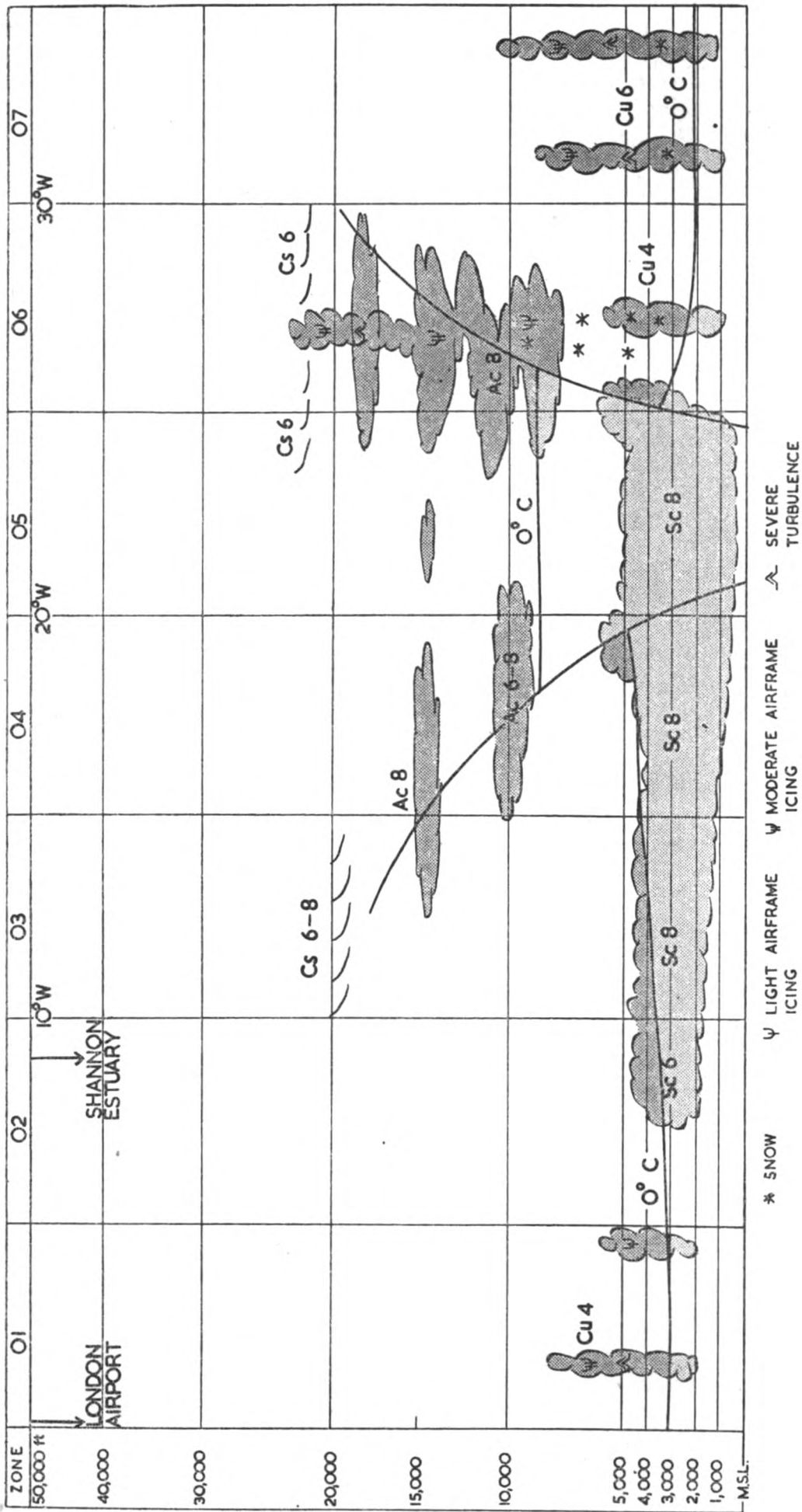
While not of vital interest to the seaman, inclusion in ships' weather messages of the height of clouds is an item of some importance for the forecaster and sometimes for aircraft in flight. Ashore there are means of measuring this height fairly accurately, but at sea in merchant ships it must be a matter of estimation based on experience and judgment. When an observer at sea has had some practice he can usually make a fairly satisfactory estimate of the cloud height, but it is always likely to be difficult.

When visibility is good below the cloud base, it is usually possible to estimate the cloud base according to its apparent closeness to the observer. Experience also enables the rate of angular movement of the cloud across the sky to be used for the same purpose. Some idea of this last quantity can be obtained by watching clouds on a windy day when several layers of cloud are present. Although on such days the true wind speed usually increases with height, the clouds at great heights naturally appear to be moving much more slowly than those below. Cirrus cloud ("mares' tails") and altostratus (the characteristic grey sheets of cloud like fibrous veils), which are often moving in a wind well in excess of 60 knots, appear to cross the sky quite slowly on account of their great height above the observer. On the other hand there is the apparent rapid movement of "scud" clouds across the sky just before a squall, and the quick drift of very low cloud past the observer which occurs when fog is being lifted and dispersed by a strengthening of the wind. The estimate of cloud height becomes much more difficult on a hazy day, even with the aid of a balloon.

On some occasions the height of the cloud base can be deduced from the known height of mountains visible from the sea, but care is needed before accepting such a measurement as reliable, since the cloud height over the land may differ from that over the open sea. Wind blowing over the hills forces the air to rise, and if the cooling which results is sufficient to bring the air temperature below its dew point, cloud will be formed. The "tablecloth" on Table Mountain at the Cape of Good Hope is a good example of this process in action. Using the height of hills as a measure is therefore only reliable when there is a uniform layer of cloud that is obviously of the same type and height over both land and sea.

Sometimes, even with a fresh wind, clouds appear to be stationary on the tops of hills, but this is often deceptive; what is usually happening is that the wind is blowing through the cloud which is being formed on the weather side and dispersing on the lee side of the hills. The different elevations of the clouds depend chiefly upon variations of the temperature and humidity in the atmosphere; all types being generally lower in winter than in summer. For the same reason they are lower in polar regions than in the tropics. In general, the higher the humidity of the air the less is the height through which that air must ascend in order to become cold enough to form a cloud.

The brightness of clouds may at times be taken as a very rough guide in estimating their height. The brightest clouds are usually the highest. Attempts have



Example of a section of a flight forecast, showing the warm sector of a temperate latitude depression in which the warm front was typically very weak.

been made to devise means of measuring cloud heights from merchant ships at sea, but so far without much success. The method of using a searchlight, which is illustrated in the *Marine Observer's Handbook*, was tried in two ships some years ago with only limited results; one of the main difficulties being to find ships long enough to give a sufficient base line.

Small hydrogen-filled balloons of known rate of ascent can be used, the time from release to their disappearance in the cloud base giving the height. The British ocean weather ships occasionally use this method of measuring the cloud height, using either the small pilot balloons or the larger instrument-carrying balloon. The balloons are, however, not easy to keep in sight from a moving vessel, and there are also objections from the safety aspect to carrying the hydrogen on board merchant ships.

The balloon method was tried in the Royal Research Ship *Discovery II* on her 20-month oceanographical survey voyage in 1950 and 1951. A description of the voyage, written by Dr. H. F. P. Herdman, appeared in the July, 1952, number of this journal, and there was a note by the editor as follows:

In addition to the normal equipment, she was also supplied with balloons and hydrogen for checking the estimation of cloud heights. In general the weather prevented the extensive use of this aid, but from the few observations made it was seen that cloud heights below 1,500 ft were usually underestimated whilst those above 1,500 ft were usually overestimated.

In most observing ships, therefore, it is only possible to obtain the height of the clouds by estimation. To do this with any degree of accuracy needs care; experience teaches the necessary skill.

It will be obvious to any sea navigator that forewarning of the clouds likely to be encountered during a flight must be most useful information to the air navigator. Remembering his own anxieties in fog, the seaman will sympathise with the airman flying at high speed through cloud, and will readily appreciate that the latter then needs all the help he can get. The pilot of the present-day airliner is chiefly interested in reports of cumulonimbus clouds, which he tries to avoid on account of the violent and dangerous updraughts and downdraughts of air found inside them. The captains and navigators of jet aircraft are likely to be just as interested in the occurrence of cirrostratus clouds, which have been found at heights over 40,000 feet in tropical regions, since these seriously interfere with the navigation of jet aircraft which nowadays spend the greater part of a flight at these high altitudes.

On the forecast form supplied to aircraft in meteorological offices ashore at which flight forecasts are prepared, conventional symbols are used to indicate the various cloud forms. These flight forecasts also show the type and height of clouds which the aircraft can expect at different stages on the route, in a diagrammatic form as a cross-section of the atmosphere. They show besides in simple form much other information, such as the level at which there is likelihood of icing, winds at various levels and so on.

On page 23 is an example of part of one of these flight forecast forms for an Atlantic flight from London, showing the conventional cloud forms of cirrostratus, altostratus, stratocumulus and cumulus, through the warm sector of a depression.

On the actual form the higher clouds are tinted pink and those below the freezing level tinted green; the warm front is shown as a red line and the cold front blue. There is also on the form a good deal of tabulated information which is of great value to the pilot.

Cloud observations are part of the raw material from which weather forecasts are made. Observers afloat, ashore and in the air all help to supply this information and thus enable the forecaster to keep track of important changes taking place in the air masses. Although a weather forecast for shipping does not usually include much reference to cloud, reports of cloud in a ship's weather messages sent by radio will have assisted the meteorologist in making that particular forecast.

Thus the officers in ships of the Voluntary Observing Fleet in making their

entries of cloud in the meteorological logbook and in transmitting the information in the radio weather message, may rest assured that the information is useful and sometimes vital both for the immediate purpose of weather forecasting and for the more long-term purpose of ocean climatology.

Note. A previous article, by Mr. E. W. Barlow, on this subject was published in the April, 1948, number of this journal as part of a series entitled "Observing Weather at Sea", and parts of it have been used in the above.

INSTITUTE OF NAVIGATION

In March, 1955, Cdr. J. M. Sharpey-Schafer read a paper at the Institute of Navigation entitled "Collisions at Sea". The author must have put an extraordinarily large amount of effort into the preparation of this paper, for he compiled (with the assistance of the Liverpool Underwriters Association and Lloyd's) some comprehensive statistics and discussed various collision cases in connection with each of the 32 "rules" of the Collision Regulations. The statistics showed that between 1950 and 1953 the number of collisions involving ships of various nationalities amounted to an average of 1,350 per year out of an annual total of 6,800 shipping casualties of all types. The world total of shipping being about 31,500 vessels, this represents nearly 5 per cent, which seems to be a fairly high figure. No statistics are given as to the number of collisions which were due to meteorological causes, but judging by the Admiralty Court cases which are reported in the shipping press, it seems that a fairly high percentage of the collisions are due directly or indirectly to some meteorological cause or other.

The most important rules from the meteorological viewpoint are numbers 15 and 16, and as so many collisions cases inevitably take place during thick weather, Cdr. Sharpey-Schafer dealt with these in considerable detail, and stressed the complications which the use of radar have brought into the interpretation of these rules. He mentioned, for example, the difficulty at times of deciding when to "stop engines" and how to interpret "moderate speed", and quoted two opinions given by judges in Admiralty Courts: "There is an excellent rule in motor collisions that you ought to be ready to stop within the limits of visibility. That the other obstacle at sea is a ship, and not a fixed barrier as in motor cases, must cut down that limit of visibility by half" and "no steamer has a right to navigate at such a rate that it is impossible for her to prevent damage . . . if she cannot do that without going less than 5 knots then she is bound to go at less than 5 knots".

The paper emphasised that the International Convention for the Safety of Life at Sea (1948) said: "While recognising the advance in radar it in no way relieves the ship from strictly observing the Regulations, particularly Rules 15 and 16."

On the general question of collisions the author of the paper referred to the necessity of the "give way" ship taking early avoiding action, and quoted the Elder Brethren of Trinity House: "It is this 'hanger-on', putting the stand-on ship in a state of uncertainty, who contributes much to collisions."

The author quoted no less than 131 Admiralty Court cases dating from 1845 up to the present day.

The discussion, in which examiners of masters and mates and instructors at navigation schools took an active part, was lengthy and spirited, as could be expected with such a controversial subject which is of universal interest to mariners.

The paper and the discussion are reported in full in the July, 1955, number of the Journal of the Institute of Navigation.

C. E. N. F.

Insects at Sea

By C. B. WILLIAMS, SC.D., F.R.S.

(Dr. Williams has recently retired from the position of Head of the Department of Entomology at Rothamsted Experimental Station)

At times travellers in ships see flying insects, such as moths and butterflies, dragonflies or locusts, maybe hundreds of miles from land. When such insects come on board they may perhaps be captured, and a small number find their way into the hands of entomologists or museums, with some information as to where they were caught. It is the purpose of this short note to point out the scientific and economic interest of such observations, and to ask all who may see such an occurrence to capture the insects and to send them for examination to some museum or some individual who may be interested.

I have travelled a fair amount by sea myself and have seen butterflies on several occasions when crossing the Mediterranean, and there is good reason to believe that many species—and particularly the Painted Lady butterfly—regularly cross the Mediterranean, flying to the north in the spring and to the south in the autumn; in fact migrating in a way very similar to the birds. These insects seem to have no difficulty in crossing the few hundred miles between Europe and Africa, but in this case there is land to reach on the other side whether they fly north or south.

I also saw Painted Lady butterflies in September, 1943, flying to the south about 100 miles off the west coast of Africa, between the Mediterranean and Sierra Leone. Nearly every day in hot, calm weather they could be seen flying over the ship or a few feet above the sea, and it is possible that they were on their autumn migration from Spain and would reach the African coast in the neighbourhood of Sierra Leone.

There is also a white butterfly—somewhat resembling the Small Cabbage White of this country—which is not infrequently seen in large swarms far out at sea off the north-west coast of Africa. Just before the war we sent out a special request for information to a large number of ships, and in December, 1938, we received three separate records from ships in this area indicating that the butterflies must have been abundant over the sea for about two weeks.

At times butterflies in larger or smaller number fly, or get carried away, to much greater distances than these examples indicate. In October, 1950, an entomologist was travelling from Holland to Dutch Guiana and in 23N., 41W. a number of Painted Lady butterflies were seen flying round the ship. The position was about 1,400 miles from the African coast, about 1,300 miles from the Azores and about 1,200 from the South American Continent (where, however, the butterfly only occurs as a very great rarity). There is some evidence that they may have been blown from south Europe by the prevailing north-east trade wind.

As long ago as 1865 two butterflies of the same species were reported in the middle of the North Atlantic in 51° 30'N., 38° 17'W., flying round the *Great Eastern* when she was laying the trans-Atlantic cable. Even before this, in December, 1832, Charles Darwin when on board H.M.S. *Beagle* reported a great swarm of yellow butterflies (related to our Clouded Yellow) off the Bay of San Blas in Argentina.

There are also a number of records of great swarms of moths and butterflies and other insects far out at sea off the coast of Brazil, which seem to occur usually after heavy storms as if the insects had been blown out to sea against their will.

A most interesting butterfly, about which we need more information from ships at sea, is the Monarch, a large chestnut-brown species with dark veins on the wings. This is a great migrant in North America, and in the last 80 years over 200 have been captured or seen in the British Isles. As the food plant of their caterpillars is unknown in Europe they cannot have bred here, and the problem is whether they have been carried across in ships as "stowaways" or whether they got across on their own wings. I would request that a special lookout be kept in the Atlantic between the British Isles and the U.S.A. (particularly during August

and September) for such butterflies, and special note be made of whether they appeared first over the sea, or were found in the holds or some similar situation, indicating that they might have come on board when the ship was in harbour.

Although the examples so far given are from the Atlantic we have records from all the other oceans, and these are just as valuable and interesting. Information about locusts and other insects is also very welcome.

The scientific value of such records is in the study of the distribution of insects over large areas of water, usually considered to be barriers to the spread of insects; and also in the study of regular migration. The economic value is in the light that the observations may throw on the spread of injurious insects and pests to crops from one country to another.

May I therefore ask readers to help in this work by paying particular attention to winged insects found when the ship is far from land. Whenever possible the insects should be captured and put in a cigarette tin or some such similar container to prevent their being crushed. The information attached should give the latitude and longitude where the insects were seen, the date and the time of day, the name of the ship and the last port of call and any notes on the weather that seem relevant. The specimens and information should be sent to the Meteorological Office with the meteorological logbook, or to the Natural History Museum, London, S.W.7, or to the writer of this article at "Ard Insh", Kincraig, Inverness-shire.

Anyone doing this will help in an important branch of Natural History, and may also find a new interest in the sea voyage.

Note. In the October, 1955, number of this journal we published an observation of a moth caught aboard S.S. *Malmesbury*. This was the first specimen which we can remember being sent here, but we hope that Dr. Williams's article will result in more coming in.

THE MAYFLOWER PROJECT

On 4th July, 1956, a barque-rigged wooden vessel of 182 tons (having a length of 90 feet and a beam of 26 feet) is expected to sail from London to Plymouth, Massachusetts, U.S.A., via Southampton, Dartmouth and Plymouth.

She will be named the *Mayflower* and will be as exact a replica as possible of the vessel in which the Pilgrim Fathers sailed to America in 1620. It is understood that the naval architect responsible for preparing the detailed drawings has been able to find no record of the original *Mayflower's* dimensions, and has had to use considerable research and ingenuity in order to determine, as far as possible, her original detail. The vessel is being built at Brixham and will perform the voyage under sail alone—unaided by any modern device or auxiliaries with the exception of radio. She will carry the same number of passengers and crew and follow the same route as her predecessor.

The cost of building this ship is being borne by British subscriptions, and after her voyage across the Atlantic she will be presented to the people of the United States of America. A more enduring contribution to Anglo-American understanding will be the Mayflower Trust, linked with the ship project, which will establish scholarships for study and exchange visits between the two countries.

No logbook of the voyage exists, but *The Pilgrim Reader* by G. H. Willison tells us that the *Mayflower* sailed from Plymouth on 6th September and made a landfall off Cape Cod on 10th November, 1620. The following meteorological extracts are taken from the same book:

They put to sea . . . with a prosperous wind which continued diverse days together.

After they had enjoyed faire winds and weather for a season they were incountered many times with cross winds and met with many feirce stormes with which ye ship was shrewdly shaken.

The North Atlantic weather seems to have been true to form!

C. E. N. F.

Shipping Operations in Hudson Bay

We have received the Commonwealth Shipping Committee's 14th Report on the Hudson Bay Marine Insurance Rates. These Reports are submitted to Her Majesty's Government annually with the object of giving "such additional facts as become available during the course of each year, thus enabling underwriters in London to appreciate the physical circumstances of the route as they gradually become better known, and on the other hand enabling those in Canada interested in the route to appreciate the factors which had to be taken into account in London before a rate could be quoted".

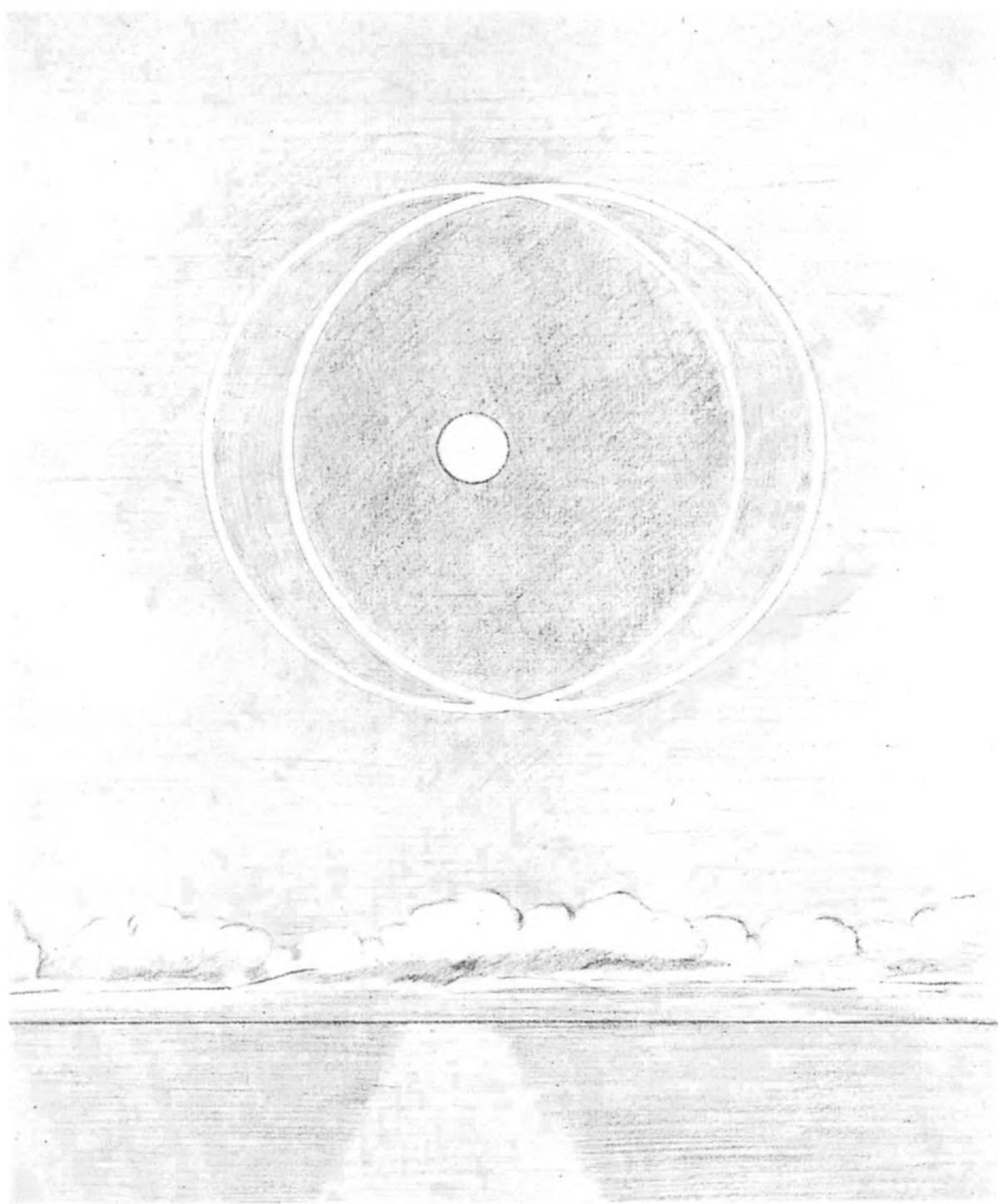
A study of the Reports year by year shows a steady growth of seaborne trade to Churchill, and it is apparent that the meteorological and other observations made by ships on that run contribute to the safety of shipping in that trade.

During the 1954 season a larger number of commercial voyages were made to Churchill than ever before, namely 36, which was five more than the record created in the 1953 season. In the years 1950-54 the port has coped with 20, 21, 27, 31 and 36 commercial voyages respectively, and the Report states that there is no evidence to suggest that the heavier traffic of later years has caused any berthing difficulties or delays in shipping turn-round.

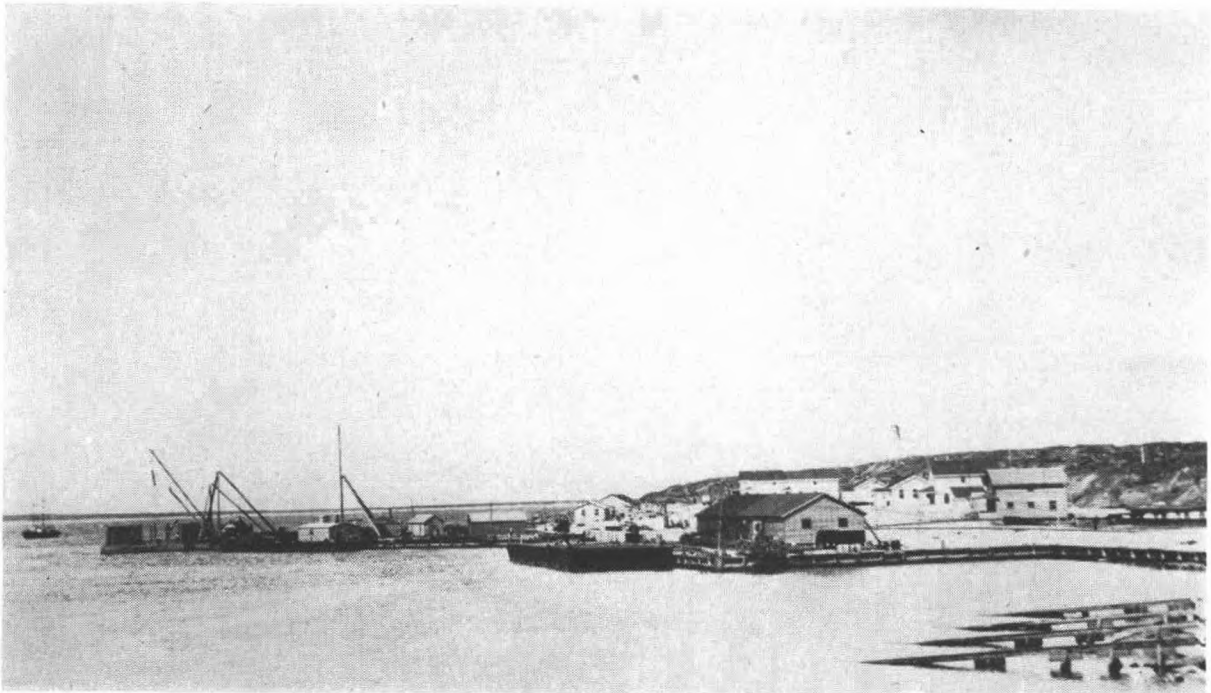
There was no alteration in the Marine Insurance Rates, or in the permitted period of navigation, which again extended from 23rd July passing Cape Chidley to 10th October leaving Churchill. The first ship in, which once again was the *Warkworth*, a selected ship belonging to Messrs. Dalgliesh of Newcastle, was given permission to enter the Hudson Strait by the Canadian Government's patrol vessel *N. B. Maclean* on 23rd July, and the last vessel out left Churchill on 7th October. The port could, however, have been used by commercial shipping up to 15th October.

The possibility of a ship being caught by ice in the Hudson Bay or Strait after departure from Churchill at the end of the season can be safely regarded as a remote one, for over a number of years it has been shown that the Churchill River freezes first, and that the freezing up gradually extends to the Bay and finally to the Strait. Data taken over a number of years show that ice has not appeared at Churchill until late October or early November, and that its appearance is progressively later at Nottingham Island, Cape Hopes Advance and Resolution Island. It appears from ships' reports that the navigational hazards of the route are generally much lighter at the end of the season, and apparently for some time after the close of the season than they are at the beginning. Ships using the route at the beginning of the season encountered the usual conditions of fog and ice. The earlier vessels on the inward passage met with stretches of pack-ice, some of which had to be traversed and which caused, in a few cases, slight damage to plates and propeller blades, but on their homeward passage, through Hudson Bay and Strait, they found the route free from pack-ice. The Liberian motorship *Anna C.*, however, with her radar out of action, was involved in a collision with an iceberg during dense fog on 3rd August, after she had left the Hudson Strait on her homeward passage. She was able to proceed on her voyage to London, but it is noteworthy that this is the only accident for many years which has resulted in a vessel on the Hudson Bay route sustaining more than superficial damage.

The National Research Council of Canada collected ice reports from Canadian icebreakers and merchant ships on the run. These were analysed in an attempt to determine the effect of radar in reducing the navigation hazard in ice-infested waters and in locating the ice concentration in order to ascertain whether or not a seasonal trend was evident. Ranges recorded on all ice formations with a large cross-sectional area were found to be good, but little data was submitted on ice that could be obscured by sea clutter. The ice was entirely concentrated in the Hudson Strait and its approaches, with the greatest hazard occurring between

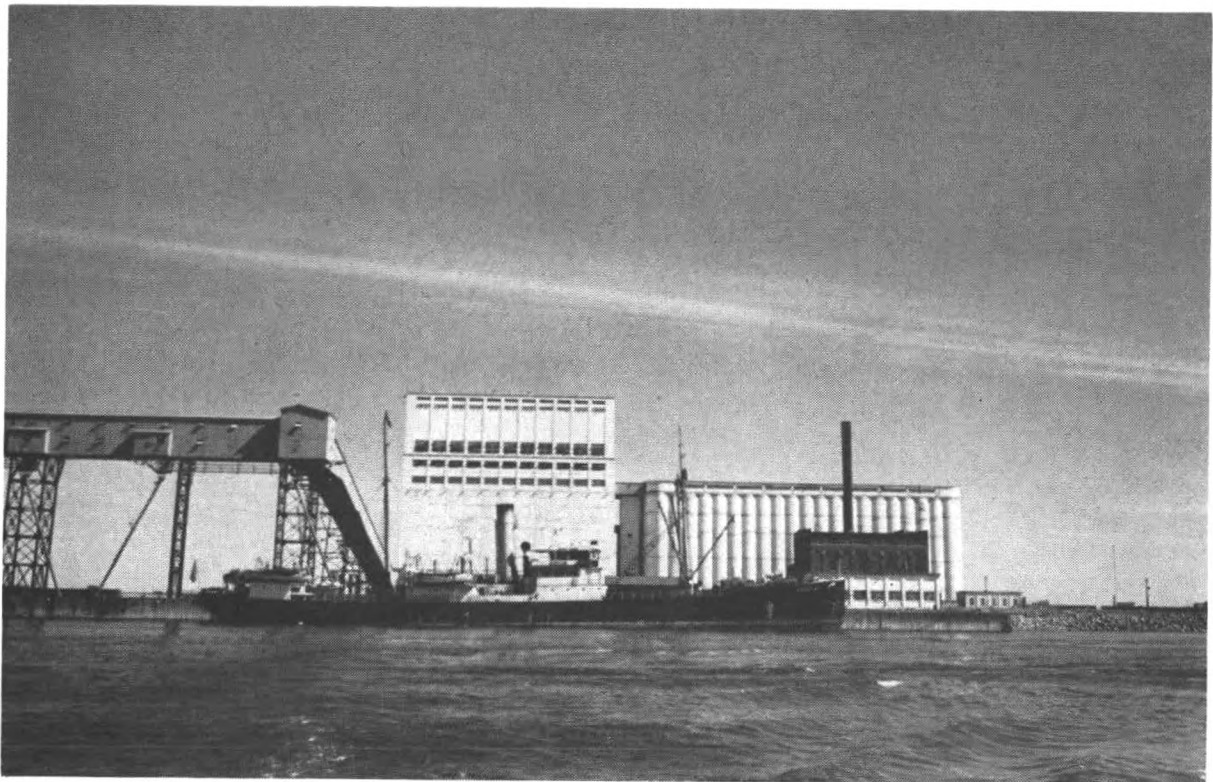


Drawing of a double solar halo seen from S.S. *Tamara* (see page 13).



Churchill Harbour in about 1929.

Canadian National Railways



Ship loading at the grain elevators at Churchill.

Canadian National Railways

Resolution Island and Cape Hopes Advance. Nothing was reported from Hudson Bay or in the western approaches to the Strait.

The Council state that a broad assumption from the data would be that the ice hazard decreased by 75 per cent for the latter half of the shipping season and that whilst this could not be considered conclusive from one season's data, it indicates a trend that could be evaluated over a period of years with reasonable accuracy.

The Canadian authorities continue in their efforts to make the route as navigationally safe as possible, and the value of their help and guidance may be summarised in the following tribute from one shipmaster. "The willing co-operation and assistance of all shore stations and the icebreaker *N. B. Maclean* with weather and ice reports and any other advice one may require, leaves nothing to be desired and sets an example that might well be followed in most other parts of the world, and it should be added that the same remark applies to all organisations once the port of Churchill has been reached."

Ice conditions in Hudson Bay are also constantly watched by means of aerial surveys and the resulting information is available to masters of vessels in the area, together with reports of surface observations collected from Churchill and the coast stations. These reports are transmitted to London and forwarded to the shipping press for publication.

The Commonwealth Shipping Committee now expresses the view that the Hudson Bay and Strait areas are adequately charted and equipped with navigational aids and that this route can be considered as safe as the St. Lawrence River. They also pay tribute to the fact that shipowners are promoting the safety of their ships on the route to an increasing extent by the installation of the gyro compass, direction-finding and radar equipment.

It has been suggested that Churchill offers good prospects for the shipment of lumber to the United Kingdom, for it is the only port which might offer northern Manitoban and northern Saskatchewan lumber producers opportunity of marketing their product in the United Kingdom. There have indeed been one or two lumber shipments out of Churchill since the war, but the port has not been used for this traffic in recent years because of the costs, which makes such shipments from it economically unattractive. The Committee are studying the prospects of developing this trade, and hope to comment on it in their next Report.

The position as regards the safety of the Churchill route has further improved to the extent that the joint Hull Sub-Committee have approved an amendment to the Hudson Bay scale of additional premiums to the extent of permitting a vessel to leave the last loading port on or about but not later than 15th October, with a proviso that extensions up to 20th October can be agreed at scale rates surcharged by 25 per cent. Thus the safe navigation season in Hudson Bay has been extended by five days.

The following historical notes have been kindly supplied and are published by permission of the Governor and Committee of the Hudson's Bay Company:

"Captain Jens Munck is usually regarded as the true discoverer of Churchill Harbour. In 1619 he and 64 companions left Denmark to search for a North-West Passage. They anchored in 'Jens Munck's Winter-haven' in September of that year, but as the expedition had been unprepared for the severe climate they suffered great privations and when the ice broke up in June, 1620, only Munck and two sailors were still alive.

"In the spring of 1686 Captain John Abraham and Michael Grimington of the Hudson's Bay Company sailed from York Fort in the sloop *Hayes* '50 leagues Northward of Port Nelson and discovered there a faire River'. They found 'two Iron Morter Pieces' left there, as they supposed, by the Danes. No mention has been found of the name given to this 'faire River' by Abraham, Grimington and their companions, but the letter sent by the

Governor (John, Lord Churchill)*, Deputy Governor and Committee to Governor Geyer and Council at Port Nelson in 1687 stated: 'Wee order that noe time bee lost in makeing a Settlemt. to the Norward in Churchill River where Grimington and Abraham went the Last Yeare. . . '.

" Nothing more definite regarding the naming of Churchill River has been found in our archives. Since, however, it was the usual custom to name new places after the Governor, Deputy Governor and Committee, it is safe to assume that Churchill River was named after Lord Churchill.

" It was not possible to carry out the orders regarding a settlement at Churchill River until June, 1689, when a site was chosen farther up the harbour than that where Munck had wintered. Building began, but at the beginning of August the whole, with much of the stores, was burnt to the ground. By 5th August the place was abandoned.

" So far as we know no trade was made at this short-lived post on Churchill River.

" It was not until after the Treaty of Utrecht of 1713 had recognised the full claims of the Hudson's Bay Company that it became a practical proposition to re-establish the post on Churchill River.

" Preparations were made and in the summer of 1717 Captain James Knight sailed from York Fort to Churchill River. On 16th July, after sailing up the river, Knight went ashore, remarking in his journal: ' I never see such a Misserable Place in all my Life.' There was only one place on which to build a fort, that was on the ' Little Place where the Danes had Wintred, wch. is upon a point as hardly contains so much compass of Ground as the Royall Exchange Stands upon . . . '.

" The ' outer point ' was occupied by Eskimo tents and was ' Impossible for any European to Live at '.

" Knight remarked that the place further up the river where the fort of 1689 had been built was worse than his and ' wch. they found so badd that After they had built it I believe they was so Disscouraged that they sett it on fire to Run away by the light of it . . . '.

" The wooden fort built by Knight on Churchill River in 1717 gradually came to justify its existence.

" The following remarks regarding the name of the new fort are to be found in a letter dated 4th June, 1719, from the Governor and Committee to Richard Staunton at Churchill. ' Capt. Knight haveing Desired us to give a name to the Fort lately Built by him at Churchill River, wee do hereby Order you for the future to call it " Prince of Wales Fort " . '

" Following receipt of this letter the new name was actually given to the fort on 17th August, 1719. The spelling more usually appears as ' Prince of Wales's Fort '.

" On 3rd June, 1732, Richard Norton, Governor of Prince of Wales's Fort, laid the foundation stone of a new fort. This was the ' Stone Fort ' erected on Eskimo Point at the mouth of Churchill River. It was called Prince of Wales's Fort.

" Samuel Hearne, the first European to travel across the Barrens of the Arctic Ocean, was Governor of the stone Prince of Wales's Fort in 1782 when it was captured and destroyed by a French squadron (detached from the West Indian Fleet) under the Comte de Laperoise.

" Hearne returned to Churchill River in 1783, and on 25th September of that year informed the Governor and Committee that he had re-established the fort ' on the very spot where the Old Wood Fort (Knight's) stood '.

* This famous soldier, created Earl of Marlborough in 1689 and Duke of Marlborough in 1702, was Governor of the Hudson's Bay Company 1685-92.

"This post, re-established on the site of Knight's post, was always known as Churchill and the Hudson's Bay Company have continued in business there until the present day."

By an agreement made in 1869 the territory of Prince Rupert's Land, over which the Hudson's Bay Company had been given sole trading rights, was surrendered to the British Crown and the Hudson's Bay Company assumed the status of an ordinary commercial company. In 1870 the territory was formally added to the Dominion of Canada and the province of Manitoba was established.

The development of Churchill in the short space of 30 years as a transit port for all imports and exports of this vast hinterland is a romance of commerce.

During the winter of 1926-27 survey showed the possibility of establishing a deep-water port near the site of the old Hudson's Bay trading post, and in 1928 work began in earnest. A temporary wharf was erected that year to receive ships loaded with timber, coal and other supplies; in 1929 the preliminary dredging was completed, and the Continental railway was extended to the new port. On 19th September, 1929, the S.S. *Ungava* left Churchill for England with a souvenir shipment of 1,800 lb. of wheat. The route was open.

Progress with harbour works and installations was swift and soon the first commercial cargoes of wheat were leaving Churchill. The first two were carried in Messrs. Dalgleish's ships *Farnworth* and *Warkworth*.

The outbreak of the Second World War, however, closed the port to commercial traffic and it was not until 1946 that it was opened again. Since then the tonnage handled at the port has increased every year.

An interesting account of a contemporary voyage to and from Churchill is given by the following narrative of the M.V. *Irish Cedar* (Captain J. P. Kelly), which has been forwarded to us by the Director of the Irish Meteorological Service.

"The *Irish Cedar* sailed from Limerick on 21st August, 1955 for Churchill. The voyage was uneventful and weather fine to a position 70 miles south of Cape Farewell, Greenland.

"Off Cape Farewell the visibility was excellent and though 70 miles off the mountains were exceedingly clear and appeared to be very much nearer. At times there was a lot of refraction and the mirage effect on the mountain tops and peaks made them appear something like the Manhattan skyline of skyscrapers. The mirage sometimes lasted about half an hour, then faded and appeared from time to time.

"After passing Cape Farewell we came in contact with the first icebergs.

"The bergs off Greenland were sighted between 58° 47'N., 44° 00'W., and 59° 12'N., 47° 44'W., and then clear until in 60° 42'N., 60° 48'W., and then plentiful from there into Hudson Strait to east of Big Island.

"Off Greenland the mirage effect raised the images of several bergs that were not visible after the mirage effect cleared, this with exceptional visibility. During the mirage effect a distinct target showed up on the radar at a range of 26 miles, though no object could be seen with binoculars. This signal was constant from 080° Green to 100° Green. I do not know if refracted images would have that effect on radar. It would need to be a fairly big object to show such a distinct target at 26 miles, and as far I know no vessels were in the vicinity at the time.

"Entering Hudson Strait I passed four miles south of Resolution Island. Large bergs were plentiful around the shore to the north-west of Hatton Headland. From this position on a 290° course bergs and growlers were plentiful. With radar, the vessel was able to maintain full speed through darkness with a smooth sea and good visibility. No ice was sighted from east of Big Island to Churchill.

"On the return passage from Churchill to Hull, no ice was sighted until in 62° 07'N., 70° 56'W., then various bergs, large and small, and growlers to 60° 37'N., 62° 26'W. No ice was sighted after this on 103° course.

"It was noticeable with several of the glacier bergs that the centre appeared bowl-shaped with the extremities at the corners being high pinnacled. The Arctic

bergs were mainly wedge-shaped with a flat ledge at the top, one side of the berg steep to almost vertical and the other sloping to the water's edge at about an angle of 20° to the horizontal. Several of this type were passed.

"Most of the growlers showed up well on the radar, including quite small pieces. Type of radar here is Marconi Mark III. Some extremely small pieces showed on the P.P.I. for a short period in passing at a few cables range. The sea was comparatively smooth and the sea clutter slight. In rough water with sea clutter the small pieces and small growlers would not have been visible on the radar."

L. B. P.

ANTARCTIC EXPEDITIONS

Since the days of Captain Cook's voyages the United Kingdom has been consistently associated with south polar travel and exploration; outstanding examples being Scott's heroic and tragic polar journey in 1912 and Shackleton's epic voyage of survival in 1916 from his crushed ship *Endurance*. During recent years the Falkland Islands Dependency Survey has been carrying out systematic and regular scientific work at various bases in the Antarctic regions, and their remote bases depend on ships for their supplies, as aircraft cannot operate safely for long periods in an area which has such violent and changeable weather and lacks navigational aids and landing facilities. Ships and seamen have inevitably always played a prominent part in polar explorations.

During the next few years there will be increased activity in the Antarctic; Argentina, Australia, Chile, France, Japan, New Zealand, Norway, the United Kingdom, U.S.A. and U.S.S.R. are establishing scientific bases in different parts of Antarctica. This is in preparation for the scientific programme of the International Geophysical Year (I.G.Y.), July, 1957, to December, 1958, when these bases will join together with others all over the world in a concentrated study of the meteorological and other natural physical phenomena of the earth.

The Royal Society, which has been associated with Antarctic expeditions for nearly two centuries, is responsible for the organisation of an expedition from the United Kingdom to Vahsel Bay (78°s., 35°w.) to set up a station for the making of meteorological, aurora and glaciological observations. The advance party sailed in November, 1955, in the *Tottan*, a Norwegian whaling vessel, to prepare for the main party in 1957 when the I.G.Y. begins. This will be one of 22 such bases set up on the Antarctic continent by various countries.

A somewhat more spectacular British venture will be the Trans-Antarctic Expedition led by Dr. V. E. Fuchs, who will attempt Shackleton's dream of crossing the Antarctic continent from the Weddell Sea via the south pole to reach the Ross Sea, nearly 2,000 miles. He will be ably supported by a Commonwealth team led by Sir Edmund Hillary, who will link up from the Ross Sea side of the continent. The main party is hoping to make the crossing between December, 1957, and March, 1958. They will be using tracked vehicles and dogs and assisted by small-scale air reconnaissance. Much knowledge will be gained as to the form of the continent, some of which is as yet unseen by man. This expedition will be helped by an Antarctic meteorological organisation which will prepare weather charts and issue forecasts which will be of importance, especially in regard to the aircraft. The various bases on the continent will contribute to building up this meteorological picture, and ship reports received will undoubtedly be of great value, especially in latitudes south of 40°s.

A comprehensive article about the work of the Geophysical Year will appear in a later number of *The Marine Observer*.

WEATHER CHARTS PLOTTED AT SEA

Navigating officers aboard many merchant ships are accustomed nowadays to plot weather charts from information contained in radio weather bulletins in various oceanic areas. There are many advantages which a ship can derive from drawing weather charts while on passage, and the Meteorological Office is anxious to encourage this practice aboard as many ships as possible. To this end a section of the text-book *Meteorology for Mariners*, which is expected to be published in the near future, deals with the scientific principles involved in drawing up weather charts, and should prove helpful for this purpose as well as in many other ways.

It so happens that a typical specimen of such a chart drawn recently aboard a selected ship was forwarded by the master to the Marine Division of the Meteorological Office. It was considered that it might be of interest if a similar chart were drawn up, using the same data, in the Marine Division for purposes of comparison. Figs. 1 and 2 show the charts drawn up in the ship and the Marine Division respectively.

In what follows in this note the aim is to help the mariner who draws his own synoptic charts at sea, whether on charts provided (such as Form 1258) or on tracing paper, to produce even better and more realistic charts than hitherto, and the comments are not intended in any way as a criticism of the chart shown in Fig. 1.

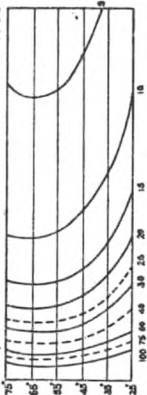
Fig. 1 serves in the first place to show what a large amount of information is available in a typical shipping bulletin, in this case the Atlantic Weather Bulletin issued by Great Britain, and in what detail a synoptic chart can be drawn up from this information alone, provided the mariner has some familiarity with the meaning of the meteorological elements and symbols used, and with the fundamental simple facts regarding pressure and frontal systems together with their characteristics, developments and movements.

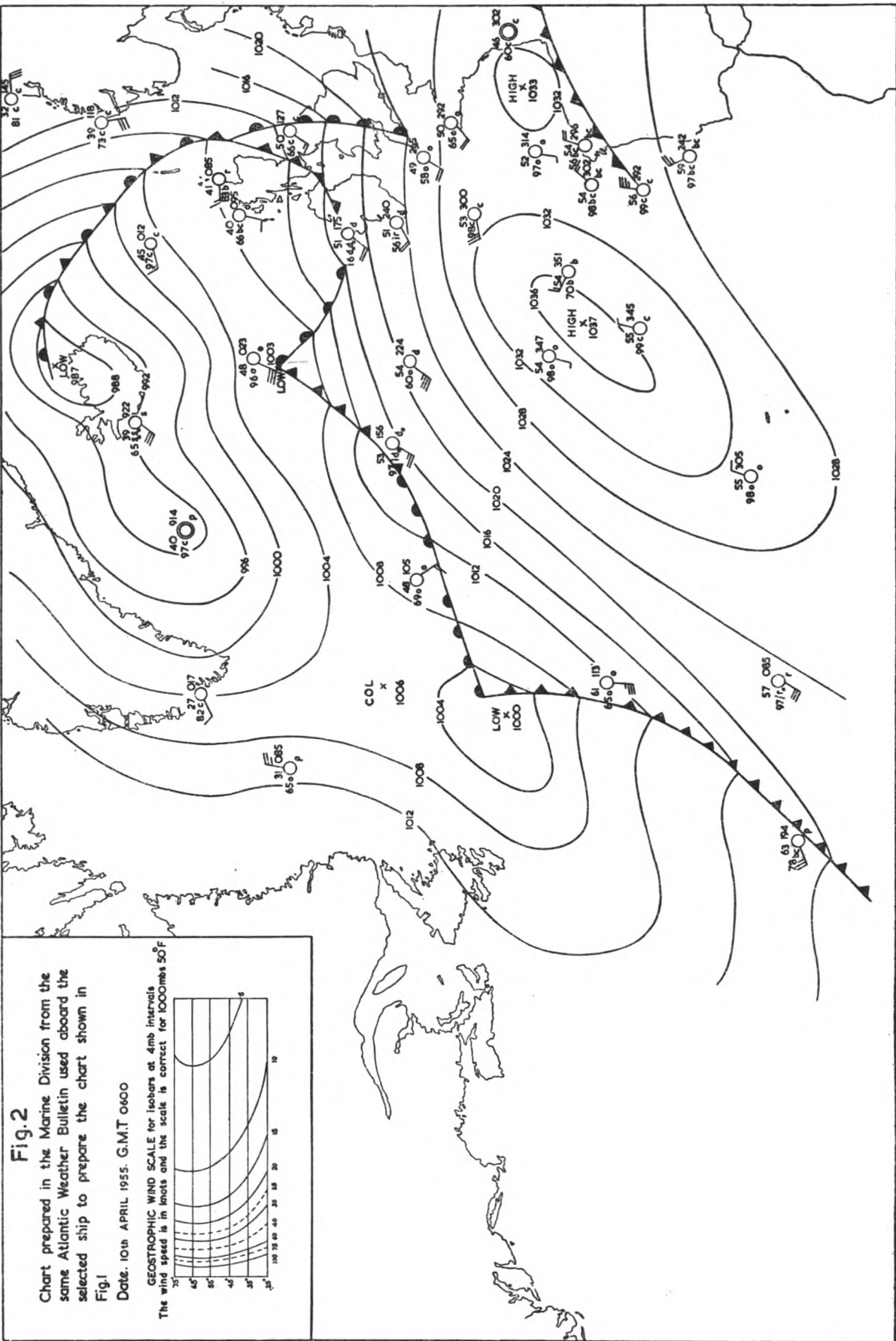
A detailed examination of the charts drawn aboard the selected ship and in the Marine Division respectively, shows that the individual surface observations are almost all in agreement, and that the information regarding the positions of the centres of depressions and anticyclones, and of fronts, was sufficient to enable the positions of these elements to be drawn so that the agreement between their positions on the two maps was extremely close. However, when we look at the drawing of the isobars there are a few discrepancies whose explanation it may be instructive to seek out. The first is that the spacing between isobars should be reasonably even; they should be drawn so that the isobaric gradient (the change of pressure with distance in a direction always at right angles to the isobars at the particular point) is either uniform or increasing or decreasing uniformly in a given direction. A comparison of the two charts shows that the isobars on the ship's chart are very unevenly spaced in comparison with the drawing up of the chart in the Marine Division. Isobars like those drawn in Fig. 1 over the middle of the North Sea, or to north-west of the anticyclone off Spain, seldom or never occur with such irregular spacing in real synoptic situations. Secondly, the isobars in the warm sector of a deepening depression, and in most mature depressions, are usually almost straight and parallel; they may have a slight cyclonic curvature; or often, away from the centre, an anticyclonic curvature. Except near the depression centre the isobars in a warm sector seldom show pronounced cyclonic curvature. (An isobar which shows cyclonic curvature is concave towards low pressure, while an isobar having anticyclonic curvature is concave towards high pressure.)

Other rules which will help in drawing up isobars correctly are that their spacing should be drawn with the help of a transparent geostrophic scale and related to actual wind observations on land or sea, wherever these are available, remembering that over land the surface wind blows with about 50 to 60 per cent of the geostrophic value, and similarly over sea with about 60 to 70 per cent of the geostrophic speed. As far as possible the direction of the isobars should also be drawn so that

Chart drawn aboard a selected ship from the same Atlantic Weather Bulletin as was used in Fig.2.

GEOSTROPHIC WIND SCALE for isobars at 4mb intervals
The wind speed is in knots and the scale is correct for 1000mb 50°F





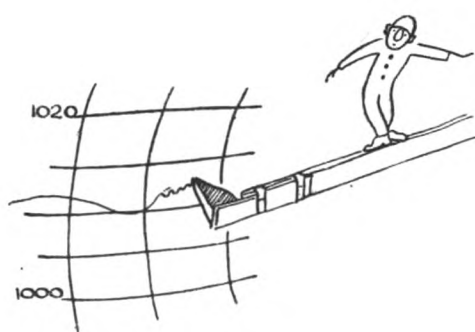
for moderate and strong winds the wind blows across the isobars and into the low pressure, making an angle of about 40° with the isobars over land and about 20° over the sea.

In drawing isobars at fronts it will often help to produce a tidy, realistic-looking synoptic chart, if the artist can remember that isobars often have a "kink" at a front which is sometimes quite pronounced. This "kink" should always be drawn so that its apex points towards the higher pressure. Also the curvature of the isobars is for the most part cyclonic along the portions of the fronts near the centres of depressions, but they are straight or anticyclonically curved near a front which runs through a col or a ridge or an anticyclone.

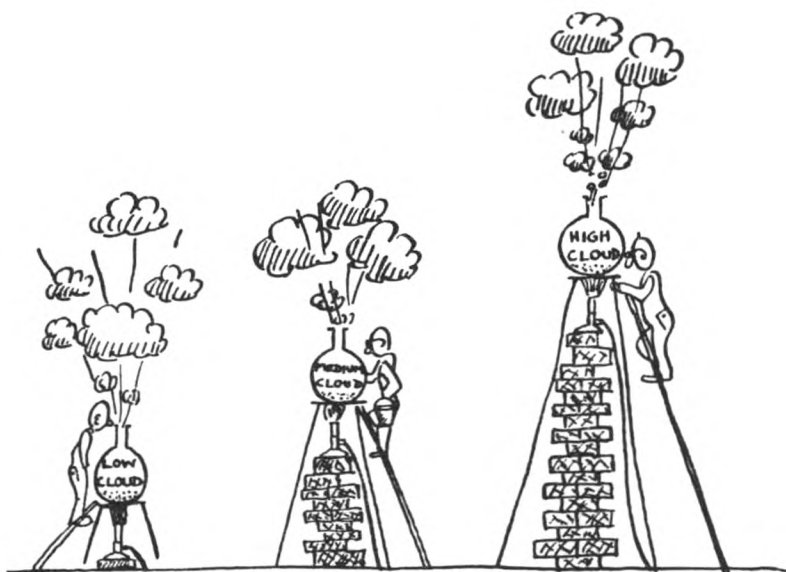
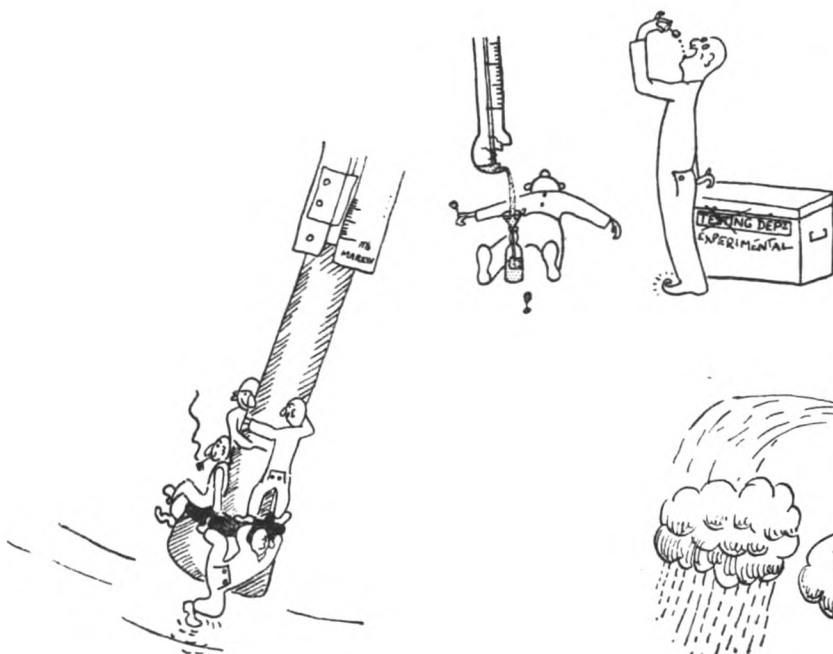
A useful fact to remember when drawing up a chart is that isobars seldom if ever show pronounced "kinks" in a real weather situation, except at fronts as already described. As far as possible they should be drawn with a smooth and slowly varying rate of curvature, apart from the exceptions described here. When the pressure for a land station, or for a ship, as reported in the coded message received, makes it impossible to draw the isobars without making them unevenly spaced, or violating the rules already given here in some other way, the value of that pressure should be suspected. For instance, it may be reported with an error of 5 or 10 mb, or the ship's reported position may be in error by 5° or 10° of latitude or longitude. If it is not possible to decide which of these errors is operative, and if the wind direction and weather reported by the ship also appear inappropriate to the synoptic situation in that area of the chart, it is better to assume that some error has crept into the message and therefore to reject the observations of that ship altogether and draw up the chart as if they did not exist. However, a ship's observation should not be lightly disregarded in this way and the mariner should apply all the tests given above to make quite sure that such observations need to be rejected before actually doing so.

The course of isobars which cross from an ocean to a continent is not usually appreciably affected by the presence of the coastline, not at any rate on the scale on which the charts in Figs. 1 and 2 are drawn. But mountains and plateaux such as the Alps and Greenland do have a marked effect on surface isobars; and in general when there is a moderate or steep pressure gradient across a mountain range or a high-level land mass, the surface isobars show a definite trough in the lee of the obstructing mountain range or high land area. Evidence of such a trough can be seen over the Denmark Strait in Figs. 1 and 2; another region where a similar trough often occurs is over the Gulf of Lyons and the Tyrrhenian Sea when a strong north-west pressure gradient develops over the Alps.

R. F. M. H.



FIFI The original FM21



The Workings of a Weather Factory

On the back of an old chart which had been used as a dust cover on the meteorological logbook of S.S. Helicina (Captain W. C. Loughlin) in March, 1955, one of the officers, Mr. A. Ferguson, had made a series of amusing and ingenious drawings. A selection of these is reproduced here. They show the activities of the "gremlins" that plague the lives of voluntary observers at sea by swinging the barometer, jiggling the barograph pen up and down, suddenly heating up the thermometer and manufacturing the clouds and rain.

“TREVIDER’S” FAREWELL TO THE METEOROLOGICAL OFFICE

(This poem appeared inside the front cover of the last meteorological logbook of the M.V. *Trevider* (Captain F. G. Bolton). She had been an observing ship since December, 1953, and earned an Excellent Award in the year ending 31st March, 1955.)

*Within these volumes you will find
Records to cover many climes;
The howling Gale, the glassy Calm,
Atlantic swell, Pacific charm,
All neatly indexed, day by day,
For you to use as best you may.*

*While reading these, in fancy stray
With me, among the waves and spray;
The warmness of a Tropic night,
Torrential rain, the Meteors' flight,
Are captured here, as numbers bare
Especially for you to share.*

*Alas! Alack! My name no more
In Morse will fly from Ship to Shore,
So from your records please erase
Trevider. I shall end my days
Under another name. But then
There's still a chance we'll meet again.*

*If not, I hope I've been a Friend
And to some troubles brought an end;
Forgive me for the odd mistake
That now and then I'm bound to make;
But now it seems my Tale is done,
So Cheerio, it's been great Fun.*

W. R. Clipson, 2nd officer.

HULL TRINITY HOUSE NAVIGATION SCHOOLS

To celebrate the opening of some new buildings at Hull Trinity House Navigation Schools, a very comprehensive maritime exhibition was held in which the Marine Division of the Meteorological Office participated. The photograph between pages 20 and 21 shows this exhibit, which includes a painting showing the distribution of British selected ships in various oceans on a stated date, representative logbooks from selected ships dated 1855 and 1955, photographs of activities aboard selected ships and weather ships, and climatological atlases compiled from observations received from selected ships. There were also some oil paintings prepared by a member of the staff of the Marine Division illustrating the value of the gale warning service to shipping.

The first Nautical School at Hull Trinity House was officially opened on 2nd February, 1787. The present building, which is the second school erected, is not on the original site, but is itself more than 100 years old. During the past six years it has been completely reconstructed and extended while all students have remained in session. It was to make the successful conclusion of this building operation that the exhibition was held.

C. E. N. F.

BIRDWATCHING

The Annual Report of the Royal Naval Birdwatching Society, *Sea Swallow*, is expected to be ready at the end of the year at a cost of about 4s. 6d., depending on the number of copies required. Captain G. S. Tuck, the chairman of the Society, tells us that this year's report will contain a number of ornithological observations which we have extracted from ships' meteorological logbooks and forwarded to him from time to time. Readers who would like to buy a copy of the report are asked to write to Commander C. E. Smith, R.N., H.M.S. *Ceres*, Wetherby, Yorks.

THE BRITISH SHIP ADOPTION SOCIETY

At the Annual Meeting of the British Ship Adoption Society, which was held aboard the *Wellington* (headquarters ship of the Honourable Company of Master Mariners) on 17th November, the Society celebrated its twentieth birthday.

Speakers at the meeting stressed the value of the work of this Society in bringing home to the youth of this country the importance of the Merchant Navy to the life of our nation. Sir William Currie, who is a Vice-President of the Society, mentioned that he had been surprised during a recent visit of stockholders to P. & O. ships how many of them had never seen a big ship before. As the Annual Report of the Society mentions, visits of pupils of schools which have adopted merchant ships are frequent, and not only do the pupils learn something about ships and seamen and the cargoes they carry, but it also helps enormously with such subjects as geography, meteorology and the like.

The number of adopted ships now total over 1,000, and included in those are three of the British ocean weather ships. The Society pointed out, however, that there is a considerable number of schools still waiting to be adopted.

Book Review

The Elements of Astronomy. Fifth Edition. By E. A. Fath. 9 in. × 6 in. pp. 369 + star charts. *Illus.* McGraw-Hill Book Company Inc. New York, Toronto and London, 1955. 41s. 6d.

The science of astronomy has made great progress, especially in recent years. This is due to the construction of great reflecting telescopes, the largest of which are in the United States, and to the development of new methods of observation and research, many of which depend on the increased optical power and penetration of these giant instruments. In addition, an entirely new kind of telescope has been invented, the radio telescope, which can explore the natural very short radar waves of the universe in an analogous way to the exploration of light waves by ordinary telescopes. The largest of these, so far constructed, is in England.

A considerable part of astronomy deals with the real and apparent movements of heavenly bodies and their distances, also with practical matters such as the determination of time, latitude and longitude. A more modern branch of astronomy is astrophysics, dating from the application of spectrum analysis to the light of the sun and the stars, which began to be developed in the second half of the nineteenth century. This branch deals with the temperature and other physical characteristics of the heavenly bodies, and with their chemical composition. These two main branches of astronomy overlap, since the spectroscope has given us much new information about the movements of the stars.

By its very nature, in contemplating the inconceivably vast extent of the universe, astronomy affords the widest field for the human mind to search for ultimate knowledge, in such enquiries as the age of the solar system and how it came into being and the still wider questions of the origin and evolution of the sun and stars and of the universe as a whole, in which order is observed among infinite variety.

It follows that the more advanced types of modern astronomical research are the province of specialists with the highest physical and mathematical equipment.

It is obviously difficult to present a comprehensive and well-balanced summary of our knowledge of the universe in a single volume, owing to the great accumulation of detailed information now available and to the necessity for the author to keep himself up to date in widely differing lines of research. From this point of view the present volume must be regarded as a noteworthy achievement. The author was formerly Professor of Astronomy in Carleton College, U.S.A. It is the fifth edition of a work first published in 1926, and it offers a sound and accurate introduction to the whole range of astronomical science. The book is written for students desiring such a course at colleges and universities and is also intended for the general reader. The presentation is as non-technical and non-mathematical as is possible, with only a few simple formulae, and is set out in text-book style, with numbered and headed sections. While there is need for economy of wording to include so much information within the limits of the volume, the style has nowhere been sacrificed to this and the book is eminently clear and readable.

The book is very well illustrated with 263 diagrams and photographs. The subject index is reasonably adequate, but could have been somewhat fuller with advantage. At the end of the volume there are eight star charts showing the brighter naked-eye stars, those down to magnitude 4.5, with the internationally agreed constellation boundaries.

E. W. B.

NEW BATHYMETRIC CHART OF THE SOUTHERN PORTIONS OF THE SOUTH ATLANTIC AND INDIAN OCEANS

The third edition (March, 1954) of Sheet B'IV of the General Bathymetric Chart of the Oceans has been published recently by the International Hydrographic Bureau. Publication has been with the collaboration of National Hydrographic Offices, of Cable and Steam Navigation Companies and of oceanographers throughout the world. Financial assistance was provided by the American Philosophical Society, the National Academy of Sciences, the Association Internationale d'Océanographie Physique, the Challenger Society of London and the Office de la Recherche Scientifique d'Outre-Mer, Paris.

In addition to the 7,000 soundings used in the earlier editions, the third edition contains much new data from the hydrographic work of R.R.S. *Discovery II* and from the expeditions of the ships *Meteor* and M.S. *Schwabenland*. The new data has allowed more accurate bathymetry in many areas where previously information was lacking. Thus it has been found that Bouvet Island appears to form the most south-easterly point of the Atlantic Rise; the general depth of this Rise (2,000–3,000 metres) being broken up immediately to the west of the island by a chaotic succession of deeps and submarine mountains. The coastline of the Antarctic Continent has also been entirely redrawn.

The production of the chart reaches a high standard, and the layering is pleasing to the eye.

R. F. M. H.

Personalities

RETIREMENT.—In May, 1955, CAPTAIN H. PERCIVAL, O.B.E., R.D., R.N.R., Commodore of the City Line, retired from the sea after 42 years with the Ellerman Lines. He joined the Company in 1912. During the 1914–18 War he served in the Royal Navy as an R.N.R. officer. Returning to the Company after the war he was given his first command in 1922 in the S.S. *Crewe Hall*, and has commanded several of the Ellerman cargo and passenger liners.

Throughout the 1939–45 War he was in command of ships in various operations. In September, 1940, his ship the *City of Simla* was torpedoed and sunk off Ireland.

His next ship, the *City of Canterbury*, was in several actions, including the attack by the German cruiser *Hipper* on Christmas Day, 1940, and operations at Crete in 1941 and Singapore in 1942.

In 1942 he joined the *City of Paris* and was continuously in command of her until 1952, when he was appointed to the new ship *City of Port Elizabeth*.

Captain Percival had been associated with the Meteorological Office since 1932 when he was in the *City of Baroda*, and has sent in a number of excellent logbooks.

We wish him good health and happiness in his retirement.

C. H. W.

OBITUARY.—We regret to record the death, on passage from Colombo to Aden, in August of CAPTAIN J. W. B. ROBERTSON, R.D., R.N.R., master of the S.S. *Maipura*. He was buried at sea.

Captain Robertson began his seafaring career in January, 1914, with Messrs. T. & J. Brocklebank, whom he served throughout, with the exception of his service in the Royal Navy during each world war.

During the First World War, as midshipman R.N.R., he was in one of the first landing ships, being present at Gallipoli. He subsequently served at Salonica and in the Northern Patrol as sub-lieutenant.

The outbreak of the Second World War found him Chief Officer of the *Magdapur*, in which he was mined and sunk in the North Sea only seven days after war broke out. He subsequently served as Commander and Captain R.N.R. in various theatres of war and was for a short while Divisional Sea Transport Officer at Rangoon.

Returning to his Company in 1945 he was in command successively of *Masirah*, *Mahanada* and *Maipura*.

Captain Robertson's association with the Meteorological Office goes back to 1921 when he was Second Officer of the *Malancha*. In all he was observing for 13 years, during which he sent us 32 logbooks.

L. B. P.

CHANGES IN NAUTICAL STAFF OF THE METEOROLOGICAL OFFICE

Captain A. D. White, who is also a Lt.-Cdr. R.D., R.N.R., and who has recently been in command of H.M. Revenue cruiser *Vigilant*, has been appointed a Senior Nautical Officer at Harrow and deputy to the Marine Superintendent in succession to the late Commander Hennessy. Captain White served his time with Messrs. Furness Withy & Co., Ltd., and rose to the rank of Second Officer in that Company. In 1937 he transferred to the Union-Castle Line. From 1939 to 1946 he was on active service in the Royal Navy in command of escort vessels. He then returned to the Union Castle Line, and in 1953, having attained the rank of Chief Officer on a mail ship, he joined the service of H.M. Customs. Captain White has done considerable service as a voluntary observer at sea.

Mr J. C. Matheson, Master Mariner, who has been Port Meteorological Officer at Cardiff since August, 1949, has been promoted to Senior Nautical Officer in the Port of London in succession to Commander C. H. Williams, who retired in July, 1955 (see *The Marine Observer*, Vol. XXV, page 242). Mr. Matheson was formerly in the Clan Line, where he attained the rank of Chief Officer.

Captain F. G. C. Jones has been appointed Port Meteorological Officer at Cardiff in succession to Mr. Matheson. Captain Jones (Extra Master) was formerly in command in the Blue Funnel Line.

C. E. N. F.

Notices to Marine Observers

Observations in the North Sea

As stated in the April and July, 1955, numbers of *The Marine Observer*, the Meteorological Office is making a special effort to encourage ships to send radio weather messages when in the North Sea area. Although messages in the full code form FM21A are preferable, messages in the shortened form of codes FM22A or FM23A will be extremely useful and the message can be sent either by W/T or R/T as convenient.

It is desirable, as a general rule, that such messages should only be sent when the ship is outside of 20 miles from shore.

If any British ship in the North Sea area is unable to clear such a message direct to a British coast station she can send the message free of charge as follows:

- (a) Scheveningen Radio: the message being addressed "KNMI De Bilt".
- (b) Blavand Radio, or Skagen Radio: the message being prefixed "OBS" and addressed to "Vejrtjenesten, Kobenhavns lufthavn".
- (c) Bergen Radio: the message being addressed "Met. Bergen".

In all cases it is desirable that the message should include the preamble "OBS".

Meteorological Charts for Ships leaving the River Thames

From Monday, 21st November, 1955, the Meteorological Office is arranging for the masters of merchant ships leaving the River Thames to be supplied with a forecast chart. These charts will be prepared at the Meteorological Office in Kingsway, and a sufficient number of them will be dispatched by rail each day from Charing Cross to Gravesend and will be delivered to the Pilotage Office. Each pilot who boards an outward bound steamer at Gravesend will take one of these forecast charts for the information of the master of the ship.

At the top of the chart will be a general statement about the existing weather situation based upon the 0600 G.M.T. chart that morning. The chart itself will be a "prebaratic"; in other words it will be a forecast chart, portraying what the general meteorological situation around the British coasts and in the Atlantic will look like at 0001 the next day. Facing the chart will be a detailed forecast based upon the 0600 chart that morning.

These arrangements have been made possible thanks to the kind co-operation of the Elder Brethren of Trinity House and British Railways.

Thames Fog Warnings

A recent Admiralty Notice to Mariners draws attention to a scheme whereby warnings are issued by radio from North Foreland (GNF) when visibility is less than $\frac{1}{2}$ mile in the vicinity of Gravesend Reach. Another warning is issued when visibility is restored. The warnings are scheduled and provision is also made for the convenience of hours of watch in ships carrying only one radio officer.

When one considers the unfortunate prevalence of fog in the River Thames and the danger to shipping venturing into these congested waters when fog is known to exist, the value of this service which has been initiated by the Port of London Authority is obvious.

Drawings by Marine Observers

In the meteorological logbooks which we receive there are many excellent diagrams and sketches, a number of which are published in *The Marine Observer* each quarter. Unfortunately, owing to the nature of the paper and ink used, these are not always suitable for publication and have to be redrawn, and however carefully this is done some of the individual character of the drawing is lost. It is suggested, therefore, that marine observers should draw their diagrams in Indian ink on plain white

paper where possible and attach them to the Additional Remarks section of the logbooks. In this way we might be able to reproduce the sketches without alteration. Some pencil drawings can also be reproduced as they stand. Though, due to the prohibitive cost, we are not able to print in colour, we still hope to continue receiving the interesting coloured sketches that observing officers send us from time to time.

Observations of Ice Conditions

Under the International Convention for Safety of Life at Sea, drifting ice, derelicts and all other floating dangers to navigation are reported by all means at the disposal of the master. (See pages 96–98 of the *Marine Observer's Handbook*, seventh edition.)

However, as regards ice, more detailed information than can be given in a TTT message would be of value to the Meteorological Office. If marine observers could note the condition of ice, either drifting or fast, in the pages at the end of the meteorological logbook or on Form 912, which may be obtained on application to Port Meteorological Officers or Merchant Navy Agents, it would help in research work ashore and for Admiralty charts and sailing directions.

In the North Atlantic ships are requested not only to record the presence of ice, but also during the ice season if they have encountered no ice. In this way it can be ascertained when the tracks have been free from ice.

NAUTICAL OFFICERS AND AGENTS OF THE MARINE DIVISION OF THE METEOROLOGICAL OFFICE, GREAT BRITAIN

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Bristol Channel.—Captain F. G. C. Jones, Port Meteorological Officer, 2 Bute Crescent, Cardiff. (Telephone: Cardiff 21423.)

Southampton.—Captain J. R. Radley, Port Meteorological Officer, 50 Berth, Old Docks, Southampton. (Telephone: Southampton 24295.)

Clyde.—Captain R. Reid, Port Meteorological Officer, 53 Bothwell Street, Glasgow. (Telephone: Glasgow Central 2558.)

Forth.—Captain A. Wilson, 9 Rosslyn Crescent, Edinburgh, 6. (Telephone: Leith 35788.)

Humber.—Captain R. E. Dunn, c/o Principal Officer, Ministry of Transport, Trinity House Yard, Hull. (Telephone: Hull 36813.)

Tyne.—Captain P. R. Legg, c/o F. B. West & Co., Custom House Chambers, Quayside, Newcastle upon Tyne. (Telephone: Newcastle 23203.)

**SOME ATLASES PREPARED IN THE MARINE DIVISION OF THE
METEOROLOGICAL OFFICE AND PUBLISHED BY HER MAJESTY'S
STATIONERY OFFICE**

Atlantic Ocean

Monthly Meteorological Charts of the Atlantic Ocean (M.O. 483, 1948). 19 $\frac{3}{4}$ in. \times 24 in. £2 15s. (1s. 1d.).

Monthly Sea Surface Temperatures of the North Atlantic Ocean (M.O. 527, 1949). 19 $\frac{3}{4}$ in. \times 12 $\frac{1}{4}$ in. 10s. (3d.).

Quarterly Surface Current Charts of the Atlantic Ocean (M.O. 466, 1945). 22 $\frac{1}{2}$ in. \times 17 $\frac{3}{4}$ in. 12s. (6d.).

Monthly Ice Charts of Western North Atlantic (M.O. 478, 1944). 12 in. \times 7 $\frac{1}{2}$ in. 4s. (2d.).

Indian Ocean

Monthly Meteorological Charts of the Indian Ocean (M.O. 519, 1949). 15 $\frac{1}{4}$ in. \times 22 in. £3 3s. (11d.).

Indian Ocean Currents (M.O. 392, Second Edition 1939, reprinted 1950). 30 in. \times 20 in. 10s. (3d.).

Pacific Ocean

Monthly Meteorological Charts of the Eastern Pacific (M.O. 518, 1950). 17 in. \times 23 $\frac{1}{2}$ in. £4 4s. (1s. 4d.).

Monthly Meteorological Charts of the Western Pacific (M.O. 484, 1947). 16 $\frac{3}{4}$ in. \times 24 in. £2 2s. (1s.).

Monthly Sea Surface Temperatures of Australian and New Zealand Waters (M.O. 516, 1949). 19 $\frac{3}{4}$ in. \times 12 $\frac{1}{4}$ in. 10s. (3d.).

Quarterly Surface Current Charts of the Western North Pacific Ocean, westward of long. 160°W., with Monthly Chartlets of the China Seas (M.O. 485, 1949). 21 in. \times 16 in. £1 5s. (5d.).

South Pacific Ocean Currents (M.O. 435, 1938, reprinted 1944). 34 $\frac{1}{2}$ in. \times 24 in. 7s. 6d. (6d.).

Arctic Ocean

Monthly Ice Charts of the Arctic Seas (M.O.M. 390A, revised 1944). 12 in. \times 7 in. 3s. 6d. (2d.).

Prices in parentheses give postage (inland)

Publications in this list are obtainable direct from H.M. Stationery Office at the addresses shown on the title page, or from any bookseller.

Fleet Lists

GREAT BRITAIN

The Marine Observer, January, 1956

The following is a list of British ships voluntarily co-operating with the Marine Branch of the Meteorological Office. The names of the Captains, 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 third column.

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

The Port Meteorological Officers and Merchant Navy Agents at the ports will make personal calls on the Captains 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 financial year. The names of the Captains, Principal Observing Officers and Senior Radio Officers gaining these awards are published in a special list in *The Marine Observer*.

It is requested that prior notification of changes of service, probable periods of lay-up, transfer of Captain, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Captains are requested to point out any errors or omissions which may occur in the list.

Selected Ships

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Accra</i> ..	GJSW	13.9.55	G. D. Simpson, O.B.E.	R. Myers, M. Foster	J. Stewart ..	Elder Dempster Lines, Ltd.
<i>Adelaide Star</i> ..	GKPB		C. Roberts, O.B.E. ..	R. R. Glen, T. Harris, A. Francombe ..	G. Williams ..	Blue Star Line, Ltd.
<i>Aden</i> ..	GJMN		W. J. Banks	N. Perser, B. S. Mordaut, P. B. Jackson, ..		P. & O. Steam Navigation Co.
<i>Afghanistan</i> ..	GNYP	14.5.55	R. Connacher	A. K. Ewing		F. C. Strick & Co., Ltd.
<i>Ayana</i> ..	GKVP	15.3.55	F. W. Mould	A. D. Forster, F. E. Bowley, A. A. J. Rotherham	A. Sinclair ..	Trinder Anderson & Co.
<i>Ajax</i> ..	GJXM	13.4.55	J. H. Kaye ..	H. A. McGill, T. Hastings, P. J. E. Charman	L. Kidd ..	A. Holt & Co.
<i>Albistan</i> ..	MART	19.8.54	E. E. Dunn ..	K. F. Eder, J. K. Marshall, R. B. Stephens ..	C. Braithwaite ..	F. C. Strick & Co., Ltd.
<i>Alcantara</i> ..	GLQR	6.8.55	W. H. Grimshaw ..	E. C. Cross, M. Fleming ..	J. Peel ..	Royal Mail Lines, Ltd.
<i>Alsatia</i> ..	MABL	17.5.55	J. Chapman, R.D., Capt.	P. F. Jowers, T. Farquharson, J. A. Lewin ..	R. Hammond ..	Cunard Steamship Co., Ltd.
<i>Amakura</i> ..	MCPN	19.6.55	R.N.R. (Retd.) ..	B. V. Mercer, J. Weston, J. Clark, H. Dormer	J. Mockler ..	Booker Bros. McConnell & Co., Ltd.
<i>Andes</i> ..	GQCV	25.6.55	A. Jones ..	D. Andrew, C. St. John-Keyton, J. H. Donaldson	E. Ash ..	Royal Mail Lines, Ltd.
<i>Andria</i> ..	GDWM	14.3.55	H. H. Treweeks	C. Oxborrow, J. Lebreight, D. Williams ..	W. Smith ..	Cunard Steamship Co., Ltd.
<i>Apapa</i> ..	MACE	9.3.54	A. G. Cuthill ..	P. A. A. James, T. Edwards, P. Gadsden ..	D. P. Byrne ..	Elder Dempster Lines, Ltd.
<i>Arabia</i> ..	GLKF	4.8.55	A. G. Baptiste	D. J. Brown, A. Hopper ..	G. I. Gilling ..	Cunard Steamship Co., Ltd.
<i>Arabistan</i> ..	GCKK	13.7.55	W. B. Tanner, R.D., Capt.	M. S. Dixon, R. A. Woodall, R. J. F. Nightingale	T. Sandham ..	F. C. Strick & Co., Ltd.
<i>Araby</i> ..	GMZL	1.12.53	D. L. Cook ..	D. G. Mason, D. Calvert, G. R. Catchpole ..	P. Murphy ..	Royal Mail Lines, Ltd.
<i>Arakaka</i> ..	GDVN	26.5.55	A. J. G. Barff, R.D., Cdr.	J. A. Le Brecatt, R. Foulkes, M. Larrive ..	M. Duff ..	Booker Bros. McConnell & Co., Ltd.
<i>Argentina Star</i> ..	GTKF	23.6.55	R.N.R. ..	R. A. Hammond, F. Sanchez, J. L. Anczykowski, J. Donaldson ..	J. Fraser ..	Blue Star Line, Ltd.
			J. A. Carter	M. Moore, B. G. Knights, J. Rawding ..	G. E. Dyson ..	
			E. R. Pearce, O.B.E.			

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Arigami</i> ..	GMBL	8.9.55	R. W. Lundy, O.B.E., R.D., Lt.-Cdr. R.N.R. (Retd.) ..	N. Abbott, J. Quinlan, D. Penny ..	H. Roderic ..	Elders & Fyffe, Ltd.
<i>Armagh</i> ..	GQGG	5.4.55	J. F. Wood ..	A. Ashdown, J. Cole, J. Johnston ..	T. Philips ..	Avenue Shipping Co.
<i>Arundel Castle</i> ..	GQZL	13.6.55	D. D. MacKenzie ..	D. France, C. Ennis, I. Mason ..	E. Pitt, D.S.C. ..	Union Castle Mail S.S. Co., Ltd.
<i>Ascania</i> ..	GKNJ	3.5.55	E. A. Divers, O.B.E., R.D., Capt. R.N.R. ..	N. M. Johnson, P. J. Mullen, V. Charles ..	H. M. Milligan ..	Cunard Steamship Co., Ltd.
<i>Ashburton</i> ..	GNJN	20.8.55	C. Parry ..	J. Johns, R. N. Toye, J. Tissiman ..	C. Peddie ..	Trinder Anderson & Co.
<i>Asia</i> ..	GLJV	1.11.54	F. E. Patchett ..	R. Smith, P. J. Davies, C. R. Bishop, R. Pauley, O. H. Howells, P. Jackson ..	J. S. Marshall ..	Cunard Steamship Co., Ltd.
<i>Assyria</i> ..	GGKX	15.8.55	J. G. Bradley, R.D., Capt. R.N.R. ..	C. M. Goddard, J. A. Davies, G. W. Newcombe ..	B. A. Long ..	Cunard Steamship Co., Ltd.
<i>Asturias</i> ..	GLQS	17.6.55	J. Smith, R.D., Capt. R.N.R. (Retd.) ..	J. V. McDermott, D. Box, A. Heather, R. Flood, N. R. Slackie, G. Bonner ..	R. Farrell ..	Royal Mail Lines, Ltd.
<i>Athelfoam</i> ..	GMFN	24.6.55	A. W. Pegg ..	S. Waldron, J. K. Davies, A. MacDonald ..	P. J. Brouder ..	Athel Line, Ltd.
<i>Athenic</i> ..	GBLS	30.6.55	L. E. Edmeads ..	J. O. Williams, D. Aberdeen, J. W. Localis ..	H. S. Knight ..	Shaw, Savill & Albion Co., Ltd.
<i>Athlone Castle</i> ..	GYTK	18.6.55	C. C. Page ..	G. Stockley, P. Jackson, D. Rawlins ..	F. Summers ..	Union Castle Mail S.S. Co., Ltd.
<i>Aureol</i> ..	GMGJ	17.8.55	W. Munt ..	D. Capstick, —, Evelyn ..	J. W. J. Broomfield ..	Elder Dempster Lines, Ltd.
<i>Auricula</i> ..	GKPV	2.5.55	J. R. Petrie, M.B.E. ..	R. M. Watt, F. R. Christian, W. A. Clark ..	J. J. Crotte ..	Messrs. Shell Tankers, Ltd.
<i>Australia Star</i> ..	GYCS	21.5.55	J. A. Hoppe ..	G. C. Williams, J. A. Nolan, C. V. Brown ..	C. Francis ..	Blue Star Line, Ltd.
<i>Avistone</i> ..	GBSV	8.7.55	A. A. Roche ..	J. P. Garfield, T. Davies, W. W. Brindle ..	L. R. Bradley ..	Purvis Shipping Co., Ltd.
<i>Awondene</i> ..	MAWG	10.5.55	F. Moorcraft ..	E. B. Fitzpatrick, A. D. Arthur ..	J. T. W. Moody ..	Dene Shipping Co., Ltd.
<i>Avonmoor</i> ..	GFGL	25.4.55	L. C. Welch ..	D. A. Crawford, R. R. Jordan, G. Everitt ..	T. D. D. Kenny ..	Walter Runciman & Co., Ltd.
<i>Balaena</i> ..	GLDG	13.5.54	P. Uirik ..	R. Christoffersen, —, Bentyen, A. Anderson ..	J. Dahl ..	Hector Whaling, Ltd.
<i>Balanitia</i> ..	GBNM	28.4.55	J. A. Philips ..	J. Wilson, M. Bennett, G. H. Burdon ..	P. Neve ..	Royal Mail Lines, Ltd.
<i>Baron Elphinstone</i> ..	GCCD	13.6.55	A. Campbell ..	J. Dumpace, R. Blackmore ..	W. Dobbie ..	H. Hogarth & Sons
<i>Baron MacLay</i> ..	GKXW	17.6.55	J. Reid ..	A. R. McKay, C. P. Roy, H. Bryson ..	A. P. Oliver ..	H. Hogarth & Sons
<i>Baron Murray</i> ..	GIBF	27.5.55	J. Pearson ..	J. W. Budka, J. Minards, C. Spierlins ..	P. Murphy ..	H. Hogarth & Sons
<i>Baron Renfrew</i> ..	GYDR	20.9.55	W. Warden ..	G. Downie, A. E. Stainthorpe, J. Liggett, D. Harlock, P. Laurie ..	T. O'Looney ..	T. & J. Harrison, Ltd.
<i>Barrister</i> ..	MSFR	12.7.55	A. Wolstenholme ..	M. Watson, J. Bean, J. Dwyer, L. G. Bennett ..	G. Stacey ..	Runciman (London), Ltd.
<i>Backerville</i> ..	GSDN	14.5.55	J. G. Wilson ..	G. C. Elvidge, M. Martin, J. J. Aitkin ..	A. Leary ..	Ellerman's Wilson Line, Ltd.
<i>Bassano</i> ..	GNXK	19.3.55	C. H. Tutty ..	A. C. Neesham, C. R. Tutty, D. W. Bedford ..	G. Adamson ..	Canadian Pacific S.S., Ltd.
<i>Beaverburn</i> ..	MAGB	22.4.55	W. J. P. Roberts ..	R. Elliott, J. Richardson, P. P. Ainsworth ..	B. Johnson ..	Canadian Pacific S.S., Ltd.
<i>Beaverford</i> ..	MQJG	22.4.55	J. Soane ..	R. J. Baddock, M. Organ, C. R. Worthington, D. Roberts ..	W. H. Pettit ..	Canadian Pacific S.S., Ltd.
<i>Beaverglen</i> ..	GBCP	17.9.54	C. L. de H. Bell, D.S.C., R.D., Capt. R.N.R. (Retd.) ..	R. N. Walker, M. Scott, G. Parry ..	A. E. S. Thompson ..	Canadian Pacific S.S., Ltd.
<i>Beaverlake</i> ..	GBCQ	5.2.54	N. W. Duck, D.S.C., R.D., Capt. R.N.R. (Retd.) ..	C. Hutchinson, G. Palmer, J. Whaling ..	F. C. Devin ..	Canadian Pacific S.S., Ltd.
<i>Beaverlodge</i> ..	MAGJ	16.9.55	L. J. Johnston, M.B.E. ..	E. Brewer, P. Roberts, B. Snell ..	F. G. Hayes ..	W. Thomson & Co.
<i>Bellerophon</i> ..	GGCM	14.6.55	A. R. McDavid ..	G. M. Evans, T. E. Lang, G. A. Fisher ..	E. Carruthers ..	Hector Whaling, Ltd.
<i>Bernevis</i> ..	MAGG	25.7.55	R. Griffiths ..	G. C. Alston, I. R. Ansell, J. Ritchie ..	D. Wilkes ..	
<i>Bervannoch</i> ..	GCDZ	12.8.55	T. Sutherland ..	A. Syme, E. Bicknell, G. Mathison ..		
<i>Biscoc</i> ..	GDCW	22.4.55	S. K. Williams ..	M. D. Chester, C. T. Fellowes, G. E. Baker ..		

<i>Bransfield</i>	..	GDRK	4.5.54	M. Paulsen ..	..	A. G. Giblin	..	T. Salvesen ..	Hector Whaling, Ltd.
<i>Brasil Star</i>	..	GTLF	3.8.55	G. E. Barnard	..	D. Robertson, P. Gilkes, R. Middleton	..	M. Burke	Blue Star Line, Ltd.
<i>Bravo</i>	..	GLDZ	27.5.54	J. A. Echtes	..	A. J. Collard, P. Lomas, F. M. Martin	..	J. Hudson	Ellerman's Wilson Line, Ltd.
<i>Bridlington</i>	..	GLYS	..	D. Fitzgerald-Lombard	..	P. Weevil, K. J. Melvin	..	K. Melvin	Air Ministry
<i>Brisbane Star</i>	..	GZCJ	6.8.55	S. Foukles ..	..	S. Buchanan, P. Mitchell, B. Temperton	..	D. Turner	Blue Star Line, Ltd.
<i>Bristol City</i>	..	GUAY	22.7.55	F. W. Harris	..	D. Stoddley, E. A. Allchin, K. Mapstone	..	R. Chappell	Charles Hill & Sons
<i>Britannic</i>	..	GDXF	29.6.54	G. H. Morris	..	P. A. Brush, R. G. M. Hunt, K. T. Jones	..	J. Kidson	Cunard Steamship Co., Ltd.
<i>British Consul</i>	..	GEXT	8.9.55	J. H. Nelson	..	T. G. Reid, A. H. Skellem, A. Dunkerley	..	R. B. Smith	British Tanker Co., Ltd.
<i>British Endeavour</i>	..	GFCN	6.7.55	R. M. Jary ..	..	S. A. N. Le Fevre, N. O. Morrice, R. Crombie, M.B.E.	..	J. Hogan	British Tanker Co., Ltd.
<i>British Escort</i>	..	GCRB	23.8.55	N. Leybourne, D.S.C.	..	L. MacKay, A. Mackinnon, K. J. MacKay	..	M. G. Williams	British Tanker Co., Ltd.
<i>British General</i>	..	GCDJ	22.7.55	G. C. Dobson	..	R. G. Brockman, A. Hendry, E. C. Hempenstall	..	K. D. Harris	British Tanker Co., Ltd.
<i>British Marquis</i>	..	GWVL	25.1.55	J. V. Robinson	..	G. F. T. Smith, J. F. Hobbs, A. P. Hughes, D.S.C.	..	D. W. James	British Tanker Co., Ltd.
<i>British Patience</i>	..	GUFF	27.9.55	R. Phillips, R.D., Lt.-Cdr. R.N.R. (Retd.)	..	T. M. Carrick, R. J. Young, C. G. Jones	..	M. Newcombe	British Tanker Co., Ltd.
<i>British Piper</i>	..	GDNN	17.6.55	C. D. Ayres	..	A. M. Overton, G. Lambert, G. A. B. King	..	E. Irving	British Tanker Co., Ltd.
<i>British Resource</i>	..	GFCD	17.6.55	L. Atthill, O.B.E.	..	B. Robinson, R. Riley, J. S. Fitzwalter	..	V. Holme	British Tanker Co., Ltd.
<i>British Sailor</i>	..	GSDQ	23.7.55	H. T. McMichael, O.B.E.	..	J. F. Surman, J. G. Harrison, G. H. Smith	..	P. Kenrick	British Tanker Co., Ltd.
<i>British Splendour</i>	..	GCTT	28.4.55	G. Atfield ..	..	A. Gill, R. Maybourn, M. Carnell	..	J. Nicolson	British Tanker Co., Ltd.
<i>British Union</i>	..	GCLZ	7.9.55	C. W. Ellis	..	R. Bolger, D. R. Upham, G. Willis	..	S. Boner	British Tanker Co., Ltd.
<i>Brittany</i>	..	GMZS	30.6.55	C. C. Dingle	..	J. M. Jones, J. L. Holt, G. S. Varney	..	R. D. Jones	Royal Mail Lines, Ltd.
<i>Brockleymoor</i>	..	GDWP	30.11.54	D. J. Jones	..	T. J. Graham, D. Nicholas	..	E. Williams	Walter Runciman & Co., Ltd.
<i>Cairnaron</i>	..	GPJN	26.9.55	J. W. Scott	..	N. Shell, A. R. Fairley, J. Thompson, P. F. Sutton	..	D. Cook	Cairns, Noble & Co.
<i>Cairndhu</i>	..	GPBB	12.8.55	J. Hogg	..	D. Aitchison, K. Murray, N. Young	..	P. Magnum	Cairns, Noble & Co.
<i>Cairnesh</i>	..	GMKR	6.7.53	G. R. Norvell	..	L. Edwards, G. Pattison, D. Lamb	..	W. Greaves	Cairns, Noble & Co.
<i>Cairngowan</i>	..	GNZZ	3.12.54	I. G. Foster	..	I. Gault, J. E. Potter, T. Bell	..	E. Johnston	Cairns, Noble & Co.
<i>Calchas</i>	..	GMSS	23.5.55	D. R. Jones	..	E. Farmer, J. Wishart, J. Cottier	..	D. M. Hughes	A. Holt & Co.
<i>Caledonia</i>	..	GCKR	16.9.55	D. Blair	..	D. T. Storey, D. Barclay, A. McKelvie, T. Patience	..	D. Barclay	Anchor Line, Ltd.
<i>Cambridge</i>	..	MMBF	7.4.55	P. P. O. Harrison	..	L. T. Fancett, P. W. Bower, R. F. D. Pook, S. W. Lambrick	..	D. W. Field	Federal Steam Navigation Co., Ltd.
<i>Canton</i>	..	GDDT	4.8.55	J. C. W. Last, O.B.E.	..	A. J. Arrowsmith, R. Hubbard, G. J. Jones, G. E. V. Holmes	..	M. J. Murphy	P. & O. Steam Navigation Co.
<i>Cape Clear</i>	..	GCKN	16.5.55	P. Farnborough	..	A. MacLeod, D. Cameron, A. Ashton	..	A. Giddins	Lyle Shipping Co., Ltd.
<i>Cape Grafton</i>	..	MAIF	11.5.55	D. M. Taylor	..	A. C. Hunter, F. M. Rebane, C. C. Paterson	..	D. Cunnane	Lyle Shipping Co., Ltd.
<i>Capetown Castle</i>	..	GKGM	27.7.55	J. Trayner ..	..	J. L. White, D. M. Bailey, P. M. Bolton, B. R. Webb	..	P. Williams	Union Castle Mail S.S. Co., Ltd.
<i>Captain Cook</i>	..	GLBX	22.8.55	A. Banker ..	..	C. Sheppard, N. Dalziel, A. McGugan	..	L. W. Hopper	Donaldson Bros. & Black, Ltd.
<i>Carnarvon Castle</i>	..	GJSL	22.8.55	W. S. Byles, R.D., Capt. R.N.R.	..	R. Smith, P. N. Rippon, P. J. O'Sheridan	..	H. G. Liggins	Union Castle Mail S.S. Co., Ltd.
<i>Caronia</i>	..	GYKS	12.9.55	J. W. Caunce, R.D., Cdr. R.N.R. (Retd.)	..	D. H. Lee, P. Miller, D. Swinnerton, D. Boyd, F. E. Pollit	..	W. A. Sturgeon	Cunard Steamship Co., Ltd.
<i>Carthage</i>	..	GRNX	25.3.55	D. H. F. Armstrong	..	P. Kennard, B. J. Carter	..	W. Pongdestre	P. & O. Steam Navigation Co.
<i>Caslon</i>	..	MCJR	22.2.54	R. Blacklock	..	R. C. Scroggins, T. R. Robinson, R. R. Rawlins	..	G. Dunn	Runciman (London), Ltd.
<i>Cavina</i>	..	GKJV	9.8.55	F. P. Inch ..	..	D. Brighton, P. O'Donnell, W. Thompson	..	W. McHugh	Elders & Fyffes, Ltd.
<i>Caxton</i>	..	GCDX	16.9.55	W. J. Coull	..	R. C. Scroggins, R. Goodfellow, W. Hendry	..	W. P. M. Edmunds	Runciman (London), Ltd.
<i>Ceramic</i>	..	GFLM	13.4.55	F. A. Smith	..	I. K. McIntosh, C. D. Craig, B. Agnew, G. Houchin	..	S. Lillis	Shaw, Savill & Albion Co., Ltd.
<i>Chantala</i>	..	GQMR	10.3.55	L. W. Smith	..	W. M. Coutts, M. R. Stubbington, D. R. Andrews	..	N. Taylor	British India Steam Nav. Co., Ltd.

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Chapman</i> ..	GFVR	17.1.55	L. C. Burton	J. S. Glen, J. W. Peck, E. S. Peers	B. Braithwaite	Runciman (London), Ltd.
<i>Cheshire</i> ..	GLXV	10.5.55	N. F. Fitch	J. J. Mullins, A. MacPherson, J. Lundberg	C. Beyer	Bibby Bros. & Co.
<i>Chandwara</i> ..	GFRT	21.5.55	B. A. Rogers, D.S.C., R.D., Cdr. R.N.R.	H. B. Chambers, T. I. Robertson, D. V. Harradine	G. J. Edge	British India Steam Nav. Co., Ltd.
<i>Cilicia</i> ..	GDGL	1.4.55	J. L. Gibson, O.B.E.	D. MacLeod, G. Hendry, N. McFarlane	C. Pennington	Anchor Line, Ltd.
<i>Cingalese Prince</i> ..	GFRC	23.8.55	B. R. Simons, M.B.E.	J. F. Newton, A. Farrar-Hare, K. E. Maxwell	K. McQuire	Prince Line, Ltd.
<i>City of Barcelona</i> ..	GTKR	3.9.55	A. N. Fry	I. A. Cucksey, A. A. C. Mason, C. I. Free	A. M. Adams	Ellerman Lines, Ltd.
<i>City of Birmingham</i> ..	GZLR	8.8.55	W. S. Doidge	E. S. Page, J. W. E. Caffyn, P. Leatham	H. Reynolds	Ellerman Lines, Ltd.
<i>City of Brisbane</i> ..	GDLM	21.6.55	E. G. Chapman	D. J. Sheil, H. Brown, A. M. Bowman, W. M. Fieldhouse	A. E. Lawrence	Ellerman Lines, Ltd.
<i>City of Bristol</i> ..	GCPN	6.8.55	W. A. Owen	C. H. Long, R. T. MacNab, I. G. Lumley, L. R. Jones	E. Fitzgerald	Ellerman Lines, Ltd.
<i>City of Cape Town</i> ..	GBBQ	5.5.55	I. Blewett	J. R. Lowe, J. R. Phinn, N. Bradley	D. R. Green	Ellerman Lines, Ltd.
<i>City of Carlisle</i> ..	GBJK	9.6.55	F. McKay	P. J. Carnie, G. Roose, A. MacMillan	J. O'Donoghue	Ellerman Lines, Ltd.
<i>City of Chester</i> ..	MAHN	31.3.55	W. A. Hannah	D. D. Jamieson, W. Locker, C. Granger, T. Lovell	D. G. Hallam	Ellerman Lines, Ltd.
<i>City of Delhi</i> ..	GLBW	7.5.55	W. S. Lowe	K. Graham, W. Courts, A. Ledger	P. Travers	Ellerman Lines, Ltd.
<i>City of Derby</i> ..	GFWC	3.6.55	F. W. Woods	C. F. Fawcett, D. S. MacLean	J. Simpson	Ellerman Lines, Ltd.
<i>City of Dieppe</i> ..	GSVQ	30.7.55	B. Walker	R. E. W. Butcher, R. Frame, D. H. McIntosh	B. B. Jones	Ellerman Lines, Ltd.
<i>City of Durham</i> ..	GBJM	4.5.55	W. J. Merchant	J. B. Jones, R.N.R., G. G. Francis, B. W. Walker	G. W. Hockston	Ellerman Lines, Ltd.
<i>City of Edinburgh</i> ..	GNGC	17.6.55	W. Nimmo	T. Innes, F. W. More, B. Fletcher	H. Smith	Ellerman Lines, Ltd.
<i>City of Evansville</i> ..	GINF	24.3.55	T. L. Vaughan	J. Cowper, W. Fleming, R. MacMahon	W. T. Brace	Ellerman Lines, Ltd.
<i>City of Johannesburg</i> ..	GBKW	1.6.55	R. J. Ricketts, O.B.E.	D. W. Asquith, G. Rainier, A. J. Lawrie	V. Manning	Ellerman Lines, Ltd.
<i>City of Khartoum</i> ..	GBZC	9.8.55	T. G. Mathias	G. Salter, P. Stock, D. Lewis	E. M. Grover	Ellerman Lines, Ltd.
<i>City of Lichfield</i> ..	GCXL	3.12.54	G. R. Jackson	A. A. Smith, I. Butcher, D. Quinn	A. T. Murray	Ellerman Lines, Ltd.
<i>City of Lille</i> ..	GSLN	12.5.54	H. Mackie	F. W. More, D. Wright, G. H. Watkins	I. Morgan	Ellerman Lines, Ltd.
<i>City of Liverpool</i> ..	GZJX	22.1.55	W. A. Rogerson, O.B.E.	P. Thornton, J. H. Robson, L. King	E. D. McMahon	Ellerman Lines, Ltd.
<i>City of Lyons</i> ..	GMCN	22.1.55	I. R. Pulford	J. M. Longstaff, J. Kinley, W. M. McGregor	J. Herron	Hall Line, Ltd.
<i>City of New York</i> ..	GLYQ	4.7.55	A. M. Westlake	B. J. Lewis, P. Boyle, P. A. Embley	A. Gandon	Ellerman Lines, Ltd.
<i>City of Paris</i> ..	GFQM	30.9.55	T. H. Speakman	H. Farquhar, R. G. Binnie, R. C. Matson	K. G. Arthur	Ellerman & Bucknall S.S. Co., Ltd.
<i>City of Pretoria</i> ..	GBLN	6.8.55	A. G. Freeman	A. A. Ramsden, D. A. Broadway, P. R. Williamson	M. Riley	Ellerman Lines, Ltd.
<i>City of Swansea</i> ..	GBZT	8.9.55	F. J. H. T. Vizer	P. Field, C. Heywood, F. Smith, J. Petter	T. H. Rowlands	Cayzer Irvine & Co., Ltd.
<i>City of Sydney</i> ..	GSFM	18.2.55	G. F. Sumpton	J. M. S. Gibson, J. Kendal, R. A. White	J. Brown	Cayzer Irvine & Co., Ltd.
<i>Clan Brodie</i> ..	GKPD	4.1.55	N. M. Graham	A. Crawford, A. B. Forster, L. Hamer	R. F. Cole, M.B.E.	Cayzer Irvine & Co., Ltd.
<i>Clan Buchanan</i> ..	GKNM	6.7.55	H. T. Booth	B. Peat, R. Shattock, P. Vaughan	E. Shillabeer	Cayzer Irvine & Co., Ltd.
<i>Clan Campbell</i> ..	GDZK	17.5.55	H. C. Simpson, O.B.E.	J. C. Walters, P. R. Kent, S. Young, J. Duncan	J. W. S. Wilson	Cayzer Irvine & Co., Ltd.
<i>Clan Chattan</i> ..	GF BX	18.7.55	J. McCrone	J. J. Grigor, A. Campbell, M. W. Scott, P. Fountain	G. D. Ainslie	Cayzer Irvine & Co., Ltd.
<i>Clan Chisholm</i> ..	GF BY	30.7.55	V. W. Green	R. Bullmore, S. K. Currie, J. Ibbster	P. H. Cottrill	Cayzer Irvine & Co., Ltd.
<i>Clan Davidson</i> ..	MAWU	6.7.55	T. A. Watkinson	T. M. Connolly, P. Philip, W. O. M. Cathro		
<i>Clan Forbes</i> ..	GPG B	8.6.55	J. C. Scott	D. C. Stobbart, T. H. Graham, R. N. Snape		

<i>Clan Macaulay</i>	GZCS	20.1.55	F. H. S. Petherbridge	R. S. Schooling, R. A. Escolme, E. N. Bass, M. R. Pearson	C. Heggerty ..	Cayzer Irvine & Co., Ltd.
<i>Clan MacDonald</i>	GCPG	29.9.55	A. S. Hogg	M. N. Ure, G. W. E. F. Wilson, G. Brice	R. W. Bathgate	Cayzer Irvine & Co., Ltd.
<i>Clan MacDougall</i>	GFBO	13.7.55	P. MacMillan	T. Hunter, A. Moir, N. C. Van Willingham	C. E. C. Crewe	Cayzer Irvine & Co., Ltd.
<i>Clan MacKinnon</i>	GKLY	9.9.55	W. Graham	E. Taylor, J. W. B. Duncan, M. J. Maclean	G. Norton ..	Cayzer Irvine & Co., Ltd.
<i>Clan MacLaren</i>	GSSC	11.8.55	A. G. MacPherson	R. J. Scott, C. P. Marshall, H. I. S. White	R. W. Moore	Cayzer Irvine & Co., Ltd.
<i>Clan MacLay</i>	GSTV	3.8.55	S. S. Davidson	A. F. Aspin, G. Stonehouse, D. Paterson	F. Fawcett ..	Cayzer Irvine & Co., Ltd.
<i>Clan MacLean</i>	GSWX	5.9.55	H. Whitehead	E. T. Burke, H. S. Carterall, D. Williams	V. Gillespie ..	Cayzer Irvine & Co., Ltd.
<i>Clan Macrae</i>	MAHP	22.8.55	H. Lockyer	G. F. Healy, B. J. Johnson, I. Dalziel	D. W. Powell	Cayzer Irvine & Co., Ltd.
<i>Clan MacTavish</i>	GUBB	28.4.55	E. Gough, O.B.E.	R. A. Fletcher, I. M. Shearer, F. R. Usher	W. Ellmers ..	Cayzer Irvine & Co., Ltd.
<i>Clan Robertson</i>	GRQQ		H. J. Anchor, O.B.E., R.D., Capt. R.N.R. (Retd.)	R. J. Brews, R. M. McCrone, J. Patterson	A. Hadden ..	Cayzer Irvine & Co., Ltd.
<i>Clan Shaw</i>	GBYW	11.8.55	L. C. Higgins, M.B.E.	C. J. Abbott, J. G. Smith, A. G. Cruickshank	G. H. Hudd	Cayzer Irvine & Co., Ltd.
<i>Clan Sutherland</i>	GFWZ	3.10.55	F. H. Turton	G. S. Gann, E. C. Harvey, B. Middleton	W. Gay ..	Cayzer Irvine & Co., Ltd.
<i>Clan Urquhart</i>	GFBK	1.7.54	T. W. Inman, O.B.E.	A. A. Elston, L. S. Jones, M. C. MacCabe, D. Townsend	R. Morris ..	Cayzer Irvine & Co., Ltd.
<i>Clydebank</i>	GKLM	14.3.55	F. Hale	W. C. Stoddard, R. Spedding, H. R. Hall	E. B. Maguire	Andrew Weir & Co., Ltd.
<i>Condessa</i>	MAHU	29.4.55	A. McEwan	A. Millie, J. Jacques, M. Gilmore	J. Bishop ..	Furness-Houlder Argentine Lines, Ltd.
<i>Consuelo</i>	GCCQ	2.1.55	G. Goodman	F. H. Johnson, D. C. T. Martin, T. Connor	G. Gamm ..	Ellerman's Wilson Line, Ltd.
<i>Corfu</i>	GRNW	5.10.55	L. A. Hill ..	A. C. MacKinnon, D. Williams, J. A. G. Jones	B. C. McCorry	P. & O. Steam Navigation Co.
<i>Corinaldo</i>	GMKP	8.7.55	R. McNie ..	J. Reid, A. Dougall, W. G. Cullen	A. R. Coy ..	Donaldson Bros. & Black, Ltd.
<i>Corinthuc</i>	GZYL	29.8.55	A. C. Jones	G. B. Broom, I. Harkness, R. Frisby, — Harefield	— Lileo ..	Shaw, Savill & Albion Co., Ltd.
<i>Corrales</i>	GSJL	17.8.55	R. A. Laycock	G. Spikins, B. Hodges, G. K. Evans	D. L. Oliver	Elders & Fyffes, Ltd.
<i>Cotopaxi</i>	GQNX	8.8.55	J. D. Richards	A. G. Tester, R. D. O. Driscoll, E. Gowland	M. M. Garbett	Pacific Steam Navigation Co.
<i>Craftsman</i>	GPZT	29.5.54	T. B. Littlechild	G. B. Thomson, F. R. Robinson, J. Maddison	D. Baty ..	T. & J. Harrison, Ltd.
<i>Crofter</i>	MNGX	31.3.55	S. Diamond	J. A. Heald, H. Sutcliffe, D. Smith	B. W. Dunscombe	T. & J. Harrison, Ltd.
<i>Cumberland</i>	GPY	9.6.55	A. E. Williams	G. Lowery, P. G. R. Rankin, J. Weston	G. S. Ross ..	Federal Steam Navigation Co., Ltd.
<i>Cuzco</i>	GKPF	2.12.54	R. D. S. Eckford	K. L. Crowther, G. D. Partison, A. Jestico	V. Dalton ..	Pacific Steam Navigation Co.
<i>Daleby</i>	MFBV	14.9.55	F. D. Lloyd	K. Barnett, D. Rogers	M. R. Carney	Ropner Shipping Co., Ltd.
<i>Dallas City</i>	GCLS	7.10.55	R. Dodds ..	O. Whitecross, O. J. Lindsay, D. Baker	J. M. Robson	Sir William Reardon Smith & Sons, Ltd.
<i>Darro</i>	MAID	22.2.55	T. Stevens ..	E. Long, M. B. Wingate, G. Varney	J. R. Hinds ..	Royal Mail Lines, Ltd.
<i>Deerpool</i>	GKDY	15.8.55	R. H. Anderson	A. C. Duncan, D. Clarke	J. M. Barry ..	Sir R. Ropner & Co., Ltd.
<i>Delphic</i>	MBLQ	13.4.55	C. L. Carroll, D.S.C., R.D., Lt.-Cdr. R.N.R. (Retd.)	D. A. Rogers, B. Tomalin, J. D. Haberfield	A. Morris ..	Shaw, Savill & Albion Co., Ltd.
<i>Descado</i>	MAIH	21.6.55	R. C. S. Woolley, R.D., Cdr. R.N.R. (Retd.)	T. D. Lilley, R. J. Turner, F. Williams, B. Copland	P. Murray ..	Royal Mail Lines, Ltd.
<i>Devon</i>	GDRF	8.6.55	J. M. James	L. Bridges, J. Wright, J. S. Glover, T. E. Partridge	E. Caley ..	Federal Steam Navigation Co., Ltd.
<i>Devonshire</i>	GTTV	3.8.55	A. N. Williamson ..	G. F. Risley, J. W. Mackinlay, G. H. Draysey ..	A. Jones ..	Bibby Bros. & Co.
<i>Ditwara</i>	GYQV	21.9.55	M. C. Williams	D. G. Watson, T. W. Barnett, I. K. Bowerman, R. J. Elston	J. Taylor, M.B.E.	British India Steam Nav. Co., Ltd.
<i>Discovery II</i>	GWVM	1.7.55	H. O. L'Estrange, D.S.C., R.D., Lt.-Cdr. R.N.R.	R. W. Major, R. M. Frederick, J. Norrington	— Miller ..	National Institute of Oceanography
<i>Dominion Monarch</i>	GRGG	19.7.55	B. Forbes Moffatt ..	T. H. Wilson, P. Carden, D. Hammerton, R. L. Reid, W. J. Gibson	F. V. Harford	Shaw, Savill & Albion Co., Ltd.
<i>Dorset</i>	GZFQ	4.5.55	K. Barnett ..	E. W. Christian, M. Blake, B. R. Baggot	D. B. Stewart	Federal Steam Navigation Co., Ltd.

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Drina</i> ..	MAIL	19.8.55	F. J. Swallow	W. G. Henderson, R. J. F. Collins, P. R. Brown	D. C. H. Franklin	Royal Mail Lines, Ltd.
<i>Duke of Athens</i> ..	GMYS	19.8.54	I. Walton	K. Tucker, T. Owen, D. Montague	E. Dennis	Trent Maritime Co., Ltd.
<i>Dunedin Star</i> ..	GKKT	22.11.54	J. D. W. Davies	C. Holleyoak, J. B. Kirkham, J. Hutton	R. Read	Blue Star Line, Ltd.
<i>Dunera</i> ..	GBBR	31.5.55	A. A. Kay	T. M. Hall, D. Matthews, P. Davis	T. F. Holden	British India Steam Nav. Co., Ltd.
<i>Durango</i> ..	MAIM	30.9.54	H. A. Wright	B. E. Becher, D. B. Cairns, C. B. Chamberlain	H. Davies	Royal Mail Lines, Ltd.
<i>Durban Castle</i> ..	GPGP	17.9.55	J. E. R. Wilford	J. C. A. Drake, L. P. H. Sayles, F. J. Pigeon, D. G. Webster	D. Droyer	Union Castle Mail S.S. Co., Ltd.
<i>Durenda</i> ..	GFSL	23.9.54	W. J. Machon	P. J. Clarke, R. Palmer, D. M. D. Rae	G. H. Smith	British India Steam Nav. Co., Ltd.
<i>Durham</i> ..	GWWK	29.4.55	J. D. Bennett	J. Stringfellow, R. C. Anderson, J. Hannah	P. Driscoll	Federal Steam Navigation Co., Ltd.
<i>Edenfield</i> ..	GFJF	19.7.55	O. T. Polkinghorne	B. W. Simpson, W. H. Lawson, D. E. Arnell, J. B. Batterbury	J. Hodgson	Hunting & Son, Ltd.
<i>Edinburgh Castle</i> ..	GOHN	8.9.55	H. A. Deller	T. Ball, J. G. Kemp-Luck, C. White	N. Fail	Union Castle Mail S.S. Co., Ltd.
<i>Egidia</i> ..	GJZD	13.7.55	R. H. Harris	R. Watt, J. McLarty, W. Stockley, D. Smith	A. R. Prole	Anchor Line, Ltd.
<i>Elysia</i> ..	GJZK	2.8.55	A. J. F. Colquhoun	A. McKendrick, G. Davidson, I. C. Graham	D. Thompson	Anchor Line, Ltd.
<i>Empire Clyde</i> ..	GDXS	18.7.55	A. C. Johnston	J. A. Scrimgeour, G. Ramage, W. Hallum, J. G. Murdoch, A. Johnston, J. McCutcheon	W. Dawson	P. & O. Steam Navigation Co.
<i>Empire Forney</i> ..	GMFW	22.8.55	F. F. Irons	D. G. Black, D. H. R. White, A. J. Whitehead, J. R. V. Beatty	D. Robson	Anchor Line, Ltd.
<i>Empire Halladale</i> ..	GPVQ	29.4.55	R. Blake	M. B. MacTavish, H. Toms, H. A. Cameron, W. W. Cameron	E. Winslow	Royal Mail Lines, Ltd.
<i>Empire Ken</i> ..	GKZJ	17.6.55	C. E. Mason	C. Moat, M. Thompson, R. Byles, J. Thwaits	S. Shippam	Orient Steam Navigation Co., Ltd.
<i>Empire Orrell</i> ..	GRCB	18.7.55	J. D. Birch, D.S.C., R.D., Cdr. R.N.R.	N. Lawson, E. Pickles, G. Munson	I. N. James	Blue Star Line, Ltd.
<i>Empire Star</i> ..	GCDP	28.7.55	F. N. Johnson, M.B.E.	M. A. Flynn, D. G. Mallinger, R. C. Cameron	E. Murphy	Canadian Pacific Steamships, Ltd.
<i>Empress of France</i> ..	GNTV	23.5.55	R. A. Leicester, O.B.E.	W. Holmes, I. Smith, M. Blossom	W. Campbell	Canadian Pacific Steamships, Ltd.
<i>Empress of Scotland</i> ..	GMLV	4.8.55	C. E. Duggan, R.D., Capt. R.N.R.	R. M. Dickinson, J. Walker	H. B. Smith	Blue Star Line, Ltd.
<i>English Star</i> ..	MFSS	13.4.55	L. Vernon, M.B.E.	T. V. Anderson, J. Law, E. S. Neave	P. Smith	Royal Mail Lines, Ltd.
<i>Essequibo</i> ..	GKPK	1.7.55	T. W. F. Bolland	A. W. Pickering, E. J. O'Keefe, P. J. Shephard	J. G. Burnet	Trader Navigation Co., Ltd.
<i>Essex</i> ..	GMLL	28.7.55	L. W. Fulcher	H. Harkins, J. Cosker, M. J. D'Oyly	D. Robertson	Esso Transportation Co., Ltd.
<i>Essex Trader</i> ..	GCMS	26.7.55	R. E. Bennett	A. Findlay, E. Atkinson, Z. Greiber	I. Clarke	Esso Transportation Co., Ltd.
<i>Esso Cambridge</i> ..	GRWJ	17.5.55	R. Drummond	I. S. Smith, J. R. Lewis, J. Wilson, J. W. Borrowdale, A. Eadie	L. A. Bundoek	Andrew Weir & Co., Ltd.
<i>Esso Canterbury</i> ..	GQZF	8.9.55	J. W. Smith	P. L. French, K. McKenzie, G. Arthur, R. Phillips	J. M. Watson	A. Holt & Co.
<i>Esso Glasgow</i> ..	GTXC	17.6.55	D. J. Davies	E. Gulwell, F. Lord, J. Watson	H. M. Robinson	T. & J. Harrison, Ltd.
<i>Esso Manchester</i> ..	GWCD	27.8.55	R. E. Smith	J. R. Petrie, J. M. Phillips, A. Harling	N. Davitt	T. & J. Harrison, Ltd.
<i>Euvebank</i> ..	GDMK	14.6.55	R. J. Warr	H. K. Stevens, J. B. Bain, G. D. Scott		
<i>Eucadia</i> ..	GJZL	28.4.55	W. MacVicar, M.B.E.	J. S. Watson, W. Stevely, R. B. Douglas		
<i>Eumaeus</i> ..	MRWT	6.9.55	H. C. Large	R. W. Johnson, D. Hammond, M. J. Steele		
<i>Explorer</i> ..	GYJX	31.3.55	W. S. Eustance	W. C. T. Pennant, E. J. Maxwell, D. T. English		
<i>Factor</i> ..	GPZV	27.8.55	R. Williams	R. Bell, R. H. Douglas, J. G. Morris		

<i>Fanad Head</i> ..	GNQQ	21.6.55	W. J. Leinster	T. F. Austin, W. Greig, T. McDowell ..	E. Gill ..	G. Heyn & Sons, Ltd.
<i>Flamenco</i> ..	GCBV	5 8.54	P. L. Hickey	C. Pringle, F. J. Leicester, G. McIntyre ..	P. E. Grenway ..	Pacific Steam Navigation Co.
<i>Francia</i> ..	GBRQ	27.8.55	D. N. MacLean, D.S.C., R.D., Capt. R.N.R. (Retd.)	H. L. Ashcroft, J. B. Clemenson, A. Hutcheson, H. Blackman ..	E. P. Bishop ..	Cunard Steamship Co., Ltd.
<i>Fremantle Star</i> ..	MQFT	16.9.55	C. R. Horton, D.S.C.	J. A. F. Jenkins, C. Swanton, C. T. Whitaker, R. Moreland, G. Marsh ..	M. J. Sheenan ..	Blue Star Line, Ltd.
<i>Fresno City</i> ..	GBYD	20.11.54	D. L. Beynon	J. S. Randall, H. Ward, M. Scarffe ..	A. Ferguson ..	Sir William Reardon Smith & Sons, Ltd.
<i>Garvelpark</i> ..	GKSV	31.8.55	A. McF. Allan	N. E. F. Jacotine, I. C. Campbell ..	J. McL. Robertson ..	Messrs. J. & J. Denholm, Ltd.
<i>Geelong Star</i> ..	GNWI	31 5.55	J. S. Crowl	H. Arkon, D. L. Burt, R. N. Parker ..	D. Lodge ..	Blue Star Line, Ltd.
<i>Georgic</i> ..	GRLJ	19.8.55	W. T. Fitzgerald, R.D., Capt. R.N.R. (Retd.)	D. Calvert, P. Walton, J. Burnhopc, W. Smith ..	A. G. Hill ..	Cunard Steamship Co., Ltd.
<i>Glenartney</i> ..	GBLG	25.7.55	H. E. Readshaw	H. C. Moule, M. P. Stone, D. C. Wareing ..	B. I. Chamberlain ..	Glen Line, Ltd.
<i>Glenbank</i> ..	GKLC	24.8.55	E. P. Stephens	D. C. Broome, W. Watson, R. Lorrains ..	T. McMin ..	Andrew Weir & Co., Ltd.
<i>Glenorchy</i> ..	GBLL	5.7.55	R. A. Hanney	J. D. Gardner, C. H. F. Hill, R. E. Davies, J. C. Ray ..	D. Royle ..	Glen Line, Ltd.
<i>Gloucester</i> ..	MANK	20.7.55	J. E. Bury ..	B. W. Anstey, D. C. Blackman, E. R. Hubbard ..	R. Waters ..	Federal Steam Navigation Co., Ltd.
<i>Gloucester City</i> ..	GKJS	22.8.55	A. L. Webb, O.B.E.	C. F. Harfoot, J. R. Campbell, B. G. Reece ..	C. Thompson ..	Chas. Hill & Sons
<i>Golfito</i> ..	GBYL	30.7.55	I. H. Bull ..	P. Wenham, H. G. Cresswell, G. Foster ..	J. Reardon ..	Elders & Fyffes, Ltd.
<i>Gothic</i> ..	MAUQ	10.6.55	K. Fisher ..	J. Dalby, — MacDougall, A. Murison ..	B. MacGovern ..	Shaw, Savill & Albion Co., Ltd
<i>Graig</i> ..	MFDS	15 12.54	S. Glynn-Woods	G. M. Nish, D. Owen, B. G. Cawson ..	L. Rawson ..	Idwal Williams & Co., Ltd.
<i>Granford</i> ..	MOGC	24.6.54	E. J. C. Morgan	R. Rawlinson, M. D. Perry, H. J. Garrett ..	R. Small ..	Gouldandris Bros., Ltd.
<i>Great City</i> ..	GBYS	2 8.55	I. Williams	J. Attwood, J. G. Driscoll, P. J. Harry ..	R. R. Colwell ..	Sir William Reardon Smith & Sons, Ltd.
<i>Haparangi</i> ..	GJYX	10.9.55	D. Chadwick	W. Hooley, T. Rowland, J. Cosh, J. Fordham ..	E. Graham ..	New Zealand Shipping Co., Ltd.
<i>Harbalyous</i> ..	GYNB	23 5.55	J. Wharton, D.S.C., M.B.E.	J. Parnall, G. Robinson, E. Miller ..	N. Cockayne ..	J. & C. Harrison, Ltd.
<i>Harrington</i> ..	GFCZ	22.7.55	J. F. Champion	W. T. Loskoczynski, J. B. Skeele, L. Hagreen ..	J. E. Conway ..	J. & C. Harrison, Ltd.
<i>Hauraki</i> ..	GJLV	26.7.55	R. G. Hollingdale ..	A. J. Rawson, C. A. Miller, P. Lay, I. F. Smith ..	R. Oliver ..	New Zealand Shipping Co., Ltd.
<i>Hector</i> ..	GBNK	1.9.55	G. R. Cheetham ..	R. A. Warren-Perry, T. P. Welch, J. T. Podmore ..	D. W. Rae ..	A. Holt & Co.
<i>Helenus</i> ..	GBTM	27.8.55	S. G. Ellams	G. Holmes, R. M. Simpson, J. Hughes ..	D. Colley ..	A. Holt & Co.
<i>Helicina</i> ..	GKBC	21.7.55	W. C. Louchlin	A. Ferguson, A. Alexander, H. Scott, C. Eldridge ..	S. Cox ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Hertford</i> ..	GKNW	10.8.55	E. A. Burton	C. Hill, J. Hunt, P. Ireland ..	H. Hare ..	Federal Steam Navigation Co., Ltd.
<i>Highland Brigade</i> ..	GJKN	6.8.55	T. Powell ..	R. R. New, R. Stapledon, J. Hindmarsh, C. W. Harris ..	T. Desboro, M.B.E. ..	Royal Mail Lines, Ltd.
<i>Highland Chieftain</i> ..	GCTY	28.6.55	P. M. Burrell	A. Acaon, V. Webster, N. Wardle, J. Escolme ..	W. Rollason ..	Royal Mail Lines, Ltd.
<i>Highland Monarch</i> ..	GMZF	21.7.55	D. R. Miller	J. Thornhill, D. Henderson, T. P. Davies ..	R. Dunk ..	Royal Mail Lines, Ltd.
<i>Highland Princess</i> ..	GFMN	17.9.55	H. A. Wright	P. Campbell, K. Ogilvie, I. Farquharson, N. Smith ..	A. Newcombe ..	Booth S.S. Co., Ltd.
<i>Hilary</i> ..	GQVM	3 6.55	J. H. Stoker	R. T. King, R. L. Thomas, T. W. McMullan ..	D. Douglas ..	Booth S.S. Co., Ltd.
<i>Hildebrand</i> ..	GKTK	22 6.55	J. Whayman, D.S.C., R.D., Capt. R.N.R.	G. Potts, J. Kerr, F. Cavendish ..	J. F. Clarke ..	P. & O. Steam Navigation Co.
<i>Himalaya</i> ..	GBDK	29.4.55	R. G. Freeman	N. D. Smith, P. R. L. Bishop, H. F. Hossell ..	G. Miller ..	New Zealand Shipping Co., Ltd.
<i>Hinabura</i> ..	GDVS	10.3.55	N. L. Warren	R. A. Wilson, J. Masson, M. W. Carrell ..	T. N. Green ..	New Zealand Shipping Co., Ltd.
<i>Hororata</i> ..	MANZ	8.7.55	H. R. M. Smith	W. Seybold, B. Whybrow, D. Brockbank ..	—, McKeown ..	Booth S.S. Co., Ltd.
<i>Hubert</i> ..	GSBF		J. H. Stoker	B. C. D. Franklin, G. W. Walker, —, Roberts ..		

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Huntingdon</i> ..	GFCT	2.8.55	P. S. Calcutt	B. S. Smith, F. R. Wilson, H. D. Harrington	A. G. Wallace	Federal Steam Navigation Co., Ltd.
<i>Hurumi</i> ..	GJZF	12.7.55	F. Pover	J. Thorpe, R. Loveridge, R. J. Boss	G. Walker	New Zealand Shipping Co., Ltd.
<i>Hyrcania</i> ..	MADE	26.5.55	R. O. Ormsby	J. Scott, A. V. Jones, J. Callan	T. Keating	Baltic Trading Co., Ltd.
<i>Imperial Star</i> ..	GIAC	24.8.55	G. C. Goudie	H. K. Dyer, C. P. Davy, R. A. Cole	D. Whitehead	Blue Star Line, Ltd.
<i>Inishowen Head</i> ..	MAOC	1.6.55	H. N. Clarke	S. Thompson, A. Fee, D. J. McDowell	A. E. Adams	G. Heyn & Sons, Ltd.
<i>Interpreter</i> ..	GPZY	10.12.54	T. Winstanley	R. Simmons, B. W. Jones	T. & J. Harrison, Ltd.	T. & J. Harrison, Ltd.
<i>Inverbank</i> ..	GKML	11.1.55	R. A. Lorrains	D. S. Hoskins, J. F. Campbell, C. Strachan	V. R. Lonney	Andrew Weir & Co., Ltd.
<i>Ivernla</i> ..	GTKX		A. B. Fastig, R.D., Capt.			
<i>Ixon</i> ..	MLIB	12.7.55	R. Blakey	P. N. Broad, J. T. Lister, P. A. Hartnett	W. Steward	Cunard Steamship Co., Ltd.
<i>Jamaica Producer</i> ..	VPLM	12.8.55	G. E. M. Jenkins	D. B. Bird, G. Millward, J. A. Stringer	N. J. Wilkinson	A. Holt & Co.
<i>Jason</i> ..	GBMW	24.6.55	D. W. Stroud	G. Alder, P. Hopper, F. Barry	J. D. Steele	Kaye Son & Co., Ltd.
<i>John Biscoe</i> ..	VPNE	21.6.55	W. Johnston	J. P. Morley, N. R. Brown, M. S. Smith, F.I.D.S. Personnel	T. Davies	A. Holt & Co.
<i>John Holt</i> ..	GNFD	1.10.55	W. R. Atkinson	M. de Lacey, J. G. Jones, N. G. Bentz	P. King	Government of the Falkland Islands
<i>Journalist</i> ..	MSFQ		F. R. Phillips	J. Baillie, J. Bramley	G. Cunningham	Guinea Gulf Line, Ltd.
<i>Kaipaki</i> ..	QOGJ	7.5.55	T. G. Wilson	B. D. Diggle, G. Gunn, T. Bryon	F. X. Smythe	T. & J. Harrison, Ltd.
<i>Kaipara</i> ..	MQLP	4.8.55	J. Wood	L. W. Davies, J. Chambers, D. L. King	T. H. Dinn	Trinder Anderson & Co.
<i>Kenilworth Castle</i> ..	GOBW	9.7.55	J. A. Apelin	P. Birch, J. Mildren, G. C. Craze	T. R. Twomey	Trinder Anderson & Co.
<i>Kenuta</i> ..	MAON	21.1.55	T. J. Naylor	D. Beaumont-Jones, A. B. Powell, R. Pass	I. W. Dick	Union Castle Mail S.S. Co., Ltd.
<i>King Robert</i> ..	GNVF	24.6.55	G. Craze	G. Boyle, J. P. Daniel	T. Burnett	Pacific Steam Navigation Co.
<i>King William</i> ..	GNVZ	3.10.55	J. C. Davies	W. Moss, A. H. Brines, J. T. Langstaff	R. V. Pemberton	King Line, Ltd.
<i>Kohistan</i> ..	GSFZ	22.4.55	A. N. Henderson	D. M. Foster, G. Grindrod, W. Cowan	J. M. Pugh	King Line, Ltd.
<i>Koyan</i> ..	GNFL	15.9.54	W. I. McIntosh	G. H. Robertson, R. S. Brown	F. C. Strick & Co., Ltd.	F. C. Strick & Co., Ltd.
<i>Lalande</i> ..	GKST	9.7.55	F. E. Crebbin	W. J. Thomas, P. V. Deslandes, M. Boyce	P. H. Reynolds	Henderson & Co.
<i>Lanarkshire</i> ..	GCTC	18.5.55	R. B. Linsley	J. W. Hogg, J. A. Baxter, T. R. Parsons	P. F. Thompson	Lampport & Holt Line, Ltd.
<i>Lancashire</i> ..	GLZC	6.8.55	H. B. Peate, D.S.C.	J. H. Birch, M. Perry, Y. McColl	P. F. Delhanty	Turnbull Martin & Co., Ltd.
<i>Langton Grange</i> ..	MAOT	28.7.55	J. R. Faulkner	D. W. Luft, P. J. Healy, N. Roberts	G. C. Talbot	Bibby Bros. & Co.
<i>Lasell</i> ..	GFND	26.9.55	J. King	T. Sampson, A. Corlett, E. Minshull	P. McKenna	Houlder Bros. & Co., Ltd.
<i>Laurentia</i> ..	GNDY	28.7.55	T. S. Graham	T. Scott, N. Larsen, W. Joyce	J. Brown	Lampport & Holt Line, Ltd.
<i>Leverbank</i> ..	GLPZ	30.6.55	R. A. Leach	J. Rigby, T. E. Alexander, R. A. Harvey	D. Murray	Donaldson Bros. & Black, Ltd.
<i>Limerick</i> ..	GNLF	14.5.55	R. F. Hellings	O. Brodie, J. Blake, P. Johnson	J. K. Kelly	Andrew Weir & Co., Ltd.
<i>Linguist</i> ..	QBCB	9.9.55	A. Hinchcliffe	T. A. Butler, C. S. Boam, J. A. Ashcroft	E. Ingham	Birt, Potter & Hughes
<i>Liuvorno</i> ..	GPWF	4.7.53	W. Weatherall	R. A. Jones, D. J. Rouse	D. Callingham	T. & J. Harrison, Ltd.
<i>Lloydrest</i> ..	MAOY	28.8.53	L. Barwell	A. Burrell, J. Beckensale, G. Bridges	M. McMahon	Ellerman's Wilson Line, Ltd.
<i>Loch Avon</i> ..	GMZT	9.5.55	H. E. Sang	F. Morton, D. Hatton, J. Connell	J. Rowe	Crest Shipping Co., Ltd.
<i>Loch Garth</i> ..	GMZY	19.7.55	G. S. Grant	J. Evans, R. W. Clarke, G. Vale	M. R. Littlejohn	Royal Mail Lines, Ltd.
<i>Loch Ryan</i> ..	MAOZ	6.11.54	H. V. Todd, R.D., Cdr.	R. L. Collins, J. Cox, L. W. Green, A. Fairbairn	F. Page	Royal Mail Lines, Ltd.
<i>London Pride</i> ..	GKTI	7.9.54	I. H. Cooper	J. Morgan, G. Douglas, D. Rattray	O. Livermore	Royal Mail Lines, Ltd.
<i>Lotorium</i> ..	GBLP	19.9.55	N. Clarke	D. H. White, P. H. W. Atkins	J. P. Deegan	London Overseas Freighters, Ltd.
<i>Macharda</i> ..	GKKF	21.9.55	T. C. Eddy	J. I. Redden, W. Lloyd Williams, R. C. Main	B. I. D. Mellors	Anglo-Saxon Petroleum Co., Ltd.
<i>Magdabur</i> ..	GBIX	10.3.55	J. Richardson	P. Slade, C. Pears, B. Fry	G. Stone	T. & J. Brocklebank, Ltd.
<i>Mahanada</i> ..	GOFM	3.8.55	J. B. Newman	W. G. M. Coles, A. Scott, A. G. M. Ward,	D. C. Brown	T. & J. Brocklebank, Ltd.
<i>Mahout</i> ..	GDZN	10.3.55	W. Gibson	A. B. Davies, G. Newcombe	T. Williams	T. & J. Brocklebank, Ltd.
				E. D. Symonds, E. G. Anderson, D. Woolfenden, J. Moore	P. Y. Wright	T. & J. Brocklebank, Ltd.

<i>Malisee</i>	..	GZSV	9.8.55	A. Hill, O.B.E.	..	G. M. Taylor, M. L. Woodcroft, S. E. Turner, D. L. des Landes	A. E. Rea ..	T. & J. Brocklebank, Ltd.
<i>Maihar</i>	..	GSCL	9.2.55	G. B. Thomas	..	R. V. K. Robbins, C. Hicks, J. Hanbridge	J. Davis ..	T. & J. Brocklebank, Ltd.
<i>Makalla</i>	..	GOFN	14.9.55	H. Simpson	..	D. M. G. Murphy, E. Watkins, H. Evans	W. Currey ..	T. & J. Brocklebank, Ltd.
<i>Malancha</i>	..	GZRD	1.7.55	S. Broughton	..	E. T. M. Chambers, J. Saxty, C. O. Marsden	K. Wrigley ..	T. & J. Brocklebank, Ltd.
<i>Malayan Prince</i>	..	GNSQ	19.8.55	E. G. Jones	..	P. R. Cable, R. P. Aske, E. E. Talbot	M. D. Johnson	Prince Line, Ltd.
<i>Manchester City</i>	..	GBBP	31.3.55	W. Hine, Lt.-Cdr. (Retd.)	R.N.R.	T. B. Hancock, P. A. Barracough, A. Cookson	W. Huyton ..	Manchester Liners, Ltd.
<i>Manchester Explorer</i>	..	GNBK	19.3.55	W. E. G. Oliver	..	J. Baker, G. Garner, L. Fletcher	T. G. Jones ..	Manchester Liners, Ltd.
<i>Manchester Mariner</i>	..	GSPD	7.10.55	E. W. Raper	..	K. Lehepuu, G. R. Thompson, K. W. Rourke	P. B. McNab	Manchester Liners, Ltd.
<i>Manchester Merchant</i>	..	MGZQ	31.3.55	J. E. Jones ..	..	D. S. Millard, J. Illingworth, D. C. Woodall	A. J. S. Broadbent	Manchester Liners, Ltd.
<i>Manchester Pioneer</i>	..	GNVG	4.5.55	A. Starmier	..	C. J. Harfoot, J. Rushworth, T. W. Field, W. Boyle	J. Buchanan ..	Manchester Liners, Ltd.
<i>Manchester Port</i>	..	GYNF	10.1.55	J. L. McLaren	..	L. Fletcher, L. Taylor, G. A. Cowell	M. Doran ..	Manchester Liners, Ltd.
<i>Manchester Progress</i>	..	GPGD	21.1.55	M. Bewley ..	..	J. C. Elliot, E. Askew, T. Hancock	J. Sterry ..	Manchester Liners, Ltd.
<i>Manchester Prospector</i>	..	GQKV	7.7.55	W. E. Quirk	..	K. Lehepuu, T. M. Varley, M. J. Butler, A. H. Swan, H. D. Carmichael	W. B. MacPherson	Manchester Liners, Ltd.
<i>Manchester Regiment</i>	..	GBRD	10.3.55	W. H. Downing	..	G. R. Thompson, G. Andrews, J. T. Bird	J. Reid ..	Manchester Liners, Ltd.
<i>Manchester Shipper</i>	..	MAPC	5.5.55	W. Hancock	..	N. T. Storr, A. W. Barber, P. N. Fielding, J. Williamson	W. Critchley	Manchester Liners, Ltd.
<i>Manchester Spinner</i>	..	GNVB	30.11.54	E. W. Raper	..	J. Bird, P. Cresswell, D. Millard	P. B. McNab	Manchester Liners, Ltd.
<i>Manchester Trader</i>	..	GMWG	4.8.55	E. W. Espley	..	J. E. Croft, D. G. Thomas, G. R. Clayton	F. J. Fitzgerald	Manchester Liners, Ltd.
<i>Manidasor</i>	..	GBNY	14.6.55	G. A. Jackson, M.B.E.	..	R. H. Wills, G. A. Jenkins, P. Gunsen	B. Beecham ..	T. & J. Brocklebank, Ltd.
<i>Manistee</i>	..	GRXC	23.7.55	F. T. Barber	..	K. Leslie, J. Beatson, M. Sheppard, G. Edmonds	L. Varpun ..	Elders & Fyffes, Ltd.
<i>Maplecove</i>	..	GNLX	25.4.55	W. R. Thorburn	..	P. Leslie, N. Saddington, D. A. Jones	T. Herriots ..	Canadian Pacific Steamships, Ltd.
<i>Mapledell</i>	..	GBBS	6.8.55	N. W. Duck, D.S.C., R.D., Capt. R.N.R.	..	W. P. Embleton, D. E. Rae, P. Ainsworth, M. Organ, D. Martucci	W. J. Briggs	Canadian Pacific Steamships, Ltd.
<i>Marabank</i>	..	GCCP	7.10.55	T. S. Robertson	..	R. F. Hamilton, D. C. Quinlan, E. H. Travers	J. D. Grennan	Andrew Weir & Co., Ltd.
<i>Marengo</i>	..	GLFW	30.6.55	H. Grunnill	..	E. Tushingham, M. R. G. Forward, G. Mitchell	G. Camm ..	Ellerman's Wilson Line, Ltd.
<i>Margay</i>	..	GFYQ	19.5.55	G. W. Stammers	..	J. Jenny, N. O. R. Webster, A. G. Scott	P. C. Bryne ..	Kaye, Son & Co., Ltd.
<i>Marikhor</i>	..	GTFZ	29.7.55	H. F. Scoins	..	J. S. Munro, D. D. Barlow	B. R. Banks ..	T. & J. Brocklebank, Ltd.
<i>Mariland</i>	..	GTGG	1.9.55	H. Fosbrooke	..	B. P. Ross, N. McK. Coles, R. Roberts	A. Halstead ..	T. & J. Brocklebank, Ltd.
<i>Martita</i>	..	GNQT	11.5.55	I. Brydson ..	..	J. R. Crane, D. M. Range, J. Lord	D. J. Mumby	Kaye, Son & Co., Ltd.
<i>Mataroa</i>	..	GCSV	22.8.55	R. G. James, R.D., Capt. R.N.R.	..	D. A. Rogers, W. Wilson, J. Yarwood, L. Mounsey	E. L. Boyce ..	Shaw, Savill & Albion Co., Ltd.
<i>Matheran</i>	..	GOFQ	13.6.55	R. Humble	..	C. R. Lucas, O. Pritchard, D. W. G. Groves	L. Dixon ..	T. & J. Brocklebank, Ltd.
<i>Matina</i>	..	GSZX	24.1.55	W. G. Lock	..	A. A. Robinson, G. C. Wallis, H. E. Beyer, C. Jones	A. C. Knight	Elders & Fyffes, Ltd.
<i>Mauretania</i>	..	GTTM	2.8.55	W. M. Stewart, O.B.E.	..	N. M. Johnson, D. J. McManus, R. J. Ogilvy, G. W. Wotton	A. Connock ..	Cunard Steamship Co., Ltd.
<i>Media</i>	..	GSWR	28.9.55	A. G. Cuthill	..	L. Crump, P. King, H. L. Burn, A. W. Hoyle	A. F. Crosby	Cunard Steamship Co., Ltd.
<i>Melbourne Star</i>	..	GDFZ	31.5.55	C. Aldridge	..	K. Kelly, H. Sproul-Cran, M. Pearson	W. D. Brown	Blue Star Line, Ltd.
<i>Middlesex</i>	..	MPBK	28.4.55	N. A. Thomas	..	C. P. Jones, T. Gibson, R. E. Donald	E. Barley ..	Federal Steam Navigation Co., Ltd
<i>Mowarch</i>	..	GBDF	26.8.55	J. P. F. Betson	..	W. Richardson, I. J. L. Lang, P. V. Flynn	T. Tilly ..	H.M. Postmaster General
<i>Muristan</i>	..	MABB	22.8.55	T. Dunn ..	..	E. M. Thomson, J. F. Ockleford, D. Power	—, Barker ..	F. C. Strick & Co., Ltd.
<i>Myrtlebank</i>	..	GLQB	2.6.55	F. L. Holden	..	I. B. Sparham, W. W. Davies, F. S. Williams	W. R. Ness ..	Andrew Weir & Co., Ltd.

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS/MANAGERS
<i>Napier Star</i> ..	MAPN	5 8.55	J. B. Kennedy	F. E. Thomas, G. C. Jones, G. J. Crisford	P. Kennedy ..	Blue Star Line, Ltd.
<i>Naticina</i> ..	GIGH	10.8.55	R. S. Allan	J. V. Cook, R. Shaw, M. J. Laws	T. M. Winney ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Nestor</i> ..	GNZG	9.9.55	J. M. Anderson	P. K. MacDonald, W. A. Cameron, S. E. Minshall ..	H. Roberts ..	A. Holt & Co.
<i>New Australia</i> ..	GZKD	1.7.55	J. W. Hart ..	A. L'Estrange, D. G. Model, F. Sangster, W. Denly ..	G. Hunt ..	Shaw, Savill & Albion Co., Ltd.
<i>New Zealand Star</i> ..	GYCR	10.3.55	E. N. Rhodes	S. Tompsett, P. Hunt, G. Jones ..	E. Ewart ..	Blue Star Line, Ltd.
<i>Newfoundland</i> ..	GNMC	13.5.55	C. H. Kenyon	P. Warne, R. I. Heys, K. Swinburne	T. Cahill ..	Furness Withy & Co., Ltd.
<i>Norfolk</i> ..	MMBD	6.6.55	W. J. T. Stevens	M. J. Ewans, J. D. Hallings, C. M. McCathie, B. R. Blood ..		Federal Steam Navigation Co.
<i>Nordic</i> ..	GDJC	22.6.55	F. S. Thornton, O.B.E.	J. Buddles, P. Tebbutt, M. Greig ..	D. Gough ..	Prince Line, Ltd.
<i>Norseman</i> ..	GBVS		R. E. Small	P. H. Edwards, A. W. Henderson, P. A. Shaw ..	W. Harney ..	Cable & Wireless, Ltd.
<i>Nottingham</i> ..	GCNC	25.6.55	E. Allen ..	E. Cooper, D. Burdett, P. Egan, G. Treleven ..	L. Sutton ..	Federal Steam Navigation Co., Ltd.
<i>Nova Scotia</i> ..	GNNK	19.5.55	J. E. Wilson, O.B.E.	J. H. Williams, A. C. Wales, A. R. Smith	W. C. Brock ..	Furness Withy & Co., Ltd.
<i>Novelist</i> ..	GMLG	10.8.55	R. H. Longster	H. P. Roberts, J. T. C. Gibson, C. Carew	W. Mahon ..	T. & J. Harrison, Ltd.
<i>Oakland Star</i> ..	GFKT	1.4.55	A. H. Watson	G. Tunnicliff, L. Smith, W. A. Ansdell	B. Thompson ..	Lampert & Holt Line, Ltd.
<i>Obvasi</i> ..	GMLQ	13.4.55	R. W. Phillip	D. A. Norris, R. Myers, D. Corner, D. Howe ..	S. W. Barlow ..	Elder Dempster Lines, Ltd.
<i>Oilfield</i> ..	GNMN	9.9.55	A. I. McKenzie	J. B. Sample, D. G. Bissett, I. Haddow ..	P. Shine ..	Hunting & Son, Ltd.
<i>Orari</i> ..	GJKX	25.7.55	J. R. M. Ramsey	P. W. Cresswell, W. A. French, C. J. Highfield ..	D. G. Brandham ..	New Zealand Shipping Co., Ltd.
<i>Oreades</i> ..	MABA	9.6.55	N. W. Smith	T. MacCarthy, A. McGuffie, T. Caulder	F. Miller ..	Orient Steam Navigation Co., Ltd.
<i>Orion</i> ..	GYKL	17.1.55	E. Coles, R.D., Capt. R.N.R.	B. Pickering, E. Ellingham, T. R. Williams ..	F. Harrop ..	Orient Steam Navigation Co., Ltd.
<i>Oronsay</i> ..	GCNB	30.9.55	C. K. Blake, O.B.E.	G. Calvert, R. Woods, C. H. Goddard ..	R. Oakley ..	Orient Steam Navigation Co., Ltd.
<i>Orontes</i> ..	GBXM	6.9.55	C. W. C. Pinckney, O.B.E., R.D., Cdr. R.N.R. (Retd.)	B. O. Sullivan, F. Woolley, R. G. Charlton, R. Mattingley, E. Le Vine ..	A. Quinton ..	Orient Steam Navigation Co., Ltd.
<i>Orsova</i> ..	GNDL	9.9.55	S. S. Burnnand, O.B.E.	J. L. Chapman, D. B. Gaffney, E. A. Robinson ..	P. Parish ..	Orient Steam Navigation Co., Ltd.
<i>Otaki</i> ..	GPBV	17.5.55	A. Hocken ..	D. G. Thomas, A. Hibble, P. Butcher ..	R. Heath ..	New Zealand Shipping Co., Ltd.
<i>Otranto</i> ..	GFKV	26.9.55	R. W. Roberts, O.B.E., D.S.C.	D. J. Steff, K. H. Howard, J. B. William	C. Seaton ..	Orient Steam Navigation Co., Ltd.
<i>Pacific Fortune</i> ..	GBFM	27.8.55	H. A. Shaw	A. Adams, M. J. Brown, G. D. Kaye ..	I. R. M. Thomas ..	Furness, Withy & Co., Ltd.
<i>Pacific Northwest</i> ..	GQCP	19.8.55	F. H. Perry	D. M. Lloyd, D. Fuller, P. Crone ..	I. Bell ..	Furness, Withy & Co., Ltd.
<i>Pacific Reliance</i> ..	GMJK	26.5.55	P. F. Owens	D. W. Hopkinson, V. C. Jackson, R. Urry	W. J. Jennings ..	Furness, Withy & Co., Ltd.
<i>Pacific Unity</i> ..	GUAN	16.6.55	E. A. Kemp	A. Hodges, P. R. Farthing, E. Woods ..	F. O'Shea ..	Furness, Withy & Co., Ltd.
<i>Pacuare</i> ..	GCNX	6.6.55	J. Purvess ..	R. J. Williams, N. Deighton, D. Morris ..	C. J. Jones ..	Elders & Fyffes, Ltd.
<i>Pampas</i> ..	GCDL	31.3.55	L. T. Peterson	M. V. Keen, W. M. Wheatley, M. H. Hobbs ..	A. Duggen ..	Royal Mail Lines, Ltd.
<i>Papanui</i> ..	GDJW	27.7.55	H. A. Owen	I. Excell, A. W. S. Cripps, L. Howell ..	P. Dickson ..	New Zealand Shipping Co., Ltd.
<i>Paparoa</i> ..	GBCZ	14.9.55	J. D. Guyler	R. P. B. Manson, A. A. Faulkner, B. D. Allen, D. Phillips ..	I. Barbar ..	New Zealand Shipping Co., Ltd.
<i>Paraguay</i> ..	MAQS	16.5.55	W. S. Thomas	B. M. Rowley, R. F. Dalgleish, R. H. Atkinson ..	D. Powell ..	Royal Mail Lines, Ltd.
<i>Paraguay Star</i> ..	GTNC	25.6.55	D. R. Macfarlane, O.B.E., D.S.O.	I. W. Hay, B. Gibb, M. Moore ..	I. MacDonald ..	Blue Star Line, Ltd.
<i>Pardo</i> ..	GMNZ	3.8.55	W. Williams	R. E. Fairley, F. W. Chapman, C. B. Lambert ..	M. B. Wood ..	Royal Mail Lines, Ltd.

<i>Parima</i>	..	GCLQ	21. 5. 55	T. Fraser, D.S.C., R.D., Cdr. R.N.R.	H. J. Perkins, M. Wardle, S. Lewin P. J. R. Lawley, H. Hurtle, G. A. Newcombe	W. Graham ..	..	Royal Mail Lines, Ltd.
<i>Parthia</i>	..	GSWQ	30. 9. 55	S. A. Jones, R.D., Cdr. R.N.R. (Retd.)	J. Law, G. Kellock, D. MacKillop P. Bealey, W. A. Read, M. Watkin, — Thomas	A. O'Sullivan S. Stewart ..	..	Cunard Steamship Co., Ltd. Lampert & Holt Line, Ltd.
<i>Patagonia Star</i>	..	GQGT	1. 10. 55	E. Jerny ..	D. S. Edmans, I. W. Bennet, J. H. Beavan, P. J. E. Charman	R. Cahill ..	..	P. & O. Steam Navigation Co.
<i>Perim</i>	..	GCGB	13. 4. 55	L. Porter ..	H. Selmer, G. Rowe-May, D. Rayner .. R. J. Turner, P. C. Davies, D. Hutton .. J. Charlesworth, W. Dan, K. Maybaw, J. Norrington	I. Pattie A. Laurie J. Donochie ..	..	Turnbull Martin & Co., Ltd. General Steam Navigation Co., Ltd Royal Mail Lines, Ltd.
<i>Perthshire</i>	..	GYWK	16. 9. 55	T. N. Soane ..	J. Billington, S. Keating .. D. S. Evans, D. A. Burgess, J. L. Hope W. P. Russell, M. Caldwell, D. P. Culham P. D. Holloway, G. G. Mooney, C. Lilley P. Beattie, D. E. Bowden, A. A. Gough V. J. Gatis, A. Ditchfield, J. W. Cushion M. H. C. Twomey, C. W. Meadowcroft, J. Sharp	A. McInnes .. A. Linnit .. P. Kelly .. J. Skinner .. D. Don .. J. W. Kenny .. A. G. Johnson ..	..	New Zealand Shipping Co., Ltd. T. & J. Harrison Port Line, Ltd. Port Line, Ltd. Port Line, Ltd. Port Line, Ltd. Bibby Line, Ltd.
<i>Philomel</i>	..	GYPV	23. 9. 55	H. T. Wells ..	B. Scrimshire, M. S. Box, D. W. Berrie L. J. Brown, P. Richards-Jones, A. C. Marriage, P. R. Ardley	D. Dooling .. F. Sharpman ..	..	Port Line, Ltd. Port Line, Ltd.
<i>Philomayo</i>	..	GBZX	27. 11. 54	C. M. Fletcher ..	S. W. Lunn, R. W. Leslie-Makeig, J. A. Bramley ..	W. Paterson ..	..	Port Line, Ltd.
<i>Pipiriki</i>	..	GDRQ	20. 5. 55	S. R. Harding ..	G. W. Norris, G. B. Bonds, D. J. Orr .. J. Toghill, T. Stowel, P. Stevens .. B. E. Crabb, E. E. Chapman, P. B. Griffiths	W. E. G. Richards T. Hargreave J. Robertson ..	..	Port Line, Ltd. Port Line, Ltd. Port Line, Ltd.
<i>Planter</i>	..	GZSS	22. 9. 55	H. T. Wells ..	O. B. Embleton, N. Juddenhams, B. Pritchard	W. Sharkey ..	..	Port Line, Ltd.
<i>Port Adelaide</i>	..	MCGG	18. 9. 55	W. B. Craig ..	K. Miller, V. Hunt, R. Homol ..	J. Bryce T. G. Thomson ..	..	Silver Line, Ltd. Port Line, Ltd.
<i>Port Auckland</i>	..	GWRB	21. 9. 55	E. J. Syvret ..	R. D. B. Polock, G. L. Danton, M. F. Norris	J. McMillar ..	..	Port Line, Ltd.
<i>Port Brisbane</i>	..	GWRC	22. 9. 55	F. W. Bailey, M.B.E.	B. Collier, A. J. Starkey, J. D. C. Tainsh D. E. Kemp, J. A. McManus, D. I. Pull B. Dunlop-Jones, W. Dutchie, E. Walshaw J. Jermyn, W. Neill, W. Ferriday J. P. L. Thornhill, R. Kistler, R. Clarke	R. C. Crompton J. B. French J. C. Coutts .. E. Saul .. R. Bailey ..	..	Port Line, Ltd. Port Line, Ltd. Port Line, Ltd. Blue Star Line, Ltd. Royal Mail Lines, Ltd.
<i>Port Dunedin</i>	..	GLCI	22. 7. 55	W. H. Clough ..	A. C. Wehner, C. G. Stiff, D. Allen .. H. Burgess, T. Logan, D. Joyce .. D. Mulville, J. Gizowski ..	M. L. Van Schelkwyck —, Williams ..	..	Pacific Steam Navigation Co. Hector Whaling, Ltd. Union Castle Mail S.S. Co., Ltd.
<i>Port Hardy</i>	..	GDEG	6. 5. 55	P. H. Potter ..	E. Sherlock, D. A. Manchock, G. L. Beecroft	J. Grand ..	..	Dr. B. M. Cwillong
<i>Port Hobart</i>	..	GKGC	2. 5. 55	J. A. Fairbairn ..	K. Robson, H. Blair, G. D. Gibbons .. D. J. Newman, E. Carr, D. Fantham .. D. J. McDowell, E. G. Davey, R. Harris J. Peattie, G. Clarke, J. Evans, J. North J. T. Varney, D. Crabtree, H. C. Hynard, A. Anson	F. Murrant .. C. Lambe ..	..	New Zealand Shipping Co., Ltd.
<i>Port Jackson</i>	..	GZKR	21. 7. 55	P. S. Ball ..	A. E. Lettington, O.B.E., D.F.C.	J. Grand ..	..	New Zealand Shipping Co., Ltd.
<i>Port Lincoln</i>	..	GFZK	17. 6. 55	J. L. Porter ..	C. R. Pitche, O.B.E.	F. Fowley ..	..	New Zealand Shipping Co., Ltd.
<i>Port Macquarie</i>	..	MAQY	27. 7. 55	R. Bettess, D.S.C.	Niblock ..	G. Parker ..	..	New Zealand Shipping Co., Ltd.
<i>Port Napier</i>	..	GPKD	25. 5. 55	C. R. Townshend ..				
<i>Port Phillip</i>	..	MAOZ	4. 4. 55	L. Copeland ..				
<i>Port Pirie</i>	..	GLVQ	4. 4. 55	P. H. Pedrick ..				
<i>Port Stephens</i>	..	GCQR	2. 9. 55	T. S. Morgan ..				
<i>Port Townsville</i>	..	MGCV	6. 9. 55	L. J. Skales ..				
<i>Port Victor</i>	..	MSWK	19. 5. 55	G. G. Langford ..				
<i>Port Vindex</i>	..	MAUW	28. 4. 55	E. E. Roswell ..				
<i>Port Wellington</i>	..	GONI	18. 5. 55	T. L. Kidwell ..				
<i>Port Wyndham</i>	..	GYCW	24. 1. 55	G. Hodson ..				
<i>Portland Star</i>	..	GZSY	26. 7. 54	A. W. Mitchell ..				
<i>Potaro</i>	..	GNIJ	8. 7. 55	W. Tennent ..				
<i>Potosi</i>	..	GPQL	8. 7. 55	W. D. Hutchinson ..				
<i>Powell</i>	..	GKIL	8. 7. 55	S. K. Williams ..				
<i>Pretoria Castle</i>	..	GOAE	4. 8. 55	G. H. Mayhew ..				
<i>Princess Waimai</i>	..	OJNS	19. 10. 54	Dr. B. M. Cwillong ..				
<i>Prospector</i>	..	GJMS	19. 10. 54	E. V. Dunn ..				
<i>Radley</i>	..	ZZZG	26. 2. 55	H. W. White, O.B.E.				
<i>Rakata</i>	..	GFGW	20. 7. 55	C. P. Robinson ..				
<i>Ramore Head</i>	..	MAXX	12. 5. 55	W. A. Haddock ..				
<i>Rangitane</i>	..	GDBV	30. 9. 55	R. G. Rees ..				
<i>Rangitara</i>	..	GSZN	15. 6. 55	G. Kinnell, O.B.E.				
<i>Rangitiki</i>	..	GSXW	9. 8. 55	A. E. Lettington, O.B.E., D.F.C.				
<i>Rangitoto</i>	..	GLMV	6. 9. 55	C. R. Pilcher, O.B.E.				

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Rathlin Head</i>	GRDB	18.7.55	M. Kennedy	R. J. Crawford, C. F. Pringle, S. Dunwoodie	E. Heywood	G. Heyn & Sons, Ltd.
<i>Regent Royal</i>	GRPN	5.10.55	R. Armstrong	J. D. Pollock, J. A. Cresswell, S. S. Jenkins, R. J. Peters	J. A. Jackson	Regent Petroleum Tankship Co., Ltd.
<i>Reina Del Pacifico</i>	GMPS	30.9.55	J. Whitehouse	A. C. Gordon, T. Wilcockson, P. B. Potts, J. Eardley	J. Butler, R.N.R.	Pacific Steam Navigation Co.
<i>Retriever</i>	MRWY	29.9.55	J. G. West	P. Watts, C. W. Thompson, E. B. Bloomfield	D. Sydenham	Cable & Wireless, Ltd.
<i>Reynolds</i>	GQNC	7.9.55	W. Kyne, M.B.E.	J. Pratt, J. Parsloe, C. Dale	G. Haywood	Bolton Steam Shipping Co., Ltd.
<i>Rhodesia Star</i>	GUAX	1.11.54	F. L. Hambridge	D. N. Murray, W. Robertson, M. G. Thomas	P. Middleton	Blue Star Line, Ltd.
<i>Rialto</i>	GBLV	20.6.55	H. Greenhill	D. J. Pengelly, A. D. Robinson, S. Smith, J. Bradley	D. McQueen	Ellerman's Wilson Line, Ltd.
<i>Richmond Castle</i>	GCSP	21.9.55	I. D. B. Fisher	G. Dadds, C. D. Rea, D. J. Jones	Rees	Union Castle Mail S.S. Co., Ltd.
<i>Ripplingham Grange</i>	GIGP	20.9.55	R. Owen	M. H. L. Jenkins, P. Hector, J. Elton	J. McBride	Houlder Bros. & Co., Ltd.
<i>Rochester Castle</i>	GZQF	28.1.55	D. W. Sowden, R.D., Cdr.	K. G. Barry, J. Cranner	J. R. Walker	Union Castle Mail S.S. Co., Ltd.
<i>Roanagh Head</i>	GNTN	11.5.55	E. W. Black, O.B.E.	N. Walsh, A. F. James, S. McD. Knox	M. Maw	G. Heyn & Sons, Ltd.
<i>Roslin Castle</i>	GYJZ	16.8.55	C. E. Lorrans	P. Truman, A. E. C. Paul, N. E. Upham	M. Duff	Union Castle Mail S.S. Co., Ltd.
<i>Rowallan Castle</i>	GDFT	21.9.55	A. G. Bidwell	K. J. Barry, C. A. McKedwin, R. G. Goddard, J. Taylor	J. A. R. Walker	Union Castle Mail S.S. Co., Ltd.
<i>Roxburgh Castle</i>	GBGS	29.7.55	D. W. Sowden, R.D., Cdr.	J. Spencer, J. Pascoe, J. Canner	P. Gillow	Union Castle Mail S.S. Co., Ltd.
<i>Ruahne</i>	GKSY	18.7.55	F. Loughheed	A. Dorkins, O. Springett, D. Jones, R. Shannon	J. Heath	New Zealand Shipping Co., Ltd.
<i>Runic</i>	GGCS	5.10.55	C. W. Sendall	G. Cairns, J. K. Wyles, R. Hind	A. McMurray	Shaw, Savill & Albion Co., Ltd.
<i>Sacramento</i>	GKCN	25.6.55	J. Robinson, M.B.E.	J. V. Hatfield, K. B. Grayson	G. Power	Ellerman's Wilson Line, Ltd.
<i>Saint John</i>	GRBT		J. Owens		G. Conway	South American Saint Line, Ltd.
<i>Salacia</i>	GZRN	5.10.55	J. L. Downie	D. G. Hall, I. McFarlane, H. D. McDiarmid	W. McKay	Donaldson Bros. & Black, Ltd.
<i>Salamanca</i>	GLSG	22.12.53	P. L. Hockey	E. J. Pepper, G. R. Dewnap, R. B. Bryant	B. E. Bewley	Pacific Steam Navigation Co.
<i>Salaverry</i>	GBLQ	24.9.55	E. C. Hicks, R.D., Cdr.	B. I. Coppack, T. Wilcockson, G. B. Swan	W. Read	Pacific Steam Navigation Co.
<i>Salinas</i>	GLIK	29.12.54	D. W. Hutchinson	G. McC. Hunter, R. K. Thomas, P. L. Whittaker	H. Roderick	Pacific Steam Navigation Co.
<i>Salween</i>	GFFN	24.5.55	S. Thomson	A. H. S. Gray, J. Gaffney, G. Armstrong, K. Mackay	W. J. Scott	P. Henderson & Co.
<i>Samanco</i>	MARQ	7.9.54	T. H. G. McGill	M. E. Jones, G. E. Turner, E. Gowland	M. D. Pilgrim	Pacific Steam Navigation Co.
<i>Samaria</i>	GJCF	25.7.55	W. T. Fitzgerald, R.D., Capt.	J. L. Easton, F. E. Pollitt, E. D. Hall, O. Elson	R. M. Shore	Cunard Steamship Co., Ltd.
<i>San Adolfo</i>	GYKK	19.2.55	A. Walker	E. J. Cousins, F. D. Smith, P. Flanders	C. Maguire	Eagle Oil & Shipping Co., Ltd.
<i>San Cirilo</i>	GZMR	12.7.55	M. E. Holdron, M.B.E.	J. D. Baty, D. A. Doyle, M. J. Weston	R. Mullen	Eagle Oil & Shipping Co., Ltd.
<i>San Felix</i>	GFJZ	21.6.55	J. Bright	J. D. Tomlinson, B. J. Hamilton, K. J. Dunbaun	I. R. Nesbett	Eagle Oil & Shipping Co., Ltd.
<i>San Velino</i>	GCNY	23.9.55	I. J. Goldsworthy	G. J. Hughes, W. Richardson, G. Scarf	T. Murray	Eagle Oil & Shipping Co., Ltd.
<i>San Veronico</i>	MASQ	15.6.55	E. J. Osborne, M.B.E.	G. B. Shakespeare, A. G. March, L. Vaughan	V. S. Cullinan	Eagle Oil & Shipping Co., Ltd.
<i>San Vulfrano</i>	MASR	12.9.55	J. A. Whyborn	E. T. Kemp, D. A. Cork, G. L. Munday	F. C. Sterry	Eagle Oil & Shipping Co., Ltd.
<i>Sansu</i>	GQQN	27.9.55	L. B. Silvester	D. G. Brown, W. M. Crossman, D. Howison	J. Clarke	Elder Dempster Lines, Ltd.

<i>Santander</i> ..	GBNR	29.4.55	T. H. Rice ..	J. Meardley, A. Lang, D. Houghton, W. Washington ..	J. Whitfield ..	Pacific Steam Navigation Co.
<i>Sarmiento</i> ..	MARW	18.3.54	A. G. Litherland ..	I. Eardley, F. Nuttall, W. Jenkins ..	K. Lancaster ..	Pacific Steam Navigation Co.
<i>Saxon Star</i> ..	MARX	17.8.55	R. J. C. McDonald ..	I. Walker, D. H. Thomas, T. Cree ..	B. O'Dwyer ..	Blue Star Line, Ltd.
<i>Saxonia</i> ..	GSJS	5.10.55	J. D. Armstrong ..	P. Walton, M. Bingham, G. Buckley, I. K. Brice, D.S.C., R.D., R.N.R., Q. K. Paul, I. A. Watt ..	A. Goodwin ..	Cunard Steamship Co., Ltd.
<i>Scottish Eagle</i> ..	MMVX	26.9.55	R. R. Baxter ..	M. W. Scott, J. J. Grigor, J. Lyon ..	H. Arnold ..	Scottish Tankers, Ltd.
<i>Scythia</i> ..	GDYP	16.6.55	F. G. Watts, R.D., Lt.-Cdr. R.N.R. (Retd.) ..	D. J. Swinnerton, J. C. Nicholson ..	S. W. Brown, M.B.E. ..	Cunard Steamship Co., Ltd.
<i>Seattle Star</i> ..	MMNW	18.6.55	A. Penrice ..	J. Rymes, G. Stubbings, D. E. Sayle ..	L. Hunter ..	Blue Star Line, Ltd.
<i>Selector</i> ..	MARZ	15.2.55	R. L. Williams ..	P. Doran, E. D. Ashdown, J. Keating ..	T. & J. Harrison, Ltd. ..	T. & J. Harrison, Ltd.
<i>Settler</i> ..	GTTX	24.5.55	R. F. Phillips ..	R. J. Turnbull, R. B. Wilson, I. Mitchell ..	J. J. Blake ..	T. & J. Harrison, Ltd.
<i>Shielbank</i> ..	GDPZ	9.2.55	D. A. Reid ..	G. M. Jones, D. Campbell, C. Mullaney ..	A. T. Holloway ..	Andrew Weir & Co., Ltd.
<i>Sheaton</i> ..	GDBS	20.1.55	W. Armstrong ..	E. Wilson, G. Wilson, W. R. Atkinson ..	J. MacDonell ..	Headlam & Son
<i>Socotra</i> ..	MASC	22.4.55	L. H. Howard, R.D., Lt.-Cdr. R.N.R. (Retd.) ..	M. Hall, P. Love, A. W. Hughes ..	R. Mathew ..	P. & O. Steam Navigation Co.
<i>Somersby</i> ..	GRLK		T. Wilson-Cameron ..	K. B. Dines, H. W. Finn, P. Palfreman ..	J. Stockdale ..	Ropner Shipping Co., Ltd.
<i>Somerset</i> ..	GJMN	22.11.54	W. J. T. Stevens ..	R. Holdsworth, E. Reed, D. Fantham ..	R. Baker ..	Federal Steam Navigation Co., Ltd
<i>South Africa Star</i> ..	GUAU	28.8.54	R. M. T. Jones ..	R. J. Webb, F. P. McGuckin, E. J. T. Boone, M. F. S. Bradshaw ..	T. W. Lindsay ..	Blue Star Line, Ltd.
<i>Southern Atlantic</i> ..	GBLY	7.7.53	J. O. Bowie ..	J. Sinclair, D. A. Watt, D. Frejzendorf ..	P. Curson ..	Chr. Salvesen & Co.
<i>Southern Collins</i> ..	MASE	19.5.55	J. W. Ross ..	A. Smith, G. A. Walteson, W. Dunnet, C. Geach ..	N. W. Wilding ..	Chr. Salvesen & Co.
<i>Southern Cross</i> ..	GSWW	31.8.55	Sir David Aitchison, K.C.V.O. ..	M. England, I. S. McEwan, M. Butcher, I. Condie, C. C. Patterson, W. W. Newport ..	H. Mathews ..	Shaw, Savill & Albion Co., Ltd.
<i>Southern Garden</i> ..	MASF	19.5.55	W. J. Swanson ..	S. McGillivray, W. Scott, A. Smith ..	J. Christie ..	Chr. Salvesen & Co.
<i>Southern Harvester</i> ..	GFZJ	17.5.55	L. Bartho ..	J. B. Kerr, W. Christoffersen ..	A. R. Turnbull ..	Chr. Salvesen & Co.
<i>Southern Opal</i> ..	MASG	12.5.55	A. F. Baikie ..	J. Thomson, A. Wiseman, R. D. McGlaston ..	I. Johnson ..	Chr. Salvesen & Co.
<i>Southern Venture</i> ..	GNNM	12.5.55	H. Myhre ..	K. Snekestad, R. O. Frizendorf, O. Vikklender ..	J. Marr ..	Chr. Salvesen & Co.
<i>Specialist</i> ..	GCYF	23.5.55	L. J. Sharman, R.D., Cdr. R.N.R. ..	T. F. Maddox, J. B. Mitchell, B. Riddiough ..	—, Ware ..	T. & J. Harrison, Ltd.
<i>Stirling Castle</i> ..	GYPX	13.4.55	J. F. Oakley ..	B. J. Bennett, B. R. Webb, J. P. E. Baines ..	W. A. Brown ..	Union Castle Mail S.S. Co., Ltd.
<i>Stirlingshire</i> ..	GCQD	25.8.55	E. W. Jenkin ..	C. W. Gowans, G. Pow, C. D. de F. Hedges ..	A. Ross ..	Turnbull Martin & Co., Ltd.
<i>Strathaird</i> ..	GRSX	18.7.55	H. P. Mallett ..	K. W. Farr, T. A. M. Lincoln, I. A. Coull, J. Le Fevre, M. J. Borland ..	H. A. M. Jardine ..	P. & O. Steam Navigation Co.
<i>Stratheden</i> ..	GDGT	31.3.55	K. A. H. Cummings ..	J. M. Bower, P. I. Black, S. W. Townsend, C. Morris ..	B. M. Evans ..	P. & O. Steam Navigation Co.
<i>Strathmore</i> ..	GYMS	8.6.55	A. G. Jenkins ..	I. C. Bayliss, J. Houghton, N. Fox, F. Ewell ..	J. P. Carey ..	P. & O. Steam Navigation Co.
<i>Strathnaver</i> ..	GRPZ	6.8.55	J. M. Peter ..	D. C. Guthrie, L. H. Kellet, A. Foster, J. Woollen ..	W. Freeman ..	P. & O. Steam Navigation Co.
<i>Struan</i> ..	MASJ	29.5.54	M. Polson ..	W. Ross, E. Smith, G. Clarke ..	W. Hayes ..	Chr. Salvesen & Co.
<i>Suffolk</i> ..	GQQS	5.9.55	H. C. R. Dell ..	P. E. Robertson, G. MacIver, R. B. Hood, R. B. C. Brown ..	W. H. Jones ..	Federal Steam Navigation Co., Ltd
<i>Tantallon Castle</i> ..	MQWN	2.7.55	M. W. Lloyd ..	P. Redford, G. Francis ..	A. J. Smith ..	Union Castle Mail S.S. Co., Ltd.
<i>Sussex</i> ..	MAEF	28.2.55	E. H. Hopkins ..	P. Ogden, J. Newshan, W. Sewell, J. Werry ..	D. James ..	Federal Steam Navigation Co., Ltd
<i>Sydney Star</i> ..	MKSM	6.7.55	G. L. Evans ..	R. Crookall, L. Graham, J. Reeve, B. R. Cook ..	W. A. Wade ..	Blue Star Line, Ltd.
<i>Tabritan</i> ..	GZDR	13.9.55	W. J. Ellis ..	A. T. Cant, R. J. Kane, J. R. Taylor ..	N. Clarke ..	F. C. Strick & Co., Ltd.
<i>Tagelus</i> ..	GBMG	24.9.55	J. Brittain ..	A. B. Culvert, J. Todd, D. Curphy ..	A. B. Millar ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Tamaroa</i> ..	GFWX	1.6.55	T. H. Davies ..	L. Howells, I. P. N. Cameron, W. J. Lyman ..	D. MacRae ..	Shaw, Savill & Albion Co., Ltd.

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Tamela</i> ..	GCBF	9.9.55	C. H. Sweeney	R. S. Elliott, C. E. Thompson, D. J. Burgess ..	A. Allen ..	Elder Dempster Lines, Ltd.
<i>Tarkwa</i> ..	MASU	26.5.55	R. A. Roberts	G. J. Forster, T. P. Dodkins, C. Armitage ..	A. G. Hindle ..	Elder Dempster Lines, Ltd.
<i>Tasmania Star</i> ..	GKPC	7.6.55	R. White ..	C. E. Leatham, I. B. Owen, G. Munro, A. Pickford ..	C. V. James ..	Blue Star Line, Ltd.
<i>Tectus</i> ..	GBMJ	18.7.55	D. Curtis-Lewis	W. Snowdon, G. A. Ramsden, J. S. L. Ayre ..	W. Hoyes ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Tekoa</i> ..	GJFQ	14.3.55	J. H. Sladen	A. Dorkins, K. Field, T. Rowland, P. Deslands, E. Travers ..	G. Liston ..	New Zealand Shipping Co., Ltd.
<i>Telemachus</i> ..	GBLB	23.8.55	A. Lane ..	W. B. Bannerman, R. G. Southern ..	M. Shannon ..	A. Holt & Co.
<i>Tetela</i> ..	GMPN	5.8.55	G. M. Roberts, M.B.E.	H. Mackinnon, D. Howell, D. Hamilton ..	M. Maw ..	Elders & Fyffes, Ltd.
<i>Tenagodus</i> ..	GDLZ	30.6.55	W. Broughton	F. I. Bodger, B. Winchester, J. J. Diston ..	E. G. Hutchinson ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Terviot</i> ..	MASX	28.6.55	W. A. Kennedy	D. J. Walker, A. N. Brook, G. B. Chamberlain ..	R. W. Morden ..	Royal Mail Lines, Ltd.
<i>Thalamus</i> ..	GDSV	12.9.55	R. J. Mayne	D. G. Whiteley, D. M. Renton, G. K. Knight ..	H. H. Houston ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Thaumastus</i> ..	GDTs	27.8.55	B. G. Stanley	B. C. Baglee, R. W. Denmark, I. D. Westley ..	R. W. Fowlie ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Theliconus</i> ..	GBMT	2.8.55	J. M. Hogg	P. Shawyer, A. Dales ..	P. McMannon ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Thule</i> ..	GGBL	12.5.55	F. Holst	R. E. Dovik, C. Abrahamson, R. Petersen ..	E. Bergen ..	Hector Whaling, Ltd.
<i>Timaru Star</i> ..	GKKM	15.2.55	H. W. McNeil	M. Foster, N. Johnson, P. Davies ..	A. Sloan ..	Blue Star Line, Ltd.
<i>Tinto</i> ..	GBYT	17.1.55	S. H. Bennett, M.B.E.	J. A. Green, C. Tutty, D. Smee ..	G. S. Dunn ..	Ellerman's Wilson Line, Ltd.
<i>Tongararo</i> ..	GLFZ	8.12.55	I. C. Davison	P. Cresswell, A. Mason, I. Baxter, J. Half ..	P. Dickinson ..	New Zealand Shipping Co., Ltd.
<i>Torr Head</i> ..	GZPW	29.9.55	S. J. Stark	R. J. Quail, E. McIntosh, R. S. M. Heddles ..	J. McKinnon ..	G. Heyn & Sons, Ltd.
<i>Tregenna</i> ..	GBPM	19.9.55	W. F. Denyer	B. C. Smith, J. M. Downard, F. M. Marchant ..	I. C. Carr ..	Hain S.S. Co., Ltd.
<i>Trelewan</i> ..	GBPQ	12.7.54	J. Cornish ..	D. K. Ball, S. H. Ray, B. C. Lee ..	H. Whitaker ..	Hain S.S. Co., Ltd.
<i>Trelyon</i> ..	GBPP	22.8.55	W. T. Evans	T. Youdan, E. D. Stewart, H. Winter ..	K. Beelby ..	Hain S.S. Co., Ltd.
<i>Tribesman</i> ..	GBNZ	31.8.55	W. P. Baker	J. M. Procter, W. C. Johnston, E. J. Maxwell ..	H. W. Ashcroft ..	T. & J. Harrison, Ltd.
<i>Tribulus</i> ..	GFJS	26.7.55	A. M. Chapman	R. Hayward, —, Wills, R. W. Lumsden, E. N. Taylor ..	A. B. Vos ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Trochiscus</i> ..	GFKB	30.7.55	C. McK. Young, M.B.E.	J. W. Curry, J. Mayo, J. M. Connelly, F. Walton ..	G. Andrews ..	Shell Tanker, Ltd.
<i>Tweed</i> ..	GBRP	18.7.55	G. C. W. Meldrum, M.B.E., R.D., Lt.-Cdr. R.N.R.	A. R. Hanily, D. Stratton, P. J. Foster ..	M. Reddin ..	Royal Mail Lines, Ltd.
<i>Twickenham</i> ..	CNDC	27.8.55	S. E. Hooper	D. Dickson, D. N. Allen, J. F. Coyne ..	J. Rayner ..	Watts, Watts & Co., Ltd.
<i>Tyrone</i> ..	GZPZ	6.7.55	N. Fraser ..	J. G. C. Campbell, B. P. Trefer, P. J. MacPherson ..	L. A. E. Lavel ..	Trinder, Anderson & Co.
<i>Umali</i> ..	GYWB	28.7.55	F. E. J. O'Hea	J. J. Jenn, C. M. Cozens, G. A. Brace ..	W. J. Rouffignac ..	Bullard, King & Co., Ltd.
<i>Umata</i> ..	GDQF	12.7.55	D. L. Weston	G. S. Wood, R. Harris, H. G. Swanson ..	I. Molloy ..	Bullard, King & Co., Ltd.
<i>Umsinto</i> ..	GIFO	10.8.55	R. Harber	J. G. Campbell, J. G. Steel, J. Shanahan ..	R. Merchant ..	Bullard, King & Co., Ltd.
<i>Velletia</i> ..	MGGD	4.7.55	J. H. J. Hamling	J. Morris, J. A. Forbes, J. J. Thomson ..	M. Riley ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Vestra</i> ..	MNNB	11.12.54	D. S. Archibald	K. B. Singer, D. C. White ..	D. C. White ..	I. T. Salvesen & Co.
<i>Volo</i> ..	GPCJ	18.12.53	J. Maynard	G. Paton, R. Massam, W. Walker ..	G. Williams ..	Ellerman's Wilson Line, Ltd.
<i>Waipawa</i> ..	GWXQ	27.7.55	A. S. D. Masters	J. E. Talbot, N. O. Johnston, D. James ..	J. Houghtney ..	Shaw, Savill & Albion Co., Ltd.
<i>Wairangi</i> ..	MATX	18.7.55	J. L. Stobbs, R.D., Lt.-Cdr. R.N.R.	J. L. Harrison, R. J. McVittie, A. B. Dann ..	J. Taylor ..	Shaw, Savill & Albion Co., Ltd.
<i>Waiwera</i> ..	GBJB	3.6.55	R. A. Barns	A. B. Chandler, F. K. Murchison, F. M. Pen-Warden, D. S. Knight ..	J. Downie ..	Shaw, Savill & Albion Co., Ltd.

<i>Walvis Bay</i> ..	..	GKBZ	20. 9. 55	A. Donald, O.B.E.	..	W. E. Campbell, J. Clements, M. R. Filkins ..	J. R. Martin ..	Sir R. Ropner & Co., Ltd.
<i>Wanstead</i> ..	..	GFLS	21. 7. 55	D. Martin ..	..	N. Atkinson, S. McWhannell, D. Hunt ..	M. Mann ..	Watts, Watts & Co., Ltd.
<i>Warkworth</i> ..	..	MALF	24. 6. 55	N. Thompson, M.B.E.	..	G. Bell, D. Oates, D. Cook ..	R. Munro ..	R. S. Dalglish, Ltd.
<i>Washington Star</i> ..	..	GRPR	19. 8. 55	C. E. Legg ..	..	J. Risk, W. L. Murphy, R. Smith ..	R. Treyer ..	Lampert & Holt Line, Ltd.
<i>Wendover</i> ..	..	GFM L	31. 5. 55	J. A. Tully ..	..	M. King, A. Douglass, A. Pharony ..	H. Whitficase ..	Watts, Watts & Co., Ltd.
<i>Winchester Castle</i> ..	..	GTPZ	30. 7. 55	G. W. B. Lloyd ..	..	J. H. Lear, A. W. Lewins, B. J. Bennett ..	J. Easer ..	Union Castle Mail S.S. Co., Ltd.
<i>Windsor</i> ..	..	GPQG	29. 12. 54	A. Cox ..	..	J. R. Kirby, J. Lane, W. H. Head ..	G. Wallis ..	Watts, Watts & Co., Ltd.
<i>Woodford</i> ..	..	GMMM	10. 1. 55	J. Cormack ..	..	F. Branch, J. Lewis, D. W. Griffin ..	D. W. J. Bewick ..	Watts, Watts & Co., Ltd.
<i>Woolwich</i> ..	..	GRWC	24. 9. 55	D. Cameron ..	..	A. Sugden, J. Lewis, D. Griffin ..	J. McKenzie ..	Watts, Watts & Co., Ltd.
<i>Worcestershire</i> ..	..	GFZM	28. 6. 55	F. C. Brooke ..	..	R. W. Barton, R.N.R., R. M. Bessant, P. R. Carling ..	W. G. Fletcher ..	Bibby Bros. & Co.
<i>Yoma</i> ..	..	GLPN	24. 8. 55	W. D. E. Campbell ..	..	W. Fitzgerald, T. A. Hood, T. Duncan ..	W. Scott ..	P. Henderson & Co.

Supplementary Ships

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Alert</i> ..	GCBM	12. 9. 55	R. H. J. Wallis ..	R. M. Turnbull, G. A. Alfred, D. M. Curro, G. MacLagan ..	A. Prest ..	H.M. Postmaster General Bristol Steam Navigation Co., Ltd.
<i>Apollo</i> ..	MSFM	12. 5. 55	G. V. Barnes ..	P. J. Wright, H. G. Mowatt ..	..	..
<i>Ariel</i> ..	GMDY	29. 4. 54	C. M. G. Evans, M.B.E.	E. J. Evans, D. C. Chisholm, A. C. H. Childs ..	R. Cunningham ..	H.M. Postmaster General Joseph Robinson & Sons
<i>Bagonia</i> ..	GBRM	2. 8. 55	R. Reekie ..	J. Barker, L. Hopper, M. Johnson ..	J. E. B. Sams ..	..
<i>Bellerby</i> ..	MQJF	21. 5. 55	E. Dunn ..	S. H. Nicholson, W. E. N. Gordon, G. Dutton ..	J. Blaylock ..	Ropner Shipping Co., Ltd.
<i>Blairclava</i> ..	GLLG	16. 12. 54	H. MacKinnon ..	J. E. Halliday, C. Ferguson, A. McAdam ..	E. Yard ..	Geo. Nisbet & Co.
<i>Cape Breton</i> ..	GLXG	2. 2. 53	J. Smith ..	Miller, W. R. Pilling, A. D. Chappell ..	G. Aherne ..	C. T. Bowring & Co., Ltd.
<i>Cape Howe</i> ..	GCYP	11. 8. 55	C. G. Mallett ..	A. C. Hunter, W. W. King, J. Campbell ..	..	Cape of Good Hope Motorship Co., Ltd.
<i>Cara</i> ..	GSZJ	27. 8. 55	A. Mackay ..	I. Skinner, A. Livingstone, G. Cowan ..	I. Hart ..	Glen & Co., Ltd.
<i>Circassia</i> ..	GZMD	..	J. McG. Brown ..	J. Ballantyne, R. M. Sinclair, J. G. Robertson ..	J. MacDonald ..	Anchor Line, Ltd.
<i>Clan Alpine</i> ..	GIFF	4. 8. 55	T. O. Marr ..	A. C. Myhill, M. P. R. Turner, R. R. Cawdrey ..	C. J. Ritchie ..	Cayzer Irvine & Co., Ltd.
<i>Clan Lamont</i> ..	GTTD	2. 7. 55	J. E. Townrow ..	L. O. Keefe, A. Wallace, J. Piece, W. S. Wallace ..	R. G. Davies ..	Cayzer Irvine & Co., Ltd.
<i>Coptic</i> ..	GSND	13. 10. 55	V. H. Vizer ..	E. B. Creese, C. A. Borthwick, R. J. Cladish, J. F. Scott ..	H. M. Burson ..	Shaw, Savill & Albion Co., Ltd.
<i>Dartmoor</i> ..	CFQT	22. 3. 55	F. Bradfield ..	R. Thompson, A. Coaster, R. Jenkins ..	W. Beverley ..	Walter Runciman & Co., Ltd.
<i>Devon City</i> ..	MBKL	15. 10. 54	S. Leebetter ..	A. Prasser, R. L. Hunter, J. Groves ..	L. Mills ..	Sir William Reardon Smith & Sons, Ltd.
<i>Eastern City</i> ..	GBRB	18. 7. 55	H. W. Marshall ..	T. C. Rooney, A. H. Davies, P. G. H. Vanner ..	P. Sleightholme ..	Sir William Reardon Smith & Sons, Ltd.
<i>Edward Wilshaw</i> ..	MBMP	7. 12. 54	R. W. Porter-Reynolds ..	J. Orr, R. Riddle, N. Morganti ..	G. O'Brian ..	Cable & Wireless, Ltd.
<i>Fry Hill</i> ..	MAKS	18. 12. 54	J. Campbell ..	J. Naibitt, C. Morgan ..	D. T. Greaves ..	Counties Ship Management Co., Ltd.
<i>Greenbatt</i> ..	MSGG	2. 12. 54	R. Cook ..	I. D. S. Ogilby ..	R. Miller ..	Newbiggin S.S. Co., Ltd.
<i>Harpation</i> ..	GFFXJ	15. 12. 54	H. R. C. Small ..	A. H. Webber, J. Baras, P. Brake ..	J. Hill ..	J. & C. Harrison & Co., Ltd.

Supplementary Ships—Contd.

NAME OF VESSEL	CALL SIGN	LAST RETURN RECEIVED	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGERS
<i>Hesione</i> ..	GUGJ	10.3.55	F. D. Bonney	W. Lindsay, A. M. Ewing, B. Dubery ..	N. Burnett ..	Houston Line (London), Ltd.
<i>Horsa</i> ..	MPFJ	..	D. Dickson	J. Turner, A. Wallace ..	J. Turner ..	Currie Line, Ltd.
<i>Hudson Deep</i> ..	MPCR	16.8.55	J. Gibbons, D.S.C.	M. J. Rice, K. R. Mackenzie, R. Moloney ..	J. P. McKernan ..	Hudson S.S. Co., Ltd.
<i>Hudson Firth</i> ..	GDMK	19.3.55	E. W. Pybus	M. R. Umanski, W. Wilson ..	E. J. Standley ..	Hudson S.S. Co., Ltd.
<i>Leicestershire</i> ..	GDBL	17.8.55	E. D. Brand	L. D. Conway, J. W. Waldie, J. Routledge ..	J. E. Unsworth ..	British India Steam Nav. Co., Ltd.
<i>Linga</i> ..	GLCK	8.9.55	W. Anderson	W. Kelly, S. R. Smith, A. Quinan ..	G. K. Patterson ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Lingula</i> ..	GKDT	31.5.55	S. I. T. Harland	C. Veitch, M. Bruce ..	T. Regan ..	Anglo-Saxon Petroleum Co., Ltd.
<i>Loch Gowan</i> ..	MMJT	18.5.55	E. N. Giller, M.B.E.	R. Phillips, A. F. Nottage, B. Thorne, J. Hunt ..	P. Hemery ..	Royal Mail Lines, Ltd.
<i>Marie Louise Mackay</i>	GDNP	22.11.54	C. F. Hunter	L. R. Cook, M. Poyser, W. D. Harper, L. P. Denny ..	E. Mathias ..	Commercial Cable Co.
<i>Markab</i> ..	GCVT	21.7.55	C. Christensen	M. Rosic, J. Toet, J. Phillips, C. Christensen ..	D. A. Styles ..	Phoceean Ship Agency, Ltd.
<i>Marna</i> ..	MLPK	12.10.55	L. B. Anderson	J. Carne, W. G. Morrison ..	R. Goodman ..	Chr. Salvesen & Co.
<i>Menastione</i> ..	GUFA	..	J. P. Jackson	J. Dunn, T. J. Hamilton, S. Baxter ..	C. F. McCullough ..	Messrs. Stone & Rolfe, Ltd.
<i>Mathura</i> ..	GXCQ	27.10.54	S. Sheasby	A. R. S. Campbell, W. Ward, G. Davies ..	D. MacFarlane ..	T. & J. Brockiebank, Ltd.
<i>Meta</i> ..	MPWB	18.2.55	A. D. McNab	R. G. Lawernson, R. S. McLachlan, J. Chism ..	J. Poulten ..	Glen & Co., Ltd.
<i>Mirror</i> ..	GDFL	5.8.54	T. A. Vickers, Capt. R.N.Z.N.R. (Retd.)	T. G. Dryburgh, A. J. de C. Harrison, M. Simons, J. D. Hawkins ..	D. Meighan ..	Cable & Wireless, Ltd.
<i>Mulberry Hill</i> ..	MAKQ	1.7.55	G. Tait	J. McLeash, R. B. Tarbuck, M. Keating ..	G. Banner ..	Counties Ship Management Co., Ltd.
<i>Narva</i> ..	GQFP	5.10.55	R. J. McNinch	J. G. Paul, A. Wood, B. Beavers ..	C. R. McAnerney ..	Glen & Co., Ltd.
<i>Nicania</i> ..	GIGJ	..	J. Carr	L. F. Money, B. R. Alderton, B. S. Holroyd ..	..	Anglo-Saxon Petroleum Co., Ltd.
<i>Northia</i> ..	GDQK	2.8.55	A. Mackay	D. Martin, I. G. C. Wildish ..	..	Anglo-Saxon Petroleum Co., Ltd.
<i>Port Fairy</i> ..	GSTP	8.8.55	L. W. Cady	D. A. Church, R. C. W. Marr, W. R. C. Petter ..	..	Port Line, Ltd.
<i>Ramsay</i> ..	GPSW	2.6.55	J. B. Burns	G. D. Leith, D. Parry ..	E. Loft ..	Bolton Steam Shipping Co., Ltd.
<i>Rembrandt</i> ..	GPFD	25.1.55	W. E. Kyne, M.B.E.	D. Fullwood, M. Siddle, J. Reikstins ..	P. F. Watson ..	Bolton Steam Shipping Co., Ltd.
<i>Rockwood</i> ..	GPSN	4.8.55	A. Dover	T. H. Curry, D. A. Dickinson, F. Turnbull ..	C. Mosley ..	Wm. France, Fenwick & Co., Ltd.
<i>Royal Emblem</i> ..	GDSC	10.5.55	H. Morgan	K. B. Jewell, M. Martin ..	J. Moss ..	Hall Bros.
<i>Runa</i> ..	GFSW	3.2.55	L. W. Loose	R. Gray, H. Delacour, J. H. Greenland ..	F. Petch ..	Glen & Co., Ltd.
<i>Silvio</i> ..	GSVC	2.7.54	S. F. Williams	N. Hebdon, N. Cook, J. Pickering ..	A. Corless ..	Ellerman's Wilson Line, Ltd.
<i>Shuna</i> ..	MMGC	..	J. Loose	K. Wilson, —, Ballantyne ..	H. Moore ..	Glen & Co., Ltd.
<i>Table Bay</i> ..	MFTV	21.6.55	G. E. Miles	W. F. R. Whiting, R. J. Grant ..	—, Quin ..	Ellerman's Wilson Line, Ltd.
<i>Taranitia</i> ..	GIGS	8.6.55	R. S. Paton	C. Boyle, T. L. Langlands, D. MacCallum ..	M. J. Maundrell ..	Lyle Shipping Co., Ltd.
<i>Thelma</i> ..	MBKK	23.9.54	T. A. W. Fairweather	J. A. G. McColl, J. D. McIntosh, D. MacDonald ..	A. MacPherson ..	Anchor Line, Ltd.
<i>Treksick</i> ..	GBPR	10.3.55	D. I. Spencer	I. J. Annett, G. Gillon, D. K. Paterson ..	K. Hicks ..	Glen & Co., Ltd.
<i>Trevelyan</i> ..	MATE	21.9.55	H. Gravell	J. Spall, D. L. Lacey, M. Cayzer ..	G. Hearne ..	Hain S.S. Co., Ltd.
<i>Trevince</i> ..	MATH	20.8.55	B. George	E. A. Sprunks, E. F. Boyd, W. G. Keiky ..	T. Berry ..	Hain S.S. Co., Ltd.
<i>Trevarlas</i> ..	MATL	4.7.55	I. M. Price	M. Kennett, L. Watson, J. O. Spence ..	R. C. Seaton ..	Hain S.S. Co., Ltd.
<i>Tronda</i> ..	MMLX	15.10.51	R. J. Sinclair	R. Angus, K. Chow ..	D. A. McKenzie ..	Hain S.S. Co., Ltd.
<i>Truro</i> ..	GFTQ	17.6.55	H. Whitfield	A. Burrell, J. A. Squire ..	V. Smith ..	Chr. Salvesen & Co.
<i>Warwick Castle</i> ..	GRRJ	11.1.55	J. M. Rayner, R.D., Capt. R.N.R.	J. A. Spencer, T. B. Schmidt, G. Beaumont ..	R. C. Cullen ..	Ellerman's Wilson Line, Ltd.
						Union Castle Mail S.S. Co., Ltd.

Marid Ships

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

NAME OF VESSEL	CALL SIGN	CAPTAIN	OWNERS/MANAGERS
<i>Actuality</i>	GPPF	D. O'Leary	F. T. Everard & Sons, Ltd.
<i>Amsterdam</i>	MFBP	C. R. Baxter, D.S.C. ..	British Transport Commission
* <i>Angelo</i>	GQFY	S. N. Stokes	Ellerman's Wilson Line, Ltd.
*† <i>Apollo</i>	MSFM	G. V. Barnes	Bristol Steam Navigation Co., Ltd.
<i>Ariosto</i>	GKPW	W. C. Gill	Ellerman's Wilson Line, Ltd.
* <i>Atlantic Coast</i> ..	GWSY	J. O. Rowlands, M.B.E.	Coast Lines, Ltd.
<i>Barra Head</i>	MPQZ	W. Flett	A. F. Henry & MacGregor, Ltd.
<i>Belravoock</i>	MKGV	— Irvine	London & Edinburgh Shipping Co., Ltd.
* <i>Belvina</i>	MLZF	W. Fisher	London & Edinburgh Shipping Co., Ltd.
<i>British Coast</i> ..	GWOX	R. E. Holt	Coast Line, Ltd.
* <i>British Scout</i> ..	GJKD	T. S. Rawlingson ..	British Tanker Co., Ltd.
<i>Brora</i>	MLVY	M. MacIver	William Sloan & Co.
<i>Caledonian Coast</i> ..	GLXF	J. Webber, M.B.E.	Coast Lines, Ltd.
<i>Cambria</i>	BKKT	N. Lloyd-Williams ..	British Transport Commission
<i>Cato</i>	GUAK	L. Jenkins	Bristol Steam Navigation Co., Ltd.
<i>Clupea</i>	GOAJ	J. Jappy	Fishery Board for Scotland
<i>Corfen</i>	GDJX	F. S. Granger	Wm. Cory & Son, Ltd.
<i>Corfleet</i>	GWTD	A. G. Waller	Wm. Cory & Son, Ltd.
<i>Cormain</i>	MAHT	J. T. Collin	Wm. Cory & Son, Ltd.
<i>Cormead</i>	GDBX	T. Slack	Wm. Cory & Son, Ltd.
<i>Cormist</i>	GDVT	R. J. Barrow	Wm. Cory & Son, Ltd.
<i>Cormoat</i>	GLKV	R. B. Armstrong ..	Wm. Cory & Son, Ltd.
<i>Cormull</i>	MAHS	E. R. W. Allen	Wm. Cory & Son, Ltd.
<i>Corncrake</i>	MJKL	W. S. Dunlop	Moss Hutchison Line, Ltd.
<i>Crane</i>	MMCS	B. Cooney	Moss Hutchison Line, Ltd.
<i>Drake</i>	MMYC	J. Main	General Steam Navigation Co., Ltd.
* <i>Dryburg</i>	GNVD	G. Simpson	George Gibson & Co., Ltd.
<i>Duke of Argyll</i> ..	GNVX	W. N. Greenwood ..	British Transport Commission
<i>Duke of Lancaster</i> ..	GCPQ	J. T. Irwin, R.D., Cdr.	
		R.N.R. (Retd.)	British Transport Commission
<i>Duke of Rothesay</i> ..	GNVL	H. Thompson	British Transport Commission
<i>Eildon</i>	MLZL	J. Little	G. Gibson & Co., Ltd.
<i>Empire Cedric</i>	GRSC	W. H. Laws, R.D., Lt.-	
		Cdr. R.N.R. (Retd.) ..	Atlantic Steam Navigation Co., Ltd.
<i>Empire Cymric</i>		W. P. Page	Ministry of Transport
<i>Empire Doric</i>	MAVQ	W. Close	Atlantic Steam Navigation Co., Ltd.
<i>Empire Gaelic</i>	MAVR	H. T. Green	Atlantic Steam Navigation Co., Ltd.
<i>Explorer</i>	MRCZ	G. B. McLaren	Scottish Home Department
<i>Falcon</i>	MNXL	S. W. Develin	General Steam Navigation Co., Ltd.
<i>Fountains Abbey</i> ..	MSGT		Associated Humber Lines
<i>Fulham X</i>	MADV	D. Battle	Central Electricity Authority
<i>Golden Dawn</i>	MIZV	A. Adamson, M.B.E., R.D.,	
		Sk. Lt. R.N.R. (Retd.) ..	A. Adamson, M.B.E.
* <i>Gothland</i>	MJMS	H. Anderson	Currie Line, Ltd.
<i>Great Western</i> ..	GWRD	D. O. Griffiths	British Transport Commission
<i>Grebe</i>	MAEY	J. S. Licks	General Steam Navigation Co., Ltd.
<i>Greyfriars</i>	MLQN	D. Hunt	E. R. Newbigin, Ltd.
<i>Guernsey Coast</i> ..		F. C. Lucas	Coast Lines, Ltd.
<i>Harrogate</i>	MNDB	J. M. Walters	Wilson's & N.E. Railway Shipping Co., Ltd.
<i>Herbertia</i>	MBMT	W. E. Meade	British Transport Commission
<i>Herbertian Coast</i> ..	GKXC	G. Mearns	Coast Lines, Ltd.
† <i>Horsa</i>	MPFJ	D. Dickson	Currie Line, Ltd.
<i>Isle of Guernsey</i> ..	GQYJ	F. Breuilly	British Transport Commission
<i>Isle of Jersey</i> ..	GRBQ	C. E. Abbey	British Transport Commission
<i>Isle of Sark</i>	GTSR	G. Pierce	British Transport Commission
<i>Jura</i>	MARU	L. J. Blanche	Admiral Shipping Co., Ltd.
* <i>Kimward Head</i> ..	GCSQ	G. Henderson	A. F. Henry & MacGregor, Ltd.
<i>Loch Seaforth</i> ..		J. Smith	David MacBrayne, Ltd.
<i>London Merchant</i> ..	MBRZ	C. A. Piper	London Scottish Lines, Ltd.
<i>Maidstone</i>	MNQV	E. H. Ashton	British Transport Commission
<i>Malmo</i>	GQCN	A. D. Seath	Ellerman's Wilson Line, Ltd.
<i>Marine Craft Unit</i> (R.A.F.) No. 1102		Flt.-Lt. D. A. Koster ..	Royal Air Force
* <i>Melrose</i>	MCFD	J. Murray	Geo. Gibson & Co., Ltd.
<i>Melrose Abbey</i> ..	GSYW	J. Blackburn	Hull & Netherlands Steamship Co., Ltd.
† <i>Meta</i>	MPWB	A. D. McNab	Clydesdale Shipowners Co., Ltd.
* <i>Milo</i>	GQDP	H. E. Lawson	Bristol Steam Navigation Co., Ltd.
<i>Minna</i>	GKPS	T. Mather	Fishery Board for Scotland
<i>Moray Coast</i>	MKDL	J. Richardson	Coast Lines, Ltd.
† <i>Narva</i>	GQFP	R. J. McNinch	Glen & Co. (Scottish Navigation Co., Ltd.)
<i>Ocean Coast</i>	GYMP	G. H. Clarke	Coast Lines, Ltd.
* <i>Pluto</i>	GUAB	G. V. Barnes	Bristol Steam Navigation Co., Ltd.
<i>Peregrine</i>	GIGM	W. Lockhart	General Steam Navigation Co., Ltd.
<i>Princess Maud</i> ..	GWRT	R. A. H. Lord, D.S.C.,	
		R.D., Lt.-Cdr. R.N.R.	
		(Retd.)	British Transport Commission
* <i>Rattray Head</i>	GCBR	J. Graham	A. F. Henry & MacGregor, Ltd.
<i>Ringdove</i>	GRKK	E. C. Painter	General Steam Navigation Co., Ltd.
* <i>Rollo</i>	GSFG	S. Stokes	Ellerman's Wilson Line, Ltd.
<i>Rora Head</i>	MKVB	G. Harvey	N. of Scotland & Ork. & Shet. S.N. Co., Ltd
<i>Runa</i>	GFSW	T. Henry, O.B.E. ..	Clydesdale Shipowners Co., Ltd.

Marid Ships—contd.

NAME OF VESSEL	CALL SIGN	CAPTAIN	OWNERS/MANAGERS
<i>St. Clement</i>	GRGM	W. J. Ramsay	N. of Scotland & Ork. & Shet. S.N. Co., Ltd.
<i>St. Helier</i>	GLBT	W. Baker	British Transport Commission
<i>St. Julien</i>	GLBV	L. J. Richardson	British Transport Commission
<i>St. Magnus</i>	GFYK	W. McKay	N. of Scotland & Ork. & Shet. S.N. Co., Ltd.
<i>St. Nimian</i>	GJBB	A. M. Dundas	N. of Scotland & Ork. & Shet. S.N. Co., Ltd.
<i>Selby</i>	MLFT	A. C. Allen	Wilson's & N.E. Railway Shipping Co., Ltd.
<i>Slieve Bawn</i>	MOCC	E. A. Bradshaw	British Transport Commission
<i>Slieve Bearnagh</i>	MLNL	C. R. Gill	British Transport Commission
<i>Slieve Bloom</i>	MQDD	R. J. Thomas	British Transport Commission
<i>Slieve League</i>	MQCM	J. Abram	British Transport Commission
<i>Slieve More</i>	MOBM	R. Roberts	British Railways (L.M. Region)
<i>Southern Coast</i>	MASD	G. Goldman	Coast Lines, Ltd.
<i>Stock Force</i>	MGYD	G. Roberts	W. S. Kennaugh & Co., Ltd.
<i>Suffolk Coast</i>	MMVC	T. Taylor	Tyne Tees Shipping Co., Ltd.
<i>Teal</i>	GBXC	C. C. Reynolds	General Steam Navigation Co., Ltd.
<i>Teano</i>	GSTY	A. T. Jardine	Ellerman's Wilson Line, Ltd.
† <i>Thelma</i>	MBKK	F. Fairweather	Glen & Co., Ltd.
<i>Vienna</i>	GTBR	A. Pearson-Sutton	British Railways (Eastern Region)
* <i>Whitby Abbey</i>	MSGV		Associated Humber Lines
† <i>Yarmouth Trader</i>	GUAP	R. A. Goodings	Great Yarmouth Shipping Co., Ltd.

* These ships also send in non-instrumental weather messages when in the North Sea.

† Ships also on supplementary list.

Trawlers and North Sea Traders

The following is a list of trawlers and North Sea traders voluntarily observing and reporting those elements of the weather which do not entail the use of any meteorological instruments.

NAME OF SHIP	CALL SIGN	SKIPPER	OWNERS/MANAGERS
Trawlers:			
<i>Athenian</i>	GFWY		Onward Steam Fishing Co., Ltd.
<i>Alamein</i>	GKCD		Hull Merchants Amalgamated Trawlers, Ltd.
<i>Banquo</i>	MSWY		Hellyer Bros., Ltd.
<i>Bradman</i>	GMCC		Bunch Steam Fishing Co., Ltd.
<i>Ernest Holt</i>	GFXD	H. J. Aldiss, R.D., Lt.- Cdr. R.N.R. (Retd.) ..	Ministry of Agriculture and Fisheries
<i>Fezenta</i>	GLGB		Onward Steam Fishing Co., Ltd.
<i>Grimsby Town</i>	GQNL		Consolidated Fisheries, Ltd.
<i>Hargood</i>	MGKK		Derwent Trawlers, Ltd.
<i>Imperialist</i>	GRGJ		Northern Fishing Co.
<i>James Barrie</i>	GBJF		Newington Steam Trawling Co., Ltd.
<i>Kingston Emerald</i>	NBSH		Kingston Steam Trawling Co., Ltd.
<i>Lancer</i>	GCPC		Royal Steam Fishing Co., Ltd.
<i>Loch Levan</i>	GCTXM	W. Parkinson	Loch Fishing Co. of Hull, Ltd.
<i>Loch Oskraig</i>	GZQX	E. Moore	Loch Fishing Co. of Hull, Ltd.
<i>Lord Cunningham</i>	GBKD		Lord Line, Ltd.
<i>Macedonian</i>	MGFC		Dominion Steam Fishing Co., Ltd.
<i>Northern Jewel</i>	GRNN		Northern Trawlers, Ltd.
<i>Northern Wave</i>	GYZC		Northern Trawlers, Ltd.
<i>Prince Philip</i>	MBLD		St. Christopher Steam Fishing Co., Ltd.
<i>Sardinian</i>	MFZW		Sir Thomas Robinson & Son (Grimsby), Ltd.
<i>Sabina</i>	GZNJ	J. W. Tomlinson	Lionel C. Tomlinson
<i>St. Alcuin</i>	MGCW	G. Argument	Thomas Hamling & Co., Ltd.
<i>St. Amant</i>	GFUD	J. Meyers	Thomas Hamling & Co., Ltd.
<i>St. Apollo</i>	GBBZ	A. E. Fisher	Thomas Hamling & Co., Ltd.
<i>St. Britwin</i>	MFXJ	J. Dobson	Thomas Hamling & Co., Ltd.
<i>St. Elston</i>	GDDL	W. Parkinson	Thomas Hamling & Co., Ltd.
<i>St. Nectan</i>	GZJY		Thomas Hamling & Co., Ltd.
<i>St. Wiston</i>	GDDK		Thomas Hamling & Co., Ltd.
<i>Serron</i>	GQRX		Standard Steam Fishing Co., Ltd.
<i>Stella Canopus</i>	GKQR	J. Kersey	Charleson-Smith Trawlers, Ltd.
<i>Stella Polaris</i>	NAWQ	G. Weir	Charleson-Smith Trawlers, Ltd.
<i>Thornwick Bay</i>	GYQB		Derwent Trawlers, Ltd.
<i>Thracian</i>	MQKL		Sir Thomas Robinson & Son (Grimsby), Ltd.
<i>Yardley</i>	GJYT		Crampin Steam Fishing Co., Ltd.
North Sea traders:			
<i>Carlo</i>	GQKL		Ellerman's Wilson Line, Ltd.
<i>Folda</i>	MLFR	A. Goodland	The South Georgia Co., Ltd.
<i>Iberian Coast</i>	GFDP	D. Collins	Tyne-Tees Shipping Co., Ltd.
<i>Olivian Coast</i>	MDRQ	E. Wilson	Tyne-Tees Shipping Co., Ltd.
<i>Netherlands Coast</i>	NQLK		Tyne-Tees Shipping Co., Ltd.
<i>Scotia</i>	GPYM	A. M. Finlayson	Scottish Home Office

Lightvessels

The following lightvessels voluntarily observe, record and/or report from coastal waters of Great Britain.

NAME OF VESSEL	MASTERS
<i>Bar</i>	E. E. Abbott
<i>Dowsing</i>	J. R. Audley, S. R. Smith, D. A. Bacon
<i>East Goodwin</i>	W. A. Price, L. W. Ling, L. N. Hawkes
<i>Galloper</i>	E. G. Mullitt
<i>Humber</i>	S. A. Balle, W. S. Parish
<i>Newarp</i>	B. Hadden
<i>Royal Sovereign</i>	L. P. Dawson, S. G. Sharnan
<i>St. Gowan</i>	H. G. T. Morgan, V. J. Lake
<i>Seven Stones</i>	D. Appleby, J. H. Cooper
<i>Shambles</i>	C. N. Duff
<i>Shiptwash</i>	J. L. Goldsmith
<i>Skulmartin</i>	D. Hawkins
<i>Smith's Knoll</i>	W. J. Hall, J. O'Neill

Training Establishments

The following is a list of Training Establishments which submit logbooks, kept by the cadets under training, to the Marine Division.

ESTABLISHMENT	CAPTAIN/SUPERINTENDENT	LAST RETURN RECEIVED
<i>Conway, H.M.S.</i>	E. Hewitt, R.D., Capt. R.N.R.	5.8.55
Pangbourne Nautical College	H. C. Skinner, O.B.E., Cdr. R.N.	27.7.55
Warsash, School of Navigation	G. W. Wakeford, Capt.	20.7.55
<i>Worcester, H.M.S.</i>	G. C. Steele, V.C., Capt. R.N.R.	8.9.55

AUSTRALIA

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Australian Meteorological Branch.

NAME OF VESSEL	CALL SIGN	OWNERS
Selected Ships:		
<i>Asphalion</i>	GZPZ	Alfred Holt & Co.
<i>Canara</i>	MAGZ	British India Steam Navigation Co.
<i>Charon</i>	GZJQ	Alfred Holt & Co.
<i>Chupra</i>	GDZV	British India Steam Navigation Co.
<i>Dongola</i>	METR	
<i>Duntroon</i>	VIFB	Melbourne Steamship Co., Ltd.
<i>Gorgon</i>	MBKC	Alfred Holt & Co.
<i>Idomeneus</i>	GKYZ	Alfred Holt & Co.
<i>Koolinda</i>	VJFC	Western Australian State Steamships
<i>Koomilya</i>	VJNF	McIlwraith McEacheron, Ltd.
<i>Koorawatha</i>	VLCW	McIlwraith McEacheron, Ltd.
<i>Kooringa</i>	VLKR	McIlwraith McEacheron, Ltd.
<i>Lautoka</i>	VQWN	
<i>Lowana</i>	VJFT	Melbourne Steamship Co., Ltd.
<i>Nellore</i>	GBLZ	Eastern & Australian Steamship Co., Ltd.
<i>Orestes</i>	GFPQ	Alfred Holt & Co.
<i>R. Clarence</i>	VLQX	
<i>Triadic</i>	GDNM	British Phosphate Commission
<i>Trienza</i>	GJJZ	British Phosphate Commission
<i>Triona</i>	GDFT	British Phosphate Commission
<i>Wangenella</i>	VJPQ	Huddart Parker & Co., Ltd.
<i>Westralia</i>	VJNJ	Huddart Parker & Co., Ltd.
Supplementary Ship:		
<i>Kabbarli</i>		Western Australian State Steamships

NEW ZEALAND

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Meteorological Service of New Zealand.

NAME OF VESSEL	CALL SIGN	OWNERS
Selected Ships:		
<i>Kauri</i>	ZMCV	Union Steam Ship Company of New Zealand, Ltd.
<i>Karitane</i>	ZMJX	Union Steam Ship Company of New Zealand, Ltd.
<i>Kaimanawa</i>	ZMGZ	Union Steam Ship Company of New Zealand, Ltd.
<i>Kaitoke</i>	ZMTZ	Union Steam Ship Company of New Zealand, Ltd.
<i>Kawaroa</i>	ZMBX	Union Steam Ship Company of New Zealand, Ltd.
<i>Kawatiri</i>	ZMKX	Union Steam Ship Company of New Zealand, Ltd.
<i>Komata</i>	ZMCX	Union Steam Ship Company of New Zealand, Ltd.
<i>Kopua</i>	ZMLZ	Union Steam Ship Company of New Zealand, Ltd.
<i>Koromako</i>	ZMRT	Union Steam Ship Company of New Zealand, Ltd.
<i>Kowhai</i>	ZMQU	Union Steam Ship Company of New Zealand, Ltd.
<i>Kurou</i>	ZMFJ	Union Steam Ship Company of New Zealand, Ltd.
<i>Kurutai</i>	ZMQH	Union Steam Ship Company of New Zealand, Ltd.
<i>Matua</i>	ZMBN	Union Steam Ship Company of New Zealand, Ltd.
<i>Monowai</i>	ZMCD	Union Steam Ship Company of New Zealand, Ltd.
<i>Navua</i>		Union Steam Ship Company of New Zealand, Ltd.
<i>Port Montreal</i>	GRKJ	Port Line, Ltd.
<i>Port Saint John</i>	GBCZ	Port Line, Ltd.
<i>Tofua</i>	ZLMI	Union Steam Ship Company of New Zealand, Ltd.
<i>Waimate</i>	ZMDV	Union Steam Ship Company of New Zealand, Ltd.
<i>Waimea</i>	ZMRU	Union Steam Ship Company of New Zealand, Ltd.
<i>Waipori</i>	ZMFL	Union Steam Ship Company of New Zealand, Ltd.
<i>Wairata</i>	ZMBZ	Union Steam Ship Company of New Zealand, Ltd.
<i>Wairimu</i>	ZMVR	Union Steam Ship Company of New Zealand, Ltd.
<i>Waitemata</i>	ZMQW	Union Steam Ship Company of New Zealand, Ltd.
Supplementary Ships:		
<i>Kaipoi</i>	ZMVD	Union Steam Ship Company of New Zealand, Ltd.
<i>Kairanga</i>	ZMCY	Union Steam Ship Company of New Zealand, Ltd.
<i>Kaitangata</i>	ZMTJ	Union Steam Ship Company of New Zealand, Ltd.
<i>Kaitawa</i>	ZMVC	Union Steam Ship Company of New Zealand, Ltd.
<i>Kaponga</i>	ZMVE	Union Steam Ship Company of New Zealand, Ltd.
<i>Konui</i>	ZMVB	Union Steam Ship Company of New Zealand, Ltd.
<i>Korowai</i>	ZMKD	Union Steam Ship Company of New Zealand, Ltd.
<i>Piri</i>	ZMGM	Imperial Chemical Industries, Ltd.
<i>Port Waikato</i>	ZMJN	Holm & Company, Ltd.
<i>Viti</i>	VQWS	Tasman Steam Ship Company of New Zealand, Ltd.
<i>Waiana</i>	ZMDQ	Union Steam Ship Company of New Zealand, Ltd.
<i>Waitaki</i>	ZMLR	Union Steam Ship Company of New Zealand, Ltd.

SOUTH AFRICA

The following is a list of observing ships voluntarily co-operating with the South African Weather Bureau.

NAME OF SHIP	CALL SIGN	OWNERS
<i>Abraham Larsen</i>	GKZB	Union Whaling Co., Durban
<i>Africana II</i>	ZSVK	Division of Fisheries, Cape Town
<i>Barrier</i>	ZTCB	African Coasters, Ltd.
<i>F. T. Bates</i>	ZSWW	South African Railways and Harbours
<i>Constantia</i>	ZSRF	South African Marine Corporation, Cape Town
<i>Dalia</i>	ZSDV	South African Railways Ships, Johannesburg
<i>Frances Repetto</i>	ZSNB	
<i>George Irwin</i>	ZSGF	Friarage Steam Fishing Co., Ltd.
<i>Hereto Coast</i>	MQZK	
<i>Matabele Coast</i>	CKGD	Thesen's Steamship Co., Cape Town
<i>Morgenster</i>	ZSSJ	South African Marine Corporation, Cape Town
<i>Tristana</i>	ZSCW	Tristan Development Co., Cape Town
<i>Vergelegen</i>	ZSSN	South African Marine Corporation, Cape Town

BERMUDA

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Meteorological Station, Bermuda.

NAME OF VESSEL	CALL SIGN	OWNERS
<i>Queen of Bermuda</i>	GZKF	Furness, Withy & Co., Ltd.
<i>Ocean Monarch</i>	GJXD	Furness, Withy & Co., Ltd.

CANADA

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Canadian Meteorological Division.

NAME OF VESSEL	CALL SIGN	OWNERS
Atlantic list:		
<i>Beaverbrae</i>	VCPO	Canadian Pacific Steamships, Ltd.
<i>Canadian Challenger</i>	VGSK	Canadian National Steamship Co., Ltd.
<i>Canadian Conqueror</i>	VCPV	Canadian National Steamship Co., Ltd.
<i>Canadian Constructor</i>	VGBY	Canadian National Steamship Co., Ltd.
<i>Canadian Cruiser</i>	VGPZ	Canadian National Steamship Co., Ltd.
<i>Canadian Highlander</i>	VCPP	Canadian National Steamship Co., Ltd.
<i>Cyrus Field</i>	GKQC	Western Union Cable Depot
<i>Esoo Knoxville</i>	HPTK	Imperial Oil Shipping Co.
<i>Fort Avalon</i>	MBMC	Furness Withy & Co.
<i>Fort Hamilton</i>	GCSS	Furness Withy & Co.
<i>Imperial Alberta</i>	VGSF	Imperial Oil Shipping Co., Ltd.
<i>Imperial Charlottetown</i>	VDWC	Imperial Oil Shipping Co., Ltd.
<i>Imperial Edmonton</i>	VGSJ	Imperial Oil Shipping Co., Ltd.
<i>Imperial Fredericton</i>	VDWB	Imperial Oil Shipping Co., Ltd.
<i>Imperial Toronto</i>	VGSQ	Imperial Oil Shipping Co., Ltd.
<i>Lake Kootenay</i>	VDZY	Western Canada S.S. Co.
<i>Lakonia</i>	GCDB	Balfour Guthrie, Ltd.
<i>Lord Kelvin</i>	GDMN	Western Union Cable Depot
<i>Mont Alta</i>	VGVC	Buries, Marks, Ltd.
<i>Ottawa Valley</i>	GKQY	Trinder, Anderson & Co., Ltd.
<i>Paloma Hills</i>	VGGX	Shell Canadian Tankers, Ltd.
<i>Pinnacles</i>	VGGZ	Shell Canadian Tankers, Ltd.
<i>Rincon Hills</i>	VGGY	Shell Canadian Tankers, Ltd.
<i>Rupertsland</i>	VDXX	Hudson's Bay Co.
<i>Sunjarv</i>	VGVO	Saguenay Terminals, Ltd.
<i>Sunwhit</i>	VCKZ	Saguenay Terminals, Ltd.
Pacific list:		
<i>Angusdale</i>	VGGQ	Lunham & Moore Shipping, Ltd.
<i>Fort Hearne</i>	VCGX	Hudson's Bay Co.
<i>Lakemba</i>	VPKV	B.C. Ship Chartering Co.
<i>Lake Minnewanka</i>	VCNC	Western Canada S.S. Co.
<i>Mossel Bay</i>	GKCB	Western Canada S.S. Co.
<i>Waihemo</i>	ZMJO	Canadian Australasian Line
<i>Waikawa</i>	ZMHU	Canadian Australasian Line
<i>Wairuna</i>	ZMMQ	Canadian Australasian Line
<i>Waitomo</i>	ZMKO	Canadian Australasian Line
Lightships:		
<i>Lurcher</i>		Minister of Transport
<i>Sambro</i>		Minister of Transport

INDIA

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the India Meteorological Department.

NAME OF VESSEL	CALL SIGN	OWNERS
Selected Ships:		
<i>Alavi</i>	VWBL	The Mogul Line, Ltd.
<i>Bahadur</i>	MAVH	Asiatic Steam Navigation Co., Ltd.
<i>Bharatjal</i>	VWXC	Bharat Line, Ltd.
<i>Dara</i>	GDTT	British India Steam Navigation Co., Ltd.
<i>Daressa</i>	GFSM	British India Steam Navigation Co., Ltd.
<i>Dumra</i>	GMLA	British India Steam Navigation Co., Ltd.
<i>Dwarka</i>	GCKS	British India Steam Navigation Co., Ltd.
<i>Havildar</i>	GLVK	Asiatic Steam Navigation Co., Ltd.
<i>Indian Exporter</i>	VWVW	India Steamship Co., Ltd.
<i>Indian Merchant</i>	VWVR	India Steamship Co., Ltd.
<i>Indian Pioneer</i>	VWVS	India Steamship Co., Ltd.
<i>Indian Trader</i>	VWVT	India Steamship Co., Ltd.
<i>Islami</i>	VWJC	The Mogul Line, Ltd.
<i>Jaladuta</i>	VWDJ	Scindia Steam Navigation Co., Ltd.
<i>Jalaganga</i>	VWJG	Scindia Steam Navigation Co., Ltd.
<i>Jalaketu</i>	VWWC	Scindia Steam Navigation Co., Ltd.
<i>Jalakirti</i>	VWWD	Scindia Steam Navigation Co., Ltd.
<i>Jalakrishna</i>	VWJM	Scindia Steam Navigation Co., Ltd.
<i>Jalamanjari</i>	VWWY	Scindia Steam Navigation Co., Ltd.
<i>Jalaprahkash</i>	VWYD	Scindia Steam Navigation Co., Ltd.
<i>Jalayamuna</i>	VWJJ	Scindia Steam Navigation Co., Ltd.
<i>Jehangir</i>	VWBJ	The Mogul Line, Ltd.
<i>Kampala</i>	GCKX	British India Steam Navigation Co., Ltd.
<i>Karanja</i>	MACS	British India Steam Navigation Co., Ltd.
<i>Mahadevi</i>	GCRN	Asiatic Steam Navigation Co., Ltd.
<i>Maharaja</i>	GNBY	Asiatic Steam Navigation Co., Ltd.
<i>Mohammedi</i>	GCBS	The Mogul Line, Ltd.
<i>Mozaffari</i>	MACV	The Mogul Line, Ltd.
<i>Nadir</i>	GCDV	Asiatic Steam Navigation Co., Ltd.
<i>Nurani</i>	MAPS	Asiatic Steam Navigation Co., Ltd.
<i>Rajula</i>	GMSN	British India Steam Navigation Co., Ltd.
<i>Santhia</i>	GFSN	British India Steam Navigation Co., Ltd.
<i>Shahjehan</i>	GPUX	Asiatic Steam Navigation Co., Ltd.
<i>State of Bombay</i>	VWWP	Scindia Steam Navigation Co., Ltd.
<i>State of Madras</i>	VWWN	Scindia Steam Navigation Co., Ltd.
<i>State of Saurashtra</i>	VWXY	Scindia Steam Navigation Co., Ltd.
<i>Subadar</i>	MADK	Asiatic Steam Navigation Co., Ltd.
<i>Umaria</i>	GMNS	British India Steam Navigation Co., Ltd.
Supplementary Ships:		
<i>Amra</i>	GNNX	British India Steam Navigation Co., Ltd.
<i>Badarpur</i>	MAUS	Burmah Oil Co., Ltd.
<i>Bharatmitra</i>	VWYX	Bharat Line, Ltd.
<i>Bharatraja</i>	VWXL	Bharat Line, Ltd.
<i>Bharatrani</i>	VWXM	Bharat Line, Ltd.
<i>Bharatratna</i>	VWZX	Bharat Line, Ltd.
<i>Bharatveer</i>	VWZY	Bharat Line, Ltd.
<i>Bharatvijaya</i>	VWZK	Bharat Line, Ltd.
<i>Indian Commerce</i>	VWZW	India Steamship Co., Ltd.
<i>Indian Importer</i>	VWYT	India Steamship Co., Ltd.
<i>Itaura</i>	GMWW	British India Steam Navigation Co., Ltd.
<i>Jagrani</i>	VWZF	Great Eastern Shipping Co., Ltd.
<i>Jalakendra</i>	VWWB	Scindia Steam Navigation Co., Ltd.
<i>Jalamavur</i>	VWWX	Scindia Steam Navigation Co., Ltd.
<i>Jalamohan</i>	GOFZ	Scindia Steam Navigation Co., Ltd.
<i>Jalapadma</i>	VWYN	Scindia Steam Navigation Co., Ltd.
<i>Jalaprabha</i>	VWXS	Scindia Steam Navigation Co., Ltd.
<i>Jalarajendra</i>	GFPF	Scindia Steam Navigation Co., Ltd.
<i>Jalaratna</i>	VWDS	Scindia Steam Navigation Co., Ltd.
<i>Jalausha</i>	VWBQ	Scindia Steam Navigation Co., Ltd.
<i>Jalavihar</i>	GCSK	Asiatic Steam Navigation Co., Ltd.
<i>Malika</i>	GLVL	Asiatic Steam Navigation Co., Ltd.
<i>Risaldar</i>	VWBF	The Mogul Line, Ltd.
<i>Rizwani</i>	VWBD	Scindia Steam Navigation Co., Ltd.
<i>State of Andhra</i>	VWBX	Scindia Steam Navigation Co., Ltd.
<i>State of Travancore-Cochin</i>		

HONG KONG

Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Royal Observatory, Hong Kong.

NAME OF SHIP	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	SHIPPING COMPANY OR OPERATOR
Anking ..	J. McKinlay ..	J. Hunter, T. A. C. Taylor, G. W. Bryant, C. E. Lingard ..	Tsin Pun Cheung ..	China Navigation Co., Ltd.
Anshun ..	A. Naismith ..	J. A. McDonald, I. F. Robertson, P. J. McPherson, A. P. Sokoloff ..	Li San Kau ..	China Navigation Co., Ltd.
Belinda ..	C. L. V. Dury ..	F. R. Spurr, C. O. Wong ..	Kenneth Keong ..	Shun Cheong Steam Navigation Co., Ltd.
Changsha ..	D. C. Sim ..	A. Harper, A. Atkin, A. H. McAuley, J. Kiely ..	Cheung Chiu Ling ..	China Navigation Co., Ltd.
Choy Sang ..	I. H. Thomas ..	R. W. E. Little, C. M. Gibbs, J. Chisholm ..	D. B. Cumming ..	Indo-China Steam Navigation Co., Ltd.
Chungking ..	W. E. Hargrave ..	A. O. Atkinson, H. M. J. Bent, G. S. R. Ormond ..	U In San ..	China Navigation Co., Ltd.
Chun Sang ..	L. C. Cox ..	W. E. McLackland, J. B. Bowman, K. Sinclair ..	D. J. O'Moore ..	Indo-China Steam Navigation Co., Ltd.
Eastern Glory ..	W. E. Reeve ..	P. G. Harkness, W. G. White, J. McArdle, A. Nelson ..	H. C. Urquhart ..	Indo-China Steam Navigation Co., Ltd.
Eastern Queen ..	S. Schofield ..	M. J. Pope, J. R. Simpson, D. McCrudden ..	R. O. Smith ..	Indo-China Steam Navigation Co., Ltd.
Eastern Saga ..	E. J. Thomson ..	C. Preston, J. Hardisty, J. W. Nugent, C. J. Farren ..	W. C. Walker ..	Indo-China Steam Navigation Co., Ltd.
Eastern Star ..	W. T. Rochester ..	T. H. Nichols, E. E. Ewbank, R. King, R. C. Hoggard ..	A. C. Martin ..	Indo-China Steam Navigation Co., Ltd.
Eastern Trader ..	A. C. Tai ..	H. C. Chen, C. H. Huang, Lee King Yue ..	Lee King Yue ..	Great Southern Steamship Co., Ltd.
El Brendon ..	L. V. Rowe ..	O. T. Uglund, Ho Kee ..	Tsang Chiu Man ..	Shun Cheong Steam Navigation Co., Ltd.
Elbeth ..	A. V. Harrison ..	A. Bartley, J. W. G. Wilby, C. H. Shih ..	Lau Wan Leung ..	China Navigation Co., Ltd.
Fengting ..	G. P. Cope ..	L. L. Watson, W. M. Coates, C. T. Lu ..	Yu Pak Pui ..	China Navigation Co., Ltd.
Fengtien ..	L. King ..	K. A. Page, P. Y. Lam, C. F. Chan ..	Chin Fook On ..	China Navigation Co., Ltd.
Foochow ..	H. W. Flint ..	C. E. C. Phipps, B. M. Stear, A. Hill ..	A. M. A. Charnney ..	Royal Fleet Auxiliary
Fort Charlotte ..	A. Watson ..	J. R. Brett, J. M. Farker, M. D. O'Keefe, B. G. D. Ward ..	P. Chander ..	China Navigation Co., Ltd.
Fukien ..	H. Pilling ..	T. Harrison, P. W. Campbell, M. W. Lewis ..	Choi Pong Cheung ..	China Navigation Co., Ltd.
Funing ..	Johan L. A. Nilsen ..	Clas Asserson, Ove Saltvold, Knut Amundsen ..	P. Poon ..	China Siam Line
Hai Hing ..	Johannes Hansen ..	A. Skjorvestad, O. Andreassen, J. Evensen ..	Wuie Iu Chang ..	China Siam Line
Hai Lee ..	T. Stange-Olsen ..	H. Kystvaag, A. Overland, F. Petersen ..	Chan Kam Chuen ..	China Siam Line
Hai Meng ..	J. M. Marshall ..	J. E. Williams, H. Worton, C. Alexander ..	Chan Kwok Chuen ..	Indo-China Steam Navigation Co., Ltd.
Hang Sang ..	C. A. N. Baker ..	W. J. Coburn, J. C. Mark, W. Lee ..	Cheung Shau Wai ..	China Navigation Co., Ltd.
Han Yang ..	J. P. Johanson ..	W. Kronenbitter, K. F. Stradtman, Chau Wai ..	C. L. Tsang ..	Jebesen & Co.
Heinrich Jessen ..	Nils Soelberg ..	O. Holm Andersen, A. Cronvik, O. Eldrup ..	Ip Yuk Fai ..	China Siam Line
Helios ..	E. T. Sørensen ..	M. Sandvik, R. Skarnes, S. Hostad ..	Lai Kwong Yin ..	China Siam Line
Hermelin ..	O. Apold ..	Kr. Kristoffersen, A. Sjøberg, Herman Wold ..	So Yuet Hang ..	China Siam Line
Hermud ..	Halvor Andersen ..	J. M. Kristensen, R. Stephan, P. Halten ..	Pung Wing Kee ..	China Siam Line
Hervar ..	E. M. Norman ..	L. I. Ovsiannikoff, G. C. Taylor, D. Wilson ..	Leung Wing Kan ..	Indo-China Steam Navigation Co., Ltd.
Hin Sang ..	M. J. K. Crichton ..	S. R. Bridgeford, M. Tonner, J. F. Edmonds ..	Luk U Cheong ..	Indo-China Steam Navigation Co., Ltd.
Hoi Houw ..	A. Fieldheim ..	A. Vespstad, L. E. Drange, T. L. Karlsen ..	H. H. Fastingsen ..	Karsten Larssen & Co. (Hong Kong), Ltd.
Hoi Wong ..	M. Bjerkenes ..	O. Oftedal, R. Økland, K. Hennes ..	E. Møller ..	Karsten Larssen & Co. (Hong Kong), Ltd.
Hoi Ying ..	Kr. Munkeljord ..	B. Maeland, J. Ekrene, O. Espeseth ..	L. Ydstebo ..	Karsten Larssen & Co. (Hong Kong), Ltd.
Hop Sang ..	R. G. G. Stanton ..	J. G. Berrin, I. D. Patterson ..	Ho Hung Ki ..	Indo-China Steam Navigation Co., Ltd.
Ho Sang ..	N. H. King ..	J. H. Gould, P. Bush, T. Y. Yuen ..	Yau Tat Sing ..	Indo-China Steam Navigation Co., Ltd.
Hunan ..	R. E. Selwyn Jones ..	G. Baxter, J. Keates, C. Tee ..	Tong Sik Iu ..	China Navigation Co., Ltd.
Hupoh ..	F. Kelly ..	F. T. Quinn, E. Clent, P. Bulatoff ..	Tsang Kau ..	China Navigation Co., Ltd.

<i>Yacob Yebien</i>	..	R. D. Nielsen	..	J. Holst, Andersen, Feng Chao Hung	..	Leung Chee Yung	..	Jebsen & Co.
<i>Lao Sang</i>	..	A. E. Andersson	..	G. H. Drake, E. A. Lindholm, T. V. Hedenklint	..	P. G. Nilsson	..	Everett Steamship Corporation
<i>Mui Hock</i>	..	W. J. Bartlett	..	R. K. Leary, A. B. Weller	..	J. A. Carlan	..	Indo-China Steam Navigation Co., Ltd.
<i>Pak Hoi</i>	..	H. Bennecke	..	W. Davidson, G. Gilroy, R. A. Button	..	Yeung Wai Chiu	..	Chin Seng Hong Shipping Co., Ltd.
<i>Poyang</i>	..	J. R. Keddie	..	J. R. Suffren, M. Clent, I. F. Lee	..	Lo Wan Kai	..	China Navigation Co., Ltd.
<i>Produce</i>	..	B. McLennan	..	J. M. Aksnes, L. Fagerland, A. Søndervik	..	Tso Pee Hong	..	China Navigation Co., Ltd.
<i>Sangola</i>	..	Th. Idsal	..	A. Mills, A. L. Thomas, R. L. Thomas, K. R. Ray	..	F. Santillo	..	Karsten Larsen & Co. (Hong Kong), Ltd.
	..	W. E. Davis	..		..		..	Mackinnon, Mackenzie & Co. (Hong Kong), Ltd.
<i>Shansi</i>	..	E. Bruce	..	D. S. Southey, S. H. Damp, G. E. Bennett,	..	Li Chiu Tsai	..	China Navigation Co., Ltd.
<i>Sinkiang</i>	..	F. Hindle	..	R. G. W. MacAlister	..	Wan Siu Hung	..	China Navigation Co., Ltd.
<i>Sirdhana</i>	..	L. T. Carter	..	S. W. Owen, J. R. Marking, E. R. Jones, G. Cheil	..	J. M. Fitzgerald	..	Mackinnon, Mackenzie & Co. (Hong Kong), Ltd.
<i>Soochow</i>	..	J. Taylor	..	H. C. Walker, G. H. Nichols, R. M. Giles, K. B. Harle	..	Leung Man Hin	..	China Navigation Co., Ltd.
<i>Star Alcyone</i>	..	G. V. A. Almstrom	..	D. A. Hutchinson, L. P. James, J. R. Kidd, F. M. Lawrie	..	P. E. G. Wengelin	..	Everett Steamship Corporation
<i>Star Betelgeuse</i>	..	P. H. Zetterquist	..	R. G. Grasman, F. A. G. Hartmann, J. O. A. Olsson	..	K. I. Danborn	..	Everett Steamship Corporation
<i>Szechuen</i>	..	E. H. Histed	..	O. C. G. Warfvinge, S. H. Soderlind, O. T. I. Louhimo	..	W. H. Collom	..	China Navigation Co., Ltd.
<i>Tai Chung Shan</i>	..	J. Scott	..	G. S. Ireland, F. J. Troup, L. J. Wang	..	K. Y. Pun	..	Shun Cheong Steam Navigation Co., Ltd.
<i>Tai Ping</i>	..	A. H. Bathurst	..	D. W. Graham, Chan Mow Tung	..	Ip Ki Tseung	..	Australia Oriental Line
<i>Tai Poo Sek</i>	..	Y. N. Campbell	..	G. E. Mackay, T. F. Woo	..	R. A. Wilson	..	Shun Cheong Steam Navigation Co., Ltd.
<i>Tai Yuan</i>	..	M. I. Groundwater	..	D. L. Wilson, J. B. Aldiss, M. R. M. Seale, M. D. Burbridge	..	W. I. Briggs	..	China Navigation Co., Ltd.
<i>Tak Sang</i>	..	E. V. Leiberath	..	W. Graham, G. H. Thompson, M. H. Major	..	U. K. W. Mauritzson	..	Indo-China Steam Navigation Co., Ltd.
<i>Thai</i>	..	D. G. R. Kinnear	..	P. A. Perswald, B. H. Johansson, W. Schoemakers	..	P. M. Matley	..	Everett Steamship Corporation
<i>Wo Sang</i>	..	V. R. Woolfe	..	P. J. Sullivan, J. Parish, A. C. Bromfield	..	Yue Shiu Ming	..	Indo-China Steam Navigation Co., Ltd.
<i>Yochow</i>	..	A. J. Kiddie	..	W. Pollock, D. Green, C. J. Wong	..	Wai Pun Un	..	China Navigation Co., Ltd.
<i>Yunnan</i>	..		..	H. Nightingale, A. G. Agnew, J. K. Chan	..		..	China Navigation Co., Ltd.

MALAYA Voluntary Observing Ships

The following is a list of observing ships voluntarily co-operating with the Malayan Meteorological Service.

NAME OF VESSEL	CALL SIGN	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS
<i>Islander</i>	VSPS	F. C. Gray	J. E. Hall	K. A. Taylor	Boustead Co., Ltd.
<i>Katon</i>	ZENR	G. Heaton	A. D. Watterson	K. A. Menon	Straits Steamship Co., Ltd.
<i>Kimani</i>	VSND	R. P. Atkinson	R. G. Ogden, B. F. Rehse	F. M. Fernandez, R. Nemesius	Straits Steamship Co., Ltd.
<i>Larut</i>	VPKO	T. Hooper	N. G. Leslie	P. Rozario	Straits Steamship Co., Ltd.
<i>Matang</i>	VSPB	J. M. Harkness	J. C. Officer	J. Sinclair	Straits Steamship Co., Ltd.
<i>Perak</i>	VSPJ				Straits Steamship Co., Ltd.
<i>Perlis</i>	VSRA				Straits Steamship Co., Ltd.
<i>Salong</i>	VSYZ				Straits Steamship Co., Ltd.
<i>Stanley Angwin</i>	GNXG	C. C. R. Evans	N. H. Smith, K. Matheson, E. Bloomfield	D. Mahony	Cable & Wireless, Ltd.



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