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# The Marine Observer



Volume XVIII      No. 139

JANUARY, 1948

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# THE MARINE OBSERVER

A Quarterly Journal of Maritime Meteorology

prepared by the

Marine Branch of the Meteorological Office

VOL. XVIII    No. 139    JANUARY 1948

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## EDITORIAL

In presenting this first number of *The Marine Observer* for 1948, we send, on behalf of the Director and staff of the British Meteorological Service, a New Year greeting to all our readers. Wherever you may be, afloat or ashore—and this magazine reaches all the four corners of the world—may you have health and happiness throughout 1948. Unfortunately, we cannot look back on 1947 with much satisfaction; world food shortages, economic difficulties, international distrust, even the weather seems to have conspired against us—let us hope that 1948 will give the world a chance of returning to sanity and to real international co-operation for the good of us all.

The difficulty of providing enough food for the people seems to be the chief preoccupation of everybody at present; we all hoped that the end of the war would see the finish of rationing, but the world has still to pay a large part of the price for world war and now it is up to all of us to pull ourselves out of the mess and see to it that we do produce enough. In particular the farmer, the seaman, and the scientist together, have a greater role to play than they have ever had before. The part that meteorology plays in this drama is very great indeed, for unfavourable weather can delay the tilling of the land, impoverish or ruin the crops, kill livestock, disorganise inland transport and seriously delay or wreck shipping. It is true that we humans can do little to change or direct the weather, for a greater Power than us has charge of this, but by a scientific study of the weather and the atmosphere in general and its effects upon crops and crop production, we can at least plan wisely and be prepared for eventualities, and here the scientist, the seaman and the amateur meteorologist can all play their part in assisting the farmer to produce the steak and the bread and the cheese and the beer which we all so naturally desire. The seaman thus plays a dual role—he carries the goods across the oceans and by observing and reporting the weather, he assists the scientist in forecasting and generally studying meteorological conditions for the benefit of the producer and of all concerned, including his brother seamen.

In our last number I mentioned that I was on my way to Toronto to attend the meetings of the Technical Commissions of the International Meteorological Organisation. At these meetings ten Commissions, whose members are technical experts in the subjects concerned, were in session more or less concurrently. The Commissions were for: Climatology; Publications; Agricultural Meteorology; Charts and Projections; Hydrology; Instruments and Methods of Observation; Synoptic Weather Information; Aerology; Aeronautical Meteorology; and Maritime Meteorology.

The time-table for the meetings was so organised that members of one Commission were able to attend the sessions of other Commissions when they so wished, so the discussions were on a very representative scale. There is not space here to go into the individual items which were discussed, but I hope to devote a separate article to the question of the International Meteorological Organisation in a later number. A glance at the list of Commissions, however, will bring home to the reader the wide field which the modern meteorologist covers and will emphasise that most of our human activities are affected by the weather in one way or another.

The Maritime Commission, of which I am President, had as its chief duty to provide for the efficient organisation of reports from ships in all oceans and for the issue of adequate weather information for shipping on an international scale. It is a pleasure to record that the meetings were noteworthy for the friendly spirit of co-operation which was shown by all those taking part in the discussions—and there were no less than 22 nations represented on this Commission. Readers may be interested to know that 12 of the members of the Maritime Commission present at Toronto are seamen, the remainder being scientists (meteorologists or oceanographers). A total of 84 resolutions was unanimously adopted by the Commission. The chief items on which decisions were reached were as follows :—

- (1) A world-wide scheme for transmission of meteorological observations from Selected Ships and other ships.
- (2) A uniform system for the recruitment of Voluntary Observing Ships and supply of instruments to them.
- (3) A uniform arrangement for transmission of weather information for shipping, including storm warnings.
- (4) Improvements in observational technique and in meteorological instruments used at sea.
- (5) The production of an International Book of Instructions for Voluntary Observing Ships.
- (6) Improved methods in observing and reporting ocean waves.
- (7) The adoption of a new code for reporting ice.

Members of the Maritime Commission were closely interested in the meetings of the Commission for Synoptic Weather Information, as that Commission is responsible for producing meteorological codes. As a result of their meetings in Toronto an entirely new universal code, based on the one tentatively produced at Paris in 1946, has evolved and will come into force on 1st January, 1949. The new code may, at first glance, appear somewhat more complicated than the one in force at present, but for the seaman it has the advantage of being uniform all over the world, both for the reports from ships and for reports to ships. This new code, with the necessary instructions for its use, will be promulgated to all shipping of the British Commonwealth at a relatively early date.

After the Toronto meetings were over, the Presidents of Commissions went on to Washington to report the results of the meetings of their Commissions to the Conference of Directors. The Directors' Conference is the supreme body of the International Meteorological Organisation and has the power to adopt or reject the recommendations of the Technical Commissions. In general, most of the resolutions of the Commissions were agreeable to the Directors and all those of the Maritime Commission were accepted. It is now the duty of each country to put the various resolutions into effect. During my stay in the U.S.A. I had the opportunity of visiting Boston and New York. At Boston I paid a lengthy visit to the U.S. Ocean Weather Ship *Bibb*, which on her next voyage so distinguished herself by rescuing the passengers and crew of a flying-boat in mid-Atlantic. I also had the pleasure of attending a meeting of oceanographers of the Wood Hole Oceanographical Institute and of American meteorologists at Harvard University. At New



York and Washington I had the opportunity of discussing marine meteorological problems with U.S. Weather Bureau representatives and problems connected with Ocean Weather Ships and Air-Sea Rescue with the U.S. coastguard authorities.

Tribute is due to our Canadian and American hosts for the admirable arrangements they made for the conduct of the meetings and for the unfailing courtesy and hospitality which they showed us. Any seaman who has traded to the North American Continent will know something of the kindness and friendliness of its people.

Our stay in Toronto was noteworthy for the great heat and humidity—the temperature most of the time (mid-August to mid-September) being in the 90s. The high humidity is, of course, due to the fact that the city is situated on the shores of Lake Ontario. When one considers the severe winters which central Canada experiences, one can appreciate the hardiness of the Canadian constitution.

What a lovely city Washington is! It is most attractively laid out—somewhat reminiscent of Paris—and has some really beautiful buildings. The weather there in the fall of the year is really delightful. During our stay there all the delegates at the Conference had the great honour of being received by Mr. Truman at the White House.

The voyage home in the *Empress of Canada* was very agreeable although we were delayed somewhat by fog in one of the lower reaches of the St. Lawrence, and experienced a very swiftly-moving and rather deep depression soon after leaving Belle Isle. I had the pleasure of visiting the bridge and discussing meteorological questions with the captain and officers: the junior officer of the watch was making out his weather message while I was there. I was able to examine a remarkable barograph trace showing the passage of the depression mentioned above.

By the time this number is in print it is expected that all four of the British Ocean Weather Ships will be on service, and that the two Ocean “ Stations ” in the eastern Atlantic, which are allocated to Great Britain, will be constantly manned. The *Weather Observer* and *Weather Recorder* have already carried out successful patrols but, as might be expected, they have had “ teething troubles ” to contend with. The weather reports provided by these ships are already proving of value, and the usefulness of the ships to transoceanic aircraft is evident from the number of requests for bearings and other information received by radio from such aircraft in flight.

MARINE SUPERINTENDENT.



## JANUARY, FEBRUARY AND MARCH

*The Marine Observers' Log* is a quarterly record of the more 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.

### DAILY WEATHER CYCLE

#### North Atlantic Ocean

The following is an extract from the Meteorological Record of S.S. *Arakaka*. Captain D. R. C. Onslow. Trinidad to Liverpool. Observer, Mr. S. Armitage, Chief Officer.

26th to 30th March, 1947, between positions Latitude  $13^{\circ} 26'N.$ , Longitude  $58^{\circ} 50'W.$  and Latitude  $24^{\circ} 35'N.$ , Longitude  $45^{\circ} 38'W.$ , the following daily weather cycle was observed to occur :—

At approximately 2 hours before the barometer reached its daily maximum, the wind freshened and remained so until about  $1\frac{1}{2}$  to 2 hours after the maximum, when it began to moderate. Clouds then banked up and short, sharp rain squalls were encountered during the next 2-hour period. As the barometer approached its minimum, the winds moderated further and remained so for a period extending about 1 hour either side of the minimum. NE Trades were experienced throughout the period in which the cycle occurred.

### CHANGE OF SEA TEMPERATURE

#### North Atlantic Ocean

The following is an extract from the Meteorological Record of M.V. *Inverbank*. Captain A. M. Williamson. Port Said to Boston, U.S.A. Observer, Mr. J. Mitchell, 3rd Officer.

25th January, 1946, 1245 to 1345 G.M.T. The sea temperature at 1245 was  $58^{\circ}F.$  At 1345 the weather became hazy and the swell increased from SW, the sea temperature was  $45^{\circ}$ , a drop of  $13^{\circ}$  during the interval of 1 hour.

Position of Ship : Latitude  $40^{\circ} 01'N.$ , Longitude  $65^{\circ} 30'W.$  to Latitude  $40^{\circ} 05'N.$ , Longitude  $65^{\circ} 41'W.$  Course  $291^{\circ}$ . Speed  $9\frac{3}{4}$  knots.

*Note.*—This observation was made in the region of the north-westerly boundary of the Gulf Stream, where the cold water of the Labrador Current, flowing south-westward, converges with the warm water of the Gulf Stream.

Along the line of convergence, tongues and eddies of the warm water often pass into the cold water region and mixing takes place, so that the boundary line is not always as sharp as it was at the time of this observation.

## FOG

### Canary Islands

The following is an extract from the Meteorological Record of M.V. *Delius*. Captain H. W. Underhill. Las Palmas to Montevideo. Observer, Mr. R. H. Turner, 3rd Officer.

15th March, 1947, 0700 to 0900 A.T.S. When 25 miles NE of Las Palmas, dense fog was experienced for about two hours with visibility nil. According to other ships, similar conditions were experienced over an area of 1,000 miles and as far west as  $24^{\circ}$ W., but with fog of longer duration. Over a number of years' experience of this trade route, this fog was a phenomenon for this area.

Approximate position of Ship : Latitude  $28^{\circ} 30'N.$ , Longitude  $15^{\circ} 00'W.$

*Note.*—S.S. *Carnarvon Castle* reported thick fog in the Cape Blanco area on 3rd March, 1947.

### Coast of West Africa

The following is an extract from the Meteorological Record of S.S. *John Holt*. Captain A. Kennedy. Takoradi to Hull. Observer, Mr. W. L. Harrison, 2nd Officer.

12th March, 1947, 0634 to 1123 G.M.T. A dense fog was experienced ; the approximate height of bank was 500 ft. Wind N'ly, force 2. Swell SW, amount 2. Temperatures at 0800 : air  $73^{\circ}$  F., wet bulb  $73^{\circ}$ , sea  $78^{\circ}$  ; at 1200 : air  $71^{\circ}$ , wet bulb  $71^{\circ}$ , sea  $76^{\circ}$ .

Position of Ship : Latitude  $9^{\circ} 43'N.$ , Longitude  $15^{\circ} 44'W.$  to Latitude  $10^{\circ} 07'N.$ , Longitude  $16^{\circ} 19'W.$

## ARCHED SQUALLS

### Canary Islands

The following is an extract from the Meteorological Record of M.V. *Delius*. Captain H. W. Underhill. Las Palmas to Montevideo. Observer, Mr. R. H. Turner, 3rd Officer.

15th March, 1947, 2015 A.T.S. After leaving Las Palmas in the afternoon, with Maspalomas Light dipping astern, an arched squall was observed to the west, moving in an easterly direction towards the ship. It appeared to be one long thin black cloud stretching north and south, with an estimated length of at least 40 miles (measured by the ship's distance from Maspalomas Light), breadth of about 300 ft. and estimated height of 500 ft. When over the ship, the squall was accompanied by a strong gust of wind and it took approximately 30 seconds to pass over the vessel. The sky was clear before and after the squall.

Approximate position of Ship : Latitude  $27^{\circ} 25'N.$ , Longitude  $15^{\circ} 30'W.$

### Pacific Ocean

The following is an extract from the Meteorological Record of M.V. *Durham*. Captain R. J. Dunning. Panama to Auckland, N.Z. Observer, Mr. R. Merry, 3rd Officer.



17th January, 1947, 0900 G.M.T. An arched squall passed over the ship. The cloud stretched from WSW horizon to ENE horizon and moved at a high speed in a S'y direction. The cloud was cumulonimbus, estimated base 1,000 ft. As it passed over there was no rain but the wind increased from force 1 to 5 from a N'y direction for about 20 minutes. The wind then decreased slowly and remained N, force 1/2. The barometer and temperature remained steady throughout.

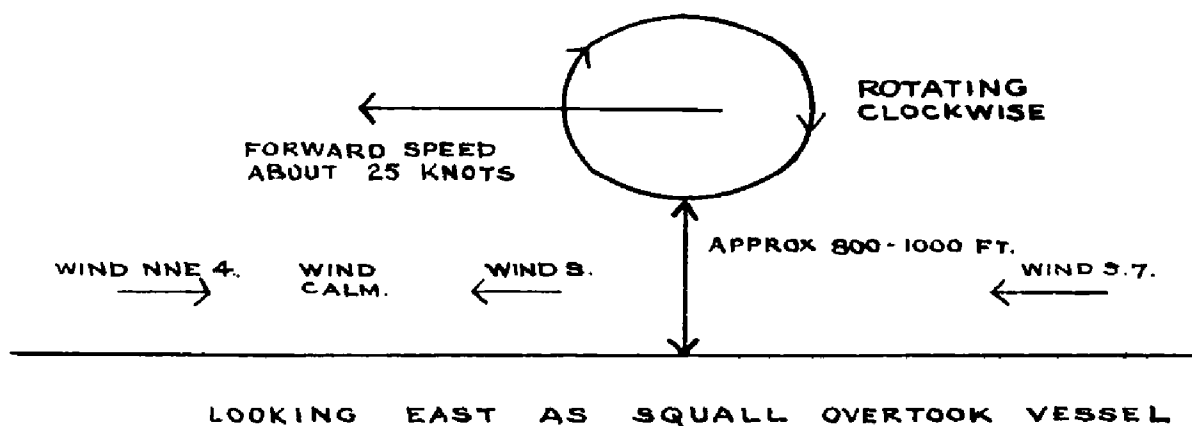
Approximate position of Ship : Latitude  $21^{\circ} 08'S.$ , Longitude  $140^{\circ} 58'W.$

### LINE SQUALL Australian Waters

The following is an extract from the Meteorological Record of M.V. *Brisbane Star*. Captain F. N. Riley, D.S.O. Melbourne to Sydney. Observer, Mr. D. G. Rassel, Chief Officer.

22nd February, 1947, 0430 G.M.T. While the vessel was steaming about 18 miles off, and parallel to, the coast, a line squall was noticed astern, extending from close to the coast (where it decreased in size to nil) to the horizon. It was in a  $280^{\circ}$  to  $100^{\circ}$  direction and curved slightly to the south at the eastern end. At 0545 the corrected barometer was 29.77 in. Wind NNE, force 4. Temperature  $78^{\circ}F.$  Total cloud amount 6/10 : cumulus 3/10, altocumulus 1/10, cirrocumulus 1/10 and cirrostratus 1/10. The squall was noticed to be overtaking the ship rapidly (at an estimated speed of about 25 knots) and the most noticeable thing about it was the fact that it was revolving so quickly that it could be seen moving when 4 or 5 miles away. The rotary movement was not the same all the way along the whole length. At 0615 the squall was overhead, the barometer rose sharply to 29.87 in. (corrected) and it became noticeably cooler. The wind became S'y about a quarter of a mile in advance of the squall, and after it had passed was S, force 7.

Position of Ship : Latitude  $36^{\circ} 45'S.$ , Longitude  $150^{\circ} 22'E.$  Course  $017^{\circ}$  Speed 12.8 knots.



### DUST HAZE West Coast of Morocco

The following is an extract from the Meteorological Record of S.S. *Empire Martaban*. Captain R. Cook. Port Said to Lagos, Nigeria. Observer, Mr. G. McGowan, 2nd Officer.

11th March, 1947, 1200 A.T.S. While approaching Cape Kantin, bearing  $141^{\circ}$  (True), distance by sextant angle 5.1 miles, the visibility was about 10 miles. Almost immediately afterwards a dust haze reduced visibility to 3 miles or less. This haze was visible to seaward as a dark brown belt extending all round the horizon to a depth of approximately  $5^{\circ}$  and persisted until about 1700. Weather conditions at 1200 : wind NE, force 2, barometer 1023.8 mb., falling. Temperature : air  $61^{\circ}$  F., wet bulb  $59^{\circ}$ , sea  $63^{\circ}$ . Cumulus and cirrostratus cloud, amount 6/10.

Position of Ship : Latitude  $32^{\circ} 33' \text{N.}$ , Longitude  $9^{\circ} 17' \text{W.}$  Course  $223^{\circ}$ . Speed 10.5 knots.

12th March, 1947, 1400 A.T.S. to sunset. While passing through the channel between the eastern island in the Canaries group and the mainland of Africa, a period of abnormal refraction was noted with the dry bulb thermometer registering  $73^{\circ}$  F. and the wet bulb  $67^{\circ}$ . A ship passing inside gave definite evidence of "looming" for its vertical height appeared enlarged and the object blurred. A dust haze persisted during the time, and was visible to the W from approximately SSW to N to an altitude of  $10^{\circ}$  above the horizon. Smoke from the funnel did not rise appreciably above the height of the funnel, but tended to hang low down on the sea. The wind throughout was ESE, force 2.

Approximate position of Ship : Latitude  $29^{\circ} \text{N.}$ , Longitude  $13^{\circ} \text{W.}$

### **SANDSTORM**

#### **Mediterranean Sea**

The following is an extract from the Meteorological Record of S.S. *Recorder*. Captain R. F. Longster. Liverpool to Port Said. Observer, Mr. G. W. Sigsworth, 2nd Officer.

26th January, 1947, 1400 G.M.T. to 27th January, 1000 G.M.T. A sandstorm was experienced in Malta Channel accompanied by winds of gale force from SW. Its duration was from 1400 on the 26th until 1000 on the 27th, with the worst period (during which visibility was less than 1 mile) lasting from 1500 until 0300. In the earlier period the air was thick with fine sand, the sun gradually taking over a bluish tint until it was finally totally obscured. The wind increased to gale force and a high sea was running. Visibility remained at less than a mile, with the exception of rare intervals when an occasional star could be seen. A slight shift of wind at 0300 on the 27th to SW  $\times$  W produced an improvement to a visibility of 3 to 5 miles, but the sand remained in evidence until about 1000, when the wind became W'ly and precipitation could be seen at a distance. Showers in the afternoon of the 27th, together with some hail, cleared the atmosphere.

Position of Ship at midnight : Latitude  $35^{\circ} 42' \text{N.}$ , Longitude  $15^{\circ} 48' \text{E.}$

### **WATERSPOUTS**

#### **Florida Strait**

The following is an extract from the Meteorological Record of S.S. *Ficus*. Captain S. Thompson. Houston, Texas, to Isle of Grain, Kent. Observer, Mr. S. W. Dean, 2nd Officer.

14th March, 1947, 1415 G.M.T. Several waterspouts were observed. The wind veered 6 points in 5 minutes during the observation and there was 7/10 cloud amount, composed almost wholly of cumulonimbus, less than 1/10 being altostratus. An estimate of the height of cloud base was 1,000 ft.

or less. The waterspouts, while in activity, moved in a N'ly direction over a distance of 3 miles in 20 minutes before subsiding.

Position of Ship : Latitude  $27^{\circ} 45' \text{N.}$ , Longitude  $79^{\circ} 33' \text{W.}$

## **DISCOLOURED WATER**

### **West African Waters**

The following is an extract from the Meteorological Record of M.V. *Brisbane Star*. Captain F. N. Riley, D.S.O. London to Australia via Cape of Good Hope. Observer, Mr. D. G. Rassel, Chief Officer.

8th January, 1947, 1400 G.M.T. The sea was noticed to be considerably discoloured to a greenish brown. This discoloration was assumed to have come from the Senegal River, which was 90 miles distant, bearing  $103^{\circ}$ . The cloud amount was 1/10 and the water quite clear, not cloudy as would be expected from a river. At 1630 the discoloration was in patches and by 1730 the sea was normal again.

Position of Ship : Latitude  $16^{\circ} 52' \text{N.}$ , Longitude  $17^{\circ} 42' \text{W.}$

## **MIRAGES**

### **Mediterranean Sea**

The following is an extract from the Meteorological Record of M.V. *Georgic*. Captain J. A. Macdonald, R.D., R.N.R. Liverpool to Bombay. Observer, Mr. H. Carmichael, Senr. 3rd Officer.

25th March, 1946, 1500 G.M.T. Abnormal refraction experienced. Passing ships showing a reflected image upside down over the true image.

Approximate position of Ship : Latitude  $37^{\circ} 03' \text{N.}$ , Longitude  $1^{\circ} 00' \text{E.}$

### **Red Sea**

The following is an extract from the Meteorological Record of S.S. *Macharda*. Captain R. A. Penston. Calcutta to Dundee. Observer, Mr. John F. Baker, 3rd Officer.

1st March, 1946. Ship proceeding from Aden to Suez : on approach course to Ras Gharib Light, the glare of the oil well on fire there was observed at 30 miles distance. On approaching within 20 miles of the light, both fire and light were seen in double, i.e. 2 fires and 2 lights each in vertical line. The effect lasted until ship was within about 7 miles. Air temperature  $67^{\circ} \text{F.}$  ; light NW'ly breeze ; clear sky and very good visibility.

### **South-east Coast of Arabia**

The following is an extract from the Meteorological Record of M.V. *San Adolfo*. Captain H. C. Archer. Abadan to Swansea. Observer, Mr. J. Dallace, 2nd Officer.

31st March, 1946, 1646 G.M.T. Shore light seen 51 miles (normal range 22 miles) over land, 400 ft. high. Quoin Lighthouse (range 22 miles) sighted 62 miles. This was not loom but actual reflection of lighthouse light. On this and previous occasions on rounding Ras Al Hadd, freshening of wind and commencement of swell has been observed, also an inferior mirage of Ras Al Hadd area.

Position of Ship : Approximately Latitude  $26^{\circ} 13' \text{N.}$ , Longitude  $54^{\circ} 38' \text{E.}$

### South-west Coast, Africa

The following is an extract from the Meteorological Record of S.S. *Empress of Scotland*. Captain J. W. Thomas, O.B.E. Cape Town to Liverpool. Observer, Mr. D. Ward, 3rd Officer.

18th February, 1946, 1115 G.M.T. Shortly after leaving Cape Town, the course set being  $316^{\circ}$  true, remarkable refraction of the land was observed to starboard and also an inverted image of Dassen Island lighthouse was clearly seen. A layer of heat haze was quite distinct on the Cape Peninsula and an inverted image of the coast lay inside of this. The amount of cloud was perhaps  $1/10$  cirrus, air temperature  $65^{\circ}$  F., wet bulb  $63^{\circ}$ , sea surface  $64^{\circ}$ , barometer 1017.5 mb.

### AURORAE

#### North Atlantic Ocean

The following is an extract from the Meteorological Record of S.S. *Scythia*. Captain T. A. Fraser. Halifax, N.S., to Liverpool. Observer, Mr. D. R. Rosling, Senr. 3rd Officer.

7th February, 1946, 2015 G.M.T. Observed Aurora Borealis, which lasted until dawn. The arc extended from horizon to horizon bearing N, the height of the lower edge of the apex being  $20^{\circ}$ . The aurora extended to directly overhead. The light was mostly of the ray type with some diffused lighting and a little drapery. It was of a greenish yellow colour and of a power equal to that of half moon. Stars were observed in the dark shadow underneath the arc. The greatest intensity occurred two hours after dusk. A magnetic storm accompanied the phenomena and there was great difficulty in sending W/T messages. Sun spots had been seen prior to this observation.

Position of Ship : Latitude  $50^{\circ} 12' \text{N.}$ , Longitude  $38^{\circ} 47' \text{W.}$

The following is an extract from the Meteorological Record of S.S. *Caxton*. Captain J. M. Cherry. Halifax, Nova Scotia, to West Hartlepool. Observer, Mr. R. Crawford, 3rd Officer.

16th to 17th February, 1947, 1110 G.M.T. to daylight. Aurora appeared as rays or beams of light shooting upwards from the horizon to a point bearing  $195^{\circ}$ , altitude between  $70^{\circ}$  and  $80^{\circ}$ , and between the bearings  $210^{\circ}$  through N to  $50^{\circ}$ . The brightest rays appeared at 1118 between bearings  $310^{\circ}$  and  $330^{\circ}$ . At this time, several rays of coloured light (red, green and yellow) appeared to shoot up from the horizon to an approximate altitude of  $30^{\circ}$ , but only lasted for a few seconds. Sometimes a faint reddish glow could be seen in the NW. The rays appeared mainly white and seemed to be continually shooting up towards the aforementioned point in the sky and receding from it.

Position of Ship at midnight : Latitude  $56^{\circ} 30' \text{N.}$ , Longitude  $23^{\circ} 36' \text{W.}$

18th February, 1947, 2200 G.M.T. Several bright rays of light were seen between  $350^{\circ}$  and  $320^{\circ}$  but they only lasted until 2210 when they disappeared leaving a faint glow in the northern sky. They reached an approximate altitude of  $45^{\circ}$ . After 2330 the sky became overcast.

Approximate position of ship : Latitude  $58^{\circ} 12' \text{N.}$ , Longitude  $12^{\circ} 00' \text{W.}$

Note.—Other ships reported the aurora on 16th to 17th February :

M.V. *Beaverdell* at 0600 G.M.T. on 17th, Latitude  $45^{\circ} 39' \text{N.}$ , Longitude  $42^{\circ} 07' \text{W.}$  "Northern lights clearly seen."



S.S. *Cairnvalona* at 0600 G.M.T. on 17th, Latitude  $50^{\circ} 40' \text{N.}$ , Longitude  $40^{\circ} 12' \text{W.}$  "Brilliant ray type auroral display."

M.V. *Beaverglen* at midnight on 16th, Latitude  $49^{\circ} 53' \text{N.}$ , Longitude  $18^{\circ} 25' \text{W.}$  "Northern lights discernible, singular beams reaching  $40^{\circ}$  altitude."

M.V. *Comanchee* at midnight on 16th, Latitude  $48^{\circ} 40' \text{N.}$ , Longitude  $30^{\circ} 00' \text{W.}$  "Northern lights."

### North Sea

The following is an extract from the Meteorological Record of M.V. *Amastra*. Captain A. K. Bamerry. Amsterdam to Curaçao. Observer, Mr. J. Kell, Chief Officer.

16th January, 1947, 1850 G.M.T. 25 miles E of Ower Light Vessel, Northern Lights were observed low in the northern sky, starting as a whitish glow, increasing in brightness and turning in places to a reddish colour. These lights were visible for about 20 minutes.

At 1900 G.M.T. a very bright meteor with a long tail was observed bearing  $270^{\circ}$ . Visibility at the time was abnormally good, Ower Light Vessel being visible at 21 miles, indicating excessive refraction.

Approximate position of Ship : Latitude  $53^{\circ} 11' \text{N.}$ , Longitude  $2^{\circ} 25' \text{E.}$

### METEORS

#### Australian Waters

The following is an extract from the Meteorological Record of M.V. *Clan Macdougall*, Captain R. P. Galer, C.B.E., R.D., R.N.R. Melbourne to Cochin. Observer, Mr. J. A. Baxter, 2nd Officer.

2nd February, 1947, 1239 G.M.T. A meteor of great brilliance appearing about the size of the moon travelled roughly from the position of the star Betelgeuse to the position of Diphda, where it dispersed. It lighted up the whole ship during its passage, giving the impression of a "snowflake" rocket.

Position of Ship : Latitude  $31^{\circ} 56' \text{S.}$ , Longitude  $112^{\circ} 26' \text{E.}$

#### Coast of Morocco

The following is an extract from the Meteorological Record of S.S. *Empire Martaban*. Captain R. Cook. Port Said to Lagos, Nigeria. Observer, Mr. D. B. Butler, 3rd Officer.

11th March, 1947, 2200 G.M.T. A bright meteor was observed to fall from the constellation of Orion, which had then passed the meridian. It appeared about  $1^{\circ}$  above the Belt and disappeared about  $\frac{1}{2}^{\circ}$  east of Rigel, i.e. falling over an arc of roughly  $10^{\circ}$  from an altitude of  $28^{\circ}$  to  $18^{\circ}$ . The duration of fall was approximately one second, the magnitude about that of Rigel, and the colour was blue, with a train which disappeared immediately afterwards. Clear, cloudless sky at time of observation.

Position of Ship : Latitude  $31^{\circ} 27' \text{N.}$ , Longitude  $10^{\circ} 23' \text{W.}$

At 2305 another meteor was seen. It was blue in colour with a train which disappeared immediately. The arc of fall was not more than  $2^{\circ}$  or  $3^{\circ}$ , but the position was not definitely fixed ; the duration was about half a second.

Position of Ship : Latitude  $31^{\circ} 19' \text{N.}$ , Longitude  $10^{\circ} 31' \text{W.}$

### **Gulf of Aden**

The following is an extract from the Meteorological Record of S.S. *Corfu*. Captain C. S. Parker. London to Rangoon. Observer, Mr. R. F. McNish, 4th Officer.

10th March, 1947, 2215 G.M.T. An intense light, blue-green in colour, was seen slightly on the Polar side of Denebola. This light appeared like the burst of a high-angle shell, and from the burst there was a trail of bright light across the sky to Regulus, persisting until 2225. The trail was very plainly seen at first but gradually diminished until it faded out and was barely discernible through glasses.

Position of Ship : Latitude  $12^{\circ} 11' \text{N.}$ , Longitude  $49^{\circ} 35' \text{E.}$

### **Gulf of Guinea**

The following is an extract from the Meteorological Record of S.S. *Empire Martaban*. Captain R. Cook. Port Said to Lagos, Nigeria. Observer, Mr. D. B. Butler, 3rd Officer.

19th March, 1947, 2141 G.M.T. A bright meteor was observed to fall just off the tail of the Great Bear about  $7^{\circ}$  east of Benetnasch. It was light blue, almost white, and the same magnitude as Sirius, or perhaps brighter. The arc of fall was about  $3^{\circ}$  or  $4^{\circ}$  and the duration approximately one second.

Position of Ship : Latitude  $4^{\circ} 26' \text{N.}$ , Longitude  $8^{\circ} 35' \text{W.}$

### **Indian Ocean**

The following is an extract from the Meteorological Record of S.S. *Pipiriki*. Captain A. Hocken. Aden to Fremantle. Observer, Mr. R. Jeffries, 3rd Officer.

15th February, 1947, 1640 G.M.T. A meteor of intense brilliancy became visible bearing approximately E (True) at an altitude of about  $50^{\circ}$ . Moving towards N (True), it left a thin trail of about  $20^{\circ}$  length and vanished, bearing approximately N (True) at an altitude of about  $30^{\circ}$ . The whole phenomenon lasted about 20 seconds, during which time the sky was bright.

Position of Ship : Latitude  $6^{\circ} 58' \text{S.}$ , Longitude  $78^{\circ} 48' \text{E.}$

### **North Atlantic Ocean**

The following is an extract from the Meteorological Record of S.S. *Consuelo*. Captain G. S. Anderton. New York to Hull. Observer, Mr. A. T. Jardine, Chief Officer.

7th March, 1946, 0642 G.M.T. A brilliant green flash was observed in the sky, bearing  $066^{\circ}$  (True), approximate altitude  $25^{\circ}$ . The flash was on the edge of a cumulus cloud, sky 2/10 cloud and the atmosphere very clear. A green light was observed to fall away from the flash and burn out almost immediately. No planes or ships were heard in the vicinity, also no trace of a rocket was seen arcking upwards.

Position of Ship : Latitude  $47^{\circ} 05' \text{N.}$ , Longitude  $43^{\circ} 08' \text{W.}$  Course  $046^{\circ}$ . Speed  $11\frac{1}{2}$  knots.

The following are extracts from the Meteorological Record of M.V. *Beaverglen*. Captain J. P. Dobson, D.S.C., R.D., R.N.R. London to St. John, N.B. Observer, Mr. L. E. McDowell, 4th Officer.

13th March, 1947, 0228½ G.M.T. A large brilliant meteor was observed in the east for a period of about 1½ seconds. Its colour was a brilliant white with a trace of light green, and it fell perpendicular to the horizon with a slight declivity to north at lower altitude. Its altitude was approximately from 25° to 15° and no trail was discernible. Weather conditions, cloudy with very good visibility.

Position of Ship : Latitude 42° 22'N., Longitude 57° 23½'W.

15th March, 1947, 2245. A large brilliant meteor was observed for about 3 seconds. It fell through an arc with arch to the zenith at an angle of 50° to the horizon. Maximum altitude 40° bearing 053° (True); minimum altitude 20° bearing 080° (True). The trail was approximately 6 times the length of the head and was a clear light red in colour. Weather partly cloudy, very good visibility.

Position of Ship : Latitude 47° 12'N., Longitude 33° 23'W.

#### **New Zealand Waters**

The following is an extract from the Meteorological Record of M.V. *Waipawa*. Captain W. G. West. Wellington, N.Z., to Balbao. Observer, Mr. D. MacCallum, 3rd Officer.

18th February, 1947, 0816 G.M.T. A meteor of 1st magnitude brightness, but with a definite green tinge, was first seen in the constellation of Leo and last seen in Corvus. The duration of its flight was about 3 seconds; the arc through which it travelled was 20° and its altitude about 10°, decreasing a little. The meteor was observed through a thin patchy layer of stratus or stratocumulus and some stars were visible all the time.

Approximate position of Ship : Latitude 41° 50'S., Longitude 178° 31'E.

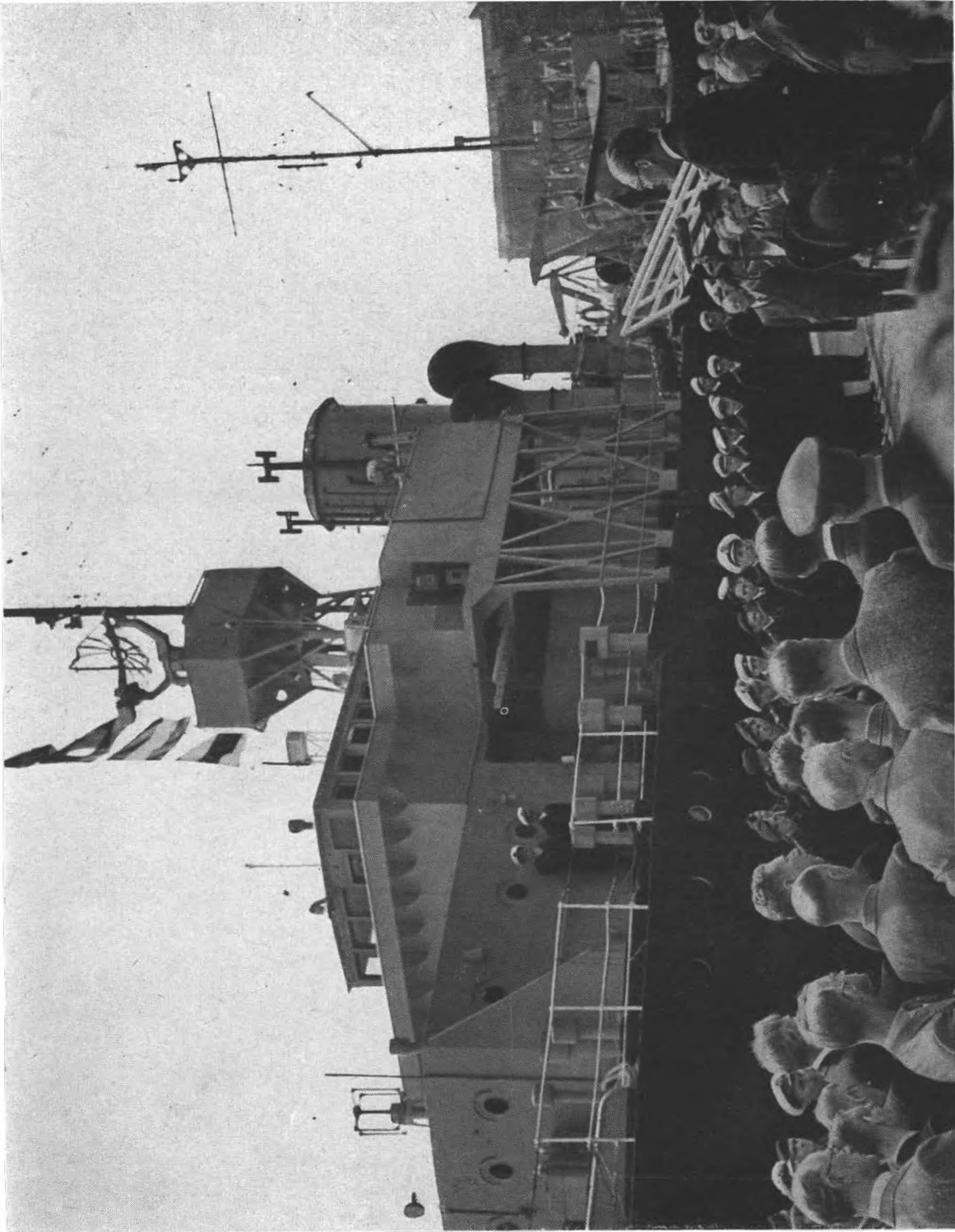
#### **West Coast, Central America**

The following is an extract from the Meteorological Record of M.V. *Waipawa*. Captain F. Smith. New York to New Zealand. Observer, Mr. R. B. Wyld, 3rd Officer.

23rd February, 1946, 0435 G.M.T. An unusually large meteor was seen of a brilliant green colour. The main body disappeared in the vicinity of  $\alpha$  Crucis, azimuth 160°, approximate altitude 10°. Its brilliancy was such that a moderate size print might have been read by the light. The whole phenomenon lasted from 3 to 4 seconds.

Position of Ship : Latitude 17° 33'S., Longitude 113° 40'W.

Leaf



Mr. Philip Noel-Baker, the Secretary of State for Air, addressing the ship's company and visitors at the renaming ceremony



## THE FIRST BRITISH OCEAN WEATHER SHIP RENAMING CEREMONY

BY COMMANDER C. H. WILLIAMS, R.D., R.N.R.

On the afternoon of Thursday the 31st July, 1947, in the London Docks, the ceremony of renaming our first Ocean Weather Ship was performed by the Secretary of State for Air. The ship was the ex-Royal Navy corvette *Marguerite* and she was to be renamed *Weather Observer*. The extensive work of converting the ship from a war vessel to her new appearance had been carried out at H.M. Dockyard, Sheerness. At about noon on Wednesday, the 30th July, the ship had arrived up river from that port and had been berthed in Shadwell Basin, London Docks.

The Port of London Authority had kindly allotted, abreast the ship's berth, a large shed in which an exhibition of meteorological instruments was laid out, and where refreshments could be arranged for the guests. Decorations were hung round the inside walls of the shed, including the national flags of the countries interested in the Atlantic Ocean Weather Ship scheme; Belgium, Canada, Denmark, Eire, France, Holland, Iceland, Norway, Portugal, Sweden, the United Kingdom and the United States of America. On a flagstaff outside the shed the Union Flag was flown; the ship herself flew masthead flags, a jack and the Red Ensign, and also her "number" M.P.J.J.

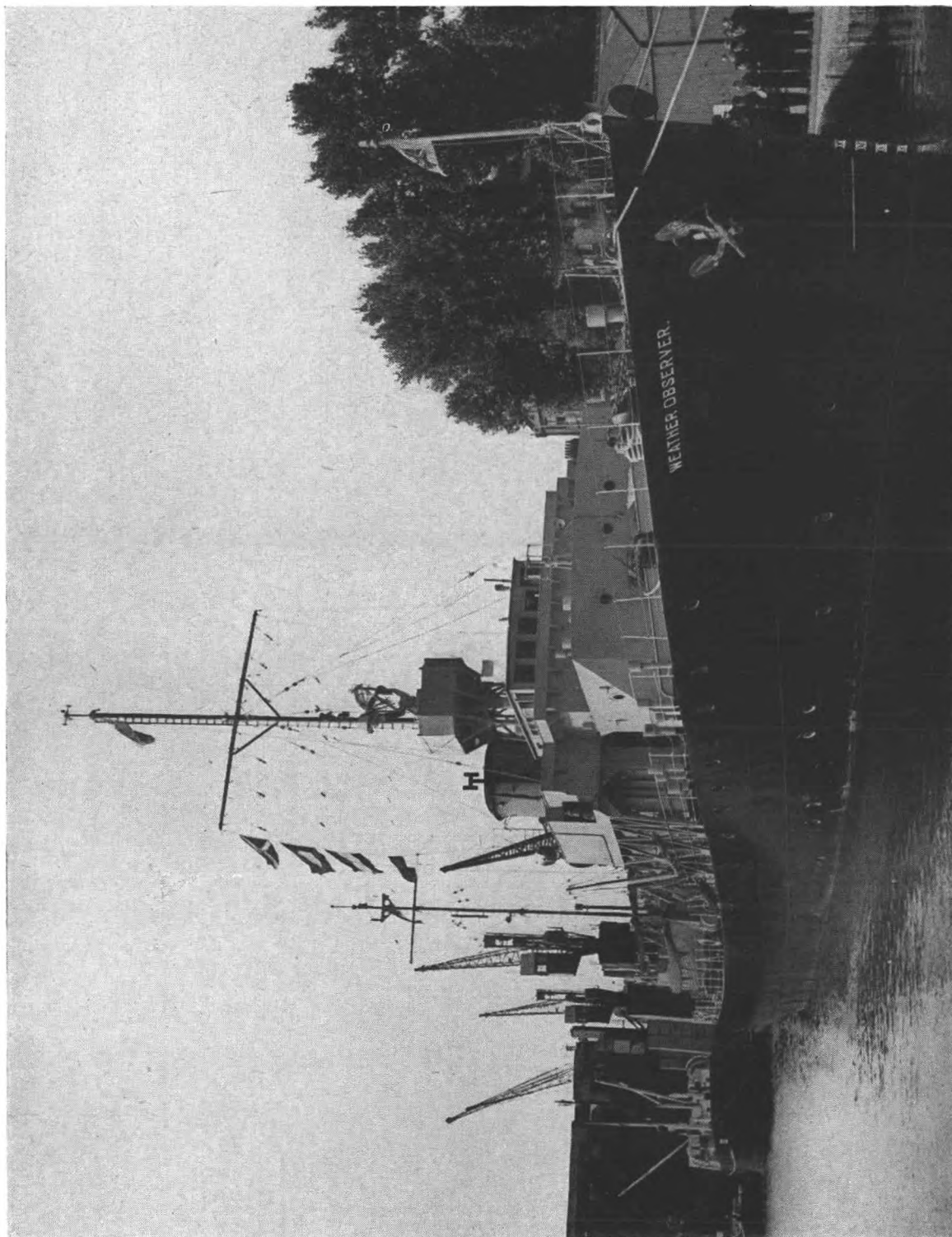
In the forenoon of Thursday, 31st July, preparations were completed for the renaming ceremony which was to take place in the afternoon. Representatives of the press visited the ship and a number of photographs were taken. Pressmen were shown the meteorological arrangements in the ship and a radio-sonde balloon was released by the ship's meteorological staff. Fortunately the wind was in the right direction to take the balloon and its gear clear of the several tall dock cranes and of a nearby church spire. At 11 a.m. Sir Nelson Johnson, Director of the Meteorological Office, addressed a large press conference in the shed on the quay.

Shortly after 2 p.m. the guests started to arrive. Chairs had been provided by the Port of London Authority and the quay was cordoned off to make a clear passage for cars. The arrangements made by the Port of London Authority Police and the Metropolitan Police for the direction and control of cars and pedestrians worked admirably.

By 3 p.m. a considerable gathering, including many distinguished people, was on the quay. The Secretary of State for Air, Mr. Noel Baker, arrived and the Director introduced a number of the guests and the captain and senior officers of the ship. The ship's company had been mustered on the quay alongside their ship, and they were inspected by the Secretary of State, who then made a speech to the assembled guests and spectators.

After pointing out that the idea of Ocean Weather Ships was not a new one, Mr. Noel Baker went on to mention the International Conference convened by P.I.C.A.O. in London in September 1946, which resulted in the signing of an agreement by 10 countries for providing and maintaining 13 Ocean Weather Ship Stations in the North Atlantic. These ships would act as floating "islands" to provide meteorological observations and to give navigational aid to aircraft in flight. He outlined the work to be done by

Send



The Ocean Weather Ship *Weather Observer*, late H.M. Corvette *Marguerite*, at Shadwell Basin, London Dock, on 31st July, 1947

them, their upper air soundings and other meteorological work and their use, should occasion unfortunately arise, as air-sea rescue vessels.

The crews of the Ocean Weather Ships would have an arduous and sometimes difficult job, but if their work resulted in improved accuracy of the weather forecasts for the civil air lines operating across the ocean as well as for shipping, and for agriculture and many other economic purposes ashore, then it would be difficult to estimate the great value of these ships to the peoples of the countries concerned.

At about 3.30 p.m. the Secretary of State, accompanied by the Director and some guests, boarded the ship and the renaming ceremony was performed; this was done by Secretary of State, after wishing good luck to all who sail in her, pronouncing the ship renamed *Weather Observer* and at the same time cutting a tape which released a Union Flag that had until then covered the vessel's name on her bow.

The party then inspected the ship, being conducted round by the captain. Other guests visited the exhibition of meteorological instruments in the shed on the quay while waiting their turn to inspect the ship. Guests were conducted over the ship in parties of about a dozen. At the end of the inspection by the Secretary of State and party, another radio-sonde balloon was released from the special balloon-filling compartment at the after end of the ship. This balloon, like the one launched in the forenoon, also went clear of all obstructions. The successful launching of radio-sonde balloons from a small ship is no easy job; the balloon with its radar target, transmitter aerial and transmitter having about 30 ft. overall length at the launch, requiring considerable skill in handling.

Visitors to the ship found plenty to interest them: the navigating bridge with the various "gadgets" in the chartroom and wheelhouse, the motor lifeboats and other rescue arrangements were all interesting. Some found their main interest in the radio and the radar equipment, all of which is of up-to-date Admiralty pattern, or in the engine room with its complicated mass of machinery. The crew's quarters, recreation rooms and cooking arrangements were of interest to others. A large proportion of the visitors were members of the staff of the Meteorological Office and to them the interest, no doubt, was in the Meteorological Plotting Room, the Instrument Preparing Room and the Balloon Filling Compartment. Meanwhile tea was provided for the guests in the shed on the quay, and as the afternoon was sunny and warm this refreshment was very popular.

The ship herself presented quite a striking appearance, with her black hull and with her deck houses, bridge, boats, funnel and masts painted a bright yellow. This colouring is to make the ship conspicuous from the air. Her unusual appearance and rig caused considerable interest in shipping circles on London river. The vessels' general dimensions are: length O.A. 206 ft., beam 33 ft., draft-loaded about 16 ft. She is of 725 tons gross, 268 tons nett measurement and has a maximum speed of 16 knots, with a single screw, reciprocating steam engines and oil-fired boilers. As a corvette her armament had been one 4-in. gun mounted forward, one 2-pounder quick-firing gun mounted aft, 6 oerlikon guns (3 either side) and 72 depth charges. Two specially designed masts have been added, with a radar platform on the lattice-work foremast. The forecastle deck has been carried aft to the mainmast to provide extra cabin accommodation; a deckhouse

has been built forward of the bridge and a large balloon-filling compartment built aft. She has also been considerably altered internally.

On Friday, 1st August, 1947, the Ocean Weather Ship *Weather Observer*, Captain N. F. Israel, D.S.C., sailed from the London Dock at 2 p.m. to complete her radar tests off Portsmouth and then proceed to her station in the Atlantic ; Station " J " in Latitude 53° 50'N., Longitude 18° 40'W.

## THE IMPORTANCE OF SHIPS' OBSERVATIONS TO THE FORECASTER

BY T. H. KIRK, B.SC.

### Part III. Practical aspects of synoptic analysis

#### 1. Introduction

The present article aims at showing how the different weather elements observed at sea are utilised in the process of analysis which precedes the making of forecasts. By this means it is hoped that the importance of the various aspects of observational routine will be fully emphasised.

It may perhaps be worth mentioning here that seamen in the North Atlantic trade are in a favourable position for practising this analysis themselves, using the data issued in the Atlantic Weather Bulletin for Shipping.<sup>1</sup> The following notes may therefore also serve in some measure as practical hints for deriving the maximum benefit from such weather bulletins.

#### 2. Plotting the observations

To facilitate the clear representation of each individual observation on the working chart some abbreviated notation is obviously necessary. Fig. 1 shows some of the symbols used in normal forecasting practice. It will be noticed at once how these symbols are suggestive of the particular element represented :

e.g. intermittent slight rain	●
continuous slight rain	● ●
intermittent moderate rain	● ●
continuous moderate rain	● ● ●
intermittent heavy rain	● ● ●
continuous heavy rain.	● ● ● ●

In order to avoid confusion, the symbols are grouped in a special way around the position of the station. Fig. 2 shows this standard representation or " station model " together with some examples. Note how concisely and conveniently this notation expresses a mass of observational detail.



ww	0	1	2	3	4	5	6	7	8	9
00	○	⊖	⊗	⊙	≡	∞	⊗	↙	≡	(≡)
10	⊙ (*)	(↗)	(↘)	∇	∧	∧	∪	⊗	⊗	6
20	⊙ (*)	']	•]	*]	*]	∇]	∇]	∇]	↗]	↗]
30	⊙	↘	↘	↘	↘	⊕	⊕	⊕	⊕	⊕
40	≡	≡]	≡]	≡]	≡]	≡	≡	≡	≡	≡
50	⊙	,	''	;	;	;	;	≡	;	;
60	⊙	•	••	••	••	••	••	≡	•	•
70	⊙	*	**	*	*	*	*	≡	△	↔
80	⊙ (*)	∇	∇	∇	∇	∇	∇	∇	∇	∇
90	⊙	↗	↗*	↗*	↗*	↗*	↗*	↗*	↗*	↗*

Fig. 1. Symbols for Present Weather (ww)

Plotting a weather chart involves making a like representation for each coded message received. The analysis of the chart must await the end of this plotting routine. It will now be appreciated how the receipt of late messages causes inconvenience. Such messages may of course contain vital information and so must always be plotted. The new information may then necessitate a revision of the analysis and a re-drawing of that part of the chart in the vicinity of the new report. The late receipt of occasional land station reports does not, in general, involve such modification as is necessitated by late ship reports, because the greater density of land station reports ensures that the chart is drawn more or less correctly. The prompt receipt of ships' observations is essential to the efficient preparation of reliable analyses and forecasts.

### 3. Drawing isobars

In the absence of fronts, the drawing of isobars on a synoptic chart is very much akin to the drawing of contours on a survey chart, lines of equal pressure replacing the lines of equal height. The following considerations are found useful in making the most of ocean observations :—

- (a) It is better to start drawing isobars where observations are more numerous, gradually extending them to areas where observations are sparse.

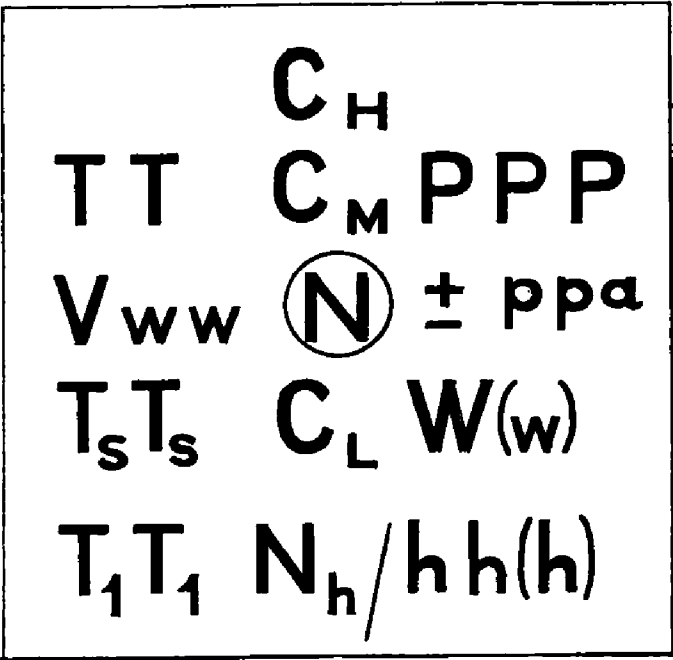


Fig. 2 (a). Station Model

The circle denotes the position of the station.

The letters have the following customary meanings :

- PPP = Pressure
- pp = Tendency
- TT = Air Temperature
- T<sub>1</sub>T<sub>1</sub> = Sea Temperature
- ww = Present Weather
- W = Past Weather
- a = Characteristic
- C<sub>L</sub>C<sub>M</sub>C<sub>H</sub> = Form of Low, Middle and High Cloud
- T<sub>s</sub>T<sub>s</sub> = Dew Point Temperature
- N = Total Amount of Cloud
- V = Visibility
- N<sub>h</sub> = Amount of Low Cloud
- hh = Height of Low Cloud (2 figs.)
- h = Height of Low Cloud (1 fig.)

Also (w) = That part of “ ww ” which refers to the last hour but not to the time of observation.  
 The figures or symbols are plotted in black and red. The following are plotted in red :  
 C<sub>H</sub>, W, T<sub>s</sub>T<sub>s</sub>, V and pp when negative.

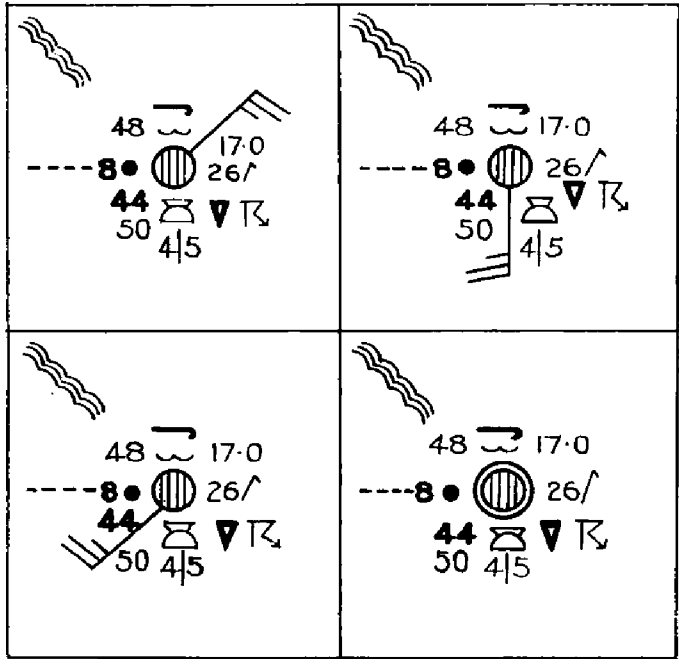


Fig. 2 (b). Method of plotting with different wind directions

The figures or symbols plotted in red are indicated by thicker lines.

The west to east course of the ship is indicated by the pecked line, the length giving the distance travelled in the past 3 hours.

The symbol at the top left indicates a heavy NW'ly swell.

(b) Simple isobars are more probable than complicated isobars. Isobars should therefore be kept as smooth as possible, consistent with the observations.

(c) Use should be made of the reported winds. The isobar is drawn so that the reported wind deviates slightly from its direction towards the side of low pressure. Adjacent isobars are spaced to give a pressure gradient in accordance with the observed wind speed. This implies, of course, that the observation is representative of conditions in an area surrounding the ship.

A rather cumbersome way of spacing the isobars is to use a geostrophic wind scale "in reverse". With a little practice, however, this procedure becomes unnecessary and isobars can be drawn by eye with sufficient accuracy, close together where the winds are strong and wider apart, in proportion, where the winds are weaker.

When applying these principles it soon becomes apparent that what is needed is a fair distribution of observations rather than a great number irregularly grouped. In general, ocean observations are sufficiently scanty to make constant reference to previous charts a necessity when drawing isobars. Care must be taken to ensure that a continuous process of change is represented, the magnitude of the change being reasonable in the particular circumstances. Here, much depends on the experience and capability of the individual forecaster.

#### 4. Adjustment of isobars to fronts

The above remarks are of general application in the absence of fronts, i.e. within a particular air mass. In general, however, the correct drawing of the isobars cannot be completed until the positions of the various fronts have been determined. This is because the pressure gradient is discontinuous at a front, or in other words, because each isobar changes direction abruptly at a front. It can be shown that in all cases the discontinuity must bulge outwards from the low pressure as in Fig. 3.

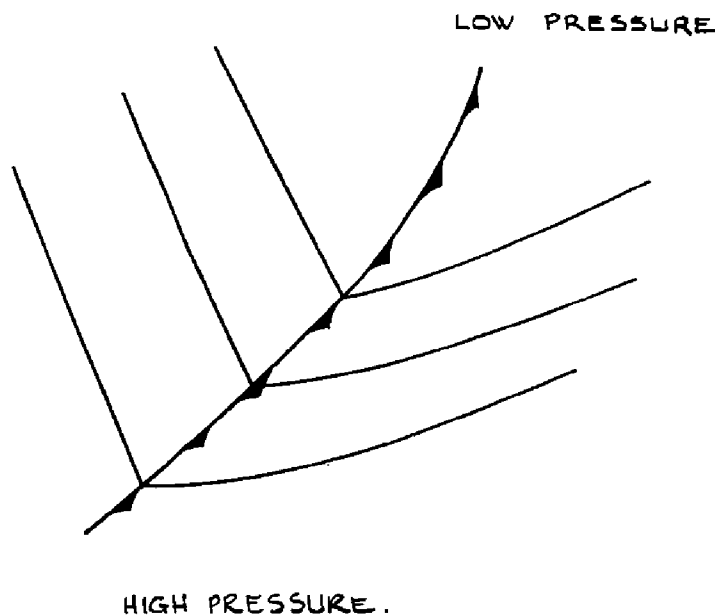


Fig. 3

A correct frontal analysis aids tremendously in the correct drawing of isobars in areas where observations are few. It would be a mistake, however, to think that a rigid procedure of drawing the fronts before the isobars should be adopted. In practice it is far better for the two processes to proceed together, fronts and isobars being drawn tentatively and later mutually adjusted to give a satisfactory final picture.

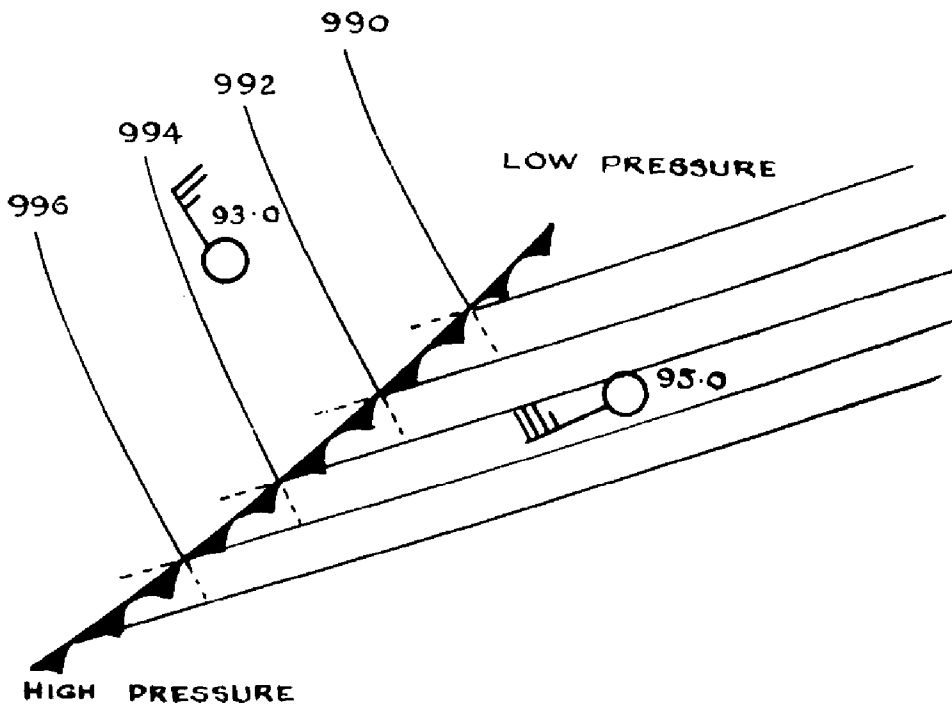


Fig. 4

The help afforded by a good analysis in drawing the isobars needs no specific demonstration but it may perhaps be worth while to see how drawing the isobars can help in the precise determination of a frontal position. Fig. 4 shows two ships' observations which afford evidence (not shown in the diagram) that a cold front must lie somewhere between them. Where exactly should it be placed? By drawing the isobars in the vicinity of each observation and finding their points of intersection it will be found that with but little adjustment these lie on a line which must therefore be the position of the front. This construction of course, assumes that there is no appreciable curvature on the isobars.

From a theoretical standpoint the correct drawing of the isobars in the vicinity of a front is of the utmost importance, for on this depends the estimate of the speed of the front. In practice, using ships' observations, the desired degree of precision cannot often be attained and any estimate of speed must to some extent be based on past behaviour.

##### 5. Use of pressure tendencies

Reference has already been made to the fact that the barometric tendency recorded on board ship is not representative, being dependent on the motion of the ship. We are now in a position to see how a correction may be applied in order to get a representative reading. In Fig. 5 suppose the full lines represent isobars on the synoptic chart and that A is the plotted position of the ship. Knowing the course and speed of the ship, which are given in the



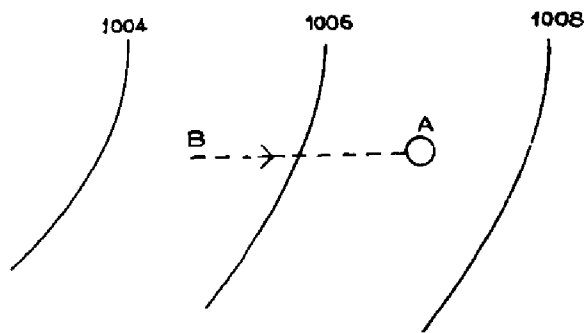


Fig. 5. Correction of Barometric Tendency for course and speed of ship

synoptic message, it is an easy matter to lay off from A a distance AB such that the vector BA represents the distance run by the ship in the past 3 hours. If there were no change in the position of the isobars during the 3-hour period we should expect the true barometric tendency measured at position A to be zero, yet solely on account of its movement, the ship registers a tendency expressed by the difference in pressure between A and B. In the example shown in Fig. 5 this amounts to a rise of 2 mb. In general, when the isobaric system is changing, the true tendency is obtained by subtracting from the measured tendency the spurious component derived from the run of the ship in the past 3 hours.

Having, by this device, made available representative values of barometric tendency at sea, how are they to be utilised? Obviously they help to determine the movements of the various pressure systems; the fact that the barometer usually falls in advance of a depression and rises in advance of an anticyclone being common knowledge. Yet the matter is not really as simple as may appear at first sight. In order to make the argument more precise let us consider the behaviour of the barometer at a point in the vicinity of a depression. Let us suppose that the pressure at the centre of the depression, its depth in other words, remains constant. Then, without doubt, if the depression moves towards the fixed point the barometer there will fall. More generally, the barometer will fall if the motion of the centre of the depression has a component towards the fixed point. Now consider the case when the depression remains stationary but the barometric pressure at its centre falls; in other words the depression deepens. We may regard this deepening process as the creation of new isobars at the centre of the depression, the whole system of isobars being slowly pushed outwards. If this outward displacement of the isobars reaches the fixed point where our barometer is situated then the pressure there must fall. Thus, in this case, the falling barometer is not evidence of the movement of the depression but evidence of its deepening.

We are therefore led to the conclusion that the barometric tendency in any general case has two components, one due to the movement or *translation* of the different pressure systems, the other due to the change of intensity or *development* of the pressure systems. It is not, in general, possible to separate these two components, although it would be highly desirable to do so.

Where many observations are available, well distributed about the centre or axis of symmetry of a pressure system, the movement of the latter can be deduced. In practice, however, the density of ocean reports is rarely sufficient

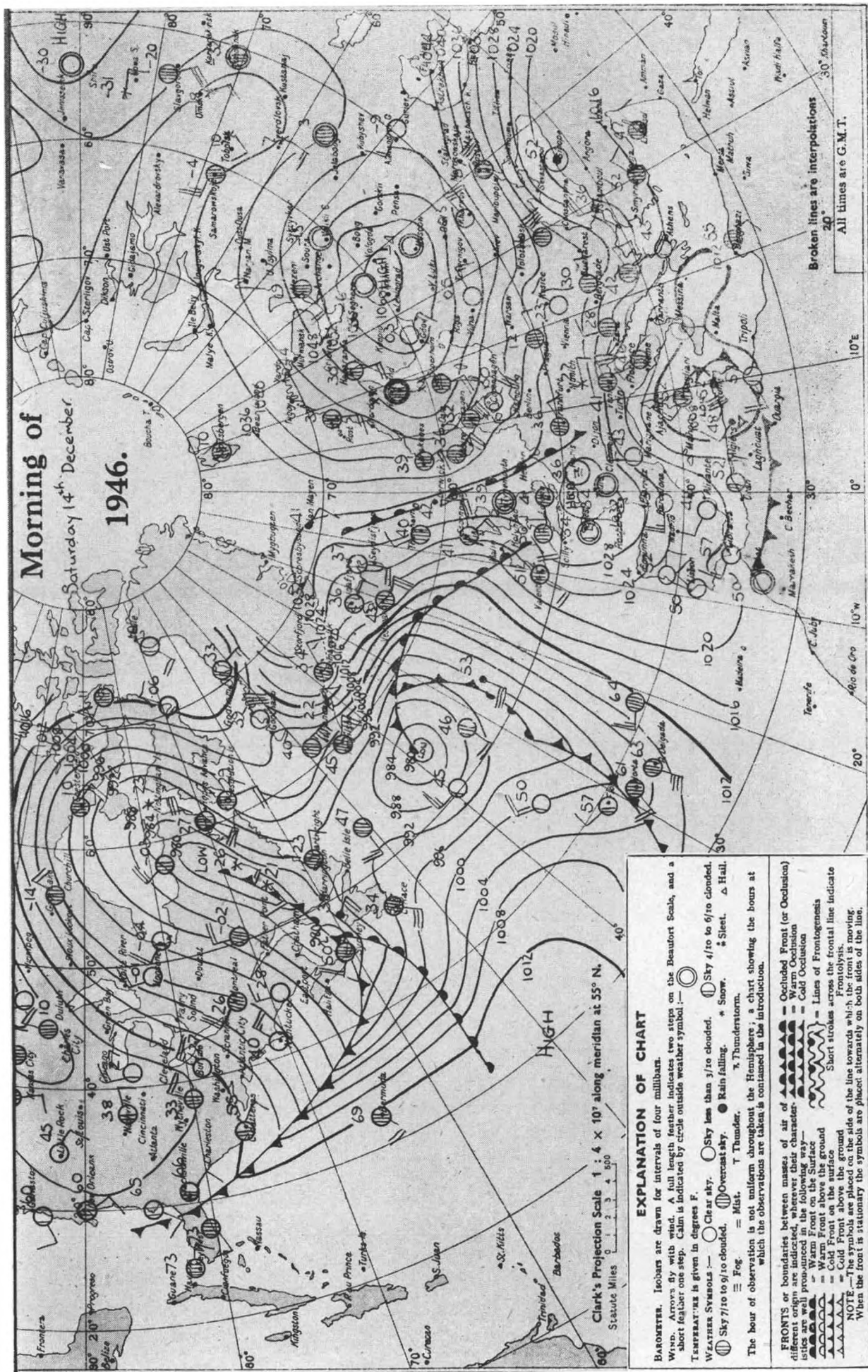


Fig. 6

to enable this to be done and the movement of pressure systems is generally estimated by a comparison of successive charts. Individual reports are of greatest value when they show exceptionally large values of pressure tendency, after correction for the run of the ship has been made.

## 6. Identifying the air-masses

In using any air-mass property or characteristic for identification purposes there are two important questions to be asked: (a) is it representative? (b) is it conservative?

Sufficient has already been said about the conditions under which certain observations are representative. It is important to know when an air-mass characteristic may be regarded as conservative in order that a particular air mass may be recognised from one chart to the next. Of course, no characteristic can ever be strictly conservative, for modifying processes are continually taking place. This modification, however, affects some elements much more slowly than others, and if the changes are sufficiently slow to be neglected when compared with the inaccuracy of the observations when a specified process takes place, then the characteristic is said to be conservative. The main physical processes making for non-conservatism are radiation, mixing and precipitation. The value of upper air data, so extensively used on land, lies in the fact that conservative characteristics can be employed in the analysis. Over the oceans it is usual at present for only surface data to be available and the best possible use must be made of them.

Non-conservative characteristics can, of course, be used in the analysis provided due weight be given to the modifying influences at work. The use of surface temperature observations may be taken as a good illustration. On land, surface temperature is only of limited value as an air-mass characteristic, owing to the fact that it is rarely representative. Its use at sea on the other hand offers considerable scope. The chief modifying influence at work is the heat exchange between the air and the sea surface. Fig. 6 (Saturday, 14th December, 1946) shows an example in which the use of temperature data in conjunction with general considerations affords considerable help in making a satisfactory analysis. The most striking feature of this chart is the broad band of warm southerly winds in the Eastern Atlantic, on the flank of the European high. The lower temperatures in North Scotland, Faroes and Iceland suggest the presence of a front dividing this air from the warm southerly current. The precise fixing of the front depends on the use of information from previous charts and on the drawing of isobars to fit both pressure and wind data. Colder air is cutting into this band of southerlies on its western flank as evidenced by the observations from Flores in the Azores and from the ship reports showing temperatures of  $50^{\circ}$ ,  $46^{\circ}$  and  $45^{\circ}$  F. It is evident that these ships are not in the same air mass as the one a little farther to the east, where a much higher temperature is recorded. In the south, a conscientious drawing of isobars to fit the wind distribution fixes the front within close limits while farther north the report of rain suggests that the front must be approaching the ship station showing a temperature of  $53^{\circ}$  F. The suggestion of a secondary depression at  $48^{\circ}$ N.,  $30^{\circ}$ W. is derived partly from the drawing of the isobars to fit all the data, and partly from theoretical considerations. The occlusion drawn from a point north-east of Iceland through the Shetlands to north-west Germany marks the discontinuity between air derived from a previous invasion of an Atlantic air mass and the

continental polar air brought round the high pressure cell centred over north-west Russia.

An examination of the surface temperatures in North America shows at once how non-representative are land station reports in this respect. At this time of the year the land is already cold relative to the sea, and the north-westerly air stream flowing in the rear of the depression centred over the Labrador Peninsula must be a cold one. The cold front initiating this outburst must have been (and indeed was !) easy to trace as it crossed the eastern United States. Its further progress over the sea is then merely a matter of estimation. The relatively high temperature of 50° F. at Sydney, near Halifax, is evidence that warm air extends at least to this latitude, and the tip of the warm sector is therefore located there, the warm front being placed between this position and Newfoundland, where much lower temperatures are recorded. There is no information on the chart to fix the southern position of this warm front and an estimate based on history is all that can be made.

The use of dew-point as an air-mass characteristic over sea areas has little, if any, practical advantage over temperature. This is partly because humidity measurements at sea are not very reliable and also because the modifying effects of a given sea track are difficult to estimate. Weather phenomena undoubtedly afford useful criteria. Here, however, it is necessary to distinguish between the weather phenomena occurring properly within the air mass and those occurring in the frontal zone at its boundary. For the moment we shall be primarily concerned with the former. Weather phenomena within an air mass are closely connected with its *stability*. The idea of stability is ultimately based on the statical criterion involving small displacements of an air particle from its position of equilibrium. A thorough understanding implies the use of thermodynamical diagrams and, in any particular application, a knowledge of the upper air structure. At sea, where upper air data are not readily available, the stability of an air mass must be judged by its effects on the weather. The word "unstable" applied to an air mass becomes a convenient label for a particular class of weather phenomena, comprising thunderstorms and line squalls, showers and turbulence. With a "stable" air mass, on the other hand, we associate stratified low cloud, generally stratus or stratocumulus, and fog patches. Precipitation, if it occurs, is generally in the form of drizzle or intermittent slight rain. In temperate zones, polar or arctic air masses are generally unstable and tropical air masses stable. This follows from the modifying effect of the sea surface temperature as the air mass travels from its source, to lower latitudes in the case of polar or arctic air masses and to higher latitudes in the case of tropical air masses.

Cloud types form a useful indication of the stability of an air mass and hence indirectly help in classifying the air mass as "polar" or "tropical". Large cumulus and cumulonimbus clouds characterise an unstable air mass whereas widespread stratus or stratocumulus can only occur in an air mass that is stable with respect to the modifying influence of surface conditions.

Visibility is also a useful air-mass characteristic in certain cases. Good visibility may occur in either polar or tropical air masses and one can apply no hard or fast rule. However, if an air mass identified on one synoptic chart is characterised by poor visibility then we can use this poor visibility as a criterion for identifying the air mass on successive charts.

7. Defining the air-mass boundaries or fronts

Having identified the main air masses the next problem is to define their boundaries, in other words, the fronts, and to relate these to the system of depressions in such a way that they evidently play their part in the life history of the system.

Fronts are generally marked by extensive weather phenomena and cloud systems that are typical of the type of front. The passage of a front at any place results in a change of most of the meteorological elements. The following tables show typical changes at warm and cold fronts in the temperate zones.

Warm front

Element	In advance	At the passage	In the rear
Pressure	Steady fall	Fall arrested	Little change or slow fall
Wind	Backing and increasing	Veer and sometimes decrease	Steady direction.
Temperature	Steady or slow rise	Rise, but not very sudden	Little change.
Cloud	Cirrus, Cirrostratus, Altostratus, Nimbostratus in succession, scud below Altostratus and Nimbostratus	Low Nimbostratus and scud	Stratus or Stratocumulus.
Weather	Continuous rain or snow	Precipitation almost or completely stops	Fair, or drizzle, or intermittent slight rain.
Visibility	Very good except in rain	Poor, often mist or fog	Usually poor; mist or fog may persist.

Cold front

Element	In advance	At the passage	In the rear
Pressure	Fall	Sudden rise	Rise continues more slowly.
Wind	Backing and increasing; becoming squally	Sudden veer and sometimes heavy squall	Backing a little after squall, then fairly steady or veering further in later squalls.
Temperature	Steady, but fall in prefrontal rain	Sudden fall	Little change or perhaps steady fall. Variable in showers.
Cloud	Alto cumulus or Altostratus, then heavy Cumulonimbus	Cumulonimbus with low scud	Lifting rapidly, followed by Altostratus or Altocumulus; later further Cumulus or Cumulonimbus.
Weather	Usually some rain; perhaps thunder	Rain, often heavy, with perhaps thunder and hail	Heavy rain for short period but sometimes more persistent, then mainly fair with occasional showers.
Visibility	Usually poor	Temporary deterioration followed by rapid improvement	Usually very good except in showers.

The changes occurring at occlusions are in general rather more complex but to some extent reflect either warm or cold front characteristics.

In practice the detailed comparison of successive charts serves to identify the changes occurring at each individual station and hence to determine the positions of the fronts or discontinuity lines.

## 8. The displacements of pressure systems and fronts

Any forecast must ultimately depend upon an estimate of the positions of the pressure centres and fronts during the period for which the forecast is intended. The determination of the speeds and direction of movement of the pressure systems and fronts constitutes the last stage in the process of analysis.

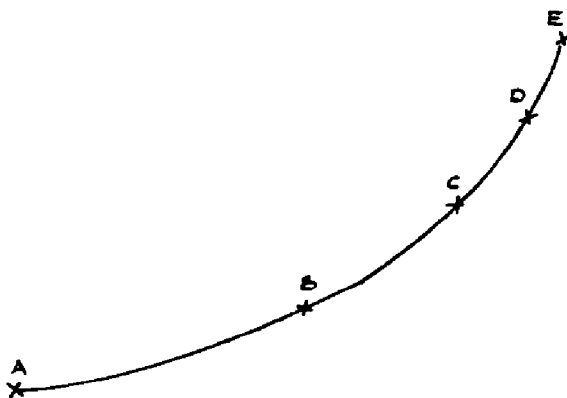


Fig. 7. Track of centre of a depression

We have already seen that, given an accurate drawing of the fields of pressure and pressure tendency, the velocity of each system can be determined. From a practical point of view we can dismiss this method as being of little use at sea because, in the absence of a close network of observations, the requisite degree of accuracy is not available. We must fall back on a method which, in effect, is the principle of continuity, to which reference has already been made. Assuming that a depression, for example, has been identified on successive charts at positions A, B, C, D (Fig. 7) then in the absence of information to the contrary we should be justified in placing it at position E on the next chart. The method must be used with caution, especially when the depression is approaching a larger system such as a semi-permanent anticyclone. In such cases there is generally a blocking action which either retards the forward progress of the depression or results in a deviation from its former path. As in so many other operations of analysis, care and judgement, based on experience, are necessary if good results are to be achieved.

A similar process of extrapolation may be utilised in estimating the positions of fronts, either where observations are lacking on the current chart, or at some future time for which a forecast is required. There is, however, another method of estimating the motion of fronts, based on the wind velocity. A front is a boundary surface between two air masses. If there were no vertical motion at this boundary surface then the horizontal component of motion of this boundary would be the same as that of the air masses on either side of it. In other words, the motion of the front measured at right angles to its length would be the same as the component of wind in this direction. Of course, in practice, there is always vertical motion at a



front. Nevertheless this method when used in conjunction with the process of extrapolation, already described, is of the greatest value. The practical application using the geostrophic scale consists simply of placing the scale along the line of the front and reading off the value corresponding to the distance between the isobar intervals (Fig. 8). The result represents the component of velocity in a direction at right angles to the front.

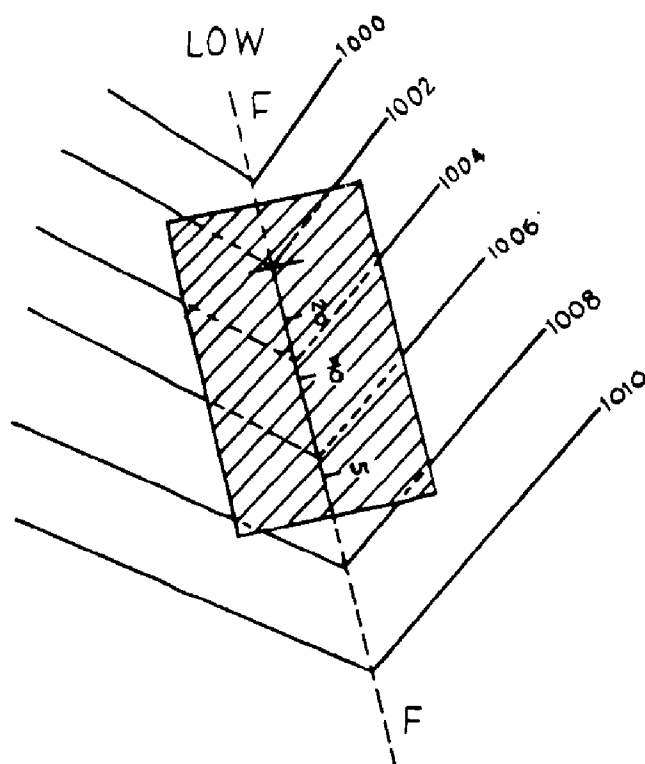


Fig. 8. Estimating the speed of a front using the Geostrophic Wind Scale

Having determined the estimated positions of the barometric features and fronts for a time *ahead* of the current synoptic chart, the art of forecasting consists of interpreting this picture in terms of the physical processes of weather and the conventional language of the weather forecast.

Details of the Atlantic Weather Bulletin for Shipping are as follows :—

Part I.—General inference and brief area forecast in plain language for Biscay, Finisterre and the NE, NW, SE and SW sections of that region of the North Atlantic, east of Longitude 40°W. and north of Latitude 35°N. These subdivisions may be varied at times to suit the synoptic situation.

The forecasts are based on 0600 and 1800 G.M.T. observations and cover a period of 24 hours from time of issue.

Part II.—Shore stations reports. Observations taken at 0600 and 1800 G.M.T. from 24 stations in form F151 : IIIAW, DDFww, PPVTT.

Part III.—Selection of ship's reports in form F2 : YQLLL, III GG, DDFww, PPVTT.

Part IV.—Particulars of pressure and frontal systems in C.A.C. Analysis Code, as follows :—

10001 33300 OYYGG  
8P,P,PP LLllk — — mddvv 8P,P,PP LLllk — — mddvv — —  
66F,F,F, LLllk LLllk — — — — mddvv\*  
66F,F,F, LLllk LLllk — — — — mddvv\*  
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19191

\* (mddvv may or may not be included).

For meaning of symbols see Part IV of the *Marine Observer's Guide*—*M.O. 477* or *Notes for use with the Atlantic Weather Bulletin for Shipping*—*M.O. 476*.

The bulletin is broadcast from Portishead as follows :—

Parts	G.M.T.	October to March		April to September	
		Call Sign	Frequencies	Call Sign	Frequencies
I	0930	GIY	51.5 (5830)	GIY	51.5 (5830)
		GKB5	16440 (18.25)	GKB5	16440 (18.25)
II		GKC3	8210 (36.54)	GKC5	16885 (17.77)
		GKC5	16885 (17.77)	GKC6	22010 (13.63)
III	2130	GBZ	19.4 (15465)	GBZ	19.4 (15465)
		GKB3	8340 (35.97)	GKB4	12678 (23.66)
		GKC4	12612 (23.79)	GKC5	16885 (17.77)
		GKC6	22010 (13.63)	GKC6	22010 (13.63)
IV	1145	GIY	51.5 (5830)	GIY	51.5 (5830)
		GKB6	22020 (13.62)	GKB5	16440 (18.25)
		GKC5	16885 (17.77)	GKC5	16885 (17.77)
		GKC6	22010 (13.63)	GKC6	22010 (13.63)
	2345	GBZ	19.4 (15465)	GBZ	19.4 (15465)
		GKB2	6425 (46.69)	GKB4	12678 (23.66)
		GKC3	8210 (36.54)	GKC5	16885 (17.77)
		GKC4	12612 (23.79)	GKC6	22010 (13.63)

OBSERVING WEATHER AT SEA

(III) The Marine Mercurial Barometer

BY H. JAMESON, D.SC.

To the sailor the most important meteorological observation he can make at sea, particularly in the tropics, is that of barometric pressure. Before wireless came into use it was not possible to broadcast warnings of approaching storms to ships at sea and the sailor had to rely mainly on the readings of his " glass " to give him such information. Even now, in spite of the elaborate system of broadcast weather reports and forecasts that has come into being, the information supplied by his own barometer is still very useful to the seaman in supplementing the official broadcast.

Because of the motion of the ship, however, the reading of a mercury barometer at sea is much more difficult than it is on land. The barometer has to be suspended so that it will swing freely and will always take up a vertical position ; it is therefore hung in gimbals at the end of a bracket, which is long enough to ensure that the barometer cannot strike against anything.

Even with the barometer suspended in this manner, “ pumping ” may occur, i.e. the mercury may oscillate in the tube. This effect is produced by : the pitching and rolling of the ship ; the swinging of the instrument about its point of support ; the effect of wind gusts on the air pressure in the room ; variations of pressure caused by the changing height of the ship as she moves up and down with the waves. The oscillations developed in the normal type of mercurial barometer under such conditions at sea would often be so great as to make observation impossible. For use at sea, a special Marine Barometer has been developed in which such oscillations are minimised.

In this instrument the bore of the glass tube is considerably constricted for the greater part of its length and part of the constriction is reduced to a fine capillary. These constrictions reduce the amount of pumping considerably, even if they cannot altogether prevent it. They make the marine barometer somewhat sluggish in picking up changes of barometric pressure but in practice the effect of this upon the readings is negligible. At the top of the mercury column the bore of the tube is much greater, usually about one-third of an inch. This minimises the effect of capillarity on the height of the centre of the mercury column but leaves the upper surface of the column sufficiently convex to facilitate accurate reading.

Even with this special type of barometer, pumping is often appreciable, and when this is the case, observers should try to set the vernier of the barometer, by eye, midway between the highest and lowest positions of the mercury surface. A more accurate observation will be made if three pairs of readings are taken, one of each pair being the highest reading attainable and the other the lowest. The value of the pressure to be entered in the log should be the mean of the whole set.

The location of the barometer on a ship is of importance. It must not be placed in such a position that it can be tampered with by unauthorised persons. It must not be exposed to direct sunshine or to suddenly varying conditions due to other causes, such as draughts of air from boilers or engine room. The lighting of the instrument should be good and there should be no glare on the glass.

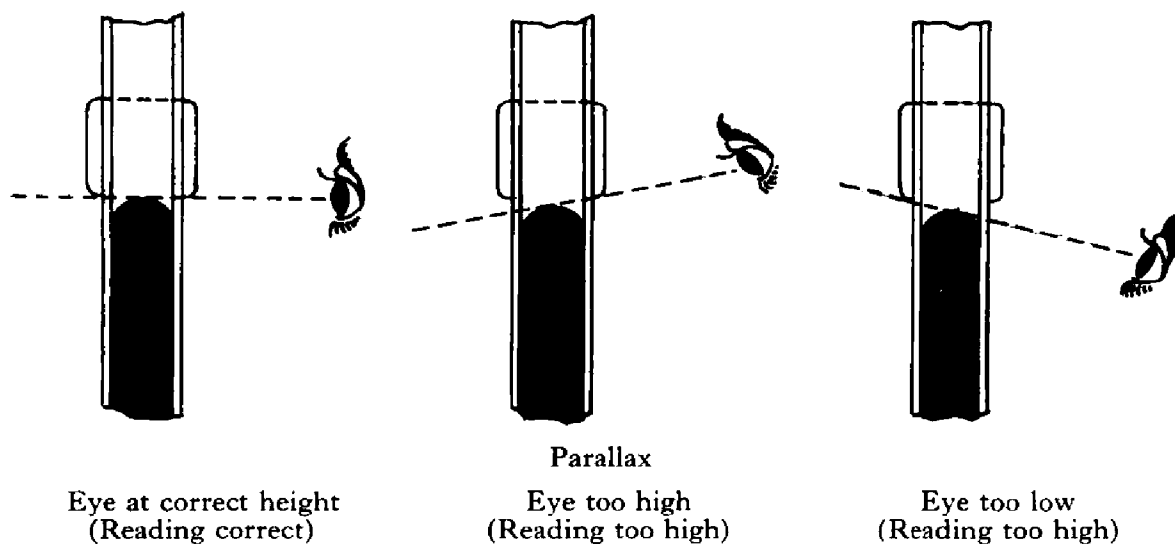
To minimise the “ pumping ” effect, it should be situated as near as possible to the ship’s centre of gravity, but for practical convenience it is usually placed in the chart room, although this is by no means an ideal position.

In an observation of barometric pressure the first reading to be taken is that of the attached thermometer, which records the temperature of the mercury, the glass tube and the metal scale. The reading should be taken quickly before heat from the observer’s body can affect the thermometer. It should be read to the nearest degree.

After the temperature has been read, the glass tube should be gently tapped till the tapping no longer alters the shape of the mercury surface in the tube. The milled head at the side of the barometer should then be

turned till the lower edge of the vernier and the lower edge of the sliding piece at the back of the tube, which moves up and down with the vernier, when in line, just appear to touch the upper part of the domed surface of the mercury. A piece of white paper or cardboard, placed behind the instrument so as to reflect light over the top of the column, will be found to assist the eye considerably in setting the vernier. An electric torch may be used at night. A lighted match or other naked light should never be placed behind the barometer as this may lead to appreciable error.

If the mercury has become dirty, or is not quite pure, it has a tendency to stick to the glass and it may happen that, when the barometer is falling, the top of the mercury column no longer shows a domed (convex) surface. The surface may be flat or even concave. If tapping does not restore the convex surface, it is much more difficult to set the vernier under these conditions. The observer should move the vernier slowly downwards, keeping its lower edge and the lower edge of the sliding piece in line as well as he can, till the white background just disappears at the centre of the tube. He should then move his eye a little up and down, to make sure that the white background still remains invisible at the centre of the tube, before he takes the reading. In this case a white or bright background is almost essential.



If the eye is not in line with the lower edges of both the vernier and the sliding piece at the back of the tube, the reading will be incorrect owing to parallax error. As the diagram shows, whether the eye is too high or too low, the reading will be too high.

When the barometer is read, a mistake occasionally made is to read the scale 5 mb. or 1 mb. (.05 in. or .10 in.) too high or too low. This error is usually caused by making a mistake in counting the number of divisions on the fixed scale. On the inch barometer an error of .05 in. can be made by taking the zero of the vernier at the lowest graduation which appears on the vernier scale, instead of at the lower edge of the vernier. A similar mistake with the usual type of millibar barometer would cause an error of 4 mb. The only means of guarding against such errors is care. After a reading has been logged it should be checked to make sure that no misreading has been made. In making the first reading, attention should be concentrated on the accuracy of the last figure (tenths of a millibar or thousandths of an inch);

in the check reading attention should be concentrated on the figures of higher value.

It is found that, in strong winds, if the door of the charthouse in which the barometer is situated is open, the height of the mercury column may be altered. If there is much wind, the doors should be closed while the barometer is read. This applies as much to the door on the lee side as to that on the weather side.

Difficulties in reading the barometer because of pumping have already been mentioned.

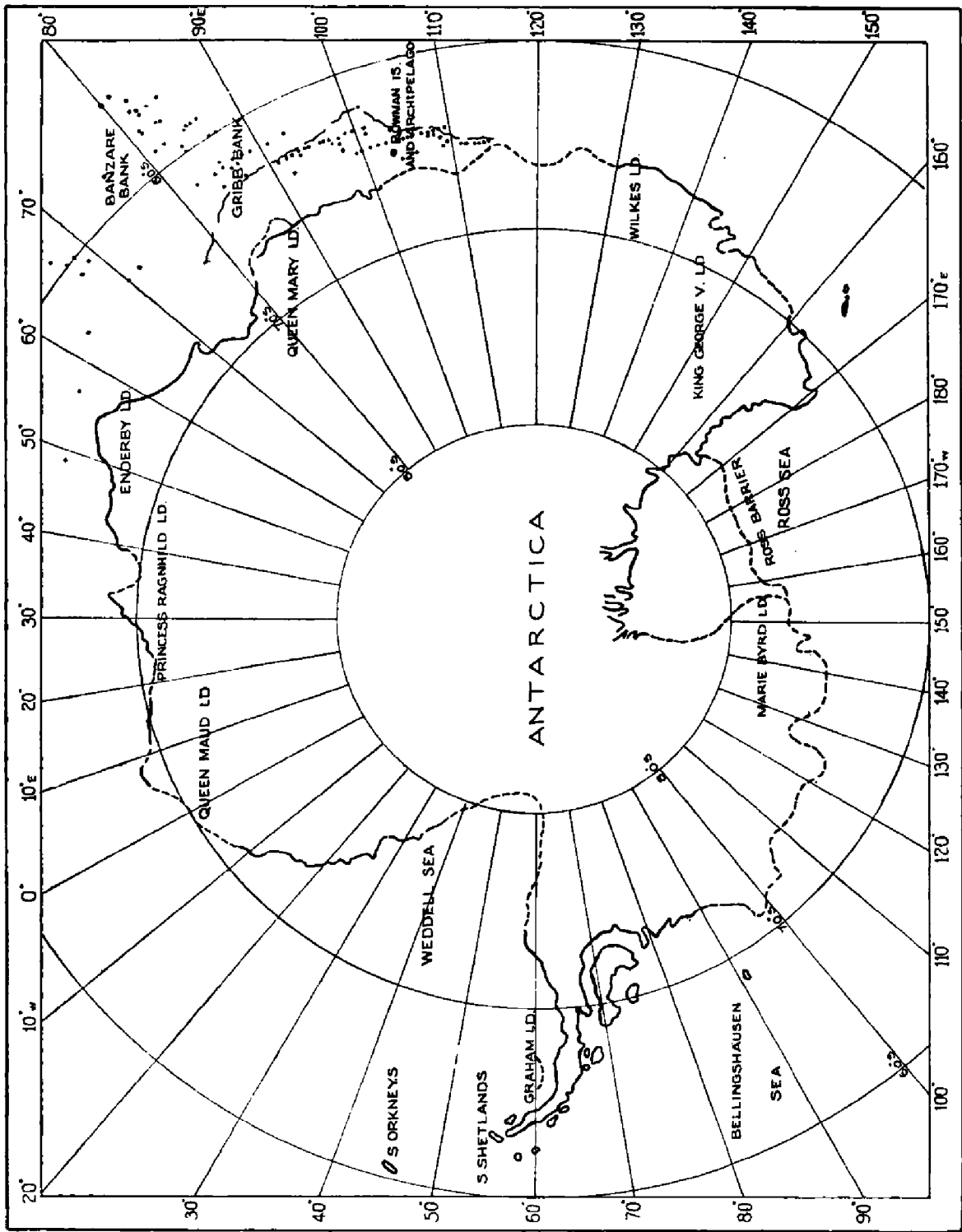
When the height of the mercury column has been read, there are various corrections to be made before the true pressure of the air at mean sea level can be ascertained. These are : the index correction ; the gravity correction ; the correction to mean sea level ; the temperature correction. These corrections are discussed, and tables given, in the *Marine Observer's Handbook* issued by the British Meteorological Office.

Many millibar barometers are now fitted with a "Gold Slide". This attachment simplifies the correction of barometer readings by rendering unnecessary the use of tables. A sliding piece, movable by rack and pinion and mounted beside the attached thermometer, carries two scales ; the lower, alongside the mercury column of the thermometer, is marked "Correction to Barometer", and the upper, "Height above Water Line". Alongside the upper scale is mounted a strip of metal on which is engraved a "Latitude Scale". On the other side of the latitude scale there is engraved, on the upper part of the "Attached Thermometer Scale", an "Index Scale". The latitude scale is fixed relative to the index scale so as to allow for the index error of the instrument before it is sold or issued, and should not be moved. The whole slide is clamped to the barometer.

After the barometer is read, the Gold Slide is moved up or down so that the height of the barometer above the water line, on the appropriate scale, coincides with the latitude of the ship on the latitude scale. The correction to be applied to the barometer reading is then read off on the appropriate scale in line with the top of the mercury column of the attached thermometer.

## ERRATUM

July, 1947, outside front cover ; *for* " Volume XVI " *read* " Volume XVII."



Map of Antarctica, showing the general course of the northern limit of the pack-ice, along which the Wh/F *Balaena* steamed, between 3rd March and 7th April, 1947: the ice-margin is indicated by a wavy, broken line. The dots indicate positions at which icebergs were sighted by this vessel during the season, each dot corresponding to one, or more, bergs.



## NOTES ON *BALAENA*'S OBSERVATIONS OF SOUTHERN ICE

BY H. H. LAMB, M.A.

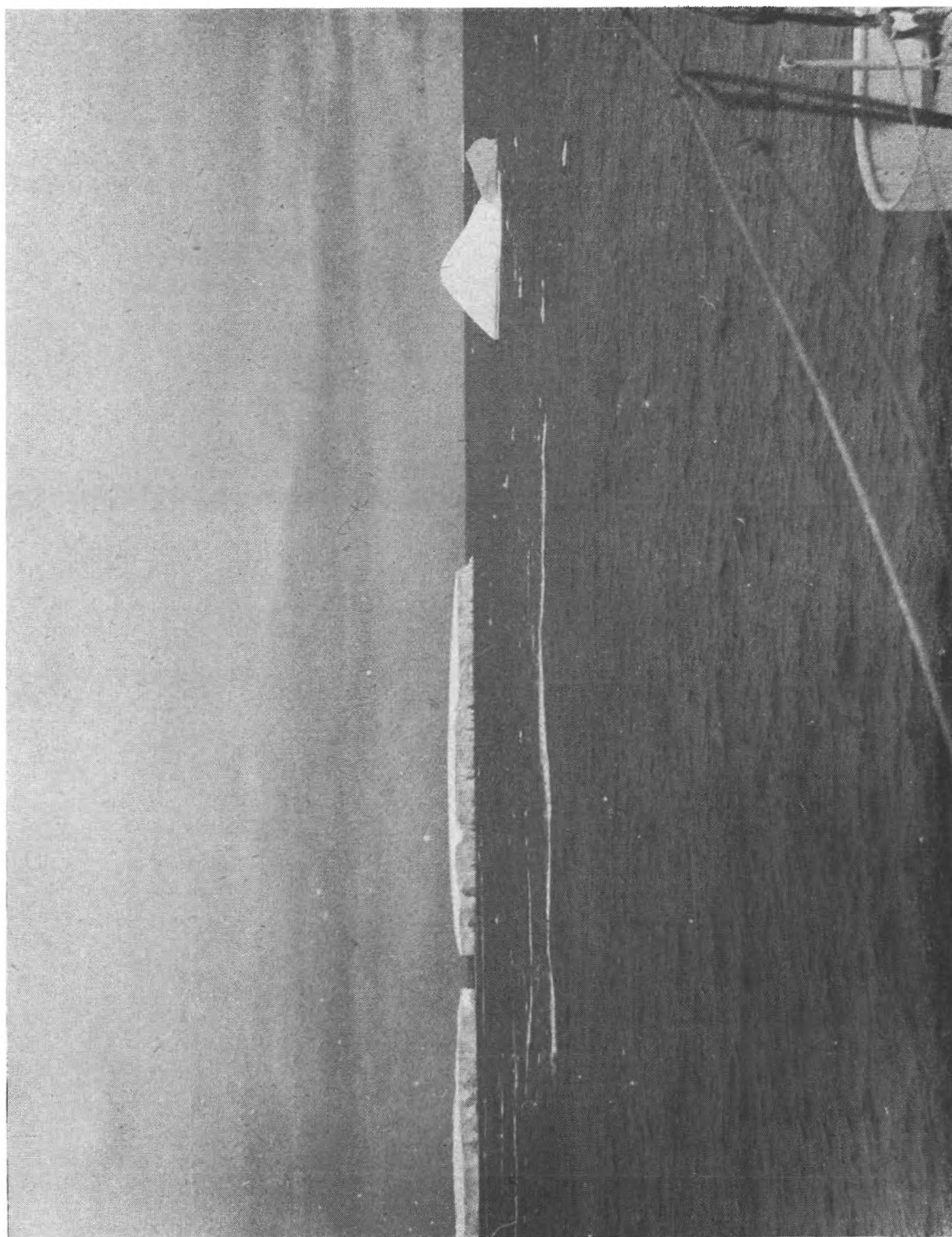
The whaling ship *Balaena* carried an official meteorological observer to the Antarctic whaling grounds in the 1946-47 season, and this number of *The Marine Observer* includes among the Southern Ice Reports the first instalment of the *Balaena* observations, namely, those for the January-March quarter. On the basis of these observations it is possible to give, in broad outline, a brief summary of the ice conditions over the Indian Ocean sector of the Southern Ocean during the period of the voyage.

In using the ice observations from a single ship moving slowly onward as the season advances, it is difficult to distinguish the effects due to the actual geographical distribution of the ice from those produced by the summer melting. Thus the first pack-ice was met by *Balaena* on her outward voyage on 17th November, 1946, near  $56^{\circ}\text{S.}$ ,  $40^{\circ}\text{E.}$  As the factory worked her way eastwards, she was also able to push farther south, reaching  $65^{\circ}\text{S.}$  in the Australian sector in February. This does not, however, necessarily mean that the ice-edge had an overall south-eastward trend. On her return voyage in April, 1947, the vessel crossed the meridian of  $40^{\circ}\text{E.}$ , in latitude  $61^{\circ}\text{S.}$ , without seeing ice, and there is good reason to think that the nearest ice was at that time considerably farther south.

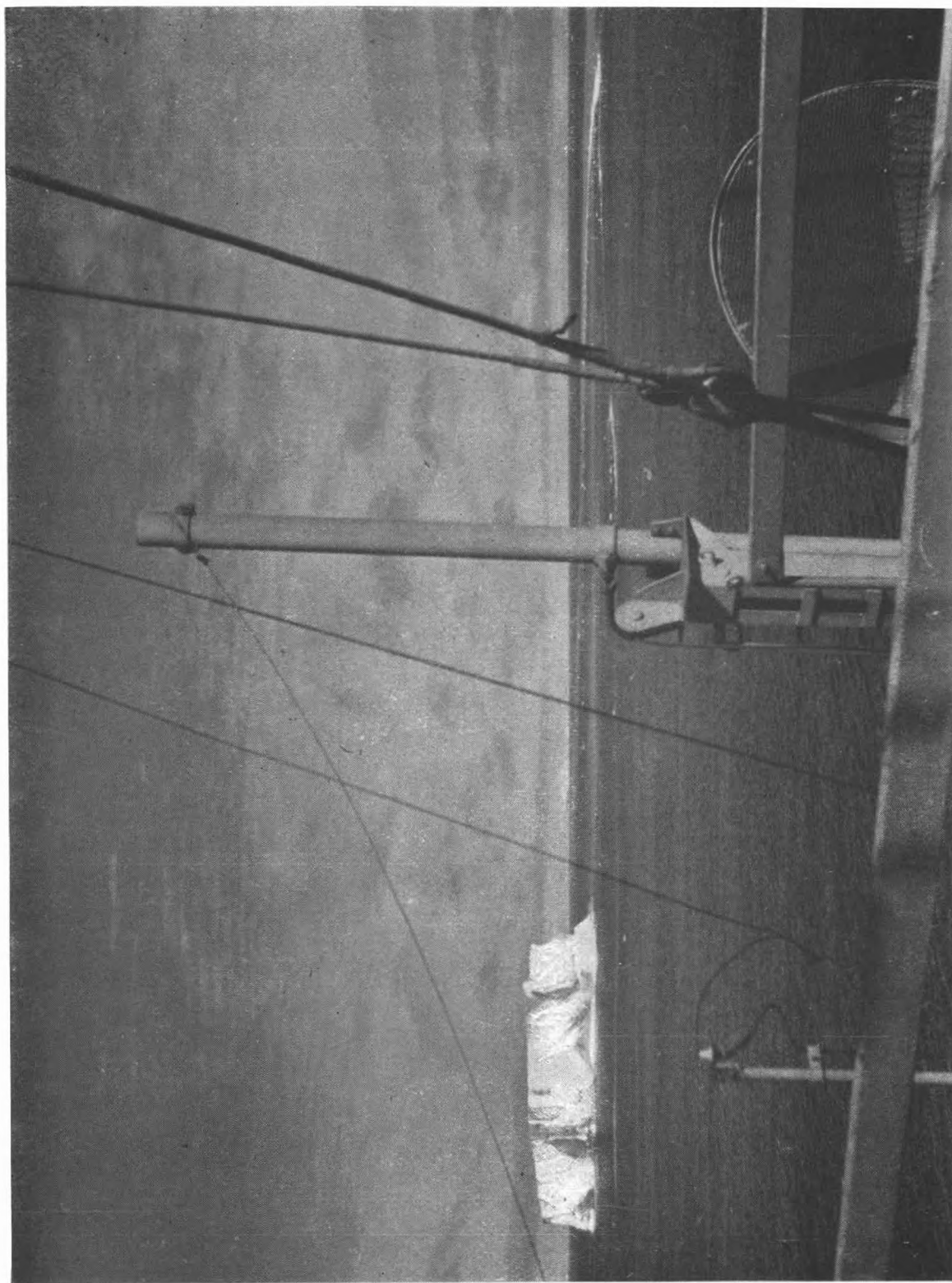
With these cautionary remarks in mind, however, we can nevertheless discern some features of interest regarding the ice distribution. Moreover, the notes and remarks appearing with the actual ice reports hint, here and there, at points of wider significance which were apparent at the time. We may also notice that *Balaena*'s return voyage from  $65^{\circ}\text{S.}$ ,  $115^{\circ}\text{E.}$  was performed much more quickly than her outward voyage, so that the ice observations made in March and April, 1947, do give some approach to an instantaneous picture of the position of the ice margin. The ship steamed west, actually following the edge of the ice, from  $65^{\circ}\text{S.}$ ,  $115^{\circ}\text{E.}$ , as far as  $63^{\circ}\text{S.}$ ,  $84^{\circ}\text{E.}$ , between 3rd March and 7th April; from that point the homeward voyage took her due west to  $44^{\circ}\text{E.}$ , the water becoming more and more open and free of ice as she approached the stormy sector off Enderby Land.

The *Balaena* observations do indeed contain evidence of how the proverbially stormy sectors of the Southern Ocean off the coasts of Enderby Land and Wilkes Land are kept relatively clear of ice. Some of the smaller vessels (whaleboats) in *Balaena*'s fleet reported that there was no ice at all off the coast of Antarctica in  $116^{\circ}\text{E.}$ , near the western end of the territory called Wilkes Land, in early March. From that point the edge of the pack-ice led away in a general north-westerly direction as far as a great nose or ice-headland, which the whale factory rounded in  $62\frac{1}{2}^{\circ}\text{S.}$ ,  $101-102^{\circ}\text{E.}$  West of this ice-headland open water gradually extended farther south again.

This great extension of the pack-ice, reaching out 150 to 200 miles northward from the outermost islands of the Bowman Archipelago ( $65^{\circ}\text{S.}$ ,  $100-105^{\circ}\text{E.}$ ) even at the very end of the warm season, is thought to mark an important frontier zone in the wind and water circulations. This is as far west as the influence of the south-easterly storms of the Australian sector and the rearside circulation of the depressions of the Ross Sea sector extended. The ice swept westwards by these storms runs into a region



Two icebergs of the flat-topped or "tabular" shape shown by most Southern Hemisphere bergs near the barrier or extension of the ice-cap out to sea, from which they are calved. The smaller, hummocky berg represents a much later stage in the history of an iceberg, after it has broken and tilted or even overturned. (3rd January, 1947, near  $59^{\circ}\text{S.}, 84^{\circ}\text{E.}$ )

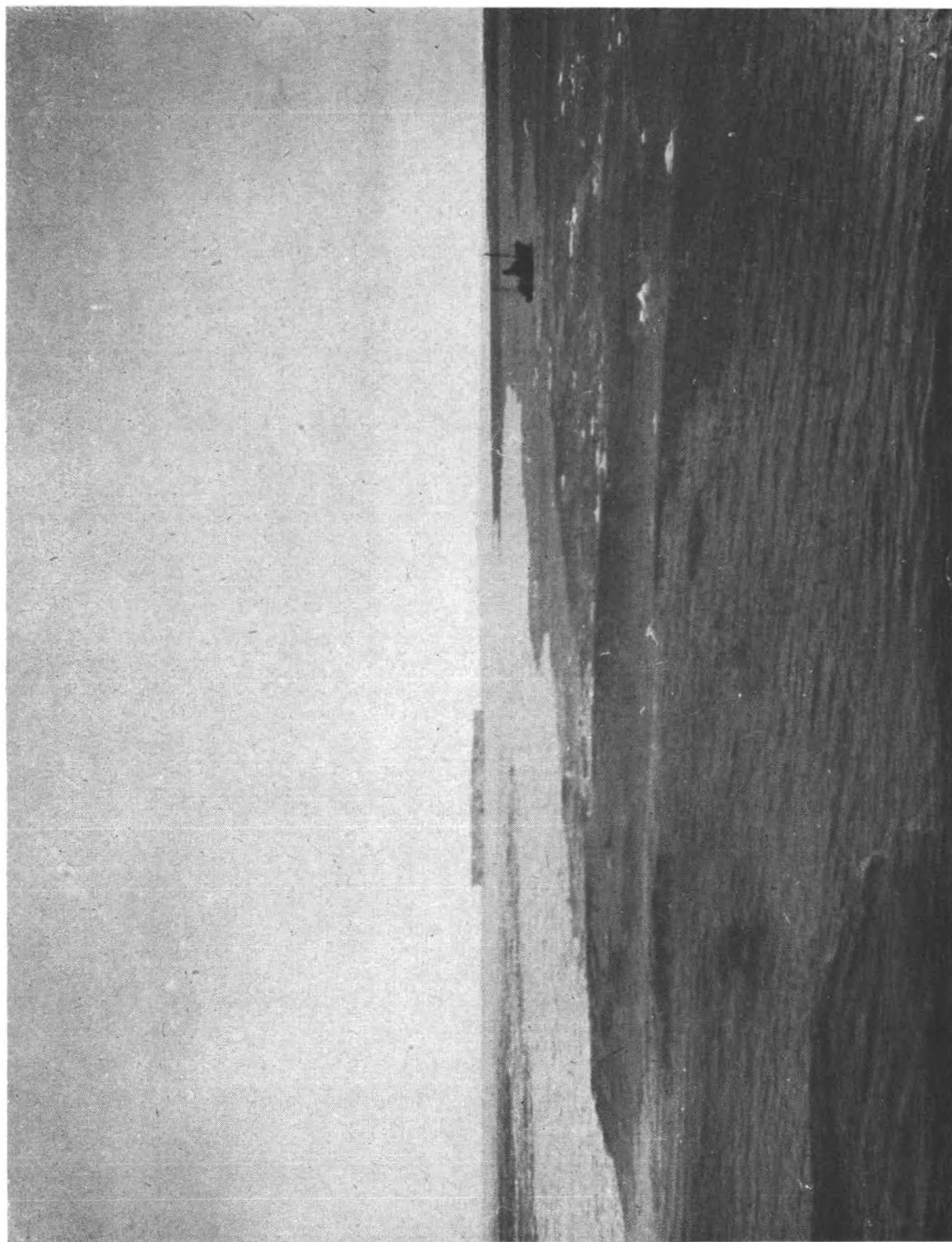


Tabular iceberg with usual caverns around the waterline, caused by erosion, as might occur at the foot of a chalk or limestone cliff. Notice the bright illumination of the upper cloud, which was tinged white by reflected light or "ice-blink" off extensive pack-ice in the distance (not seen in the photograph). (25th January, 1947, near 64°S., 98°E.)

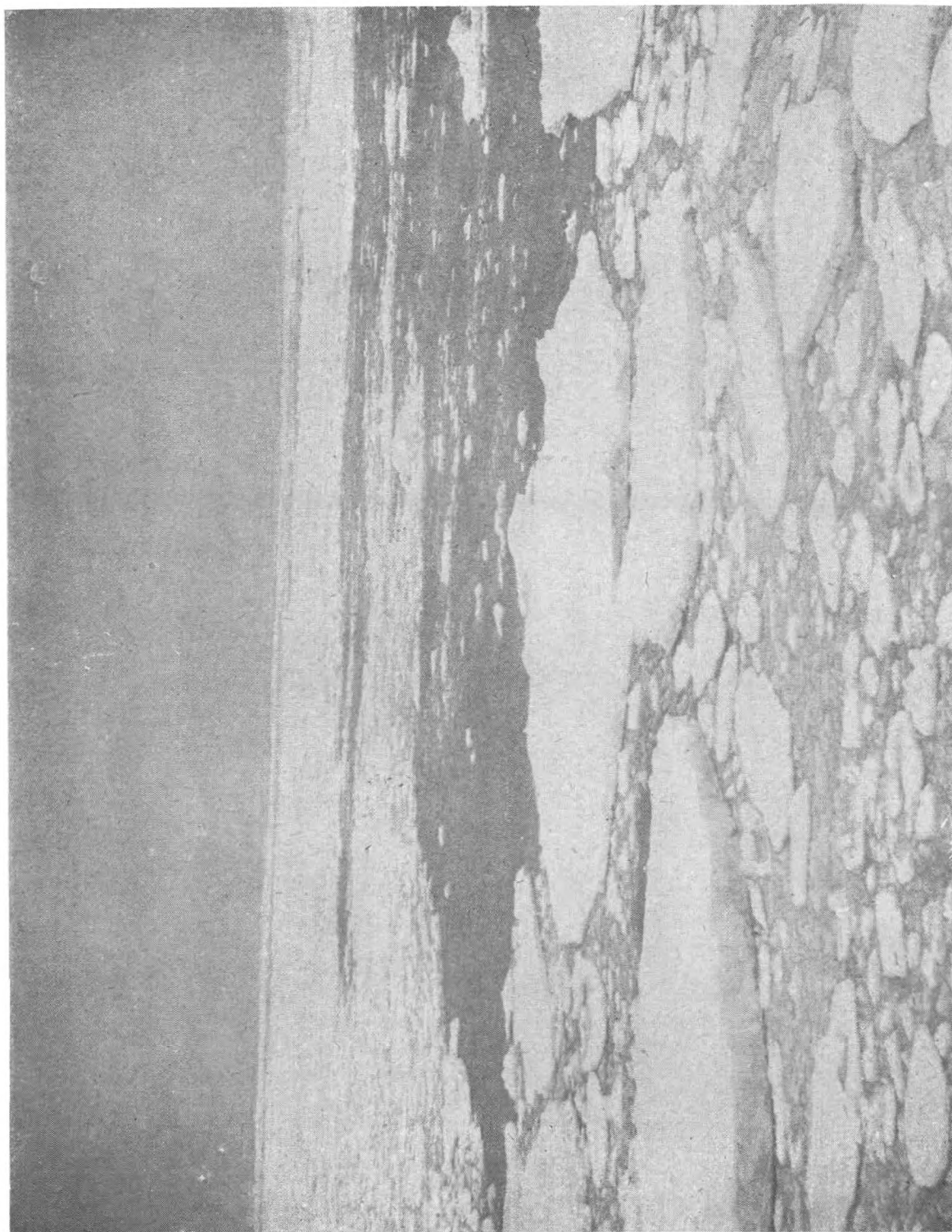


A museum of iceberg shapes. This wilderness of ice was seen near  $65^{\circ}\text{S}$ ,  $109^{\circ}\text{E}$ ., on 13th February, 1947. The picture was taken looking south and along the distant horizon the sky is clear. Nearer the observer, lighter and darker patches on the low cloud correspond to patches of more or less ice on the water surface, and the edge of the cloud sheet is itself roughly parallel with the edge of the main icefields.





At the edge of the southern pack-ice in  $64\frac{1}{2}^{\circ}\text{S}$ .,  $108\frac{1}{2}^{\circ}\text{E}$ ., on 13th February, 1947, showing the great, smooth swell which on some days rumples the icefields and sweeps across any open water amongst the ice. A typical Southern Hemisphere tabular iceberg is seen amongst the pack-ice.



Pack-ice, the heaviest penetrated by the whaling vessels, near 62°S., 86°E., on 28th March, 1947. This was at the end of the season, and the water surface between the icefloes, and particularly amongst the smaller fragments, is becoming filled with "sludge"—a preparatory stage before the fresh congealing of the icefields.

between  $100^{\circ}$  and  $105^{\circ}$ E., where the wind and water currents are slack and where they abut upon the circulations of the southern Indian Ocean. The great preponderance of south-easterly winds east of  $105^{\circ}$ E., amounting to 50–75 per cent of the observations, and the increasing incidence of northerly wind components to the westward as far as about  $80^{\circ}$ E., are among the most striking features of any geographical analysis of the *Balaena* voyage weather observations. They may be mooted as distinctive and real climatic features on other grounds. Wind and water circulations seem very much alike in this respect.

West of  $80^{\circ}$ E., south-easterly and southerly winds are thought to become dominant again, and the storms off Enderby Land in  $50$ – $70^{\circ}$ E. blow from the south-east. In these longitudes the ice margin at the beginning of April lay south of  $64^{\circ}$ S.

Besides showing these features of the distribution of the pack-ice, the *Balaena* observations include a good many iceberg positions. The icebergs in the Indian Ocean and Australian sectors visited by this whaling factory are probably mainly derived from the Shackleton Ice Barrier in  $95$ – $100^{\circ}$ E. and to a lesser extent from the known glaciers farther east and the Ross Barrier in the Ross Sea.

Two dome-shaped masses of ice, one 8 to 10 miles across near  $64^{\circ} 00'S.$ ,  $100^{\circ} 35'E.$  and the other 3 to 4 miles long near  $64^{\circ} 00'S.$ ,  $99^{\circ} 40'E.$ , both seen on 4th February, 1947, were considered to be glaciated islands or reefs rather than icebergs. It is hard to see how a dome of ice, falling away from its summit on every side to the surrounding sea, and several miles across, could have arisen, unless it had been formed on the spot. A row of icebergs and congested pack-ice seemed to be stranded along an east-west line about this point; and the ship steaming towards this ice got depth soundings of 180 to 200 fathoms in  $63^{\circ} 46'S.$ ,  $100^{\circ} 30'E.$  decreasing to 46 fathoms in  $63^{\circ} 50'S.$ ,  $100^{\circ} 18'E.$ , at which point it was deemed inadvisable to go nearer. All these soundings gave figures considerably less than any appearing on the existing charts, though the region is near the Bowman Archipelago, about which little is known with certainty.

Many icebergs are believed to go aground on the Banzare Bank, the depth of which is about 90 fathoms near  $59^{\circ}$ S.,  $77^{\circ}$ E. and possibly on the Gribb Bank near  $62^{\circ}$ S.,  $88^{\circ}$ E. Many more bergs were sighted about these areas than elsewhere. The last iceberg was sighted on the homeward voyage in  $45^{\circ}$ S.,  $22^{\circ}$ E., about 650 nautical miles SSE of Cape Town; this isolated small berg, more than 700 miles nearer Cape Town than the last previous one seen, was observed in water which showed north and north-westward sets of up to 50 nautical miles a day, and was doubtless being carried along with this unusually strong surface current.

*Note.*—A full report on the meteorological results of the *Balaena* 1946–47 whaling expedition is to be published in due course by the Meteorological Office.



## PERSONNEL

APPOINTMENT.—CAPTAIN C. G. ILLINGWORTH, R.D., R.N.R., recently appointed Commodore of the Cunard White Star fleet was born on 28th April, 1884, in Kendal, Westmorland. He began his career in sail, and is one of the few present-day captains to hold an extra master's square-rig certificate. His first ship was the full-rigger *Sierra Colonna* of Liverpool, and a voyage round the world in one year and seven months sailing is one of his many vivid memories of a lifetime at sea. While in Durban during the Boer War he tried to join the Army, but he was destined to be a sailor and continued his career at sea to join the Cunard Steamship Company as a junior officer in June, 1910. He served in many of the Company's ships, including the *Mauretania*, *Carmania*, *Campania* and *Caronia*, before going on naval training in January, 1914. The outbreak of the first world war, during which he was in H.M.S. *Valiant* at the Battle of Jutland, prolonged his naval service, and it was not until July, 1919, that he returned to the Company. After serving in various ships as 1st Officer he was promoted to Chief Officer of the *Samaria* in November, 1923, and in June, 1934, was appointed Staff Captain of the first *Mauretania*. In 1937 he became Captain of the *Ascania* and also commanded the *Aurania*, *Ausonia*, *Lancastria* and *Laconia*, before proceeding again on naval service in October, 1939. From 1940 until 1942 he served as Commodore (II Class) R.N.R., and during the last 15 months of his service as commodore of ocean convoys he did not lose a single ship. Released from naval service in 1942 to take command of the *Queen Mary*, he subsequently commanded the *Aquitania*, *Mauretania*, *Pasteur* and *Queen Elizabeth*. Captain Illingworth is a Freeman of the City of London and a Younger Brother of Trinity House.

J. H.

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OBITUARY.—It is with regret that we record the death, in Sydney, N.S.W., of CAPTAIN G. D. WILLIAMS, C.M.G., D.S.O., R.D., R.N.R.

From 1922 to 1936, Captain Williams, whilst Deputy Director of Navigation to the Commonwealth Government, acted as Sydney Agent for the British Meteorological Office.

George Davies Williams was born in Pembrokeshire in 1879 and went to sea in 1896. From 1908 to 1911 he was Chief Officer of the White Star Line sailing training ship *Mersey*, and was later Captain Superintendent of the Victoria Government's training ship *John Murray*. In 1939 he was appointed Controller of Shipping, Commonwealth of Australia.

He served as an R.N.R. officer with the Royal Navy and the Royal Australian Navy in both the 1914-1918 war and the recent conflict.

C. H. W.



in

Commodore C. G. Illingworth

# SOUTHERN ICE REPORTS

## During the Years 1946 and 1947

### January

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1946	1	59 12S	42 34W	Bergs and pack.	Few bergs and some scattered strips of pack.	<i>Southern Venture.</i>
	2	59 16S	43 51W	Bergs and pack.	Few bergs and some scattered strips of pack.	
	3	59 14S	43 27W	Bergs and pack.	Many bergs running through strips of pack.	
	4	60 11S	42 56W	Bergs and pack.	Heavy pack to S. Passing through loose scattered pack.	
	5	61 02S	43 04W	Bergs and pack.	Several bergs.	
	6	60 35S	42 04W	Bergs and pack.	Many bergs. Small scattered packs of ice.	
	7	60 18S	40 09W	Bergs and pack.	Many bergs. Small scattered packs of ice.	
	8	61 32S	46 37W	Bergs and pack.	Several bergs, 1 large one 8 miles long (61° 20' S., 46° 30' W.). Pack to S.	
	9	61 32S	46 37W	Bergs, growlers and pack.	Several bergs and growlers. Pack to S.	
	10	61 28S	46 47W	Bergs, growlers and pack.	Several bergs and growlers. Pack to S.	
	11	61 27S	46 44W	Bergs, growlers and pack.	Several bergs and growlers. Pack to S.	
	12	61 21S	46 42W	Bergs, growlers and pack.	Few bergs and growlers. Strips of pack in S.	
	13	61 16S	46 52W	Bergs, growlers and pack.	Few bergs and growlers. Strips of pack in S.	
	14	61 05S	47 05W	Bergs.	Very few bergs. No pack.	<i>Empire Venture.</i>
	15	60 54S	47 33W	Bergs.	Very few bergs. No pack.	
	16	60 48S	47 31W	Bergs.	Very few bergs. No pack.	
	17	61 00S	47 59W	Bergs and growlers.	Few bergs and growlers.	
	18	60 53S	48 17W	Bergs and growlers.	Few bergs and growlers.	
	19	60 40S	48 25W	Bergs and growlers.	Few bergs and growlers.	
	20	60 31S	48 45W	Bergs and growlers.	Several bergs and growlers.	
	21	60 50S	48 55W	Bergs and growlers.	Several bergs and growlers.	
	22	61 11S	49 08W	Bergs and growlers.	Several bergs and growlers.	
	23	61 18S	49 02W	Bergs and growlers.	Several bergs and growlers.	
	24	61 47S	48 27W	Bergs, growlers and pack.	Loose strips of pack.	
	25	61 55S	47 34W	Bergs, growlers and pack.	Several bergs and growlers. Loose strips of pack.	
	26	61 48S	48 12W	Bergs, growlers and pack.	Several bergs and growlers. Loose strips of pack.	
	27	61 57S	48 08W	Bergs, growlers and pack.	Several bergs and growlers. Loose strips of pack.	<i>Empire Venture.</i>
	4	57 33S	21 03W	Pack.	Pack consisting of large coarse lumps.	
	5	57 36S	19 22W	Pack.	Pack consisting of large coarse lumps.	
	6	57 27S	18 35W	Pack.	Pack consisting of large coarse lumps.	
	7	57 20S	18 04W	Berg.	Exceptionally large berg, 1 mile to SE. Considerable number of small bergs.	
	8	57 26S	17 02W	Bergs and pack.	with clear water.	
	9	57 37S	16 47W	Pack.	Heavy pack with long stretches of clear water to SSE.	
	10	57 42S	16 55W	Pack and bergs.	Loose pack and bergs.	
	11	57 47S	16 46W	Pack and bergs.	Loose pack and bergs.	
	12	57 41S	17 00W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	
	13	57 36S	17 07W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	

Year	Day	Position		Description	Remarks	Name of Ship Reporting
		Latitude	Longitude			
1946	14	57 54S	17 20W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	<i>Empire Venture.</i>
	15	57 57S	16 41W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	
	16	57 56S	16 31W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	
	17	57 55S	16 24W	Pack and bergs.	Pack disintegrating. Numerous bergs, mostly flat.	
	18	57 42S	16 35W	Pack and bergs.	Pack patchy and drifting. Numerous bergs, various shapes.	
	19	57 54S	16 22W	Pack and bergs.	Pack patchy and drifting. Numerous bergs, various shapes.	
	20	57 56S	16 43W	Bergs.	Mostly bergs.	
	21	57 47S	15 18W	Bergs.	Several bergs of various sizes. No pack.	
	22	58 45S	11 36W	Bergs.	Several bergs of various sizes. No pack.	
	23	58 57S	17 22W	Bergs.	Several bergs of various sizes. No pack.	
	24	58 55S	17 16W	Bergs.	Several bergs and loose ice.	
	25	59 15S	17 50W	Bergs and loose ice.	Several bergs. No pack.	
	26	59 26S	19 06W	Bergs.	Several bergs and patchy field-ice.	
	27	59 37S	19 15W	Bergs and field-ice.	Several bergs and patchy field-ice.	
	28	59 12S	19 14W	Bergs and field-ice.	Several bergs. No pack.	
	29	58 52S	19 06W	Bergs.	Numerous bergs. Patchy and loose field-ice.	
	30	58 31S	19 59W	Bergs and field-ice.	Numerous bergs and loose field-ice.	
	31	58 22S	20 47W	Bergs and drift-ice.	Many bergs and extensive fields of drift-ice.	
1947	1	59 33S	83 21E	Bergs and drift-ice.	Many bergs and a little small drift-ice.	<i>Balaena.</i>
	2	50 06S	84 18E	Bergs and drift-ice.	Many bergs and a little small drift-ice.	
	3	58 45S	84 27E	Bergs and drift-ice.	Many bergs and a little small drift-ice.	
	4	58 39S	84 24E	Bergs and drift-ice.	Many bergs and a little small drift-ice.	
	5	58 51S	84 36E	Bergs.	Many bergs and some small bergy bits.	
	6	59 09S	84 24E	Bergs.	Many bergs and some small bergy bits.	
	7	59 24S	84 42E	Bergs.	Many bergs and some small bergy bits.	
	8	59 48S	85 24E	Bergs.	Fewer bergs than of late, little other ice.	
	9	60 21S	86 18E	Bergs.	Fewer bergs than of late. One very large tabular.	
	10	61 39S	87 21E	Bergs.	Slight increase in number of bergs. No other ice.	
	11	62 15S	88 27E	Bergs.	Several bergs, perhaps 30-50 in course of day. No other ice.	
	12	62 18S	89 06E	Bergs.	Several bergs. No other ice.	
	13	62 21S	90 33E	Bergs.	Several bergs. No other ice.	
	14	62 36S	91 18E	Bergs.	Few small bergs. No other ice.	
	15	From 62 42S To 62 48S	91 42E } 94 42E } 94 30E }	Bergs and drift-ice.	Many small bergs. Drift-ice from 0800 G.M.T. onwards.	
	16	62 51S	94 27E	Bergs and drift-ice.	Many small bergs and much drift-ice, in places forming a pack. The pack consisted of both pancake-shaped ice and small bergy bits.	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	17	63 18S	94 54E	Bergs and drift-ice.	Many small and some medium bergs. Some drift-ice. Suspect much pack a few miles away.	<i>Balaena</i> .
	18	63 18S	94 45E	Bergs, drift-ice and pack.	Many small and some medium bergs. Extensive belt of pack 66 miles across lying E and W, its nearer edge 63° 39' S., 95° 00' E. Beyond that 34 miles of open water to edge of Shackleton Ice Shelf, which was observed smooth and level at an elevation of 150 ft.	
	19	63 21S	94 24E	Bergs and pack.	Many small and medium bergs. Extensive pack just S of ship.	
	20	From 63 24S To 62 12S	94 24E } 93 30E }	Bergs.	Many small and medium bergs. No pack after we had begun steaming N.	
	21	62 21S	93 27E	Bergs.	A good number of small bergs.	
	22	62 39S	93 27E	Bergs.	A good number of small bergs.	
	23	From 62 48S To 63 24S	93 06E } 95 36E }	Bergs and pack.	A good number of small bergs and extensive floe-ice forming a loose pack in belts through which vessel passed.	
	24	From 63 00S To 63 36S	95 36E } 97 24E }	Bergs and pack.	Many small, medium and large bergs, including one medium berg near 63° 36' S., 97° 24' E., with boulders of rock on it. Pack a few miles S of ship.	
	25	From 63 38S To 63 29S	97 36E } 97 58E }	Bergs, pack and Barrier.	Many bergs and extensive pack to S. Aircraft reported main Shackleton Ice Barrier edge just 40 miles S of <i>Balaena</i> * with a strip of open water between the barrier and main pack. The barrier is 50 ft. high at this point and rises westwards to 150 ft. Inland, or away from the seaward cliff, the barrier gives the impression of rising to 700 ft. within visible range of the aircraft flying low—the pilot's estimate was 50 to 70 miles S of his position over the ice edge. There were a few boulders of rock lying on top of the barrier ice at one point.	
	26	63 27S	98 09E	Bergs and pack.	*This would place the barrier edge in 64° 18' S., 97° 36' E., running roughly W x N and E x S, though some members of the crew considered it ended abruptly about here along a N-S line and that the fast ice to E. of the line was only sea ice.	
	27	63 21S	98 21E	Bergs and pack.	Many bergs and much pack.	
	28	63 24S	97 27E	Bergs.	A good many bergs. Pack now rather far to S.	
	29	63 27S	96 00E	Bergs and brash.	A good number of bergs. No other ice.	
	30	63 27S	94 45E	Bergs and drift-ice.	Much brash and a good few bergs. No other ice.	
					A good number of bergs and plentiful drift-ice (broken up pack in jagged bits).	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	31	62 45S	95 57E	Bergs and drift-ice.	Many small bergs and a little very small drift-ice.	<i>Southern Harvester.</i>
	1	58 52S	13 22W	Bergs.	Several large bergs in vicinity.	
	3	59 20S	17 46W	Pack and growlers.	Open pack with growlers.	
	4	From 59 25S	19 06W	Pack, bergs and growlers.	Open pack to S. Bergs and growlers to N.	
	5	To 59 05S	18 08W		From the noon position on the 4th to the noon position on the 6th, the edge of the pack was approximately 8 miles to S. The edge of this pack was heavy and drift believed northward.	
	6	To 59 11S	18 00W		Drift-ice with strips of close pack.	
	7			Pack and drift-ice.	Strips of drift-ice.	
	12	58 30S	17 30W	Drift-ice.	One berg on horizon. Scattered drift bits.	
	14	61 30S	21 00W	Berg and drift-ice.	Few scattered bergs and growlers.	
	15	61 30S	24 00W	Bergs and growlers.	Heavy impenetrable pack 1 mile to S.	
	16	61 30S	25 00W	Pack.	Mainly in mixed open and close pack.	
	18	61 30S	29 00W	Pack.	Mainly in mixed open and close pack.	
	19	62 00S	30 00W	Pack.	In open pack.	
	20	62 00S	31 30W	Brash.	Lying in sea of open brash.	
	22	62 30S	31 00W	Bergs and drift-ice.	Passing large bergs. Isolated drift-ice.	
	23	63 30S	33 00W	Bergs and drift-ice.	Passing large bergs. Isolated drift-ice.	
	24	63 30S	34 00W	Bergs and drift-ice.	Open water, occasional bergs. Ice blink to S.	
	25	63 30S	37 00W	Bergs.	Impenetrable pack E-S-W. Large bergs grounded.	
	27	63 00S	39 00W	Bergs and pack.	Generally clear, some small bergs. Patches fine brash.	
	29	62 00S	42 00W	Bergs and brash.	Occasional berg.	
	30	62 30S	43 00W	Bergs.	Bergs, bergy bits and growlers	
	31	63 00S	47 00W	Bergs and growlers.		

## February

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1946	1	58 17S	22 02W	Bergs.	Few small bergs. No pack.	<i>Empire Venture.</i>
	2	58 58S	22 42W	Bergs and pack.	Few small bergs. Loose pack.	
	3	58 47S	22 03W	Bergs and pack.	Many bergs. Loose pack with clear patches.	
	4	59 08S	22 10W	Bergs and pack.	Many bergs. Loose pack with clear patches.	
	5	59 24S	22 27W	Bergs and pack.	Few bergs. Loose pack with clear patches.	
	6	59 30S	23 07W	Bergs and drift-ice.	Few bergs. Drifting ice.	
	7	60 03S	23 23W	Bergs and loose ice.	Few bergs. Loose ice.	
	8	59 46S	23 25W	Bergs and loose ice.	Few bergs. Loose ice.	
	9	59 39S	23 34W	Bergs and loose ice.	Few large bergs and loose drifting ice.	
	10	59 32S	23 52W	Bergs and loose ice.	Few large bergs and loose drifting ice.	
	11	59 40S	24 21W	Bergs.	Some large bergs. No other ice.	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1946	12	59 50S	24 06W	Bergs.	Some large bergs. No other ice.	<i>Empire Venture.</i>
	13	60 05S	26 17W	Bergs and loose ice.	Few bergs. Loose heavy ice.	
	14	59 53S	29 46W	Bergs.	Few bergs. No other ice.	
	15	59 32S	31 47W	Bergs and loose ice.	Few bergs and heavy loose ice.	
	16	61 01S	40 22W	Bergs.	Few bergs. No other ice.	
	17	61 38S	41 26W	Bergs and drift-ice.	Few bergs and drifting ice.	
	18	61 33S	41 27W	Bergs and drift-ice.	Few bergs and drifting ice.	
	19	61 38S	41 35W	Bergs and pack.	Some bergs. Pack drifting.	
	20	61 41S	41 33W	Bergs and pack.	Some bergs. Pack drifting.	
	21	61 33S	41 56W	Bergs and pack.	Some bergs. Pack drifting.	
	22	61 47S	42 44W	Bergs and pack.	Some bergs. Pack drifting.	
	23	61 58S	43 46W	Bergs and pack.	Some bergs. Pack drifting.	
	24	62 03S	42 59W	Bergs and pack.	Some bergs. Pack drifting.	
	25	62 15S	43 10W	Bergs and pack.	Some bergs. Pack drifting.	
	26	62 17S	43 42W	Bergs and pack.	Some bergs. Pack drifting.	
	27	62 27S	44 32W	Bergs.	Some bergs. No pack.	
	28	62 41S	46 12W	Bergs.	Some bergs. No pack.	
	1	62 54S	99 09E	Bergs.	Many small bergs, none tabular. No other ice.	
	2	63 09S	101 12E	Bergs.	Many small bergs, none tabular. No other ice.	
	3	63 36S	101 12E	Bergs.	Very few bergs. No other ice.	
	4	From: 63 42S To: 63 54S	101 00E 100 12E	Bergs and ice-covered reef or island.	Small number of bergs of very assorted sizes, including some monster tabular bergs. Also one large ice-dome probably 8-10 miles across estimated at about 64° 00' S., 100° 35' E., which was thought to be an ice-covered island or reef. Our depth soundings were 184-197 fathoms at 1200 G.M.T. (63° 46' S., 100° 30' E.) and 46 fathoms at 1600 (63° 50' S., 100° 18' E.). Bergs were all arranged along a line 8-10 miles S of ship, possibly grounded on the south-facing slope of a shoal.* Some of these bergs were certainly 100-150 ft. high, presumably therefore of order of 1,000 ft. depth and would go aground in less than 150-200 fathoms. *The implication of a long E-W orientated shoal bank, from which Mill Island and Rowman Island probably rise, would explain the blocking of the northward drift of bergs, and the fact that we have seen almost none since 2nd February until afternoon of 4th, when this line was sighted.	



YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	5	63 54S	99 36E	Bergs, pack and (possibly) glaciated island.	<p>The same E-W line of bergs as was seen on 4th was lying just S of ship in 63° 55' S., 99° 37' E. at 0600 G.M.T. Much pack congested around the bergs. Two of the larger masses of ice (one of them many miles to the E was actually the same as that described on 4th)* constituted large domes of ice not surrounded by any cliff but sloping down to sea level (so far as could be judged) on all sides. The impression was therefore formed that these particular ice masses had formed <i>in situ</i> on a core of rock which might be either reef or island.</p> <p>*Estimated position of western dome, serrated with snow-drifts and crevasses, 64° 00' S., 99° 40' E. Dimensions of order of 3-4 miles long.</p> <p>Few bergs, usually not more than 2 within visible range and always very small, from 0200 G.M.T. onwards (i.e. once we had started steaming NE).</p> <p>Few bergs, all very small at first, but found some large tabular bergs E of 104° E. No other ice.</p> <p>A rather small number of bergs of widely-assorted sizes and shapes, including some tabular. At times a line of scattered bergs could be made out all along the S horizon, probably 20 miles S of the ship. Some smaller drift-ice early.</p> <p>At the edge of the fast pack (lying S of ship) all day. Bergs set fast in pack. A good deal of brash amongst heavy swell within a mile of edge of pack. Ice formation on whale-boats and rigging.</p> <p>At the edge of the fast pack (lying S of ship) all day. Bergs set fast in pack. A good deal of brash amongst heavy swell within a mile of edge of pack. Ice formation on whale-boats and rigging.</p> <p>Some small bergs. Main body of pack with bergs embedded just visible on S horizon. A good number of small bergs. No other ice.</p> <p>A few small drifting bergs. Main body of pack, with bergs set fast in it, visible along SW horizon.</p> <p>Many small and medium bergs and extensive loose pack or drift-ice. Vessel entered this loose drift-ice about 0600 G.M.T. (64° 26' S., 108° 08' E.) steaming on S by course—Edge of ice-belt 110°-290°.</p>	Balaena.
	6	From 64 06S To 64 12S	102 48E 105 00E}	Bergs.		
	7	From 64 18S To 64 18S	105 06E 106 06E}	Bergs.		
	8	64 24S	105 45E	Bergs, pack and brash. Ice formation on ships.		
	9	64 27S	106 03E	Bergs, pack and brash. Ice formation on ships.		
	10	64 27S	107 30E	Bergs and pack.		
	11	64 21S	108 54E	Bergs.		
	12	64 15S	108 30E	Bergs and pack.		
	13	From 64 24S To 64 42S	108 00E 108 48E}	Bergs and pack.		

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	14	64 42S	108 42E	Bergs and pack.	At edge of pack all day. Pack still quite loose at edge, but many bergs set fast in ice farther in. Several bergs inside pack, all of medium size and pinnacle shape. Several bergs inside pack, all of medium size and pinnacle shape. Edges of pack becoming tighter and more defined. Several bergs inside pack, all of medium size and pinnacle shape. Edges of pack becoming tighter and more defined. Some small bergs adrift. Main pack with bergs set fast in it visible along SW horizon early. Much small drift-ice later when wind rose. Ship amongst small drift-ice (loosened pack) all day, with many bergs. Ship amongst small drift-ice (loosened pack) all day, with many bergs. Ship amongst small drift-ice (loosened pack) all day, with many bergs. A good number of small bergs and small amounts of well broken drift-ice. Many tabular bergs clustered 3 or 4 miles SE of ship, these bergs possibly aground. Some very large tabular bergs farther SE. Extensive pack 4 or 5 miles S and SW of ship, which was in a kind of bay. Many smaller bergs of all shapes set fast amongst pack, and several small bergs adrift. Even-topped ridge of land visible at 30-40 miles on bearings 155°-180° (true) and at 40-50 miles on bearings 200°-208° (true). Bad visibility obscured observation of ice. Some of the same bergs as yesterday seen, and some pack. Bergs amongst the pack S of ship. Bad visibility obscured observation, but pack with bergs set fast in it, as well as much drift-ice, were seen. Small amounts of ice seen. No ice of any description to be seen, in spite of excellent visibility. Distant pack in view to S and SW. Numerous bergs, bergy bits and growlers with drift pieces. Patches close pack, scattered bergs. Bergs and strips of open pack.	Balaena.
	15	64 40S	108 46E	Bergs and pack.		
	16	64 34S	108 48E	Bergs and pack.		
	17	64 24S	108 48E	Bergs and pack.		
	18	64 18S	108 10E	Bergs, pack and drift-ice.		
	19	64 25S	107 50E	Bergs and drift-ice.		
	20	64 35S	109 00E	Bergs and drift-ice.		
	21	64 42S	109 20E	Bergs and drift-ice.		
	22	64 53S	109 23E	Bergs and drift-ice.		
		65 18S	111 00E	Bergs and pack before land.		
	23	65 20S	111 20E	Bergs and pack.		
	24	65 20S	111 40E	Bergs and pack.		
	25	65 10S	113 30E	Bergs, pack and drift-ice.		
	26	65 00S	113 30E	Bergs, pack and drift-ice.		
	27	64 49S	113 49E	No ice.		
	28	64 54S	113 10E	Pack.		
	1	61 30S	53 00W	Bergs, growlers and drift-ice.		
	3	61 30S	53 00W	Bergs and pack.		
	7	61 30S	53 00W	Bergs and pack.		
						Southern Harvester.

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	8	61 30S	53 00W	Pack and brash.	Open and close pack, 20 ft. floes. Some brash.	<i>Southern Harvester.</i>
	9	62 00S	51 00W	Bergs and growlers.	Growlers and numerous bergs.	
	10	62 00S	48 00W	Bergs.	Isolated bergs. No drift-ice.	
	11	62 00S	43 00W	Pack.	In close pack with fog.	
	12	62 00S	42 00W	Bergs and brash.	Isolated patches of brash. Distant bergs.	
	13	62 00S	42 00W	Bergs and pack.	Scattered pack, 10 ft. pans. Later in close pack and bergs.	
	14	62 00S	42 00W	Bergs and brash.	Numerous tabular and penguin bergs. Weathered bergy bits and brash.	
	15	62 00S	41 00W	Bergs and drift-ice.	Large tabular bergs all round. Isolated drift pieces.	
	19	62 00S	41 00W	Bergs and drift-ice.	In sea of drift-ice with numerous bergs.	
	21	62 00S	40 00W	Bergs and drift-ice.	Big tabular bergs at 1 mile intervals. Drift pieces.	
	25	63 00S	42 30W	Pack.	Patches of heavy pack, SW-S-SE, 20 miles away.	
	26	63 00S	40 00W	Pack.	2 miles to N of edge of heavy pack.	

March

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1946	4	62 36S	45 00W	Bergs and pack.	Few bergs with loose pack around. Main pack to S.	<i>Southern Venturer.</i>
	5	62 36S	45 18W	Bergs.	Few small bergs. No pack.	
	8	63 18S	45 12W	Bergs and pack.	Few large and small bergs. Heavy pack to S.	
	9	62 30S	45 06W	Bergs.	Few medium bergs.	
	10	62 06S	45 24W	Bergs.	Few large and small bergs.	
	11	62 00S	45 30W	Bergs.	Few medium bergs.	
	12	61 48S	44 33W	Bergs.	Many large and small bergs. One large berg approximately 8 miles long.	
	13	62 00S	45 12W	Bergs.	Few medium bergs.	
	17	62 00S	45 12W	Pack.	Pack to S, approximately 8 miles off.	
	18	62 06S	45 30W	Pack.	Scattered pack around, mainly to W and SW.	
	19	62 00S	45 06W	Pack and growlers.	Scattered pack around, few growlers. Main pack to SE, through S to SW.	
	21	62 00S	49 06W	Pack.	Pack visible from SW to SE through S. No bergs.	
	22	61 54S	50 24W	Pack.	Pack from SE to SW through S, 3 miles off.	
	23	61 48S	51 00W	Pack.	Pack to S, 1 mile off.	
		61 54S	51 42W	Pack.	Pack from W to SE through S, approximately 3 miles off. No bergs.	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1946	24	61 42S	52 00W	Pack.	Pack from W to SE through S.	Southern Venture.
	25	61 36S	51 54W	Pack.	Pack from F to SW through S. approximately 1 mile off.	
	26	61 24S	50 54W	Pack.	Pack from SE to SW through S.	
	27	61 24S	48 24W	Berg.	Approximately 15 miles to SSE.	
		61 24S	47 42W	Pack and growlers.	Pack from W to SE through S. Few growlers.	
	28	61 18S	47 51W	Pack.	Pack from W to ESE through S. No bergs.	
	29	61 18S	47 48W	Pack.	Loose pack from NW to SE. No bergs.	
	30	61 06S	47 30W	Pack and growlers.	Loose pack from NW to SE. Few small growlers.	Empire Venture.
	31	61 03S	47 24W	Growlers.	Few small growlers around. No pack visible.	
	1	62 57S	46 46W	Drift-ice.	Loose drifting ice.	
	2	62 50S	46 26W	Bergs and drift-ice.	Very many bergs and loose drifting ice.	
	3	62 41S	46 28W	Bergs and drift-ice.	Some bergs. No other ice in sight.	
	4	62 27S	46 30W	Bergs.	Few bergs.	
	5	62 24S	46 14W	Bergs.	Few bergs.	
	6	62 57S	44 59W	Bergs.	Few bergs.	
	7	62 44S	45 34W	Bergs.	Few bergs.	
	8	62 48S	45 36W	Bergs.	Few bergs.	
	9	62 46S	45 49W	Bergs.	Few bergs.	
	10	62 08S	46 37W	Bergs.	Few bergs.	
	11	62 03S	46 40W	Bergs.	Few bergs.	
	12	61 43S	44 42W	No ice.	No ice visible.	
	13	62 00S	45 32W	No ice.	No ice visible.	
	14	62 04S	45 27W	No ice.	No ice visible.	
	15	61 57S	45 55W	No ice.	No ice visible.	
	16	62 10S	45 36W	No ice.	No ice visible.	
	17	62 12S	45 13W	Bergs and pack.	Few bergs. Pack barely in sight.	
	18	62 06S	45 02W	Bergs and pack.	Few bergs. Pack barely in sight.	
	19	61 40S	45 15W	Bergs and pack.	Few bergs. Pack barely in sight.	
	20	61 30S	45 39W	Bergs and pack.	Few bergs. Pack barely in sight.	
	21	61 43S	45 40W	Field-ice.	Bearing S about 8 miles.	
	22	61 30S	45 16W	Bergs and field-ice.	Few bergs. Field-ice about 8 miles to S.	
	23	61 08S	45 24W	Bergs and field-ice.	Few bergs. Field in sight to SE.	
	24	61 22S	44 36W	Bergs.	Numerous bergs. Field not in sight.	
	25	61 19S	44 33W	Bergs and drift-ice.	Numerous bergs and drifting ice.	
	26	61 05S	44 38W	Bergs and drift-ice.	Some bergs and drifting ice.	
	27	61 08S	45 20W	Bergs and drift-ice.	Some bergs and drifting ice.	
	28	61 28S	46 11W	Bergs and field-ice.	Some bergs. Field in sight.	
	29	61 20S	46 57W	Bergs and field-ice.	Some bergs. Field in sight.	
	30	61 19S	46 29W	Bergs and field-ice.	Some bergs. Field in sight.	
	31	61 22S	46 35W	Bergs and pack.	Some bergs. Pack 8 miles to S.	
1947	1	64 55S	113 00E	Drift-ice.	Broken drift-ice only. Poor visibility.	Baladna.
	2	65 00S	113 40E	Pack and bergs.	Bergs, tabular and others, of all sizes, amongst pack.	
	3	65 05S	113 20E	Pack and bergs.	Bergs, tabular and others, of all sizes, amongst pack.	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	4	65 13S	113 00E	Pack and bergs.	Bergs, tabular and others, of all sizes, amongst pack, also some brash. Very few bergs amongst pack hereabouts. Very few bergs amongst pack hereabouts. Very few bergs amongst pack hereabouts. Some fairly large tabular bergs. Many miles of coastal mountains in view at some 30-50 nautical miles, estimated range at 04-05 i.t. (2200 G.M.T. on 7th), on bearings 140° to past 200°. Bergs, tabular and others, of all sizes, amongst pack. Much loose pack or drift-ice and few bergs. (Whaleboats report freak berg some 20-30 miles seaward from factory on 8th March, cloudcapped that morning when cloud base was 1,600 ft. or so.) Much loose pack or drift-ice (rotten ice). Few bergs. Much loose pack or drift-ice (rotten ice). Few bergs. A little much-loosened pack. No bergs. No ice in view (0000 G.M.T.). Only a few small pieces of ice seen all this day as we steamed W. Met the pack near 107°E. longitude as we steamed W. Edge of ice runs nearly N-S at this point. There were 2 bergs, one tabular, amongst the pack at 106° 50'E. Have steamed NW along the N edge of pack since yesterday's report. Only one or two isolated bergs seen. Two or three small tabular bergs within view. Pack about 5-10 miles S of factory. Two or three small tabular bergs within view. Pack possibly 10-15 miles to S. The air party have reported a great ice-cape where the pack-ice sticks out far to the northward about 30 miles NW of this position. I believe this ice-cape at approximately 62½°S., 102½°E. marks the limit of influence of the pressure set up by the strong E'ly and SE'ly winds and seas farther E, and is formed at the point of transition to a different wind regime W of 103°E. Ship steaming along edge of the great promontory of pack-ice. A few small bergs in isolated positions amongst the pack and in open water. Edge of pack in places consists of the smallest brash, but elsewhere of quite large floes.	Balaena.
	5	65 06S	112 40E	Pack and bergs.		
	6	65 07S	112 25E	Pack and bergs.		
	7	65 03S	112 30E	Pack and bergs.		
	8	65 00S	112 36E	Pack and bergs.		
	9	65 07S	112 55E	Pack and bergs.		
	10	65 00S	113 00E	Pack.		
	11	65 00S	112 25E	Pack.		
	12	65 04S	111 20E	Pack.		
	13	64 50S	109 24E	Pack.		
	14	64 43S	108 36E	No ice.		
	15	64 37S	106 50E	Pack and bergs.		
	16	64 03S	105 28E	Pack and bergs.		
	17	63 45S	104 33E	Pack and bergs.		
	18	63 40S	104 20E	Pack and bergs.		
	19	From 63 25S To 62 30S	103 42E} 101 16E}	Pack and bergs.		

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	20	62 30S 62 58S 63 02S 63 07S 63 06S	100 54E 99 56E 100 04E 99 46E 99 34E	Pack. Bergs. Pack. Drift-ice and bergs. Drift-ice and bergs.	Still close to edge of pack. Two small bergs in view. No other ice. Once more at edge of pack. Only small brash and 2 tabular bergs in sight. Mainly small brash or very broken drifting floes. Few bergs. Ice situation similar to yesterday. Drifting floes.	Balaena.
	23	63 15S	98 47E	Floes.	Drifting floes and a few small bergs. Numbers of small bergs increasing as we steam W. No other ice.	
	24 25	63 05S 63 30S	96 04E 92 00E	Drift-ice and bergs. Bergs.	The first new ice we have seen from the factory. Broad bands and patches of brownish sludge on the water surface, flecked with innumerable small, oval ice-plates about 6-8 in. across and 2 in. or 3 in. thick. Waves on sea surface heavily damped.	
	26	63 00S	87 30E	Pack and bergs.	A long nose of pack-ice with smallish bergs set fast in it lies just SW of ship in SE-NW orientation. One of our whaleboats has found the spit or head of this nose somewhere far to the W (order of 50 miles), and a great bay in the ice leading S beyond it. We can see across the narrow strip of pack from the factory into this bay.	
	27	62 40S	87 22E	Sludge and new ice in small plates.	Ship surrounded by sludge ice and water surface flecked with small ice-plates as on 25th. The N'y sea raised by force 4 wind breaks on the edge of this patch of sludge as if it were a shore.	
	28	From 62 00S To 62 06S	86 04E } 86 10E }	Pack and sludge.	Factory steaming on W course through heavy pack, including some floes 20 yds. across. The intervening spaces mostly filled with sludge, but a few isolated lakes 20-40 yds. across.	
	29	61 59S	85 54E	Little ice.	Little ice in view (visibility 1-1½ miles). Heavy N'y sea and swell means almost certainly no ice to N.	
	30	62 12S	86 20E	Drift-ice and bergs.	Ship steaming SE across patch of drift-ice or loosened pack, small bergs (including some tabular) and bergy bits.	Balaena.
	31	62 01S	84 53E	Ice pellets.	Water surface streaked with lines of ice pellets, consisting of soft ice in rough spheres of about 1 in. in diameter. The streaks were from about 6 in. to 2 ft. broad and separated by some 10-15 ft. of clear water, the whole pattern arranged lengthwise more or less in the light wind, i.e. NE-SW. Little other ice.	

YEAR	DAY	POSITION		DESCRIPTION	REMARKS	NAME OF SHIP REPORTING
		LATITUDE	LONGITUDE			
1947	1	62 00S	38 00W	No ice.	One berg 30 miles to NW. 23 bergs. New ice for first time. Isolated bergs. Strips of pack-ice, 20 ft. pans. In open pack. Catcher icing up, working in close and open pack. Big tabular bergs. In sea of open pack and brash. In sea of open pack and brash. 6 tabular bergs 10 miles away. In sea of brash. Sea of brash with various stages of new ice. 3 bergs on horizon.	<i>Southern Harvester.</i>
	2	62 00S	40 00W	Berg.		
	5	62 30S	40 00W	Bergs.		
	9	61 30S	48 00W	New ice.		
	10	61 30S	48 00W	Bergs and pack.		
	15	63 00S	47 00W	Pack.		
	16	63 00S	47 00W	Bergs and pack.		
	22	63 00S	49 00W	Pack and brash.		
	23	63 00S	49 00W	Bergs, pack and brash.		
	25	62 30S	48 00W	Brash.		
	26	62 30S	48 00W	Bergs and brash.		

Further reports received from *Balaena*, *Empire Venture* and *Southern Venturer* will appear in the April and October, 1948, numbers of *The Marine Observer*.  
 Reports of ice previous to January, February and March, 1946, will be found in *The Marine Observer*, Vol. XVI, No. 133, page 22.



## THE NEW INTERNATIONAL METEOROLOGICAL CODE

The International Meteorological Organisation meeting at Paris in 1946, devised a new international code for the transmission of weather messages. The guiding motive behind this meeting was the desire for a *universal* code suitable for the transmission of weather messages from land, sea and air throughout the whole world.

Observers will remember that prior to the war they were asked to use modified forms of code when in certain sea areas, in order to satisfy the different requirements of the meteorological services of adjacent land areas; and the natural query was, of course, "Why can't there be just one code throughout the whole world?"

The international code devised at Paris unfortunately did not meet the requirements of many countries who were unable to be represented at that meeting, and the provisional arrangement to introduce the new code on 1st January, 1948, had ultimately to be abandoned.

In the meantime, the Marine Branch, working to the provisional arrangement, had already circulated details of the new code together with the new logbooks, suitably revised. These logbooks must on no account be used and should be returned to the Meteorological Office.

A fully representative meeting of the International Meteorological Organisation held at Toronto in August, 1947, succeeded in achieving, by suitable modification of the Paris code, a really universal code. This revised version will be introduced, throughout the world, on 1st January, 1949. In the meantime the present code F\*233 will continue in use.

The fixing of the date of introduction a year ahead will enable observers to become acquainted with the new code in good time, a fact that should make the changeover, when it comes, a comparatively easy one.

The April number of *The Marine Observer* will contain an article explaining the revised form of code agreed upon at Toronto and subsequently approved by the Conference of Directors in Washington. Additional explanatory literature and revised logbooks will be issued later to all observing ships.

**FLEET LIST (Great Britain)**  
**VOLUNTARY OBSERVING SHIPS**

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 return received. The date of receipt of the last return received is given in the sixth 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. (See under Notices to Marine Observers.)

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 Captains, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

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

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS	LAST RETURN RECEIVED
<i>Accra</i>	C. C. Cave	L. L. James		Elder Dempster Lines, Ltd.	
<i>Admiral Sir John Lawford</i>	W. B. Hicks	R. L. Cain, J. Linton, R. S. J. Collins	V. D. Slevin	Iago Steam Trawler Co., Ltd.	29.8.47
<i>Aghamsten</i>	T. H. Farrar, O.B.E.	I. Mck. Jackson, D. L. Emery, C. M. Best	F. G. Short	Strick Line, Ltd.	5.12.47
<i>Ajax</i>	C. H. Whitehouse	J. Tierney, J. Scott, M. Brown	J. W. Soulsby	Ocean S.S. Co., Ltd.	
<i>Akaroa</i>	W. J. Williams	A. S. Wood, A. K. White, H. D. Windle		Shaw, Savill, & Albion Co.	
<i>Albion Star</i>	F. N. Johnson			Union Cold Storage Co., Ltd.	27.6.47
<i>Alpha Zambesi</i>	J. Forsythe			Alpha S.A., S.S. Co., Ltd.	
<i>Amastra</i>	A. K. Bamberg	F. R. Pretty, J. McKay, J. Weatherley	J. Evans	Anglo-Saxon Petroleum Co., Ltd.	9.10.47
<i>Amersham</i>	A. Spence	E. T. Ward, W. P. Tait	W. C. Sheard	The Thompson Steamshipping Co., Ltd.	11.8.47
<i>Aquitania</i>	G. E. Cove	D. Robertson, J. H. W. Locke, F. Boige	G. Parsons	Cunard White Star Line, Ltd.	24.8.47
<i>Arabistan</i>	I. H. Metcalfe	W. G. Smith, J. B. Clemenson	N. W. Hodgson	Strick Line, Ltd.	27.9.47
<i>Araby</i>	H. P. Taggart	G. A. Keen		Royal Mail Lines, Ltd.	
<i>Arakaka</i>	D. R. C. Onslow	J. V. Wiggins, S. Armitage, E. G. Price	R. G. Taylor	Arakaka S.S. Co., Ltd.	22.10.47
<i>Argyll</i>	J. Dodds			B. J. Sutherland & Co., Ltd.	
<i>Arigiani</i>	J. A. Wallis, D.S.C.	J. Beatson, W. F. Young	A. N. Taylor	Elders & Fyffes, Ltd.	7.7.47
<i>Artisan</i>	H. Coates	R. W. Baldwin, C. A. V. Daly, J. Nash	R. Donaldson	Charente S.S. Co., Ltd.	15.9.47
<i>Arundel Castle</i>	L. P. Wilkie	Taylor, Rutherford, Fancourt	Williams	The Union Castle Mail S.S. Co., Ltd.	2.4.47
<i>Ascania</i>	R. Sell, R.D., R.N.R.	J. Boyce, G. Drinkwater, H. Hundley	S. K. Alston	Cunard White Star Line, Ltd.	17.4.47
<i>Asia</i>	J. A. Myles, R.D., Cdr., R.N.R.	E. A. Irvine		Cunard White Star Line, Ltd.	
<i>Asturias</i>	J. W. Carr	F. Williams, G. H. Emerton, K. J. Colombo	A. Banberry	Royal Mail Lines, Ltd. (Managers)	3.11.47
<i>Athelclief</i>	A. W. Pegg	R. C. Stone, J. P. Coffey, B. Walker	G. Clark	Tankers, Ltd.	29.10.47
<i>Athelprince</i>	H. J. Hill	W. H. Cook, C. C. Billsom, R. McGregor	A. E. Morton	Athel Line, Ltd.	6.10.47
<i>Athelregent</i>	W. Meneight	C. Ferguson, A. Sugden	N. Martin	Athel Line, Ltd.	22.8.47
<i>Athlone Castle</i>	D. R. Roach	J. K. Mumford, J. A. Scott, G. B. Murray		The Union Castle Mail S.S. Co., Ltd.	
<i>Atlantis</i>	D. R. Lee	L. H. Paine, J. Gulliford, R. Phillips, W. T. Smith	L. G. Hoskins	Royal Mail Lines, Ltd. (Managers)	11.6.47
<i>Auricula</i>	H. Sangster	N. Douglas, W. A. Phillips, R. W. Moreton	W. Phelan	Anglo-Saxon Petroleum Co., Ltd.	18.8.47
<i>Australia Star</i>	T. F. Williams, O.B.E., D.S.O.	J. Hliwa, D. Carstairs, J. Thomas	W. Rollason	F. Leyland & Co., Ltd.	21.8.47
<i>Australind</i>	J. F. Woods	D. R. G. Stephen, R. Thomson, N. H. Smith	S. Hall	Australind S.S. Co., Ltd.	11.8.47
<i>Balaena</i>	P. Verik	B. Christensen		United Whalers, Ltd.	
<i>Balanita</i>	F. A. C. Thacker	B. Y. Harrison, G. Fraser, J. Chester	H. Davies	Royal Mail Lines, Ltd.	
<i>Baltara</i>	G. E. Thomas	S. Bayliss	J. Spicer	United Baltic Corp., Ltd.	27.5.47
<i>Bariff Park</i>	E. Bursby	T. Burke, G. Dunn, R. Rutherford		Sir Eric Ohlson, Bt. (Manager)	
<i>Baron Belhaven</i>	H. Moore	G. J. McIntosh	A. D. Carter	Hogarth Shipping Co., Ltd.	27.11.47
<i>Baron Napier</i>	J. H. Anderson	W. C. Casson, J. E. York, K. Krutainis	P. Kelly	Hogarth Shipping Co., Ltd.	5.11.47
<i>Baskerville</i>	E. Pugh, O.B.E.	E. A. Tickner, E. Lungley, D. Henderson	G. H. Shilson	Barberry's S.S. Co., Ltd.	10.3.47
<i>Bassano</i>	G. Hodgson	P. R. Skelton, B. W. Waldie, N. O. Cook	T. Ainsworth	Ellermans Wilson Line, Ltd.	20.5.47
<i>Beaverburn</i>	F. Poole	M. D. Atkins, J. B. Lafin, A. Aikman		Canadian Pacific Railway Co.	
<i>Beavertove</i>	B. B. Grant, R.D., R.N.R.	P. Q. Dunham, R. D. P. Gillett, G. Palmer	J. A. McAskill	Canadian Pacific Railway Co.	
<i>Beaverdell</i>	C. E. Duggan, R.D., Capt., R.N.R.	G. Bateman, L. E. McDowell, W. E. Williams	L. Norton	Canadian Pacific Railway Co.	25.4.47
<i>Beaverford</i>	R. A. Leicester, O.B.E.	G. W. R. Graves, E. R. Connorton, E. R. Shaw	W. L. Poingdestre	Canadian Pacific Railway Co.	3.9.47
<i>Beaverlegen</i>	J. P. Dobson, D.S.C., R.D., R.N.R.	R. Rawlings, J. Jeavons, D. Blois	J. S. Skinner	Canadian Pacific Railway Co.	21.3.47

<i>Beaverlake</i>	..	C. L. de H. Bell, D.S.C., R.D., R.N.R.	M. Hurd-Wood, R. Walgate, R. A. Hammond	A. R. Humphries	..	Canadian Pacific Railway Co. Ben Line Steamers, Ltd.	3.7.47
<i>Bendoran</i>	..	J. Cringle	F. Hamilton	..	..	..	..
<i>Benedict</i>	..	S. Pollock	A. S. Richardson, H. H. Robinson, D. Lear	F. E. Smith A. Saltwell I. M. Fraser	..	The Booth Steamship Co., Ltd. Ben Line Steamers, Ltd. Ben Line Steamers, Ltd. Ben Line Steamers, Ltd. Alexander Shipping Co., Ltd.	12.9.47 3.7.47 27.6.47
<i>Benedi</i>	..	A. P. Paterson	A. Jones	E. H. Pickering	..	Rio Cape Line, Ltd.	5.12.47
<i>Benreoch</i>	..	I. B. Hastie	J. C. Giles, P. M. Giles, B. S. Biggs	E. C. Bates	..	Ellerman's Wilson Line, Ltd.	..
<i>Benrackleie</i>	..	W. C. Wilson	C. W. Fox, C. Everingham, F. Hudson	E. D. J. Eastwood	..	F. Leyland & Co., Ltd.	5.12.47
<i>Black Prince</i>	..	A. Roche	R. H. Stark, M. R. Bremberg, G. Munro	R. MacLeod	..	British Tanker Co., Ltd.	16.4.47
<i>Bravo</i>	..	P. F. Owens	W. S. Jaeger	S. G. Gobbi	..	British Tanker Co., Ltd.	12.9.47
<i>Brisbane Star</i>	..	E. N. Riley, D.S.O.	E. Shingler, R. Maybourne, D. McRaid	S. E. Adams	..	British Tanker Co., Ltd.	6.9.47
<i>British Colonel</i>	..	E. L. Miller	L. McRitchie, A. D. Miller, P. C. Coyne	T. Dwyer	..	British Tanker Co., Ltd.	24.8.47
<i>British Commodore</i>	..	N. Finkney	A. E. Marshall, H. Evans, G. Barber	..	..	..	..
<i>British Endurance</i>	..	W. Watkin-Thomas	J. A. Picken, W. R. Symon, D. H. Ferrett	C. O'Mahony	..	British Tanker Co., Ltd.	5.2.47
<i>British Escort</i>	..	D. F. Ward	H. Scott, A. Gordon, G. Lawson	D. Golden	..	British Tanker Co., Ltd.	5.12.47
<i>British Hussar</i>	..	T. J. Picken	J. H. Jones	L. Cooper	..	British Tanker Co., Ltd.	20.2.47
<i>British Lancer</i>	..	W. S. Vittle	J. R. Lumley, R. Dunn, R. E. Russell	G. Squire	..	British Tanker Co., Ltd.	8.11.47
<i>British Marquis</i>	..	I. C. Lea, O.B.E.	H. White, A. Brading, J. Milburn	J. Pearcey	..	British Tanker Co., Ltd.	19.4.47
<i>British Patience</i>	..	G. A. Dickson	R. S. Threadkell, N. Leybourne, S. E. Banyard	L. Diffley	..	British Tanker Co., Ltd.	12.8.47
<i>British Pilot</i>	..	R. O. Cash	T. Giffard, D. Battel	K. Morris	..	British Tanker Co., Ltd.	25.2.47
<i>British Piper</i>	..	M. W. Good	C. V. Harrison, J. B. Hunter, F. A. Lapper	G. W. Baylis	..	British Tanker Co., Ltd.	..
<i>British Power</i>	..	C. Colburn	J. Fox, W. Morton, M. H. Blackman	J. Downie	..	British Tanker Co., Ltd.	27.10.47
<i>British Prestige</i>	..	W. Hill	F. W. Gant, J. H. Looker	J. S. Donald	..	Royal Mail Lines, Ltd.	25.8.47
<i>British Resolution</i>	..	J. Bolger	W. Davey, G. Percy, S. W. Taylor	E. Johnston	..	Henricksen & Co.	..
<i>British Statesman</i>	..	W. P. Booth	G. R. Norvell, R. Preston	R. J. Howard	..	Seddon Fishing Co., Ltd.	6.6.47
<i>British Swordfish</i>	..	..	J. W. Cuthbertson, G. R. Norvell, T. D. Ridley	O. R. Thomas	..	Cairn Line of Steamships, Ltd.	27.10.47
<i>Brittany</i>	..	H. A. Wright	G. Russell, J. Watson, T. Langlands	D. Thomson	..	Cairn Line of Steamships, Ltd.	10.7.47
<i>Brockleymoor</i>	..	D. J. Jones	P. G. Pattinson	..	..	Anchor Line, Ltd.	28.4.47
<i>Brontes</i>	..	E. Drinkall	..	..	..	Peninsular & Oriental Steam Nav. Co. Ltd.	..
<i>Bulby</i>	..	G. Bull	..	..	..	Hudson Brothers Trawlers, Ltd.	..
<i>Cairnaron</i>	..	A. Henderson	..	..	..	Hudson Brothers Trawlers, Ltd.	..
<i>Cairneak</i>	..	I. G. Foster	..	..	..	Hudson Brothers Trawlers, Ltd.	13.2.47
<i>Cairnvalona</i>	..	A. Molineaux	..	..	..	..	..
<i>Cameronia</i>	..	J. M. Brown	..	..	..	Cape York Motorship Co., Ltd.	..
<i>Canton</i>	..	G. Stable	..	..	..	The Union Castle Mail S.S. Co., Ltd.	5.12.47
<i>Cape Barfleur</i>	..	C. Agerskow	J. Hamilton	J. Hamilton	..	J. Marr & Son, Ltd.	..
<i>Cape Gloucester</i>	..	W. E. Woodall	W. E. Woodall, R. N. Dixon	R. N. Dixon	..	..	..
<i>Cape Mariato</i>	..	R. A. Cook	G. O. Lambert, D. E. Cornack, R. Brewster	J. D. Mackinnon	..	..	..
<i>Cape Trafalgar</i>	..	H. C. Hunter	..	..	..	..	..
<i>Cape York</i>	..	..	..	..	..	..	..
<i>Capetown Castle</i>	..	J. C. Brown, C.B.E., R.D., Cdre., R.N.R.	F. W. Tudor, R. Lofts, J. Beyragh	D. G. Bristow	..	The Union Castle Mail S.S. Co., Ltd.	24.8.47
<i>Carella</i>	..	J. Crewdson	H. Butler	H. Butler	..	Monarch Steamship Co., Ltd.	22.11.47
<i>Carnarvon Castle</i>	..	T. W. McAllen	J. C. Whadcoat, T. R. Kendra, R. E. Johnston	W. A. Brown	..	Hadley Shipping Co., Ltd.	..
<i>Celtic Monarch</i>	..	J. Keir	E. A. Muir	..	..	Bibby Line, Ltd.	27.9.47
<i>Cerinthus</i>	..	I. F. Auld	..	..	..	Prince Line, Ltd.	18.9.47
<i>Cheshire</i>	..	F. C. Brooks	R. D. Fielder, P. Saunders, R. Sly	J. E. Unsworth	..	British India Steam Nav. Co., Ltd.	14.8.47
<i>Chinese Prince</i>	..	F. S. Thornton, O.B.E.	H. E. Jennings, P. Brentnall, P. Eccles	E. Wearnmouth	..	..	..
<i>Chupra</i>	..	M. C. Williams	C. Allerton, J. Wills, W. Hilcoat	R. C. Whiting	..	..	..

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS	LAST RETURN RECEIVED
<i>City of Barcelona</i>	H. G. Williams, O.B.E.	A. M. Bowman, R. G. Lewis, A. J. Preston	J. E. Martlieu	Ellerman Lines, Ltd.	30.9.47
<i>City of Bristol</i>	T. F. Labey	R. J. Windsor, J. B. Somerville, D. McLean	W. G. Fitzgerald	Ellerman Lines, Ltd.	11.10.47
<i>City of Calcutta</i>	W. H. Matheson, O.B.E.	T. Lovell, I. McDermid, J. H. Henderson	D. O'Leary	Ellerman Lines, Ltd.	27.11.47
<i>City of Canberra</i>	F. Tibbets	W. H. Wilson, E. G. A. Smith, F. E. Pollitt	C. C. Northcote	Ellerman Lines, Ltd.	21.8.47
<i>City of Capetown</i>	W. S. Coughlan, O.B.E.	H. Lewis, J. L. Robertson, A. H. Davey	D. R. Crombie	Ellerman & Bucknall Steamship Co., Ltd.	7.7.47
<i>City of Carlisle</i>	L. E. Smith, M.B.E.	A. Burnett, C. F. Hunt, E. J. Beaumont	B. G. Magennis	Ellerman Lines, Ltd.	15.9.47
<i>City of Chester</i>	R. Longstaff, D.S.O.	J. B. Lister	J. A. Vallance	Ellerman & Bucknall Steamship Co., Ltd.	7.10.47
<i>City of Derby</i>	A. G. Melville	K. Dobson	R. Lennox	Ellerman Lines, Ltd.	23.8.47
<i>City of Dieppe</i>	E. G. Chapman	A. G. Willa, R. J. Tyrell, D. J. Lloyd	W. Lupton	Ellerman Lines, Ltd.	20.11.47
<i>City of Durham</i>	T. H. Speakman	Hughes-Steele	G. S. Creighton	Ellerman Lines, Ltd.	5.6.47
<i>City of Evansville</i>	A. F. Goring	A. Fry, K. Dewis, A. Ramsden	A. J. Sharland	Ellerman Lines, Ltd.	20.5.47
<i>City of Exeter</i>	G. E. Roberts, O.B.E.	W. Lowe, D. H. Wardlaw, R. Miller, J. W. Morrison	W. Roberts	Ellerman Lines, Ltd.	20.10.47
<i>City of Khartoum</i>	I. A. Beynon	F. S. Angers, H. E. Roberts, R. Frame	J. Mann	Ellerman & Bucknall Steamship Co., Ltd.	18.7.47
<i>City of Lyons</i>	R. L. Stewart	J. Kendall, A. R. Horam, C. B. Powell	R. Pickering	The Clan Line Steamers, Ltd.	5.11.47
<i>City of Paris</i>	H. Percival, O.B.E.	T. Dickinson, P. Appleton, K. Haslam	A. C. Macaulay	The Clan Line Steamers, Ltd.	23.8.47
<i>City of Swansea</i>	F. C. Dashley	I. M. Williams, J. L. Blanch, L. G. Powell	R. J. Jones	The Clan Line Steamers, Ltd.	16.9.47
<i>City of Sydney</i>	J. B. MacLaren	T. Rigg, M. Graham, E. F. Brick	J. A. Gray	The Clan Line Steamers, Ltd.	27.10.47
<i>City of Windsor</i>	W. S. Doidge	C. Owen, W. Kendall, J. Baxter, W. Burgess	A. G. Campbell	The Clan Line Steamers, Ltd.	3.3.47
<i>Clan Brodie</i>	W. Vernon Browne	S. F. Nicolson, A. G. Beynon, S. K. Young	W. H. Saville	The Clan Line Steamers, Ltd.	6.9.47
<i>Clan Campbell</i>	J. A. Foster	F. Turton, J. W. Ward, P. W. Howells	R. Gooseman	The Clan Line Steamers, Ltd.	13.8.47
<i>Clan Chathan</i>	H. C. Simpson	R. S. Russell, A. G. Alison, A. M. Vaughan	G. Martyn	The Clan Line Steamers, Ltd.	6.3.47
<i>Clan Chisholm</i>	J. H. Crellin	W. Graham, R. C. McCulloch	C. E. Crewe	The Clan Line Steamers, Ltd.	12.9.47
<i>Clan Farquhar</i>	H. S. Pengelly	C. Stonehouse, J. West, N. B. Cox	R. M. Moore	The Clan Line Steamers, Ltd.	15.11.47
<i>Clan Forbes</i>	A. G. Storkey	T. R. Halliday, C. G. Smeaton, R. G. Hallewell	D. C. Munro	The Clan Line Steamers, Ltd.	13.6.47
<i>Clan Macaulay</i>	H. Cater	J. P. Dunphy, J. Law, D. Milner	P. B. Healy	The Clan Line Steamers, Ltd.	3.9.47
<i>Clan Macdonald</i>	R. P. Galer, C.B.E., R.D., R.N.R.	R. G. Bagnall, J. A. Baxter	R. W. Mortimore	The Clan Line Steamers, Ltd.	6.9.47
<i>Clan Macdougall</i>	W. R. Woodriffe	W. J. Freestone, N. W. Wallace, P. L. Leslie	A. F. MacIntyre	Bank Line, Ltd.	15.4.47
<i>Clan MacLaren</i>	R. F. Buckley	F. C. Doyle	E. O'Neill	Northern Petroleum Tank S.S. Co., Ltd.	28.8.47
<i>Clan Macnair</i>	S. F. Carter	T. O. Marr, G. S. Gann, P. C. W. Hoblyn	J. M. Coates	Anglo-American Oil Co., Ltd.	23.10.47
<i>Clan Macneil</i>	A. G. MacPherson	W. C. Rodger, T. N. Geesin, M. N. Ure	A. E. Clark	Charente S.S. Co., Ltd.	14.11.47
<i>Clan Macrae</i>	C. C. Parfitt	E. Craig, L. Witheridge, W. Fromant	B. B. Haw	Bank Line, Ltd.	21.4.47
<i>Clan Urquhart</i>	W. Broome, O.B.E.	C. G. Barker	A. H. Elder	Furness, Houder, Argentine Line Ltd.	29.7.47
<i>Clydebank</i>	H. Vaughan-Jones	C. G. Lea, A. Smith, Harkness	R. McDougall	Ellerman's Wilson Line, Ltd.	7.6.47
<i>Clydefield</i>	C. I. W. Jones	A. E. Hughes, M. Rutherford, R. Tasker	M. J. H. Carew	Federal Steam Nav. Co., Ltd.	30.10.47
<i>Columbia Star</i>	T. Potts	D. O. Percy, E. D. Ashdown, R. E. Gerrard	T. Daly	Dornoch Shipping Co., Ltd.	22.4.47
<i>Comanche</i>	R. Williams	A. J. Whiston, R. Clark, S. J. East	A. J. Long	Charente S.S. Co., Ltd.	
<i>Comedian</i>	W. Mendus	W. A. Byers, R. F. Martin, E. G. J. Roberts			
<i>Comliebank</i>	R. Smiles, O.B.E.	H. Edwards, F. Fletcher, R. C. Neesham			
<i>Condessa</i>	F. Barnard, M.B.E.	J. M. James			
<i>Consuelo</i>	J. W. C. Pring	O. M. Ridout, C. E. Pain, R. Kirtton			
<i>Cornwall</i>	G. Robinson	C. S. S. Boam, A. P. Sandford			
<i>Couligorm</i>	A. H. Thompson				
<i>Custodian</i>					

<i>Darro</i>	..	T. Davies	..	R. Finch, D. Buckle, J. Sutherland	C. T. Ball	Royal Mail Lines, Ltd.	23.1.47
<i>Deebank</i>	..	B. Rivett	..	I. McKay, D. Campbell, T. Ridgeway	J. Freeman	Bank Line, Ltd.	28.11.47
<i>Defoe</i>	..	W. C. Blake	..	P. Casey, W. Carslaw, H. Smith	W. Auden	Lampert & Holt Line, Ltd.	2.10.47
<i>Delitian</i>	..	R. McNie	..	R. S. Macaulay, A. McFarlane, S. Bryce	F. P. Lawton	The Donaldson Line, Ltd.	30.1.47
<i>Delius</i>	..	H. Underhill	..	R. H. Turner, W. Jones, H. Jones	R. Pryer	Lampert & Hall Line, Ltd.	29.7.47
<i>Denbighshire</i>	..	W. F. Dark	..	D. J. Rudland, Hargrave, Painter, Main	H. A. Cox	Glen Line, Ltd.	16.10.47
<i>Desado</i>	..	B. C. Dodds, O.B.E.	..	W. B. Avison, J. H. Napper, J. Holt	A. Allen	Royal Mail Lines, Ltd.	6.9.47
<i>Devis</i>	..	A. Bibby, O.B.E.	..	H. M. Bunker	L. Brazill	Lampert & Hall Line, Ltd.	29.7.47
<i>Devon</i>	..	A. Hocken	..	S. G. Robinson, J. Bayley, N. A. Dennis	A. Williams	Federal Steam Nav. Co., Ltd.	12.9.47
<i>Devonshire</i>	..	J. E. Cullen, O.B.E.	..	D. Hine, J. Farrow, L. E. Mallon	G. Nutter	Bibby Line, Ltd.	8.7.47
<i>Ditwara</i>	..	F. L. Sampson, D.S.C.	..	H. B. Cray, J. A. Bell, E. L. Sleeman	S. J. Taylor	British India Steam Nav. Co., Ltd.	27.6.47
<i>Dorelian</i>	..	D. MacQueen	..	M. Todd, J. H. Stark, A. T. Johnston	J. R. Carson	The Donaldson Line, Ltd.	17.7.47
<i>Drina</i>	..	W. H. Roberts	..	D. N. G. East, J. Rutter, E. O'Keefe	D. B. Douglas	Royal Mail Lines, Ltd.	22.9.47
<i>Dryden</i>	..	C. L. Legg	..	K. Quirk, J. S. Peterkin, J. L. Radcliffe	S. J. Hardman	Lampert & Holt Line, Ltd.	27.6.47
<i>Dunnottar Castle</i>	..	J. Trayner	..	D. A. Bird, N. Upham	E. Pitt	The Union Castle Mail S.S. Co., Ltd.	27.6.47
<i>Dunster Grange</i>	..	V. Christie	..	D. T. Parker, R. Neal, A. Mullins	P. B. McNab	Houlder Line, Ltd.	27.10.47
<i>Durango</i>	..	A. R. Osburn	..	M. Weekes, J. Brennan, W. R. Clow, J. T. Jones	A. R. Cox	Royal Mail Lines, Ltd.	1.6.47
<i>Durban Castle</i>	..	C. C. Gorringe	..	W. S. Brown, J. M. Cairns	H. G. Liggins	The Union Castle Mail S.S. Co., Ltd.	23.11.47
<i>Durham</i>	..	R. J. Dunning	..	N. Eyre-Walker, R. W. Merry, C. S. Single	E. R. Saunders	Eastern & Australian Steamship Co., Ltd.	12.9.47
<i>Eastern</i>	..	T. J. Mills	..	D. C. Elkington, C. D. Dykes, S. W. Mort	E. C. Bouel	Lobitos Oilfields, Ltd.	21.8.47
<i>El Gallo</i>	..	E. A. Richardson	..	T. M. Yates	L. Hooper	Donaldson Bros. & Black, Ltd.	8.11.47
<i>Empire Brent</i>	..	J. Cook	..	J. Short	J. Thomson	(Managers)	16.10.47
<i>Empire Hallalade</i>	..	E. Stormont, M.B.E.	..	T. Moodie, J. C. Alexander, R. Crombe	G. W. Whittaker	Olsen, Johnston & Co., Ltd.	14.5.47
<i>Empire Kinsman</i>	..	A. Richardson	..	J. B. Whyte, R. L. Edwards, P. P. Bracewell	E. Forbes	Burries Markes, Ltd.	19.6.47
<i>Empire MacCallum</i>	..	J. G. Stevenson	..	N. P. E. Green, H. W. Ashforth, L. Watson	R. A. Bristy	Mediterranean & Atlantic Lines, Ltd.	29.8.47
<i>Empire MacDermott</i>	..	O. L. John, O.B.E.	..	A. V. James, H. Smallwood, J. Woodworth	T. M. Keddie	Bolton Steam Shipping Co., Ltd.	27.10.47
<i>Empire MacKennrick</i>	..	P. F. Ewart	..	G. McGowan, D. B. Butler	F. Blinco	Bibby Line, Ltd. (Managers)	4.11.47
<i>Empire Martaban</i>	..	E. Longster	..	E. J. Harding, F. M. Hughes, R. Hammond	A. Morris	F. Leyland & Co., Ltd.	18.6.47
<i>Empire Pride</i>	..	A. Beharrel	..	R. H. Hall-Soloman, Lt. R.N.R., J. T. Brown, F. P. McGuckin	R. Porter	Counties Ship Management Co., Ltd.	25.11.47
<i>Empire Star</i>	..	S. J. Phillips, C.B.E.	..	D. L. Jardine, A. Purvis, A. C. Cable	W. Campbell	Canadian Pacific Railway Co.	6.10.47
<i>Empire Viceroy</i>	..	M. D. Mackenzie	..	E. Bennett	J. Butterworth	Canadian Pacific Railway Co.	20.11.47
<i>Empress of Australia</i>	..	H. H. Davies	..	R. W. Savage, J. Bezan, H. Kinns	H. M. S. Williams	S.S. Eros, Ltd.	5.6.47
<i>Empress of Canada</i>	..	E. A. Shergold	..	G. E. Warburton, L. Thompson, J. Waling	P. McBride	Aberdeen & Commonwealth Line, Ltd.	6.9.47
<i>Empress of Scotland</i>	..	R. W. Thomas, O.B.E.	..	G. T. Sharpe, E. Curling, J. F. Turvill	C. C. H. Weekes	Anglo-American Oil Co., Ltd.	25.6.47
<i>Epsom</i>	..	H. T. Green	..	A. Hall, J. I. Clark, C. P. Turquand	M. Lebban	Charante S.S. Co., Ltd.	27.2.47
<i>Eros</i>	..	T. V. Roberts, R.D., R.N.R.	..	J. Arthur, P. L. Hopkins, S. Robinson, P. Chant	H. O'Gorman	Ulster S.S. Co., Ltd.	13.11.47
<i>Esperance Bay</i>	..	C. G. Broughton, M.B.E.	..	R. P. Penston, F. Allen, A. Highet	J. W. Leask	Elder Dempster Lines, Ltd.	5.12.47
<i>Esso Glasgow</i>	..	T. Watkins	..	W. L. Nelson	J. C. Kane	South Georgia Co., Ltd.	1.8.47
<i>Etrickbank</i>	..	W. Moore	..	G. H. Griffiths	H. S. Knight	Anglo-Saxon Petroleum Co., Ltd.	2.5.47
<i>Explorer</i>	..	E. W. Black	..	I. C. MacDonald, J. C. Gibson	E. W. Divers	Currie Line, Ltd.	
<i>Fanad Head</i>	..	A. M. Scobbie, O.B.E.	..	N. S. Dunn, J. R. Johnson, G. D. Davidson		Shaw, Savill & Albion Co., Ltd.	
<i>Fantee</i>	..	J. W. Leask	..	A. Wilson		Watts, Watts & Co., Ltd. (Managers)	
<i>Fentja</i>	..	S. Thompson	..	H. G. B. Moss, R. T. Welch			
<i>Ficus</i>	..	A. Wilson	..	W. S. Dockeray, T. Hyslop			
<i>Finland</i>	..	R. G. Ireland	..				
<i>Fordale</i>	..	R. D. Griffiths	..				
<i>Fort Augustus</i>	..		..				

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS	LAST RETURN RECEIVED
<i>Fort Brandon</i>	A. D. Seybold, M.B.E.	L. Parnell, D. Chandler, V. J. Owen	T. F. G. Twissleton	Houlder Bros. & Co., Ltd. (Managers)	18.8.47
<i>Fort Cadotte</i>	A. MacKellar, R.D., R.N.R.	K.D. Lamb, G.L. Mitchell, L. W. Coltham	J. F. Reilly	Cunard White Star, Ltd. (Managers)	13.8.47
<i>Fort Musquiarro</i>	J. Francis Drake, O.B.E., R.D., Cdr. R.N.R.	R. G. L. Hunt	J. F. Morwood	Cunard White Star, Ltd. (Managers)	5.12.47
<i>Fort Nakasley</i>	A. Cromarty, O.B.E.	M. MacPhee, A. McFie-Allen, A. S. Kelly	W. Steele	J. & J. Denholm, Ltd. (Managers)	28.2.47
<i>Fort Steele</i>	J. S. Binnie	K. Montgomery, L. Jamieson, J. Horne	J. R. Conway	Lyle Shipping Co., Ltd. (Managers)	21.4.47
<i>Fort Ticonderoga</i>	J. L. Crossdale, R.D., R.N.R.	T. W. Marshall, J. Killan, J. K. Finlay		Cunard White Star, Ltd. (Managers)	20.11.47
<i>Franconia</i>	C. I. Thompson	A. M. Thomson, J. Locke, E. L'Estrange		Cunard White Star, Ltd.	14.2.47
<i>Georgic</i>	H. Grattidge, O.B.E., R.D., R.N.R.	E. E. Willis, K. Nelson, D. Wickstead	A. G. Hill	Cunard White Star, Ltd. (Managers)	10.6.47
<i>Glaucus</i>	T. Bell	J. A. Dougall, G. Brydges, S. Crump	A. Caro	Ocean S.S. Co., Ltd.	4.11.47
<i>Glenartney</i>	W. E. Coates	H. L. Gray, D. Main	Z. R. Machett	Bank Line, Ltd.	16.9.47
<i>Glenbank</i>	T. Fraser	J. I. Reed, M. Murphy, J. R. Roe	C. H. Ball	Wyre Steam Trawling Co., Ltd.	1.2.47
<i>Gloucester</i>	A. J. Angell	G. Holland, B. Applegate, T. G. Fuller	R. J. Devlin	Currie Line, Ltd.	12.9.47
<i>Goth</i>	T. Barcock	A. Miller, W. C. Cross	D. Sinclair	Anglo-Saxon Petroleum Co., Ltd.	22.10.47
<i>Gothland</i>	D. Sinclair	N. J. Collett	G. W. Evans	Bibby Line, Ltd.	29.10.47
<i>Hoparangi</i>	C. R. Pilcher, O.B.E.	P. S. Sharer	E. W. Greaves	Royal Mail Lines, Ltd.	
<i>Helcina</i>	A. MacDougall	T. Cooper, E. Hodgson, W. Thomas	T. Desboro'	Royal Mail Lines, Ltd.	
<i>Herefordshire</i>	T. J. A. Thomson	W. R. Brooks, C. B. Lambert, A. N. Brook			
<i>Highland Brigade</i>	H. D. Hooper, O.B.E.	A. Ferguson, F. Dickenson, M. Hawkins,	F. Dunk	Royal Mail Lines, Ltd.	
<i>Highland Chieftain</i>	G. A. Bannister	E. Pearce	F. Goodall	Royal Mail Lines, Ltd.	
<i>Highland Monarch</i>	D. A. Casey, D.S.O., D.S.C., R.D., Cdr. R.N.R.	J. C. Cotton, A. J. Field		High Hook Shipping Co., Ltd.	
<i>Highland Princess</i>	D. R. Lee	A. G. Frith, M.B.E., G. Wahlberg, R. D. Thomas	J. Houghney	The Booth Steamship Co., Ltd.	17.11.47
<i>Hilary</i>	J. S. Mailaby	G. Davis, D. Jones, W. D. Aitken	W. Watt	Charente S.S. Co., Ltd.	8.7.47
<i>Historian</i>	A. Elliot, O.B.E.	N. Hanson	W. Thomas	Clive Shipping Co., Ltd.	22.4.47
<i>Hobocrown</i>	C. C. Heaton	J. C. Jackson, C. E. Pain, F. Rowe	A. Buchanan	Hopemount Shipping Co., Ltd.	5.6.47
<i>Hopepeak</i>	T. Georgeson	W. D. Tullock, G. J. Outen	C. J. Rees	Wallend Shipping Co., Ltd.	20.11.47
<i>Hopestar</i>	G. Grindrod	R. Webster, B. K. Price, P. Jeanes	C. L. Lambe	New Zealand Shipping Co., Ltd.	28.8.47
<i>Hororata</i>	F. H. Dufton	W. Urquhart, A. Wotherspoon	None carried	Currie Line, Ltd.	8.3.47
<i>Horta</i>	A. E. Taylor	N. C. Stark, J. Smythe, R. McKeague	F. Murray	Ulster S.S. Co., Ltd.	11.8.47
<i>Inishowen Head</i>	D. Dickson	J. Mitchell, J. A. Jones	W. Chalmers	Bank Line, Ltd.	25.11.47
<i>Inverbank</i>	W. A. Haddock	R. W. Macfarlane, A. Grossland, A. C. Caird	F. C. Brown	Jamaica Banana Producers S.S. Co., Ltd.	29.8.47
<i>Jamaica Producer</i>	P. D. Allen, O.B.E.	F. J. Johns, A. W. J. Justen, R. Briton	S. Whitmore	Reardon Smith Line, Ltd.	9.10.47
<i>Jersey City</i>	J. M. Cox	D. G. Waters, K. Rowland, S. N. Coe	F. Murray	Johnston Warren Lines, Ltd.	29.9.47
<i>Yessmore</i>	A. C. Bailey	P. Bathurst, W. L. Harrison, J. Spilman	E. A. Heard	John Holt & Co. (Liverpool), Ltd.	15.9.47
<i>John Holt</i>	J. Shaw	A. E. Searle	A. T. Hand	New Zealand Shipping Co., Ltd.	18.8.47
<i>Kaipaki</i>	F. Mole	N. Fraser, D. Ewan, H. Ashcroft		New Zealand Shipping Co., Ltd.	
<i>Kaipara</i>	T. R. Windus	P. F. Carnochan, J. F. Thompson, J. Hepplewhite	G. Williams	Pachesham S.S. Co., Ltd.	3.9.47
<i>Kaituna</i>	R. F. Hollings	W. Anson, F. Rossouw, J. C. Forster, B. Blackburn	J. Gillespie	The Union Castle Mail S.S. Co., Ltd.	22.10.47
<i>Kelmiscott</i>	R. E. Richardson				
<i>Kenilworth Castle</i>	G. H. Mayhew				



<i>Kent</i>	E. H. Hopkins	G. C. Simpson, D. L. Willmott, C. Masson	E. Dove	Federal Steam Navigation Co., Ltd.	30.9.47
<i>Ketos</i>	G. I. Gjertsen	W. Keith, G. Griffiths, P. Kidd	W. Fielding	United Whalers, Ltd.	10.10.47
<i>King Robert</i>	G. Craze	D. W. Hobday, L. F. Potter	J. Broad	King Line, Ltd.	9.9.47
<i>King William</i>	A. B. Drever	A. R. Cornish	W. Weaver	Kingston Steam Trawling Co.	3.11.47
<i>Kingston Pearl</i>	A. R. Cornish	A. Baird, C. O. Jones, J. B. Pelo	R. R. Gill	Shahristan S.S. Co., Ltd.	18.11.47
<i>Konistan</i>	W. A. Chappel	J. I. W. Reid	H. E. Morrison	Socony Vacuum Transport Co., Ltd.	19.3.47
<i>Lacklan</i>	W. H. Willcox			Jutland Amalgamated Trawlers, Ltd.	
<i>Lady Elsa</i>	W. Parkinson			Pacific Steam Navigation Co.	
<i>Lagarto</i>	P. L. Hockey	A. M. Grant	J. R. Pringle	Pacific Steam Navigation Co.	
<i>Laguna</i>	P. C. Skellorn	J. Orr, H. P. Winkle, R. L. Snaith	A. Leader	Austin Friars S.S. Co., Ltd.	18.2.47
<i>Lambrook</i>	H. F. McInnes	C. McCullach, J. S. Catterall, D. Crawford	P. Budge	Scottish Shire Line, Ltd.	25.9.47
<i>Lanarkshire</i>	C. E. O'Byrne	W. H. Malley, R. F. H. Mason, J. W. Q.-K. Harwood	A. Jones	Bibby Line, Ltd.	25.11.47
<i>Lancashire</i>	H. Kerbyson	F. Terry, S. M. Brockman	D. N. Todd	Currie Line, Ltd.	
<i>Lapland</i>	J. S. Brown	P. Williams, F. Packman, A. Childs	D. Macrae	Aberdeen & Commonwealth Line, Ltd.	27.10.47
<i>Largs Bay</i>	A. V. Richardson	R. K. Nicholls		Anglo-Saxon Petroleum Co., Ltd.	
<i>Latta</i>	P. G. G. Dove	J. R. Patterson, C. W. Power, G. J. R. Hayes	R. S. Lee	Reardon Smith Line, Ltd.	31.7.47
<i>Leeds City</i>	J. D. Lloyd	J. T. Andrews		Federal Steam Navigation Co., Ltd.	
<i>Leicester</i>	J. Holwood	C. R. Eaddy, C. G. Watterson, D. A. Kiddell	W. C. Doyle	Bank Line, Ltd.	
<i>Leverbank</i>	D. Gillies	D. H. Hill, A. W. Wilks, G. Dineley	S. G. Gracie	Ellerman's Wilson Line, Ltd.	13.11.47
<i>Livorno</i>	E. S. Green	J. S. Fisher, W. J. Demerrell	F. W. Saxey-Santelli	The Union Castle Mail S.S. Co., Ltd.	27.10.47
<i>Llangibby Castle</i>	J. B. McReynolds, D.S.C.	R. G. Twist, P. H. Ray, R. H. Scaiff	F. Murray	Pacific Steam Navigation Co.	22.7.47
<i>Lobos</i>	R. H. Sissons	R. G. Drewier		Royal Mail Lines, Ltd.	
<i>Loch Avon</i>	W. W. Lowe	G. B. Medleycott, J. E. Robson, Lt. R.N.R., P. C. T. Davies	J. Coutts	Royal Mail Lines, Ltd.	12.7.47
<i>Lochmonar</i>	W. W. Lowe	N. F. Seaton, C. Hartley, M. Dean, R. D. Stirling	D. Douglas	Royal Mail Lines, Ltd.	9.10.47
<i>Loch Ryan</i>	W. H. Grimshaw	W. T. Davies, M. M. Osman, S. L. Edwards	W. Phelan	Norwood S.S. Co., Ltd.	10.11.47
<i>Lord Gladstone</i>	J. Abuelo	R. M. Hall, S. Templeton, A. Brines	S. G. D. Wessels	Ulster S.S. Co., Ltd.	1.7.47
<i>Lord Glenloran</i>	W. J. Leinster	F. Austin, R. Pass	I. Sheen	Pacific Steam Navigation Co.	
<i>Lord O'Neill</i>	R. A. Ferguson	W. E. Molloy, K. Thomas, A. Hudson	F. K. Cowley	Pacific Steam Navigation Co.	13.11.47
<i>Loriga</i>	G. B. Wardale	G. E. Turner, J. Galston, M. Plewes	J. Henderson	Dorset S.S. Co., Ltd.	29.7.47
<i>Losada</i>	P. L. Hockey	J. S. Henderson, K. D. Williams		Aral S.S. Co., Ltd.	
<i>Lutworth Hill</i>	J. Reed	J. Billett	G. Caddy	Ocean S.S. Co., Ltd.	7.7.47
<i>Luminous</i>	S. J. Smith	T. H. Wardle, L. J. S. Saxty, J. F. Baker	E. Halton	T. & J. Brocklebank, Ltd.	13.6.47
<i>Macham</i>	R. A. Penstone	A. Davies, S. Baxter, P. A. Litherland	T. Williams	T. & J. Brocklebank, Ltd.	24.8.47
<i>Macharda</i>	A. Hill, O.B.E.	P. A. Gunson, L. F. Dodson, J. C. Long	J. J. Nolan	Shaw, Savill & Albion Co., Ltd.	8.10.47
<i>Magdapor</i>	L. T. Owen, O.B.E.	T. de M. Ogier, C. C. D. Gough	A. E. Weston	T. & J. Brocklebank, Ltd.	29.7.47
<i>Mahanada</i>	J. W. Hart	O. Pritchard, G. Sinclair, P. Greenhall	H. Fisher	T. & J. Brocklebank, Ltd.	29.7.47
<i>Mahia</i>	T. C. Eddy	A. Briggs, F. J. Watts	D. Butterworth	T. & J. Brocklebank, Ltd.	21.7.47
<i>Mahout</i>	R. Humble	H. P. Ackerley, J. P. Pembroke, D. L. des Landes	A. N. Orum	T. & J. Brocklebank, Ltd.	16.10.47
<i>Mahar</i>	J. R. Paisley	J. Clarke, A. H. Fawcett, J. H. Moore	J. Caddy	T. & J. Brocklebank, Ltd.	30.10.47
<i>Makalla</i>	J. B. Newman	B. T. Day, H. Defty, E. Anderson	B. Smith	T. & J. Brocklebank, Ltd.	12.9.47
<i>Makaland</i>	I. Owen	W. Gibson, D. S. Carter, T. Kemp	L. Andrews	Rio Cape Line, Ltd.	
<i>Malancha</i>	H. MacGregor	H. Gates, G. Wilkinson, E. Knaggs	W. H. Critchley	Ellerman's Wilson Line, Ltd.	
<i>Malayan Prince</i>	J. D. Fraser	W. P. Lowthian, W. Hine, M. Bewley, B. S. Roberts, R. Wadsworth		Manchester Liners, Ltd.	9.6.47
<i>Malmo</i>	I. W. Calvert				
<i>Manchester City</i>	F. L. Osborne				

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS	LAST RETURN RECEIVED
<i>Manchester Commerce</i>	H. Handcock	P. Bagshaw, W. E. Quirk, P. N. Fielding	G. Barlow	Manchester Liners, Ltd.	13.11.47
<i>Manchester Division</i>	M. E. Bewley	W. G. Oliver, F. Robinson, H. V. Neilson	T. Parker	Manchester Liners, Ltd.	28.1.47
<i>Manchester Port</i>	F. Downing	J. M. Mann, E. J. Eccles	W. Lecham	Manchester Liners, Ltd.	14.8.47
<i>Manchester Progress</i>	W. H. Downing	A. Cookson, F. Lewis, C. Marchant	J. J. Bourke	Manchester Liners, Ltd.	
<i>Manchester Regiment</i>	F. D. Struss, O.B.E., D.S.C.	J. L. McLaren, D. S. Millard	F. Park	Manchester Liners, Ltd.	23.4.47
<i>Manchester Shipper</i>	J. Barclay	F. Lewis, D. Heaton, T. H. Lynn	E. Ambler	Manchester Liners, Ltd.	14.1.47
<i>Manchester Trader</i>	E. W. Raper	D. S. Millard, P. Fielding, C. T. Marchant	A. Gavin	Manchester Liners, Ltd.	12.9.47
<i>Mandator</i>	C. W. C. Parry	J. Nuttall, D. Evans, F. P. Attwood	B. Banks	T. & J. Brocklebank, Ltd.	21.8.47
<i>Maplebank</i>	N. P. McLeod	N. P. McLeod	J. B. Anderson	Bank Line, Ltd.	
<i>Marengo</i>	F. Ellison	W. Forster, J. I. Fullerton, P. Abbott	J. Lynch	Ellerman's Wilson Line, Ltd.	
<i>Margay</i>	E. A. Prentice	H. C. Coplin	H. C. Coplin	"K" Steamship Co., Ltd.	22.9.47
<i>Marinda</i>	I. Clarkson	I. A. MacLaren, R. N. Bonny	J. Shofield	Seddon Fishing Co., Ltd.	
<i>Markhor</i>	W. Hill, O.B.E.	D. Hughes		T. & J. Brocklebank, Ltd.	
<i>Marna</i>	R. R. Hume	H. Jones, J. Tiere, L. Mansell	G. W. Hazel	South Georgia Co., Ltd.	
<i>Marquita</i>	F. C. Jennings	C. Ferguson		Coolham S.S. Co., Ltd.	
<i>Marsdale</i>	M. Ferguson	H. Simpson, J. A. Miller, A. W. Wiltshire	P. Neeson	"K" Steamship Co., Ltd.	5.12.47
<i>Martland</i>	T. Fox-Lloyd	J. Mayo, T. C. Crane, A. Walborn	A. C. Knight	T. & J. Brocklebank, Ltd.	21.7.47
<i>Martita</i>	H. Bunn	J. R. Lidgely, T. R. Buckingham, J. Hughes	F. Clarke	Elders & Fyffes, Ltd.	6.9.47
<i>Matheran</i>	A. B. Bannatyne, O.B.E.	A. G. Hustwayte, A. D. Hunt, M. V. Meardon		Cunard White Star, Ltd.	
<i>Matina</i>	R. A. Thorburn	G. J. Piper, L. A. Ankers, W. Sparks	W. M. McArdle, M.B.E.	Cunard White Star, Ltd.	25.11.47
<i>Mauretania</i>	R. B. G. Woollatt, R.D., R.N.R.	A. Carlett, B. Salisbury, G. Stewart	F. E. L. Hall	Lampport & Holt Line, Ltd.	16.10.47
<i>Media</i>	R. G. Thelwell, O.B.E., R.D., Capt. R.N.R.	R. E. Small, P. B. Henderson, C. E. Burrill	M. Doran	Lampport & Holt Line, Ltd.	18.8.47
<i>Memling</i>	D. C. Roberts	K. H. Joy, A. Hoar, Black-Tuckwell	J. Crouch	Cable & Wireless, Ltd.	5.12.47
<i>Millais</i>	J. Byrne	M. Todd, A. D. McCallum, J. C. Young	E. Robinson	Postmaster General	18.7.47
<i>Mirror</i>	S. A. Gammon	T. A. Robinson, D. C. Morrison, J. S. Davies	R. H. Hallam	The Donaldson Line, Ltd.	25.6.47
<i>Monarch</i>	J. P. F. Betson	G. G. Hodgson, J. T. Duncan, F. J. Adamson	T. McMin	British India Steam Nav. Co., Ltd.	27.8.47
<i>Moveria</i>	I. L. McQueen	E. Reed, B. Arnstad, J. Appleby	N. Kehoe	Bank Line, Ltd.	11.11.47
<i>Mulbera</i>	T. J. Murphy	Hutton	J. Adamson	Wyre Steam Trawling Co., Ltd.	8.11.47
<i>Myrtlebank</i>	F. Hale	J. E. Gill, E. Palmer, C. B. Davidson		Bank Line, Ltd.	
<i>Nab Wyke</i>	P. E. Bedford	W. A. Clark, J. G. Wilson, J. R. McCarthy	C. D. Grimster	British India Steam Nav. Co., Ltd.	29.8.47
<i>Nairbank</i>	C. S. Holbrooke	F. MacQuiston, R. G. Taylor, L. W. Evans, D. A. van der Merwe	L. Booth	Anglo-Saxon Petroleum Co., Ltd.	16.6.47
<i>Napier Star</i>	E. N. Rhodes	R. Gordon Anderson, R. S. Luly, A. B. Moss	C. J. Carter	Ocean S.S. Co., Ltd.	
<i>Narraga</i>	W. D. Speakman	C. B. Hewett	J. Heath	F. Leyland & Co., Ltd.	16.6.47
<i>Naticinia</i>	E. W. Powell	H. Wylie	J. Hugar	Federal Steam Navigation Co., Ltd.	
<i>Nestor</i>	G. Owen, O.B.E., R.D., Cdr. R.N.R.	A. Pearson, J. Williamson, R. Heys	W. C. Brock	The Donaldson Line, Ltd.	11.8.47
<i>New Zealand Star</i>	A. T. Robertson, R.D., Capt. R.N.R.	J. S. Dalgarno, T. Shields, W. Hodgson	G. Mitchell	Johnston Warren Lines, Ltd.	10.11.47
<i>Norfolk</i>	F. Loughheed	A. Mathieson, J. T. Hibbert	H. Holdridge	Houlder Bros. & Co., Ltd. (Managers)	11.8.47
<i>Northumberland</i>	J. Pollock			Boiton Steam Shipping Co., Ltd.	
<i>Norwegian</i>	J. E. Wilson, O.B.E.			(Managers)	
<i>Nova Scotia</i>	W. McMellin				
<i>Ocean Valley</i>	D. E. Norie				
<i>Ocean Wanderer</i>					

<i>Orari</i>	..	..	..	F. Pover ..	..	J. Mallett, P. L. Kemp, J. van der Straaten	J. C. Matthews	..	New Zealand Shipping Co., Ltd.	10.6.47
<i>Orbita</i>	..	..	..	J. Sutherland ..	..	J. Greenwood, J. Kelly, W. Singleton	W. McCormick	..	Pacific Steam Navigation Co., Ltd.	26.8.47
<i>Orduna</i>	..	..	..	W. A. Hearle ..	..	B. A. King, J. B. Olsson, N. Owen	J. R. Kidson ..	..	Pacific Steam Navigation Co., Ltd.	22.9.47
<i>Orion</i>	..	..	..	C. Fox, C.B.E., L.M. ..	..	C. K. Knight, J. Farrell, G. S. Willis	N. Boon ..	..	Orient Steam Navigation Co., Ltd.	24.8.47
<i>Ormonde</i>	..	..	..	A. C. G. Hawker, C.B.E. ..	..	A. M. L. Murray, S. C. B. Hickman, C. Thomas	..	..	Orient Steam Navigation Co., Ltd.	9.4.47
<i>Otranto</i>	..	..	..	I. E. G. Goldsworthy ..	..	E. V. Harris, Thomas, L. C. Kingswood	R. Oakley ..	..	Orient Steam Navigation Co., Ltd.	20.7.47
<i>Pachesham</i>	..	..	..	G. Blacklock ..	..	D. Macdonald, A. Ferguson, L. Burton	R. J. Alton ..	..	Pachesham S.S. Co., Ltd.	3.12.47
<i>Pacific Enterprise</i>	..	..	..	M. E. Cogle, O.B.E. ..	..	D. M. Morris, Crosthwaite, Cameron	I. A. Waddell	..	Norfolk & North American Steam Shipping Co., Ltd.	12.8.47
<i>Pacific Exporter</i>	..	..	..	Roy E. L. Holland	..	H. M. Head, B. A. Gouldstone, G. K. Williams	R. P. McEwan	..	Norfolk & North American Steam Shipping Co., Ltd.	29.9.47
<i>Pacific Shipper</i>	..	..	..	E. V. Richards ..	..	W. E. Thomas, R. Hughes, S. G. Edwards	T. E. Stronge	..	Furness, Withy & Co., Ltd.	13.11.47
<i>Pakeha</i>	..	..	..	H. C. Smith ..	..	A. R. Stephenson	..	..	Shaw, Savill & Albion Co., Ltd.	..
<i>Palacio</i>	..	..	..	M. H. Atkinson ..	..	C. A. Ellis, R. M. Lidgate	P. McCarthy ..	..	MacAndrews & Co., Ltd.	..
<i>Palana</i>	..	..	..	F. R. Spurr ..	..	G. T. Page, F. R. M. Greasley, W. Vickers	H. Olding	..	Peninsular & Oriental Steam Nav. Co.	3.11.47
<i>Palomares</i>	..	..	..	..	..	F. Szanage ..	..	..	MacAndrews & Co., Ltd.	..
<i>Pampas</i>	..	..	..	T. Powell ..	..	C. D. Williams	..	..	Royal Mail Lines, Ltd.	..
<i>Papanui</i>	..	..	..	E. A. Burton ..	..	G. Rennie, G. R. Naylor, R. Tomlinson	P. Broome	..	New Zealand Shipping Co., Ltd.	17.9.47
<i>Paparoa</i>	..	..	..	E. A. J. Williams ..	..	H. A. Owen, C. B. Hewett, A. P. Robinson	L. P. Rayner ..	..	New Zealand Shipping Co., Ltd.	27.11.47
<i>Paraguay</i>	..	..	..	P. M. Burrell ..	..	G. A. Gibbons, L. Gibson, W. K. West	T. G. Twistleton	..	Royal Mail Lines, Ltd.	22.11.47
<i>Pardo</i>	..	..	..	R. N. Fletcher ..	..	J. Green, R. Kilbey-Leonard, S. D. Gibson	J. Whitfield	..	Royal Mail Lines, Ltd.	5.11.47
<i>Parima</i>	..	..	..	J. N. Duncan ..	..	R. Hunnisett	D. Field ..	..	Royal Mail Lines, Ltd.	8.11.47
<i>Paringa</i>	..	..	..	C. E. Pollett ..	..	W. N. Ede, G. P. Blythe, A. L. Bennett	A. MacBeth ..	..	Peninsular & Oriental Steam Nav. Co.	11.8.47
<i>Pegu</i>	..	..	..	S. Thomson ..	..	I. S. MacColl	..	..	British & Burmese Steam Nav. Co.	..
<i>Peythshire</i>	..	..	..	A. J. Hogg ..	..	J. Browne, J. G. Smith, I. W. Bennet	F. Rayner	..	Scottish Shire Line, Ltd.	13.10.47
<i>Pilcomayo</i>	..	..	..	J. S. Wrake, Lt.-Comdr. R.N.R.	..	P. Anthony, D. P. Warren, J. Upton	A. R. Beynon	..	Royal Mail Lines, Ltd.	17.11.47
<i>Pipiriki</i>	..	..	..	R. G. Rees ..	..	J. Bryant, J. Laidlaw, M. Heron	L. Whittingdon	..	New Zealand Shipping Co., Ltd.	25.11.47
<i>Planter</i>	..	..	..	J. J. Wallis ..	..	J. L. Cule ..	..	..	Charante S.S. Co., Ltd.	..
<i>Polar Chief</i>	..	..	..	A. Goodlad ..	..	J. Gilman, E. Smith	..	..	South Georgia Co., Ltd.	..
<i>Polar Maid</i>	..	..	..	H. Leask ..	..	C. M. Watkins, M. Mitchell, P. Thomas	M. Sheehan ..	..	Polar Whaling Co., Ltd.	..
<i>Port Chalmers</i>	..	..	..	E. J. Syrett ..	..	A. J. Richardson, G. A. Pycroft, H. S. Cran	E. G. Gunner	..	Port Line, Ltd.	28.5.47
<i>Port Fairy</i>	..	..	..	D. G. H. Bradley ..	..	J. Gilman, E. Smith	..	..	Port Line, Ltd.	10.7.47
<i>Port Hobart</i>	..	..	..	T. F. Kippins, O.B.E., D.S.C.	..	A. Braund, J. D. Aitchison, J. Ashburner	B. Evans	..	Port Line, Ltd.	18.7.47
<i>Port Jackson</i>	..	..	..	T. H. Rigden ..	..	C. Guest, D. M. MacKeith, D. Sinclair	A. B. Chiffers	..	Port Line, Ltd.	22.5.47
<i>Port Lincoln</i>	..	..	..	H. H. Smith, O.B.E. ..	..	C. Rhodes, R. Silvester, D. Robinson	F. Griffiths	..	Port Line, Ltd.	29.7.47
<i>Port Macquarie</i>	..	..	..	E. T. N. Lawrey ..	..	A. W. Kinsett, T. S. Paton, P. M. Hudson	H. J. Griffiths	..	Port Line, Ltd.	30.10.47
<i>Port Phillip</i>	..	..	..	J. G. Lewis, O.B.E. ..	..	F. M. Barton, E. W. Dalton	..	..	Port Line, Ltd.	22.2.47
<i>Port Pirie</i>	..	..	..	W. J. Enright, O.B.E., R.D., Cdr. R.N.R.	..	R. C. Matthews, H. F. Lunn, J. A. Newberry	..	..	Port Line, Ltd.	17.7.47
<i>Port Wellington</i>	..	..	..	W. G. Higgs, O.B.E. ..	..	E. J. Arnold, J. T. Owen, L. A. H. Sayles	W. Miller	..	Port Line, Ltd.	4.7.47
<i>Port Wyndham</i>	..	..	..	H. Steele ..	..	W. H. Hopwood, Lawrence, Bell	J. S. MacPherson	..	Port Line, Ltd.	2.7.47
<i>Polaro</i>	..	..	..	S. J. G. Hill ..	..	T. A. Evans, W. A. Tressider, W. K. West	P. Hobbs	..	Royal Mail Lines, Ltd.	13.8.47
<i>Priam</i>	..	..	..	L. W. Kersley ..	..	R. A. Hansell, I. Webster, C. H. Jolly	C. B. Townley	..	Ocean S.S. Co., Ltd.	5.11.47
<i>Rakia</i>	..	..	..	J. S. Oxnard ..	..	A. C. Davies, T. Gibbon, D. Williamson	F. Fish	..	New Zealand Shipping Co., Ltd.	22.10.47
<i>Rangitata</i>	..	..	..	G. Kinnell, O.B.E. ..	..	H. P. Lunn, M. Drake, W. Petro	P. Holmes	..	New Zealand Shipping Co., Ltd.	5.12.47
<i>Recorder</i>	..	..	..	R. F. Longster ..	..	G. W. Sigsworth	E. Stride	..	Charante S.S. Co., Ltd.	20.10.47
<i>Red Charger</i>	..	..	..	R. Nash ..	..	C. Noble ..	..	..	Iago Steam Trawler Co., Ltd.	..
<i>Red Crusader</i>	..	..	..	B. Rogerson ..	..	..	..	..	Iago Steam Trawler Co., Ltd.	..
<i>Red Gauntlet</i>	..	..	..	W. B. Hicks ..	..	..	..	..	Iago Steam Trawler Co., Ltd.	..
<i>Red Knight</i>	..	..	..	E. Littler ..	..	..	..	..	Iago Steam Trawler Co., Ltd.	..
<i>Red Lancer</i>	..	..	..	M. Wright ..	..	..	..	..	Iago Steam Trawler Co., Ltd.	..
<i>Red Sword</i>	..	..	..	J. Tomlinson ..	..	..	R. Green	..	Iago Steam Trawler Co., Ltd.	..

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNERS	LAST RETURN RECEIVED
<i>Regent Hawk</i>	J. Ward	J. Ward, G. R. Arthur, H. G. Cresswell	J. R. Twiddell	Trinidad Leaseholds, Ltd.	29.7.47
<i>Reighton Wyke</i>	C. Whiting	R. Thompson	R. Bell	West Dock Steam Fishing Co.	29.3.47
<i>Rembrandt</i>	J. J. Grugan	D. M. Muir, F. L. James, D. Meardon	W. Keogh	Bolton Steam Shipping Co., Ltd.	5.12.47
<i>Repton</i>	D. Cowrie	E. H. F. Hall	R. Santillo	Basra S.S. Co., Ltd.	3.2.47
<i>Richmond Castle</i>	Fettitt	A. Sligsby		The Union Castle Mail S.S. Co., Ltd.	
<i>Richmond Hill</i>	M. O'Neill	J. C. Whadcoat, R. Fancourt		Punney Hill S.S. Co., Ltd.	
<i>Richbeck Castle</i>	J. E. R. Wilford, R.N.R.	L. Cubitt, D. Dickens, B. Linklater,		The Union Castle Mail S.S. Co., Ltd.	
<i>Rimutaka</i>	W. Wilson, O.B.E.	J. van der Straaten			
<i>Ripplingham Grange</i>	L. Bearbank	H. S. Butler, R. Timmouthe, E. A. Prothno	A. Stenning	Peninsular & Oriental Steam Nav. Co.	5.11.47
<i>Robert F. Hand</i>	E. J. Instone, O.B.E.	A. Cresswell, R. Phillips, J. Rochford	D. Newton	Houlder Line, Ltd.	1.10.47
<i>Robert Hewett</i>	G. Elliot	H. Wilcock	A. W. Toor	Anglo-American Oil Co., Ltd.	29.3.47
<i>Rochester Castle</i>	D. D. MacKenzie	P. S. G. Eckford, N. R. Knowles	K. N. G. Ashfold	Great Northern Fishing Co., Ltd.	14.11.47
<i>Rocksides</i>	H. L. Holland	R. H. Hudson	J. J. Smith	The Union Castle Mail S.S. Co., Ltd.	
<i>Roslin Castle</i>	A. C. M. Black, O.B.E.	K. M. Knight, D. Holden, R. G. Patterson	T. M. K. Knowles	The Union Castle Mail S.S. Co., Ltd.	22.8.47
<i>Roxallan Castle</i>	J. M. Rayner, R.D.,			The Union Castle Mail S.S. Co., Ltd.	24.9.47
<i>Roxburgh Castle</i>	R.N.R.				
<i>Royal Star</i>	R. White, D.S.C.	K. Grant, J. K. Mumford	J. H. Hillier	The Union Castle Mail S.S. Co., Ltd.	17.7.47
<i>Ruahine</i>	A. E. Lettington	T. G. Hughes, L. Thompson, T. Brewster	T. G. Hills	Union Cold Storage Co., Ltd.	12.9.47
<i>Rutland</i>	W. Thom	J. Gaylor, J. M. Mead, I. Y. Batley	J. Poyner	New Zealand Shipping Co., Ltd.	8.1.47
<i>Sacramento</i>	J. E. Robinson, M.B.E.	J. Pryde	J. Macfarlane	Currie Lines, Ltd.	17.9.47
<i>St. Crispin</i>	R. A. Cook	W. White, A. D. Robinson, A. C. Dick	W. H. Parratt	Ellerman's Wilson Line, Ltd.	14.8.47
<i>St. Just</i>	V. A. Buschini	L. Hought	L. Hought	West Hartlepool Steam Nav. Co., Ltd.	
<i>St. Loman</i>	A. Robinson	V. A. Buschini	E. White	Heward Trawlers, Ltd.	
<i>St. Zeno</i>	J. H. Ellis	A. Robinson	A. G. Phillips	Thomas Hamling & Co., Ltd.	12.9.47
<i>Salaverry</i>	A. G. Litherland	T. Hiatt, P. D. O'Driscoll, W. Johnston	P. E. Everett	Firth Steam Trawling Co., Ltd.	
<i>Salmonier</i>	J. D. Wilson	R. L. Wood		Pacific Steam Navigation Co.	29.10.47
<i>Saluta</i>	A. Torgeson	A. Lang, C. Stewart, E. Sleeman	P. Curson	W. Thomson & Co.	
<i>Samanco</i>	D. W. Hutchison	J. Ormerod, J. Hughes, W. Marshall	R. M. Evans	South Georgia Co., Ltd.	29.3.47
<i>Samarita</i>	E. I. Osborne, M.B.E.	D. L. Newton, A. W. Willis	E. P. Bishop	Pacific Steam Navigation Co.	11.2.47
<i>San Adolfo</i>	T. L. Pearson	J. W. Pratt, M. H. Jones, B. Orange	R. H. Charlton	Cunard White Star, Ltd.	24.6.47
<i>San Cirilo</i>	J. B. Macarthy	J. D. Nash, J. B. Hunter, J. Mulligan	Henderson	Eagle Oil & Shipping Co., Ltd.	23.9.47
<i>San Felix</i>	H. C. Archer, O.B.E.	J. Dixon, J. Munday, W. D. Hepworth	W. L. Radcliffe	Eagle Oil & Shipping Co., Ltd.	8.10.47
<i>San Velino</i>	A. R. Hicks	R. R. Griffiths, J. R. Stephens, D. C. Fox	W. Bryce	Eagle Oil & Shipping Co., Ltd.	18.8.47
<i>San Veronica</i>	W. Wigham	N. P. MacFarlane, T. O. Davies	A. F. Carpenter	Eagle Oil & Shipping Co., Ltd.	12.4.47
<i>San Valfranco</i>	J. Sutherland	F. J. Leicester, R. K. C. Thomas, H. Russell	N. G. McLean	Eagle Oil & Shipping Co., Ltd.	28.4.47
<i>Santander</i>	J. D. Richards	A. Powell, F. Nuttall, O. A. Baker	T. Hills	Pacific Steam Navigation Co., Ltd.	13.8.47
<i>Sarmiento</i>	F. B. Brown	J. B. Kennedy, A. H. Marshall, A. G. Smith	J. Hammond	Pacific Steam Navigation Co., Ltd.	16.10.47
<i>Saxon Star</i>	H. Dixon	D. Johnstone, W. MacDougall, F. A. Pain	P. Snow	F. Leyland & Co., Ltd.	11.6.47
<i>Scythia</i>	F. E. Godley	D. R. Tillstone, B. Stark, C. K. Harrison	L. Varmen	Cunard White Star, Ltd.	27.10.47
<i>Silvercedar</i>	I. Duncan	J. M. Evans, D. M. Lamont, N. C. Jones	J. Lord	Silver Line, Ltd.	
<i>Silverguava</i>	R. H. Woodrow, O.B.E.	R. O. Darby, J. H. Crane, K. A. Wise	R. Burrow	Silver Line, Ltd.	29.7.47
<i>Silveroak</i>	E. Stark	W. L. N. Fiken, C. A. Felgate, J. W. Ellis	F. J. Stubbs	Silver Line, Ltd.	26.9.47
<i>Silversandal</i>	C. J. Metcalf		J. J. Dunnett	Silver Line, Ltd.	8.10.47
<i>Silverteak</i>				Silver Line, Ltd.	23.10.47
<i>Silverwalnut</i>					
<i>Sheaton</i>	W. Armstrong	E. Wilson		Rowland & Marwoods S.S. Co., Ltd.	

<i>Socotra</i>	..	E. R. Bodley, D.S.O.,	..	E. Snowden	..	W. S. Hayes	..	Peninsular & Oriental Steam Nav. Co.	10.3.47
<i>Southern Collins</i>	..	D. Hunter	..	J. McNaughton, R. Cramb, T. Johnstone	..	J. Edmond	..	South Georgia Co., Ltd.	9.9.47
<i>Southern Harvester</i>	..	C. Grande	..	J. T. P.	..	D. W. Miller	..	South Georgia Co., Ltd.	18.9.47
<i>Southern Opal</i>	..	J. O. Bowie	..	G. A. D. Govan, J. Banna	..	D. V. McMurdo	..	South Georgia Co., Ltd.	30.5.47
<i>Sovac</i>	..	Haga	..	W. P. Jamieson, F. B. Stewart	..	A. Rodger	..	Sevilla Whaling Co., Ltd.	29.10.47
<i>Staffordshire</i>	..	S. F. Living	..	J. D. Nutter, J. McLellan, A. W. Kelly	..	G. P. Bryson	..	Socony Vacuum Transportation Co., Ltd.	10.7.47
<i>Stancourt</i>	..	F. H. Brand	..	J. C. Priest, J. F. Carr, A. G. Thompson	..	R. Malpin	..	Stanhope Steamship Co., Ltd.	10.11.47
<i>Stanhall</i>	..	F. H. Wainford	..	V. O. Sheppard	..	J. M. Bannerman	..	Stanhope Steamship Co., Ltd.	20.10.47
<i>Stanthorpe</i>	..	H. B. Wightman	..	P. H. Bernard, R. M. Dickie, F. Berry	..		..	Stanhope Steamship Co., Ltd.	8.11.47
<i>Stirling Castle</i>	..	R. G. Roberts	..	E. L. Davies, R. S. Drew, J. H. Buck	..		..		
<i>Stirlingshire</i>	..	W. A. Pace, O.B.E.	..	W. S. Brown	..		..		
	..	J. McCrone	..	A. S. Palethorpe-May, G. A. Winter,	..		..		
	..		..	A. J. Rutherford	..		..		
<i>Stratheden</i>	..	S. W. S. Dickson	..	Noble	..	P. Goss	..	Scottish Shire Line, Ltd.	17.6.47
<i>Strathmore</i>	..	D. M. Stuart, D.S.C.	..	E. Mortleman-Lewis, R.D., R.N.R., G. E.	..	J. Carey	..	Peninsular & Oriental Steam Nav. Co.	15.5.47
<i>Strathnaver</i>	..	E. Lee	..	V. Holmes, C. Walker, G. Eates	..	J. Ormiston	..	Peninsular & Oriental Steam Nav. Co.	7.10.47
<i>Suffolk</i>	..	H. E. Reilly, D.S.C.,	..	B. E. Evans, A. McKenzie, F. C. D. Bevis	..		..		
	..	R.D., R.N.R.	..	J. Johnson, J. Collins, P. Tate	..	J. Hasson	..	Federal Steam Navigation Co., Ltd.	14.8.47
<i>Suncrest</i>	..	L. G. Barwell	..	R. McNeil	..	G. W. Morris	..	Junecrest Shipping Co., Ltd.	26.3.47
<i>Sutherland</i>	..	J. W. Nicolson	..	R. Thwaites, A. L. Clemmet, A. Gardner	..		..	Currie Line, Ltd.	
<i>Svanby</i>	..	J. E. Roddam	..	K. H. Jackson, R. Dunn, W. Fallon	..	A. B. Hill	..	B. J. Sutherland & Co., Ltd.	2.7.47
<i>Sydney Star</i>	..	T. S. Hall, O.B.E.	..	G. C. Smart, A. H. White, J. King	..	T. J. Melville	..	Ropner Shipping Co., Ltd.	21.8.47
<i>Tactician</i>	..	A. Robertson	..	D. Bloom, J. Tooth	..	H. Lammas	..	F. Leyland & Co., Ltd.	11.8.47
<i>Talca</i>	..	A. Lyall	..	D. I. Jones, J. Peters, R. A. Mumford	..	W. J. Vine	..	Charente S.S. Co. Ltd.	18.8.47
<i>Tamale</i>	..	J. J. Smith	..	P. J. Finan, R. E. Foster	..	P. J. Sanfey	..	Pacific Steam Navigation Co., Ltd.	15.10.47
<i>Taranaki</i>	..	F. A. Smith	..	N. E. Wood, H. P. M. Lawrence, J. L.	..	F. Broomfield	..	Elder, Dempster Line, Ltd.	14.5.47
	..		..	Harrison	..		..		
<i>Tarkwa</i>	..	W. C. Baxter	..	A. H. Perkins, P. M. Raiston, J. White,	..	L. Cottell	..	Shaw, Savill & Albion Co., Ltd.	10.10.47
	..		..	O. Rowlands	..		..		
<i>Tasso</i>	..	H. Scarborough	..	E. Laverack, K. Allen	..	C. Forbes	..	Elder, Dempster Lines, Ltd.	12.9.47
<i>Tekoura</i>	..	F. Sutton	..	D. E. Edmonds	..	L. Richardson	..	Ellerman's Wilson Line, Ltd.	
<i>Telemachus</i>	..	J. F. Webster	..	A. Rankin, R. H. Masters, P. T. Power,	..	D. E. Edmonds	..	Heward Trawlers, Ltd.	26.2.47
	..		..	J. D. Murphy	..		..		
<i>Temple Inn</i>	..	S. Lamont	..	J. Lees	..	J. C. Wilson	..	Ocean S.S. Co., Ltd.	21.8.47
<i>Teutot</i>	..	T. Davies	..	C. N. Wightman, T. A. Buckney, V.	..		..	Temple S.S. Co., Ltd.	
	..		..	Charles	..		..		
<i>Thamesfield</i>	..	D. A. Law	..	T. Shanks, H. Shaw, A. D. Lombard	..	J. N. Morrison	..	Royal Mail Lines, Ltd.	20.11.47
<i>Tinto</i>	..	S. H. Bennett, M.B.E.	..	A. Ledger	..	G. Middleton	..	Northern Petroleum Tank S.S. Co., Ltd.	19.3.47
<i>Tongariro</i>	..	A. E. Williams	..	D. MacDonald, S. W. Lambrick, B. A.	..		..	Ellerman's Wilson Line, Ltd.	
	..		..	Kelly	..		..		
<i>Torr Head</i>	..	M. Kennedy	..	A. Fee, E. L. Seaton, J. K. McMorran	..	K. H. Brooks	..	New Zealand Shipping Co., Ltd.	16.10.47
<i>Tower Grange</i>	..	E. Fox	..	J. A. Burnhope	..	G. Penketh	..	Ulster S.S. Co., Ltd.	6.2.47
<i>Trepassey</i>	..	E. Burden	..	N. Stone, F. Windsor	..	W. Butcher	..	Tower S.S. Co., Ltd.	20.11.47
<i>Tresillian</i>	..	C. L. Collings, O.B.E.	..	W. Winter, W. Bulmer, W. Cussens	..	R. Kelly	..	c/o G. W. Henlen, Colonial Office	8.11.47
<i>Treacylor</i>	..	W. Agnew, O.B.E.	..	J. G. Sleight	..	W. Baldwin	..	Hain Steamship Co., Ltd.	25.11.47
<i>Tweed</i>	..	C. E. Mason	..	N. L. Tapp, M. B. Wingate, J. C. Cotton	..	F. Johnson	..	Hain Steamship Co., Ltd.	
<i>Unitati</i>	..	F. E. J. O'Hea	..	J. McDermott, A. Gibson, K. Wilson	..	S. Hewitt	..	Royal Mail Lines, Ltd.	9.10.47
	..	J. W. Miles	..	H. J. Thorn, H. K. Underwood, K. L.	..	A. H. Coxhead	..	Bullard King & Co., Ltd.	30.1.47
	..		..	Carter	..		..		
<i>Valacia</i>	..	W. Stewart	..	A. W. Foyle	..		..	Bullard King & Co., Ltd.	8.1.47
<i>Vancouver City</i>	..	B. Carnaffan	..	M. J. Cleary, O. J. Lindsay, J. King	..	J. J. Dean	..	Cunard White Star, Ltd.	
<i>Vardulia</i>	..	F. E. Patchett	..	L. H. Pound, J. Hughes, R. Conway	..	M. Doran	..	Cunard White Star, Ltd.	29.4.47

NAME OF VESSEL	CAPTAIN	OBSERVING OFFICERS	SENIOR RADIO OFFICERS	OWNERS	LAST RETURN RECEIVED
<i>Vasconia</i> ..	G. H. Morris ..	A. L. Davies, R. H. Arnott, M. Duke ..	Lea ..	Cunard White Star, Ltd. ..	22.10.47
<i>Vestra</i> ..	D. S. Archibald ..	I. MacAlpine ..	..	J. T. Salvesen & Co. ..	..
<i>Victrix</i> ..	E. Garnett ..	C. F. Lawrence ..	..	Henricksen & Co. ..	..
<i>Vienna</i> ..	A. P. Sutton ..	J. A. Tully, W. V. Adams, E. Atkinson ..	F. Howell ..	London & North Eastern Railway (Managers) ..	..
<i>Vivien Louise</i> ..	G. McLeod ..	R. E. Garisch ..	..	British Oil Shipping Co., Ltd. ..	..
<i>Volo</i> ..	A. Morrill ..	F. Briggs, O.B.E., P. Shawcross, R. F. Bramley ..	W. Ellison ..	Ellerman's Wilson Line, Ltd. ..	28.2.47
<i>Waimana</i> ..	T. T. Oliver ..	..	..	Shaw, Savill & Albion Co., Ltd. ..	26.6.47
<i>Waipawa</i> ..	W. G. West ..	R. F. Hamilton, C. Carroll, G. Watkins, A. O. Griffiths ..	W. Charlton ..	..	..
<i>Wairangi</i> ..	D. Aitchison ..	C. H. Saddington ..	..	Shaw, Savill & Albion Co., Ltd. ..	16.9.47
<i>Watvera</i> ..	B. Forbes-Moffat ..	J. L. Carroll, J. G. Fairgrieve, A. H. Baber ..	W. H. Holmes ..	Shaw, Savill & Albion Co., Ltd. ..	7.5.47
<i>War Nizam</i> ..	I. Hall ..	G. Baxter, J. R. Foster ..	J. Peacock ..	Shaw, Savill & Albion Co., Ltd. ..	16.10.47
<i>Warwick Castle</i> ..	R. Wren, D.S.O. ..	T. Cable, B. W. Mitton ..	R. Brew ..	Bulk Storage Co. ..	..
<i>Welsbach</i> ..	P. E. Bedford ..	..	..	The Union Castle Mail S.S. Co., Ltd. ..	16.10.47
<i>Winchester Castle</i> ..	L. P. Wilkie ..	I. M. Snelgar ..	J. Hodgson ..	Wyre Steam Trawling Co., Ltd. ..	8.11.47
<i>Zeni</i> ..	C. R. Hodder ..	A. Bruce ..	T. Richardson ..	The Union Castle Mail S.S. Co., Ltd. ..	28.11.47

### FLEET LIST (Canada)

### VOLUNTARY OBSERVING SHIPS

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

NAME OF VESSEL	OWNERS
<i>Imperial Edmonton</i> ..	Imperial Oil, Ltd. (Marine Department).
<i>Imperial Quebec</i> ..	Imperial Oil, Ltd. (Marine Department).
<i>Imperial Toronto</i> ..	Imperial Oil, Ltd. (Marine Department).
<i>Imperial Winnipeg</i> ..	Imperial Oil, Ltd. (Marine Department).
<i>Lady Rodney</i> ..	"Lady Rodney", Ltd. (Canadian National Steamships).
<i>Lady Somers</i> ..	..
<i>Victoria County</i> ..	Acadia Overseas Freighters, Ltd.
<i>Wathemo</i> ..	Canadian Union Line, Ltd.
<i>Waukawa</i> ..	Canadian Union Line, Ltd.
<i>Watuna</i> ..	Canadian Union Line, Ltd.
<i>Watomo</i> ..	Canadian Union Line, Ltd.

# FLEET LIST (New Zealand) VOLUNTARY OBSERVING SHIPS

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

NAME OF VESSEL	OWNERS
<i>Kaikorai</i>	Union S.S. Co. of New Zealand, Ltd.
<i>Kairanga</i>	Union S.S. Co. of New Zealand, Ltd.
<i>Kareiu</i> ..	Union S.S. Co. of New Zealand, Ltd.
<i>Kartiane</i>	Union S.S. Co. of New Zealand, Ltd.
<i>Kauri</i> ..	Union S.S. Co. of New Zealand, Ltd.
<i>Kurou</i> ..	Union S.S. Co. of New Zealand, Ltd.
<i>Matai</i> ..	New Zealand Government (Marine Department).
<i>Matua</i> ..	Union S.S. Co. of New Zealand, Ltd.
<i>Maui Pomare</i>	Government of New Zealand (Pacific Islands Administration).
<i>Pamir</i> ..	New Zealand Government.
<i>Port Waikato</i>	A. F. Watchlin.
<i>Wahine</i> ..	Union S.S. Co. of New Zealand, Ltd.
<i>Waipori</i>	Union S.S. Co. of New Zealand, Ltd.
<i>Waitaki</i>	Union S.S. Co. of New Zealand, 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 omissions or errors in the list.

NAME OF VESSEL	CAPTAIN	OWNERS
<i>Accrington</i> .. .. .	R. Good .. .. .	L. & N.E. Railway.
<i>Actuality</i> .. .. .	J. Lewis .. .. .	F. T. Everard & Sons, Ltd.
<i>Adjutant</i> .. .. .	K. R. Nichols .. .. .	General S. N. Co., Ltd.
<i>Alouette</i> .. .. .	G. C. Longfield .. .. .	General S. N. Co., Ltd.
<i>Antwerp</i> .. .. .	R. V. Adams .. .. .	L. & N.E. Railway
<i>Ariosto</i> .. .. .	— Reeves, O.B.E., D.S.C.	Ellerman's-Wilson Line, Ltd.
<i>Atlantic Coast</i> .. .. .	F. Mara .. .. .	Coast Lines, Ltd.
<i>Baltic</i> .. .. .	F. Waldron .. .. .	United Baltic Corporation.
<i>Belvina</i> .. .. .	J. Philip .. .. .	L. & N.E. Shipping Co., Ltd.
<i>Bucklaw</i> .. .. .	W. Dunnet .. .. .	G. Gibson & Co., Ltd.
<i>Bury</i> .. .. .	J. L. Davison .. .. .	L. & N.E. Railway
<i>Cambria</i> .. .. .	A. Marsh .. .. .	L.M.S. Railway, Holyhead.
<i>Clyde Coast</i> .. .. .	D. Cowan .. .. .	Coast Lines, Ltd.
<i>Coldharbour</i> .. .. .	G. L. Hetherington .. .. .	Coastwise Colliers, Ltd.
<i>Coldridge</i> .. .. .		Coastwise Colliers, Ltd.
<i>Corfen</i> .. .. .	E. Allen .. .. .	Wm. Cory & Son, Ltd.
<i>Corfleet</i> .. .. .	R. J. Barrow .. .. .	Wm. Cory & Son, Ltd.
<i>Corfoss</i> .. .. .	A. Greiffenhagen, M.B.E.	Wm. Cory & Son, Ltd.
<i>Cormist</i> .. .. .	H. H. Horley .. .. .	Wm. Cory & Son, Ltd.
<i>Cormoat</i> .. .. .	R. B. Armstrong .. .. .	Wm. Cory & Son, Ltd.
<i>Cortachy</i> .. .. .	J. Stewart .. .. .	Dundee, Perth and London Shipping Co., Ltd.
<i>Crane</i> .. .. .	E. C. Paynter, D.S.C.	General S. N. Co., Ltd.
<i>Denbigh Coast</i> .. .. .	E. C. Maddrell .. .. .	Coast Lines, Ltd.
<i>Drake</i> .. .. .	J. S. Lickis .. .. .	General S. N. Co., Ltd.
<i>Duke of Argyll</i> .. .. .	W. Thompson .. .. .	L.M.S. Railway, Heysham.
<i>Duke of Lancaster</i> .. .. .	E. B. Sergeant .. .. .	L.M.S. Railway, Heysham.
<i>Duke of Rothesay</i> .. .. .	F. Ardern, D.S.C. .. .. .	L.M.S. Railway, Heysham.
<i>Duke of York</i> .. .. .		L.M.S. Railway, Heysham.
<i>Eastern Coast</i> .. .. .	R. E. Holt .. .. .	Coast Lines, Ltd.
<i>Edina</i> .. .. .	W. Inglis .. .. .	Dundee, Perth and London Shipping Co., Ltd.
<i>Eildon</i> .. .. .	W. Jeffrey .. .. .	G. Gibson & Co., Ltd.
<i>Falcon</i> .. .. .	F. W. Wethy .. .. .	General S. N. Co., Ltd.
<i>Goldfinch</i> .. .. .	W. Lockhart .. .. .	General S. N. Co., Ltd.
<i>Granta</i> .. .. .	D. A. Hunter .. .. .	Witherington & Everett.
<i>Guernsey Coast</i> .. .. .	C. Metcalfe .. .. .	British Channel Islands S.S. Co.
<i>Harrogate</i> .. .. .	C. H. Tully .. .. .	Associated Humber Lines.
<i>Highwood</i> .. .. .	J. Coupland .. .. .	E. R. Newbiggin, Ltd.
<i>Hirondelle</i> .. .. .	— Klamp .. .. .	General S. N. Co., Ltd.
<i>Isle of Guernsey</i> .. .. .	F. Front .. .. .	Southern Railway, Southampton.
<i>Isle of Jersey</i> .. .. .	A. L. Light .. .. .	Southern Railway, Southampton.
<i>Isle of Sark</i> .. .. .	W. F. Mason, O.B.E.	Southern Railway, Southampton.
<i>Lairdsburn</i> .. .. .	J. McColl .. .. .	Burns & Laird Lines, Ltd.
<i>Lairdswood</i> .. .. .	I. McGuggan .. .. .	Burns & Laird Lines, Ltd.
<i>Lancashire Coast</i> .. .. .	B. Williams .. .. .	Coast Lines, Ltd.
<i>Lapwing</i> .. .. .	K. R. Nicholls .. .. .	General S. N. Co., Ltd.
<i>London Merchant</i> .. .. .	C. A. Piper .. .. .	London Scottish Lines.
<i>Mallard</i> .. .. .	H. Clayton .. .. .	General S. N. Co., Ltd.
<i>Medway Coast</i> .. .. .	E. A. Jones .. .. .	Coast Lines, Ltd.
<i>Melrose Abbey</i> .. .. .	J. Laverack .. .. .	Associated Humber Lines.
<i>Minna</i> .. .. .	T. Mather .. .. .	Scottish Home Department.
<i>Moray Coast</i> .. .. .	E. Griffiths .. .. .	Coast Lines, Ltd.
<i>Northern Coast</i> .. .. .		Coast Lines, Ltd.
<i>Ocean Coast</i> .. .. .	J. Webber .. .. .	Coast Lines, Ltd.
<i>Otterhound</i> .. .. .	A. M. Kennedy .. .. .	Coastal Tankers, Ltd.
<i>Pass of Ballater</i> .. .. .	R. Reid .. .. .	Bulk Oil S.S. Co., Ltd.
<i>Persian Coast</i> .. .. .	T. Taylor .. .. .	Tyne, Tees S.S. Co., Ltd.
<i>Petrel</i> .. .. .	Tomlin .. .. .	General S. N. Co., Ltd.
<i>Plover</i> .. .. .	J. F. Casey .. .. .	General S. N. Co., Ltd.
<i>Princess Maud</i> .. .. .		L.M.S. Railway, Stanraer.
<i>Royal Daffodil</i> .. .. .	A. Paterson, D.S.C. .. .. .	General S. N. Co., Ltd.
<i>St. Andrew</i> .. .. .		G. W. Railway, Cardiff.
<i>St. Julien</i> .. .. .	L. J. Richardson .. .. .	G.W. Railway, Cardiff.
<i>Salerno</i> .. .. .	A. Morrill .. .. .	Ellerman's Wilson Line, Ltd.
<i>Scottish Co-operator</i> .. .. .	T. Robertson .. .. .	Scottish Co-operative Wholesale Society.
<i>Selby</i> .. .. .	A. W. Johnson .. .. .	Associated Humber Lines.
<i>Slieve Bawn</i> .. .. .	J. Hughes .. .. .	L.M.S. Railway, Heysham.
<i>Slieve Bearnagh</i> .. .. .	A. E. Wilmott, D.S.C., R.D.	
	Cdr., R.N.R.	L.M.S. Railway, Heysham.
<i>Slieve Bloom</i> .. .. .	E. G. J. Manning .. .. .	L.M.S. Railway, Heysham.
<i>Slieve League</i> .. .. .	V. S. Phillips .. .. .	L.M.S. Railway, Heysham.
<i>Slieve More</i> .. .. .	R. Woodhall .. .. .	L.M.S. Railway, Heysham.
<i>Southern Coast</i> .. .. .	W. Quirk .. .. .	Coast Lines, Ltd.
<i>Stork</i> .. .. .	C. Carr .. .. .	General S. N. Co., Ltd.
<i>Supremity</i> .. .. .	S. F. Wilson .. .. .	F. T. Everard & Sons, Ltd.
<i>Tern</i> .. .. .	G. Thain .. .. .	General S. N. Co., Ltd.
<i>Wandle</i> .. .. .	T. W. Corney, M.B.E.	Wandsworth and District Gas Co.
<i>Welsh Coast</i> .. .. .	M. Fleming .. .. .	Coast Lines, Ltd.



## LIGHT VESSELS

The following Light Vessels voluntarily observe and report from coastal waters of Great Britain.

NAME OF VESSEL	MASTER
<i>East Goodwin L.V.</i> .. ..	J. Ward, G. F. Moles
<i>Humber L.V.</i> .. ..	
<i>Newarp L.V.</i> .. ..	
<i>Royal Sovereign L.V.</i> .. ..	
<i>Shipwash L.V.</i> .. ..	H. L. Neale

## NOTICES TO MARINE OBSERVERS

### Postal Arrangements

The quarterly numbers of the *Marine Observer* are published on the last Wednesdays of December, March, June and September.

*The Marine Observer* is addressed to the Captain, S.S./M.V....., c/o the owners, and captains are requested to make their own arrangements for forwarding.

Shipowners, Marine Superintendents, and all concerned in the despatch of mails to ships abroad are asked to kindly facilitate the despatch and delivery of postal matter, received at their offices from the Meteorological Office and Air Publications and Forms Stores, to their ships abroad.

This matter, addressed to the captains of ships, contains information which is required for the conduct of meteorological work at sea, and is most effective if received by the captains at the earliest possible date.

Much of the information referred to is published in the *Marine Observer* and is of a seasonal nature. This journal also contains advice to observing ships which enables them to perform voluntary service by wireless communication for the benefit of all shipping.

### Ice Observation

Drifting ice, derelicts, and other floating dangers to navigation are reported by all means of communication at the disposal of the master.

See Appendix III, pages 106-108 of the *Marine Observer's Handbook*, Sixth Edition.

It is also desirable that more detailed information than can be given in a TTT wireless message should be available to the Meteorological Office for the purpose of research, and for the Admiralty Charts and Sailing Directions.

Marine observers will greatly assist by noting the conditions of ice, either drifting or fast.

For this purpose Form 912 is supplied direct to all observing ships plying in regions where ice may be encountered, and this form may be supplied to the captain of any British ship on application to a Port Meteorological Officer or Merchant Navy Agent.

Regular observing ships using the Trans-North Atlantic tracks are requested to send in these forms, not only when ice is encountered, but also when they have passed through the ice region during the ice season without encountering ice. In this case a "nil" report should be returned, since it is desirable as far as possible to determine when tracks have been clear of ice.

### **Return of Logbooks**

Owing to the need for strict economy in the use of paper, observing officers should endeavour to fill up their logbooks (Forms 911), before returning them to the appropriate Meteorological Service, except when insufficient space remains for the recording of observations during a further complete passage.

### **Great Britain**

#### **Transmission of Routine Wireless Weather Messages**

When in the reporting area " Great Britain " and transmitting weather messages through British shore stations, observing ships are requested, forthwith, to address their reports to " Weather Wire London " instead of to " Weather Telex Dunstable " as previously.

### **Hong Kong**

#### **Transmission of Routine Wireless Weather Messages**

When in the reporting area " Hong Kong " and unable to contact the detailed radio station Cape D'Aguilar (VPS), observing ships transmitting their messages via Singapore (GYL) are requested to address them to " Royal Observatory, Hong Kong " to ensure that they are forwarded to Hong Kong.

### **Meteorological Services for Shipping**

Captains of British ships are requested to notify the Marine Branch of the Meteorological Office of areas in which meteorological services for shipping appear inadequate. Suggestions for the improvement of these services are always welcome.

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### **Excellent Awards**

Prior to the war, it was the practice of the British Meteorological Office to make awards to Captains and principal Observing Officers of those Voluntary Observing Ships recruited within the United Kingdom whose work had been " excellent " for not less than a certain period during each year. The award took the form of a suitably inscribed bound copy of *The Marine Observer*.

In future, instead of bound copies of *The Marine Observer* it has been decided to award books on meteorological or other suitable professional subjects each year. Occasionally, meteorological or navigational instruments may be substituted for books. Senior Radio Officers will also share in these awards.

The above awards will be presented on work performed between 1st April and 31st March each year, commencing with the year ended 31st March, 1948.

## MARINE METEOROLOGY

### Co-operation of British Shipowners, Masters and Mates

Captains and officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office, should apply to the appropriate Port Meteorological Officer or Agent.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for a number of ships to record meteorological observations at specified hours, throughout their voyage, and to transmit coded observations, by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Ships performing these voluntary duties are known as Observing Ships—the whole as the Voluntary Observing Fleet—and the captains and officers of these ships as the Corps of Voluntary Marine Observers.

The list of observing ships is published in *The Marine Observer*.

The quarterly *Marine Observer* is sent regularly to the captain of every observing ship, for the information and guidance of his observing and radio officers. The captains of observing ships are also supplied on request with charts and atlases, according to trade, as meteorological equipment.

To ensure the accuracy of data collected for the purpose of research and for weather forecasting, ashore and afloat, and to provide a pattern, which may be copied with advantage to all concerned for general use in merchant ships, sufficient tested instruments are lent by the Meteorological Office to the captains of observing ships.

Captains of observing ships are requested to return their Fair Logbooks (Form 911) when full, or when insufficient space remains for the recording of observations during a further complete passage, to the Meteorological Office.

Pages from the Coded Messages Record (Form 911A), when filled, or at the end of each voyage, should be detached, folded, and returned to the Meteorological Office.

The Port Meteorological Officers and Merchant Navy Agents inspect instruments quarterly, when possible, and they will replace, as necessary, any gear lent by the Meteorological Office. These officers will also check the accuracy of ship's barometers.

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

Captains and observing officers of the Voluntary Corps of Marine Observers will always be welcomed at headquarters, where the Marine Superintendent will be pleased to show them how their observations are utilised in meteorological research and weather forecasting.

### **Headquarters**

Commander C. E. N. Frankcom, O.B.E., R.D., R.N.R., Marine Superintendent, Meteorological Office, Air Ministry, Headstone Drive, Harrow, Middlesex. (Telephone : Harrow 4331, Ext. 324).

Commander J. Hennessy, R.D., R.N.R., Deputy Marine Superintendent. (Telephone : Harrow 4331, Ext. 323).

### **Mersey**

Commander M. Cresswell, R.N.R., Port Meteorological Officer, Room 617, Royal Liver Building, Liverpool, 3. (Telephone : Central 6565).

### **Thames**

Commander C. H. Williams, R.D., R.N.R., Port Meteorological Officer, Room 4, Ibex House, Minorities, London, E.C.3. (Telephone : Royal 1721).

## **AGENTS**

### **Bristol Channel**

Captain E. Hall, Room 120, Exchange, Mount Stuart Square, Cardiff Dock.

### **Clyde**

Captain W. W. Elliott, c/o Thomas Hastie & Son, 2-4, Tullis Street, Bridgeton, Glasgow. (Telephone : Bridgeton 3219).

### **Forth**

Captain G. More, " Craigneuk ", Dechmont, West Lothian. (Telephone : Dechmont 19).

### **Humber**

Captain R. E. Dunn, c/o Principal Officer, Ministry of Transport, Trinity House Yard, Hull.

### **Southampton**

Captain Sir Benjamin Chave, K.B.E., Royal Mail House, Southampton.

### **Tyne**

Captain F. B. West, Custom House Chambers, Quayside, Newcastle-on-Tyne. (Telephone : Newcastle 23203).

## **OFFICERS OF THE METEOROLOGICAL SERVICE OF CANADA**

### **Headquarters**

Controller, Meteorological Division, Department of Transport, 315 Bloor Street W., Toronto 5.

### **Halifax**

O.I.C. Dominion Public Weather Office, Room 111, 8 Harvey Street, Halifax, N.S. (Telephone : 3-8314).

### **Saint John**

Mr. Francis N. Barnes, The Observatory, Saint John, N.B. (Telephone : 3-3500).

### **Vancouver**

Mr. E. B. Shearman, 815 Bower Building, 543 Granville Street, Vancouver, B.C. (Telephone : PAcific 3032).

**SOME ATLASES PREPARED IN THE MARINE BRANCH OF  
THE METEOROLOGICAL OFFICE AND ISSUED BY THE  
AUTHORITY OF THE METEOROLOGICAL COMMITTEE**

**Atlantic Ocean**

- Quarterly Surface Current Charts of the Atlantic Ocean (No. 466).  
22½" × 18". 12s. (7d.)
- Monthly Ice Charts of the Western North Atlantic (No. 478, 1944).  
12" × 7½". 4s. (2d.)
- Monthly Meteorological Charts of the Atlantic Ocean (No. 483).  
24" × 19¾". In the press.

**Arctic Ocean**

- \*Monthly Ice Charts of the Arctic Seas (Hudson Bay to Kara Sea). (M.O.M. 390a Revised 1944). 12" × 6¾". 2s. 6d. (2d.)
- \*Monthly Meteorological and Current Charts of the Greenland and Barents Seas. (M.O.M. 402b 1942). 20" × 13". £2 10s. 0d. (7d.)

**Indian Ocean**

- Indian Ocean Currents (No. 392 Second Edition 1939). 30" × 20".  
10s. (8d.)

**Pacific Ocean**

- Southern Pacific Ocean Currents (No. 435 1938). 34" × 22". 7s. 6d. (9d.)
- Monthly Meteorological Charts of the Western Pacific Ocean (No. 484 Revised 1945). 16¾" × 23¾". In the press.

*Prices in brackets give postage (inland)*

The publications in this list, excepting those marked with an asterisk, can be purchased directly from H.M. Stationery Office at the following addresses :—

York House, Kingsway, London, W.C.2 ; 13a Castle Street, Edinburgh, 2 ; 39-41 King Street, Manchester, 2 ; 1 St. Andrews Crescent, Cardiff ; Tower Lane, Bristol, 3 ; 80 Chichester Street, Belfast ; or through any bookseller.

\* Publications marked with an asterisk can be purchased on application to the following address :—

The Director, Meteorological Office, M.O.10(c), Victory House, Kingsway, London, W.C.2.



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