

VOL. III. No. 27.

THE MARINE OBSERVER.

MARCH 1926.

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**QUARTERLY CHARTS OF CURRENTS FOR THE TRACKS FROM THE BRITISH ISLES TO NORTH AMERICA.**

THE observations of set and drift of current charted were made by Steamers using the Trans North Atlantic routes, and those who made the observations and use these Charts will be interested in a brief historical summary of the adoption of the present Lane Routes which were given in an article, "Ice in the Western North Atlantic," which appeared in the March 1925 Number.

**Steam Lanes across the Atlantic first projected.**

According to MAURY'S Sailing Directions the loss of the United States Mail Steamer, *Arctic*, on passage from Liverpool to New York in October 1854, after collision with the French Steamer *Vesta*, in thick fog, forty or fifty miles east of Cape Race, when about 300 souls perished, appalled and aroused the public mind. Many inquired if science or ingenuity could not devise means or invent plans for preventing the recurrence of similar accidents; some suggested measures remedial and some preventive.

Apparently MAURY himself put forward a suggestion, of which Mr. R. B. FORBES of Boston was the author, projecting two steam lanes across the Atlantic, one to go in, the other to come in, in a letter to Mr. WALTER R. JONES of New York. Mr. JONES passed

this letter to the underwriters, shipowners and merchants of Boston, with the result that they addressed a letter to Lieutenant M. F. MAURY, at the National Observatory, Washington, on January 8th 1855, requesting him to "Prepare a chart exhibiting the routes suggested, so laid off as may, in your judgment, best answer the purpose in view, of lessening the liability of collision without materially lengthening the passage."

After examining the logs of the COLLINS and CUNARD LINES and much other information at his disposal, MAURY made and forwarded two charts with a letter explaining them to Messrs. J. S. SLEEPER, C. W. CARTWRIGHT, J. INGERSOLL BOWDRECHT, R. B. FORBES, and other underwriters and merchants of Boston. One of these charts is reproduced overleaf. He found that steamers crossing the Atlantic traversed a strip of ocean covering 300 miles in breadth on the American side and 150 miles on the English side, and consequently an area in any part of which a sailing vessel by night or in fog was liable to be brought into collision with steamers.

He took into consideration the Gulf Stream, the fogs of the Newfoundland banks and ice.

He suggested steamship lanes 20 to 25 miles wide to the

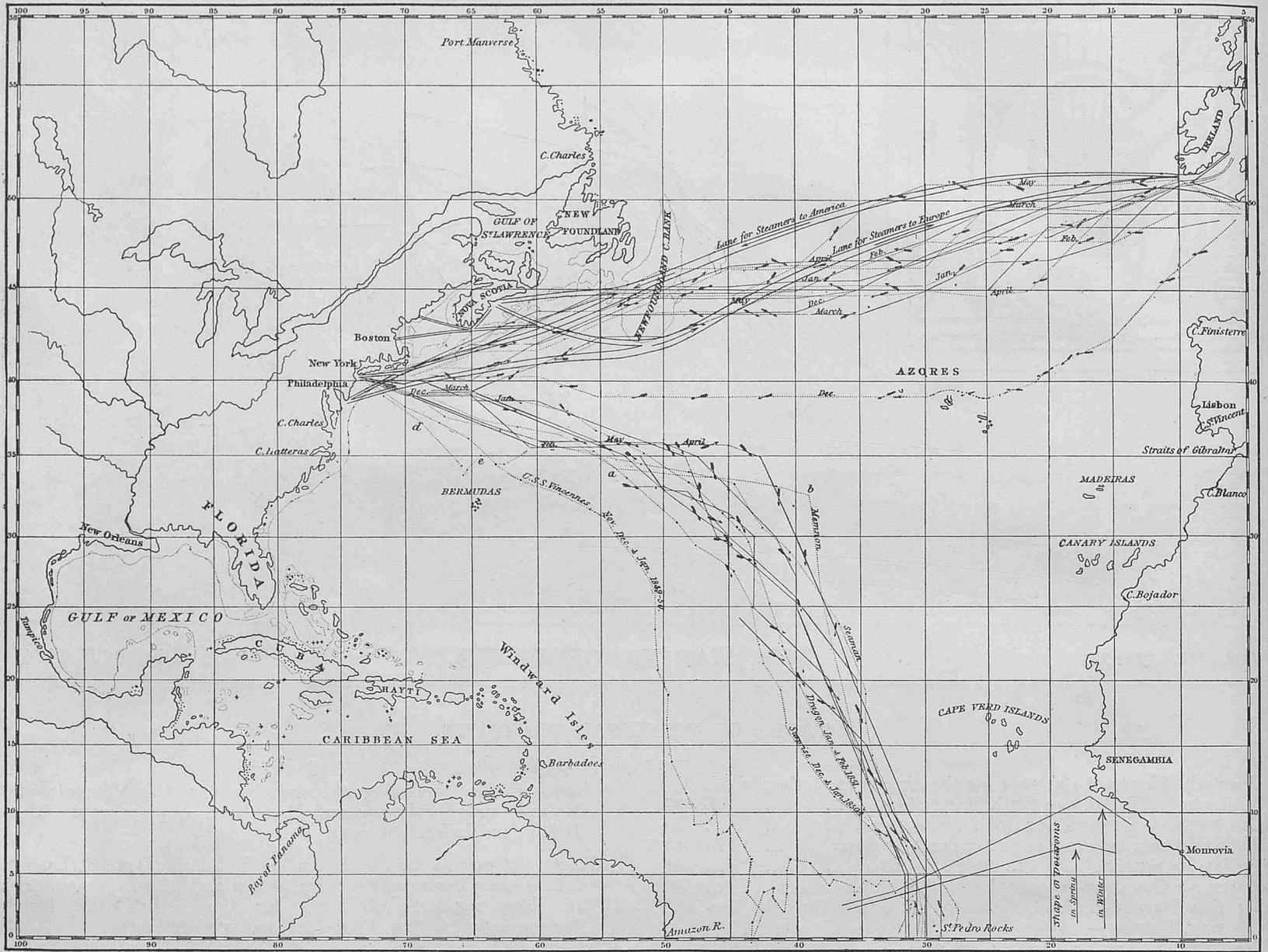


Chart from Maury's "Sailing Directions" showing the Lanes recommended for Steamers from and to America.

northward of this strip and 15 to 20 miles wide to the southward of the strip.

If his lanes were adopted by the steamship companies and engraved on the general Atlantic Chart, MAURY had little doubt that in the process of time sailing ships would make a rule to edge off the lanes, especially at night or in thick weather.

In the Eighth Edition of his sailing directions, MAURY wrote:—

"Three years have now (1858) passed since these lanes were projected. The shadows cast by the lights of experience from them are before us. Wrecks and collisions at sea have greatly increased, especially about the British Islands. The crowded state of the sea renders the recognition and use of these lanes a matter of more and more importance every year."

**The North Atlantic Track Convention.**

The CUNARD COMPANY have for many years been the Secretaries to the North Atlantic Track Convention. Mr. J. S. LISTER, General Manager of the CUNARD LINE, has very kindly sent us information of the early measures taken by his Company, and of the Track agreements of which the following are extracts:—

**North Atlantic Lane Routes.**

Extract from Cunard Publication issued in 1875.

"It is now many years ago that the increase in Atlantic traffic

directed the attention of the Company to the risks that would be run if all vessels both outward and homeward were crowding along the most direct sailing track, and it was seen that the occurrence of collisions under such conditions would only be a question of time.

"So not only wise, but also wise in time, the Company determined to lay down sailing lanes which should not only keep the outward and the homeward bound vessels apart, but which should also keep both vessels somewhat away from the ordinary highways of Atlantic navigation.

"The outward bound steamers from Queenstown to New York or Boston, cross the meridian of 50° at 43° latitude or nothing to the north of 43°; while on the homeward passage they cross the same meridian at 42° latitude, or nothing to the north of 42°."

The earliest agreement as to tracks between the Steamship Lines which can be found was that made as the result of a meeting between various lines held in London on November 15th, 1898. It was as follows:—

**Track Chart Agreements.**

"At a meeting held in London, November 15th, 1898, the following North Atlantic Lane Routes to take effect from January 15th, 1899, were agreed upon by:—

AMERICAN LINE.  
(Richardson, Spence & Co.)  
ATLANTIC TRANSPORT Co., Ltd.

COMPAGNIE GÉNÉRALE TRANSATLANTIQUE.

(Santelli) (except that Northern Track will commence October 15th.)

CUNARD LINE.

(D. Jardine.)

ELDER, DEMPSTER & Co.

FURNESS LINE.

(C. Furness.)

HAMBURG-AMERICA LINE.

HOLLAND-AMERICA LINE.

(Wierdsma.)

W. JOHNSTON & Co., Ltd.

NATIONAL STEAMSHIP Co., Ltd.

NORDDEUTSCHER LLOYD.

(Leist.)

RED STAR LINE.

(Edmund Taylor, by authority of agents.)

WILSON LINE.

(Charles H. Wilson.)

WHITE STAR LINE.

(Thos. H. Ismay, Chairman.)

The LEYLAND LINE was added December 19th, 1901.

**Westbound.**

From 15th January to 14th of August, both days inclusive.

“Steer from Fastnet or Bishop Rock, on Great Circle course, but nothing south, to cross the meridian of 47° West in Latitude 42° North, thence by either rhumb line or Great Circle, or even north of the Great Circle, if an easterly current is encountered, to a position south of *Nantucket Light Vessel*, thence to *Fire Island Light Vessel* when bound for New York, or to *Five Fathom Bank South Light Vessel* when bound for Philadelphia.

From 15th of August to 14th of January, both days inclusive.

“Steer from Fastnet, or Bishop Rock, on Great Circle course, but nothing South, to cross the meridian of 49° West in Latitude 46° North, thence by rhumb line, to cross the meridian of 60° West, in latitude 43° North, thence also by rhumb line to a position south of *Nantucket Light Vessel*, thence to *Fire Island Light Vessel* when bound to New York, or *Five Fathom Bank South Light Vessel* when bound for Philadelphia.

**Eastbound.**

“At all seasons of the year steer a course from *Sandy Hook Light Vessel* or *Five Fathom Bank South Light Vessel*, to cross the meridian of 70° West, nothing to the northward of Latitude 40° 10’.

From 15th January to 23rd August, both days inclusive.

“Steer from 40° 10’ North and 70° West, by rhumb line, to cross the meridian of 47° West in Latitude 41° North, and from this last position nothing north of the Great Circle to Fastnet when bound to the Irish Channel, or nothing north of the Great Circle to Bishop Rock when bound to the English Channel.

From 24th of August to 14th of January, both days inclusive.

“Steer from Latitude 40° 10’ North and Longitude 70° West to cross the meridian of 60° West in Latitude 42° 0’ North, thence by rhumb line to cross the meridian of 45° West in Latitude 46° 30’ North, and from this last position nothing north of the Great Circle to Fastnet when bound to the Irish Channel, as near as possible to, but nothing north of the Great Circle to Bishop Rock, always keeping south of the latitude of Bishop Rock when bound to the English Channel.

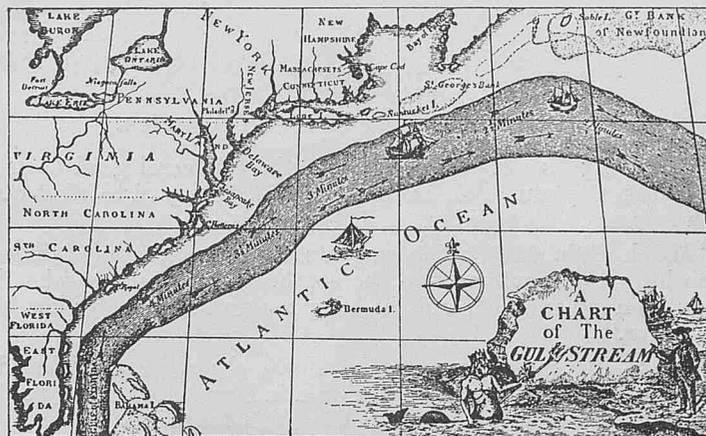
**General Instruction to Captains.**

“When courses are changed at the intersections of meridians any time before or after noon, you will note in your logs both distances to and from the meridians that the ship has sailed from noon to noon, and not the distance from the position at noon the day before to the position at noon the day after the meridian is crossed.”

There were alterations in this agreement from time to time; as before stated the Tracks now in use were given in the March 1925 Number of this Journal, and it is intended as far as possible to reproduce notifications of amendments made by the Track Convention in “The Marine Observer.”

**Early Charting of the Gulf Stream.**

In the first instalment of his notes “Marine Meteorology History and Progress,” published in last Year’s Numbers, Mr. H. T. SMITH mentioned how it came about that BENJAMIN FRANKLIN published a chart showing the course and limits of the Gulf Stream as far back as the year 1795. FRANKLIN’S Chart is now reproduced. Before this



**Benjamin Franklin’s First Chart of the Gulf Stream.**

(Reproduced from “The Depths of the Ocean,” by Sir JOHN MURRAY and Dr. JOHAN HJORT, through the courtesy of the publishers Messrs. MACMILLAN & Co., Ltd.)

chart was published the Falmouth Packets were often a fortnight longer on passage from Falmouth to Boston than were the Merchantmen regularly trading from London to Rhode Island, owing to the knowledge of the latter of the Gulf Stream.

FRANKLIN’S Chart enabled the mariner to obtain a better idea of his longitude with the sea surface thermometer when crossing the Cold Wall than was possible up to the time of the general adoption of the chronometer invented by Harrison in 1765, but which remained in the experimental stage for many years. The line of demarkation between the Cold Labrador Current and the Warm Gulf Stream, notwithstanding its fluctuations, proving at that time a more reliable means of indication of longitude than was the Dead Reckoning towards the end of an Atlantic passage.

FRANKLIN’S Chart was probably the first published which gave a clear indication to the homeward-bounder where he would find the favourable Gulf Stream and the outward-bounder the waters to avoid as far as possible. It is but fair to remind Marine Observers that FRANKLIN’S Chart was the outcome of the knowledge of a Seaman, Captain FOLGER of Nantucket, who had outlined the limits of the Gulf Stream and drawn FRANKLIN’S attention to the cause of the packets’ long passages.

**Currents and their Vagaries.**

Some years ago Commodore C. A. BARTLETT, C.B., C.B.E., R.N.R., Marine Superintendent of the White Star Line, expressed his opinion that it was most important that navigators should be provided with charts showing the vagaries of current on these tracks; he considered that even in very fast steamers more may depend upon a knowledge of the set and drift which may be experienced than is often recognised, and there are very great variations in the Gulf Stream itself.

To Lieutenant-Commander P. M. VAN RIEL, R.H.M., we are indebted for sending us a great many current observations copied in a form convenient to our methods, which have been made in Dutch steamers, so that there are a very fair number of observations notwithstanding the difficulty of obtaining the set and drift under the trying conditions of North Atlantic navigation.

Marine Observers are invited to forward remarks giving their knowledge and experience generally of currents along these routes so that they may be embodied in the articles which will appear in later Numbers and in which it is hoped that questions of wind and sea temperature connected with current may be dealt with.

MARINE SUPERINTENDENT.

## THE MARINE OBSERVER'S LOG.

It is hoped that these pages will be filled each month with a selection of the contributions of Mariners in manuscript, or remarks from the Logs and Reports of regular Marine Observers.

Responsibility for statements rests with the Contributor.

## CURRENT.

## On the West Coast of South America.

THE following is an extract from the Meteorological Log of S.S. *Orcoma*, Captain R. H. DOMINY, C.B.E., Liverpool to West Coast South America, Observer Mr. G. B. WARDALE.

"March 12th, 1925. The currents experienced from Balboa to Callao have been uniformly to the south, and contrary to what has always been experienced, and the temperature of the water has been 10° warmer."

NOTE:—In connection with the above, observers are referred to the note on "Heavy Downpours of Rain in Peru and the 'Holy Child' Current," on page 23, Vol. III, No. 26 of this Journal.

## JAPANESE CURRENT.

THE following report has been received from S.S. *President Jackson*, Captain J. GRIFFITH, Victoria, B.C., to Yokohama; Observer Mr. E. E. HENRY, 2nd Officer.

"During the afternoon of March 27th, 1925, while approaching Inuboye Zaki Light, we experienced a very decided entrance into the Japanese Current.

"At noon, in Latitude 37° 41' N. Longitude, 144° 43' E., the temperature of the sea water was 36°, air 36°, weather partly cloudy and clear with an occasional snow flurry. At 1.30 p.m., in Latitude 37° 28' N., Longitude 144° 18' E., a distinct line of fog was noticed dead ahead, the edge of which appeared so clearly defined that it probably was the northern edge of the Japanese Stream. The fog was clearly a surface fog, rising only about sixty feet from the water, and looked as though it were the steam from the warm Japanese Current condensing in the cool air above.

"The temperature of the water immediately after entering the fog was 60°, and the air, 38°. At 2.30 p.m., in Latitude 37° 18' N., Longitude 144° 08' E., we passed out of the fog into clear weather, the temperature of the water being 61° and the air 40°. The temperature of the water then remained constant until 5.30 p.m. in Latitude 36° 50' N., Longitude 143° 10' E., when it fell to 46° and then rose steadily to 60° at 8.0 p.m., where it remained constant until we reached Yokohama.

"The current set from noon till midnight (12 hours) S.E. by S. (true), six miles."

## WEATHER AND CURRENTS.

## Channel to Cape Verde Islands.

THE following is an extract from the Meteorological Log of C.S. *Stephan*, Commander G. F. CARLTON, O.B.E., R.D., R.N.R., London to St. Vincent, Cape Verde Islands, Observer Lieutenant W. E. ALLEN, R.N.R.

"March, 1925. Referring to 'Monthly Meteorological Chart of the North Atlantic of March, 1923,' sheet No. 264. The most noteworthy features from a meteorological point of view observed on this passage were:—

"(1) The consistently low barometer pressure met with all along the route, the barometer nowhere reaching the mean pressure until our arrival at St. Vincent.

"(2) The entire absence of the N.E. trade winds, on reaching the regions of the trades and until our arrival at St. Vincent, winds from the S.W. quadrant were experienced.

"(3) Presumably as a consequence of (1) and (2) above the currents experienced in the region of the trade winds had, as a rule, an easterly component instead of the westerly one expected and also at times the current ran N.E. instead of S.W. as generally expected."

## CURRENTS.

## St. Vincent Channel, Cape Verde Islands.

THE following is an extract from the Meteorological Log of C.S. *Stephan*, Commander G. F. CARLTON, O.B.E., R.D., R.N.R., Pernambuco to London, Observer, Lieutenant W. E. ALLEN, R.N.R.

"30th March, 1925. Approaching and passing through the St. Vincent Channel, Cape Verde Islands, the following currents were experienced. H.W. St. Vincent, Porto Grande 1030 A.T.P.

"0845 A.T.S. Mochado Lighthouse bearing 45° (T) distant 20 miles, current set 315°, rate 1.5 knots. Fresh N.E. by N. wind.

"0945 A.T.S. Mochado Lighthouse bearing 66° (T) distant 5 miles, current set 162°, rate 0.9 knot. Fresh N.E. by N. wind.

"1045 A.T.S. In St. Vincent Channel, current set 212°, rate 2 knots. Strong N.E. by N. wind.

"On chart No. 366 there is a note to the effect that the current in the channel runs to windward, the *Stephan* experienced the opposite effect."

## CHANGES IN DENSITY OF SURFACE WATER NEAR THE EQUATOR IN THE ATLANTIC.

THE following is an extract from the Meteorological Log of S.S. *Frankenfels*, Captain G. E. CARTMER, O.B.E., North Shields to Australia, Observer Mr. L. M. BURFITT.

"Between 1.30 to 2 p.m. March 11th, 1925, between 3° 49' N., 14° 18' W. and 3° 45' N., 14° 15' W. Light airs from S.E. by E. Sea smooth, slight swell from E. and S.S.E. temperature 81° F. Vessel ran into a confused pyramidal sea about a foot high and gave one the impression that it was a school of porpoises playing about on the surface. Several samples of the water were taken and the densities and temperatures were: 1.35 p.m., 1021-82° F.; 1.45 p.m., 1020-82½° F.; 1.55 p.m., 1021½-82° F.

"After 2 p.m. the sea was again normal until 2.45 p.m. when the sea became rippled in patches. 2.50 p.m., 1022-82½° F.; 2.55 p.m., 1023-82° F.; 3.00 p.m., 1021-83° F.; 3.05 p.m., 1021½-83° F. Speed of ship 11 knots."

## PHOSPHORESCENCE.

## Off the West Coast of India.

THE following account has been received from the S.S. *Chindwara*, Captain P. L. BRISLEY, Observer Mr. F. D. COPELAND, 3rd Officer.

"March 21st, 1925.

Barometer, 1016.2 mbs. Sky, overcast.  
Temperature of air 78° F. Sea, smooth.  
Temperature of water 78° F. Swell, slight W.N.W'ly.  
Wind N.W. by N.

"About 9.15 p.m. A.T.S. being in Latitude 19° 57' N., Longitude 71° 2' E., that is, off the Kathiawar Coast, observed what appeared to be waves of phosphorescence coming from a direction to the westward of the vessel.

"The waves or bands were not bright, but indefinite like smoke lit up by a lamp.

"Between each wave's passing the vessel there elapsed about a second, or a little under.

"They also appeared to pulsate.

"As far as could be judged they were parallel, but this may have been on account of their distance from the centre, supposing that they did originally radiate from a centre.

"After about five minutes they became so dim as to be scarcely discernible.

"Again at about 9.45 p.m. a similar though slighter disturbance broke out coming from the same direction and lasting about the same time.

"At 10.15 p.m. passed through a bright disturbance of the same nature, but could distinctly observe a rotary movement of the waves in an anti-clockwise direction, the centre (though not visible) lying to the eastward of the vessel.

"On passing away from the centre the waves or bands grew wider and less distinct, and took on the appearance of parallels.

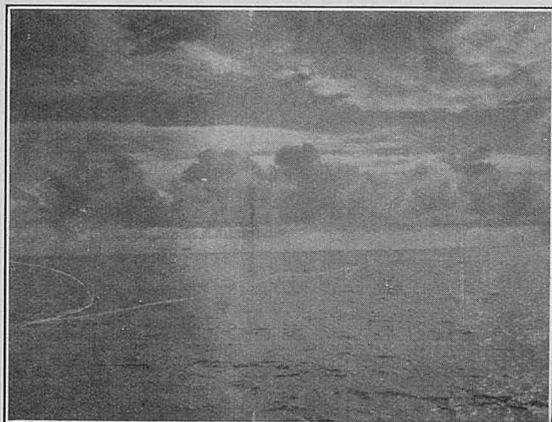
"Throughout the watch the water had been luminous, with outbreaks of bright patches about the size, say, of a washing basket, two or three bursting out simultaneously and in the same direction.

"However, suppose these latter to be shoals of porpoise or dolphin, which were frequent throughout the day."

#### CLOUD PHOTOGRAPHS.

THE accompanying photographs have been received from S.S. *Port Hacking*, Captain R. WILLIAMS, taken by Mr. H. PINKNEY, 2nd Officer.

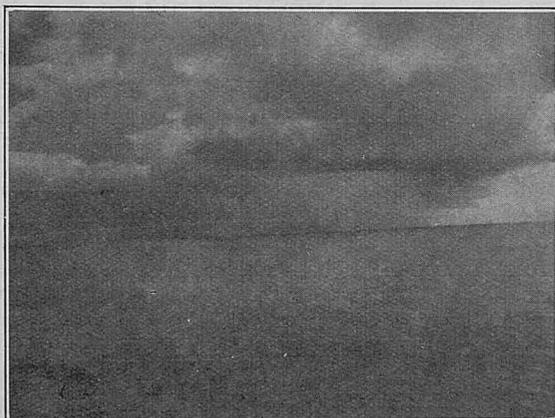
##### Cloud in the South Atlantic.



"20th March, 1925, 3.48 p.m. Latitude 4° S. Longitude 28° W., Cu. with A-Cu. and St.-Cu. above. Wind E.S.E. Force 3. Sea and swell slight."

##### A Squall.

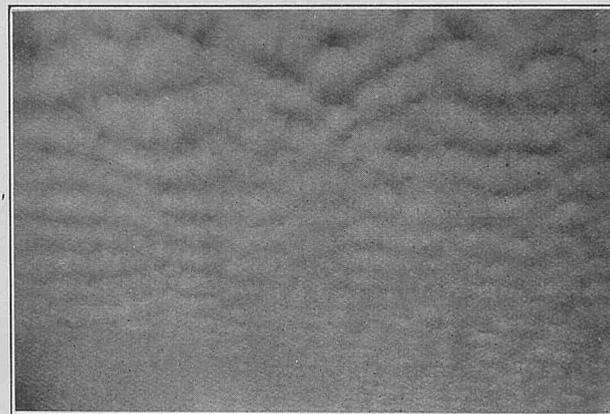
##### In the Doldrums, Atlantic Ocean.



"21st March, 1925, 2-3 p.m. Latitude 0° 03' S. Longitude 26° 33' W. Wind backed to N.E. force 2 during this squall. Barometer 29.96. Thermometer 82°. Rain squalls to leeward having passed over vessel at 1.20 p.m. from N.E. At 2.25 p.m. wind veered to E.S.E. during prolonged period of rain 2.40 p.m. Wind S.E., force 3, and later unsteady, force 1."

#### ALTO-CUMULUS CLOUD.

##### Off South Australia.



THE above photograph of Alto-Cumulus cloud has been received from S.S. *Peshawur*, Commander C. HESTER, R.D., R.N.R., and was taken by Mr. E. J. R. NORTH, 3rd Officer, on 2nd March, 1925 at 4 p.m. in Latitude 37° 36' S., Longitude 126° 21' E.

"Weather at time, Barometer 1002.6 mb. Temperature, Dry Bulb 66° Wet Bulb 63°, Sea Temperature 65°. Wind W.N.W. Force 1-2."

#### WATERSPOUT.

##### In the South Pacific.

THE following is an extract from the Meteorological Report of Ship *Monkbarns*, Captain W. DAVIES, Iquique to Sydney, N.S.W., Observer Mr. R. BAISE.

"19th March, 1925. 4 p.m. Latitude 15° 41' S. Longitude 136° 28' W. Observed waterspout about 5 miles astern. This waterspout was not complete as commonly seen. There was no connection with the clouds but a tremendous whirl at the surface of the sea, the water appearing like thin smoke.

"The mass of water was revolving counter-clockwise and travelled rapidly during over 5 minutes towards E.S.E. and then gradually disappeared.

"Sky at the time: Cloudy (Cu. and Nb. 7), wind (4 to 5). The wind increased in the same direction during phenomenon."

#### WATERSPOUT.

##### In the Western Mediterranean.

THE following is an extract from the Meteorological Report of S.S. *Oxfordshire*, Captain W. E. CRUMPLIN, Marseilles to London, Observer Mr. F. E. BROOKS, 4th Officer.

"March 23rd. 6.45 a.m. Off C. Sacratif, distance 9½ miles. Wind N.E. Heavy Cu.-Nb. to N.N.W. and N.W. clouds very low. Lightning. 6.50. Wind shifted to south. Squall drawing on to starboard beam. Several disturbances observed on sea surface. Spray or rain resembling thick smoke in circular motion over small areas. 6.55. Wind shifted to west, squall now drawing on to starboard quarter. 7.00. Wind shifted to N.W. and N. when large waterspout was observed to be forming bearing N.E. Column of water ascended from base, but did not connect with that descending from cloud. 7.12. Spout dispersed.

"Temperature fell 4° F.

"Ship was only ½ mile approx. from outside edge of squall."

**THUNDERSTORM.****Off the West Coast of South America.**

THE following is an extract from the Meteorological Log of S.S. *Orcoma*, Captain R. H. DOMINY, C.B.E., Liverpool to West Coast South America, Observer, Mr. G. B. WARDALE.

"March 15th, 1925 at 5.30 a.m. Position, Latitude  $5^{\circ} 55' S.$ , Longitude  $81^{\circ} 20' W.$  Experienced several light showers of rain between 4 a.m. and 5.30, the sky becoming heavily clouded with Cu.-Nb. and thunder clouds. At 5.30 heavy rain commenced with vivid lightning and heavy thunder. This storm increased to torrential rain with blinding lightning and terrific peals of thunder. Visibility very poor. The force of the variable winds between S.E., south and S.S.W., was 1-2. The barometer remained steady at 29.95 rising after 7.15.

"This is an unusual phenomenon for this Latitude and Longitude. On the previous night (March 14th) it was unusually clear and fine, the land being distinctly visible at a distance of 17 miles."

**REFRACTION.****On the Cape Route.**

THE following is an extract from the Meteorological Report of S.S. *Mahana*, Captain W. KERSHAW, London to Melbourne via Cape of Good Hope, Observer Mr. J. C. KELLY ROGERS, 4th Officer.

"March 31st, 1925. Noon Position, Latitude  $29^{\circ} 18' S.$  Longitude  $16^{\circ} 08' E.$  Weather at 4 p.m., light variable airs varying from S.S.E. to S.W. dropping to calm at times. Barometer 29.89". Air  $74^{\circ}$ . Lofty Cu. and Cu.-Nb. apparently stationary over the land which was distant some 40 miles.

"Unusual refraction was noticed when taking the meridian altitude of the sun at noon. This increased during the afternoon causing two distinct horizons to appear, one superimposed upon the other, the distance between them measuring a vertical angle of from ten to fifteen minutes of arc at its greatest. The double horizon was not uniform all round the compass. At some parts only the lower one was visible, and at others gradually merged into the upper one, this merging showing up as two clearly defined horizons.

"At sundown the sun assumed some very grotesque shapes, but a peculiar feature of its setting was that it completely set on the upper horizon first, then reappeared on the lower one and proceeded to set there. After dark continuous and vivid forked lightning was observed in clouds above mentioned."

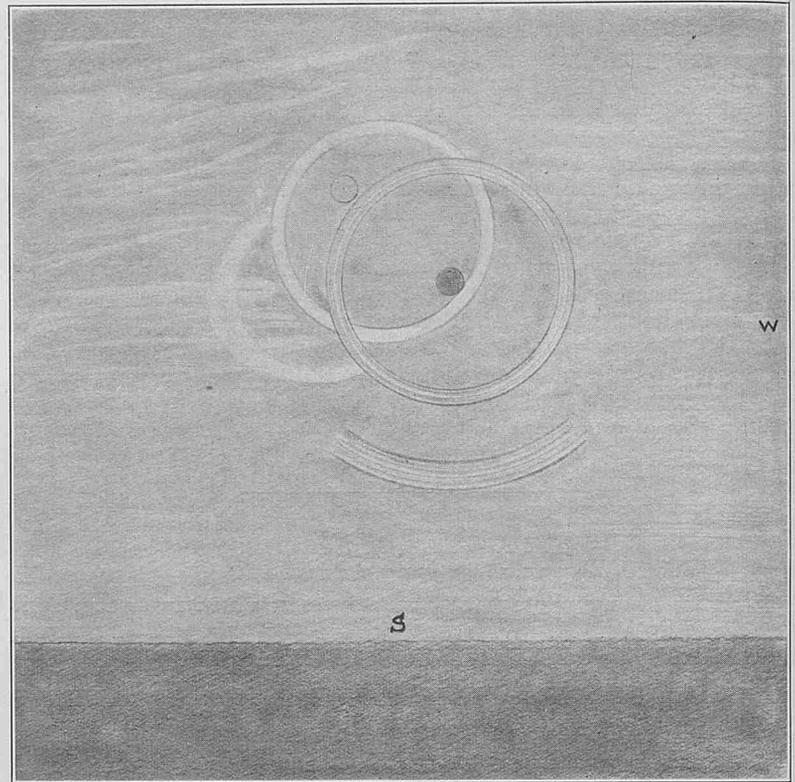
**METEOR.****In the West Indies.**

THE following is an extract from the Meteorological Log of S.S. *Orcoma*, Captain R. H. DOMINY, C.B.E., Liverpool to West Coast South America, Observer Mr. G. B. WARDALE.

"March 9th, 1925. 8.42 G.M.T. Observed in the sky, over west end of Cuba, to the S.E. of ship, what appeared to be a large blue ball of flame, moving rapidly downwards and leaving behind a brilliant tail, which on nearing the horizon burst into red and white flame. Time occupied by the phenomenon about ten seconds."

**SOLAR HALO.****Caribbean Sea.**

THE following is an extract from the Meteorological Report of S.S. *Tainui*, Captain W. HARTMAN, Southampton to Colon, Observer, Mr. P. S. HORWOOD, 3rd Officer.



Halos observed from R.M.S. *Tainui*, March 6th, 1925.  
Sky flecked with Cirrus from early morning.

"March 6th, 1925. Position at Noon: Latitude  $13^{\circ} 09' N.$  Longitude  $75^{\circ} 07' W.$  At 11.45 a.m. a halo, showing the colours of the spectrum, formed around the sun with a radius of  $21\frac{1}{2}^{\circ}$ , the breadth of the spectrum subtending an angle of  $\frac{3}{4}^{\circ}$ . Shortly afterwards an arc of a second halo appeared to the southward, this arc being concentric with and similar to the first, while a third complete halo and an arc of a fourth were observed. Neither of these two latter showed the spectrum, nor were they concentric one with the other or the sun.

"The greatest brilliancy was attained at 12.15 p.m. when the whole presented an interesting and unusual sight. By 12.40 p.m. it had disappeared completely."

**SOLAR HALO.****South Pacific.**

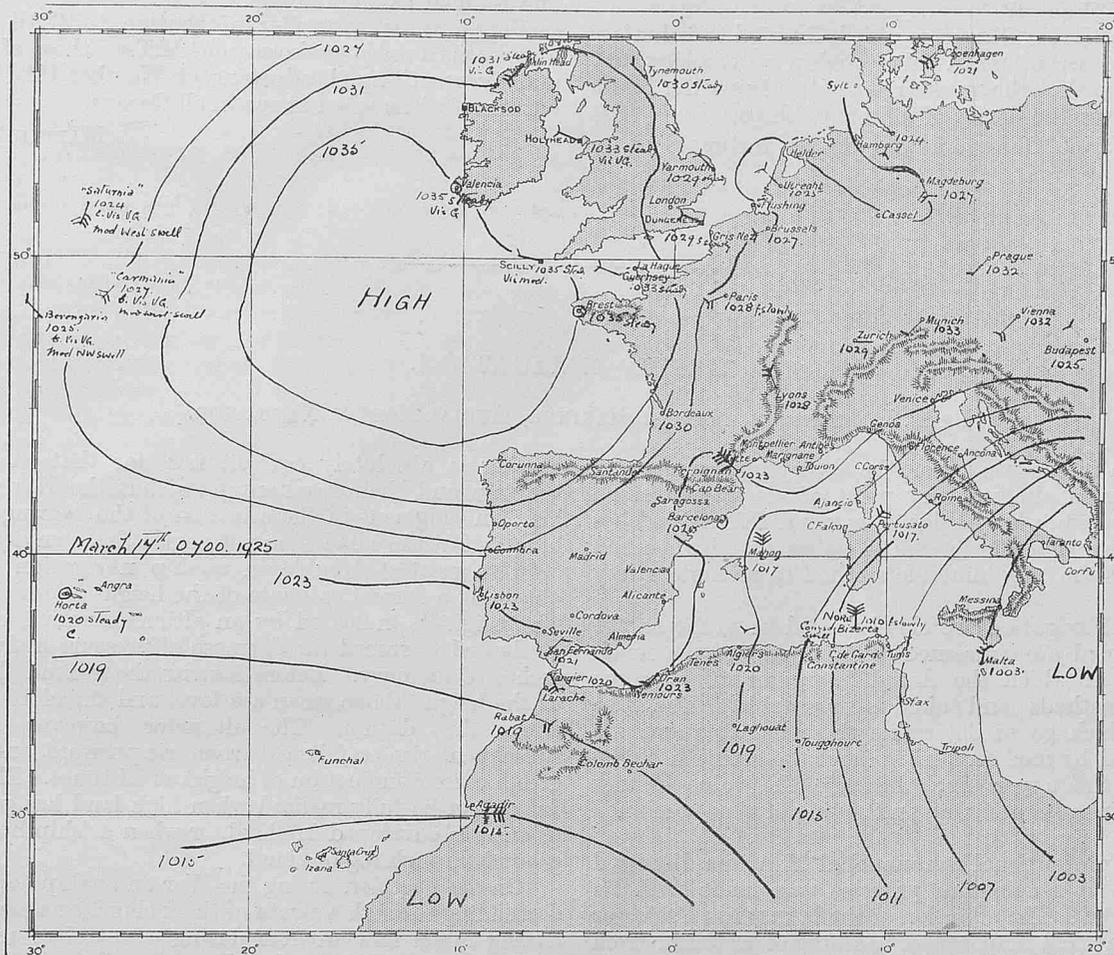
THE following is an extract from the Meteorological Log of S.S. *Makambo*, Captain T. M. BROWN, Observer Mr. F. C. REE, Chief Officer.

"31st March, 1924, at about 5 p.m. (M.T.  $165^{\circ} E.$ ) in the New Hebrides Group of Islands in Lat.  $16^{\circ} S.$ , Long.  $167^{\circ} 45' E.$  Sky half clouded with Cirro-Stratus and Cirrus, the sun shining through a large patch of Ci-St., Malekula Is. due west and directly beneath the sun. Sun's altitude when halo first seen about  $12^{\circ}$ . The  $22^{\circ}$  halo very distinct with two mock suns in line horizontally, also a fainter  $46^{\circ}$  halo with an arc of contact vertically over the sun; this halo faded in about 20 minutes, and when gone another mock sun appeared in a vertical position in the smaller halo, as the sun sank the halo became fainter, the mock suns being the last to fade. Colours reading from the sun: red, orange, yellow, green and blue edge to the  $22^{\circ}$  halo. Temp. of air  $80^{\circ}$  dry,  $76^{\circ}$  wet. Bar. 1014 mb."

$\delta = 5^{\circ} 50'$

$\delta + 2 = 19^{\circ}$

## WEATHER CHART MADE AT SEA.



Weather Chart (one of a series) by Mr. C. B. Roche, Chief Officer,  
s.s. Nore, Captain J. W. Parker.

## SOME COMMON INTERESTS OF SEAMEN AND AIRMEN.

WITH the appearance for the first time of an article by an aerial navigator in our pages, a few introductory remarks may be in season.

As was shown in the December Number last year, Marine Observers will be in a position to do much to further the development of airship navigation over the Oceans, and it follows that if they are to assist airmen as regards Meteorology they can better do so if they have some knowledge of the navigational methods of airmen. The question of displacement alone makes it certain that the airship can never replace the ship as an Ocean Carrier; but it would seem that if the airship becomes reliable for the purposes of communication, her rapid transport of mails and passengers in limited numbers may afford a means towards increasing the trade upon which the Merchant ship is dependent on for freight, by placing those responsible for the management of shipping and commerce in touch more quickly.

As to navigation and aerial navigation or pilotage, Flight Lieutenant E. L. JOHNSTON, originally an officer of the Merchant Service, tells us in his article of the advantages of the Wireless Direction Finder in aerial navigation, the perfecting and adoption of this instrument is in the common interests of Seamen and Airmen.

Regarding Meteorology there can be no doubt, even to the greenhorn, that the future of aerial navigation is largely dependent upon its development. Possibly a solution to one of the problems of the airship commander may be the formulation of an "Aerial Law of Storms," upon somewhat the same lines as our "Laws of Storms"—Rules for handling ships in Revolving Storms—as written by HENRY PIDDINGTON at Calcutta, for some time master of a ship, in his famous

"Horn Book," and since amplified.

So that as Marine Meteorology is of necessity a branch of seamanship, practical Meteorology will doubtless become an important branch of airmanship.

Life in airships over the oceans is bound to lead to a better knowledge of the upper winds which may beget greater reliability of the prediction of weather at the surface.

At present not much is known as to the height the S.W. monsoon reaches over the Indian Ocean, nor are there many observations of the height of the northerly winds at the north end of the Red Sea nor the southerly winds which we experience northward of the Straits of Bab-el-Mandeb; information of these would be invaluable in the early stages of airship navigation to India.

Commander L. GARBETT, R.N., tells us how the Royal Navy is surveying the upper air with sounding balloons, the recovery of which makes this method unsuitable for Merchant ships, but kites have been used in vessels of the Mercantile Marine, and possibly these may come to be of some value.

All things considered there can be little doubt that, as viewed with the eye of a seaman, development of airship navigation over the oceans will be an advantage; co-operation with airmen will not only assist this development, but may be the means of improving Meteorological Services generally and for shipping in particular.

There is now a division of Airship Meteorology at the Meteorological Office under the superintendence of Mr. M. A. GIBLETT, M.Sc., they have much work before them and we hope to be able to assist by

passing on data from Meteorological Logs and Ships' Reports; indeed the work of the Corps of Marine Observers has already contributed data for preliminary investigation.

In the course of time Marine Observers may be invited to volunteer to make certain special observations in aid of airship meteorology, but it is necessary to be sure that the work is kept strictly within limits which are compatible with the duties of officers of ships.

Meanwhile those Marine Observers who are so fortunate as to

have mercurial barometers can assist in building a sound foundation for organised Weather Telegraphy at sea for the purposes of shipping and seamen as well as the future needs of airships and airmen by sending out as a matter of routine to "All Ships" reports of observations made at the same G.M.T. as those of the nearest country and by practising the drawing of Weather Charts and making their own predictions when at sea in all Oceans.

MARINE SUPERINTENDENT.

## AIRSHIP NAVIGATION.

By E. L. JOHNSTON, MASTER MARINER, AERIAL MASTER NAVIGATOR.

MUCH has been written in the past upon the theory and practice of navigation in the air from almost every point of view; and as so much of this work embraces a knowledge of many different branches of the sciences, it is usual that the Specialist claims that his method and particular science is the only infallible method to promote safety in navigation.

Oceanic and Aerial Navigation are closely allied in so far as the methods and aids adopted are concerned, but in view of the much more unstable element in which the Aerial Navigator works, some modification of the methods and aids is inevitable. The two predominant factors which go to determine these modifications are the high speeds attained by modern airships, and the strength of the winds encountered in the upper air; therefore the value of any modification depends upon its accuracy and saving of time combined with simplicity.

The subject of an International Aeronautical Map was discussed as far back as 1911, but no definite progress was made with its production until after 1919. The adoption of the MERCATOR Projector for the General Aeronautical Map raised a storm of criticism from several scientific bodies, who maintained that the MERCATOR'S Projection was out of date; but the significant fact remains that the projection of MERCATOR, as applied to navigation by the English scientists BOND and WRIGHT, does more nearly meet the requirements of the aerial navigator than any other projection. Unfortunately, however, the production of these maps has been retarded through the lack of money, and the aerial navigator is still faced with the difficulty of having to use a variety of projections not especially suited to the purposes of aerial navigation.

With the development of Radiogoniometry in recent years much of the "Pilotage" work is carried out by this means, and excellent results have been obtained which justifies a high degree of reliance upon this new aid to navigation.

Upon one occasion the *Airship R. 33* was navigated for nearly twelve hours entirely by this method through the aid of the Direction Finding Stations at Croydon and Pulham. At no time during that period was the ground visible to check the drift and ground speed, and the clouds were so low that it was unsafe to attempt to bring the 'ship through them; yet at the end of this time the 'ship was brought directly over the landing ground.

The reckoning was kept by means of cross-bearings on the two stations and running fixes on one station; from these positions the ground speed, wind direction and velocity and drift were calculated, and courses set upon these results.

At one time, two fixes were given by Croydon and Pulham before and after a turn of 180° and the distance between these two positions was the correct diameter of the turning circle of the 'ship with the amount of helm used.

Upon another occasion when the *R. 33* broke adrift from her moorings with only a portion of her crew on board, the 'ship was navigated from her base by means of radiogoniometry. Soon after the break away Croydon, Pulham and Rotterdam "picked up" the 'ship, and from the positions received instructions were given to the Officer on board as to the best courses to steer to manœuvre the 'ship out of the storm which had overwhelmed her.

Several other incidents might be related to prove the good results obtained by radiogoniometry. Admittedly, not every D.F. fix or

bearing is absolutely correct, nor, for that matter, are all visual bearings and their resultant fixes, but the Navigator must exercise his own judgment in the selection of the bearings and fixes given to him, and at the same time not neglect his own dead-reckoning.

The greatest trouble in airship navigation is the difficulty in obtaining a correct estimate of the height at which the 'ship is flying. The height is indicated by an altimeter which is merely an aneroid graduated to record the decrease of pressure in feet of rise instead of inches of mercury. Before leaving the ground the instrument is set at the height above mean sea level and therefore indicates the height above that datum. The altimeter, however, is affected by any subsequent rise or fall of barometric pressure, and therefore does not give a correct indication of height at all times. The seriousness of this defect can be fully realised when high land has got to be passed over when it is enveloped in cloud, or when a 'ship has to descend to the ground through fog or cloud.

On one occasion during the War an airship flew into the sea when descending through a strata of thick cloud, as a result of the barometer having fallen half an inch during a patrol of some 18 hours. The unfortunate pilot thought that he still had 500 feet of clear air beneath him.

A correct estimate of the height is also essential in all D.R. work for checking ground speed. The ground speed is measured along a base line which is set for the different heights at which the 'ship is flying: thus from the ground speed and drift, knowing the course steered and the air speed, the wind velocity and direction, is calculated and from this, course is altered or set as the case may be; therefore a wrong estimate in height above the objects measured on the base line gives a wrong estimate of the ground speed and a resultant error in wind direction which throws out the reckoning completely.

So far the only means of determining the alteration in barometric pressure is by obtaining that information from the ground. Thus knowing what pressure the altimeter was set at for mean sea level, the pilot can easily note the correction when the different ground pressure is given to him.

There are many different types of Drift Indicators available for use, but the one most suited for airship work is a gimbaled optical sight involving the three dimensions height, azimuth, and time; a base line of constant length being maintained by a movable height scale.

The problems of D.R. are rapidly solved by means of a Course and Distance Calculator, which is a modified type of BATTENBERG, and solves the triangle of velocities by simple mechanical means.

The principle aimed at in celestial observation and aerial navigation is to obtain the simplest and readiest means of determining a fix or position. The computation of the altitude or zenith distance of a celestial body, and thus obtaining a circle of equal altitude around the geographical position of the celestial object affords the readiest means of determining the position line and from thence a fix. The Marine sextant is the most suitable instrument for taking observations to a natural horizon. Observations to sea horizon with this type of sextant give fairly good results, but they are entirely dependent upon the clearness of the sea horizon and the correct estimation of height for allowance of "Dip." Observations to cloud horizons on the whole are not entirely satisfactory for a similar reason, and observations to mist horizons, although they in some cases have given

good results, are unreliable unless the observer is at some considerable height above the top of the mist bank.

The R.A.E. Bubble Sextant is of a type which is a complete departure from the pattern of the Marine Sextant, and is especially adapted for use in the Air. Its main features are a bubble level with a combined index and object glass which is set by the revolution of a spiral cam to which is attached a graduated scale by which the altitude of the celestial object's centre is measured above the sensible horizon as presented by the bubble when centred in the bubble chamber.

Semi-diameter calculations are eliminated by the use of this sextant.

This type of sextant obviously does away with the necessity of using a natural horizon whether land, sea or cloud. In common with all artificial horizons, however, the level is subject to errors due to accelerations of the airship acting on the bubble. Errors due to acceleration have been found to be less on fore and aft observations than on athwart-ship observations.

The index error of this instrument is obtained by suspending a mirror vertically and observing the image of the observer's eye reflected in the mirror.

Errors in the position lines, from observation with this type of

sextant are in the order of about 2 miles.

Instruments for the rapid solution of the spherical triangle by means of plotted curves and graphical representation of formulæ have been used, amongst which may be mentioned the BAKER Navigating Machine, the VEATER Diagram and the D'OCAGNE Nomogram. These, however, have not given the high degree of accuracy desired, and might now be said to be of academic value. The most satisfactory instrument, and that which is in general use, is the BYGRAVE Cylindrical Slide Rule. This slide rule gives a high degree of accuracy and is very simple to use.

GOODWIN'S Alpha Beta and Gamma tables are used with great success. They present the advantage of not being bulky and require no interpolation.

To the marine navigator it will be obvious that his *confrère*, the aerial navigator, is beset with all manners and means for the navigation of his 'ship. After reading manufacturers' and publishers' catalogues it would appear that all the navigator has to do is to buy "So and So's" new instrument, or the "Latest Treatise" and put it on board and the work is done for him without any further effort. In practice, however, he is always coming up against the hard fact that the successful navigator is the one who uses his own judgment taught him in the bitter school of experience.

## UPPER AIR OBSERVATIONS OVER THE SEA.

BY COMMANDER L. G. GARBETT, R.N. (*Retired*), SUPERINTENDENT  
NAVAL METEOROLOGICAL SERVICES.

IN "The Marine Observer," published in May 1925, a detailed account was given of pilot and sounding balloon observations carried out from H.M.S. *Kellett* in July 1924.

This year (1925) I have again had the opportunity of going afloat to carry out similar kinds of observations, and with the approval of the Hydrographer of the Navy, Captain H. P. DOUGLAS, C.M.G., R.N., I was able to embark on board H.M.S. *Fitzroy* (Lieutenant-Commander H. V. SILK, R.N.) at Grimsby on July 19th.

I took with me, as on the previous cruise last year, a large equipment of Pilot Balloons and Hydrogen and the Mirror Theodolite, which has already been described in a previous article.

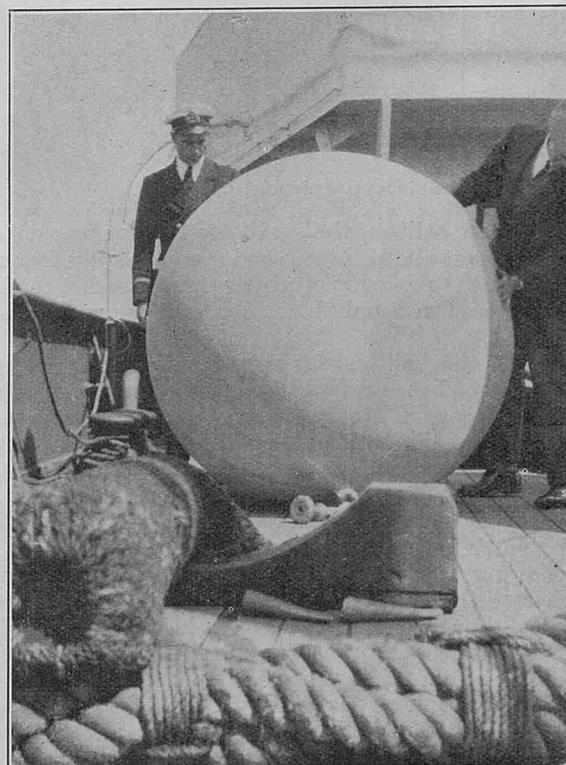
On the morning of the 20th July, H.M.S. *Fitzroy* proceeded to sea. Unfortunately the weather was extremely unsettled, and during the six days spent on board observations were hampered by unfavourable weather. On the first two days operations were impossible owing to rain and fog, visibility being a little over a mile. By the third day, weather conditions had improved, and although the visibility at the surface was still only moderate, it was clear overhead, with passing clouds. Several pilot balloon observations were made with a sextant during the day, and the results showed that the velocity of the wind at 5,000 feet was considerable, although the surface wind was only 10 m.p.h., but increasing. Knowing the North Sea under the conditions of weather which we were experiencing, it was considered advisable to take advantage of the moderate visibility prevailing at the time and send up a sounding balloon.

In the early afternoon a report was received from the Meteorological Office giving information of upper winds, and from this it was estimated that a sounding balloon apparatus set to rise to a height of 25,000 feet would probably fall 333° 40 miles from the position from which it was released. The ship thereupon proceeded to a position to the east of the *Inner Dowsing Light Ship* in order to give a clear run of 40 miles to the northward. Steam for 14 kts. was arranged, and it was proposed to chase the balloon in that direction.

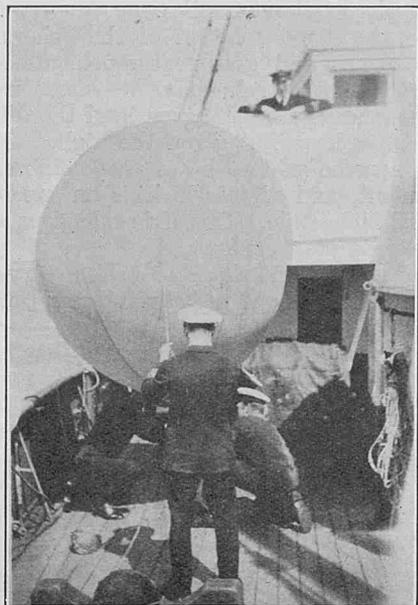
The procedure for getting the apparatus ready was the same as last year, and whilst this was being done on the fore-deck, the ship lay to with the wind on the port quarter, this being the best position for filling and releasing the apparatus.

By the time all was ready the surface wind had increased to 16 m.p.h. Unfortunately the upper balloon developed a number of

leaks during the process of inflating, many of them were patched, but it was apparent that the rubber of the balloon had perished and was of little use for the ascent. Another balloon was tried which appeared to be in good condition and was successfully inflated to the required lift. In order to avoid as far as possible unnecessary vibration and jerks to the meteorograph, it was mounted in a cage instead of being secured directly to the line as last year. The dropper was similar to



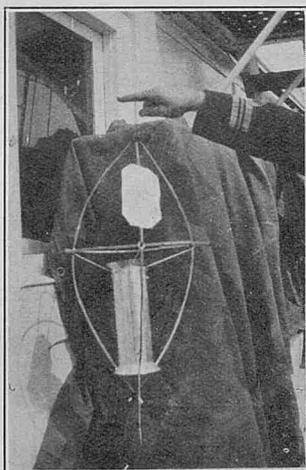
Upper Balloon being inflated.



The Lower Balloon.

the one used in 1924 but was set to release the upper balloon at from 6-7 km. instead of 5-6 km.

The apparatus was now released and ascended clear of the ship. Two minutes later, however, the upper balloon was seen to collapse and the whole apparatus came down. Owing to the strong wind and



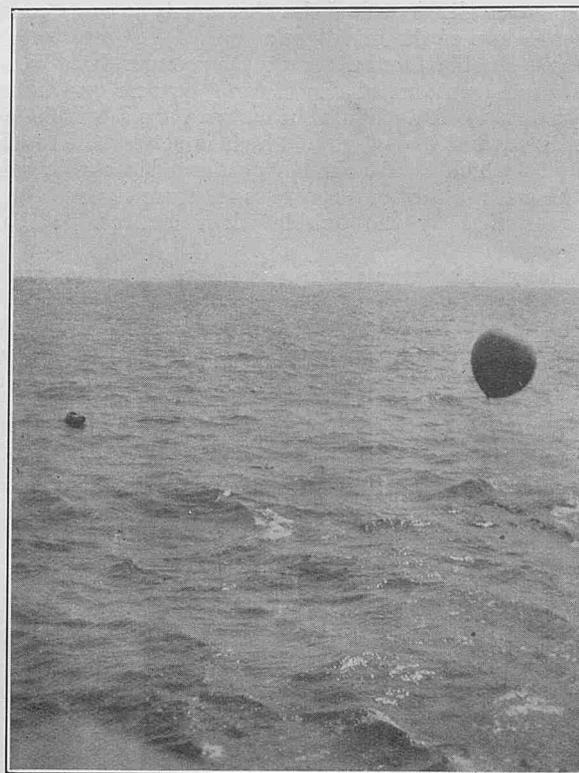
Meteorograph and Cage.

the drag of the burst balloon, the surviving balloon was not able to support the instrument above the sea and it was frequently under the water; this showed the necessity of giving more free lift to the lower balloon; on this occasion it only had 2 lbs. and the upper one which burst 7 lbs.

The collapse of the balloon was very disappointing; it had been hoped to obtain a good record from the meteorograph after the experience gained last year. The experiment, however, was not useless as experience was gained in recovering the balloon and instrument from a ship at sea, which was not possible during last year's experiments. No difficulty was experienced in this, however, and the still inflated balloon and instrument were recovered without damage by means of a small grapnel.

On the following days pilot balloon observations were carried out but the weather was hazy and on an average heights of only 4,000 feet were obtained, although on one occasion a height of 8,000 feet was reached. In this case the ship was travelling in more or less the same average direction as that taken up by the balloon.

Figure 1 gives a graph of this ascent and from it will be seen that the surface wind was about E.N.E. 10 m.p.h.; at 1,000 feet it had veered to E.S.E. and its velocity increased to 20 m.p.h.; at 3,000 feet it had veered slightly more and increased to 32 m.p.h. From this height upwards its direction remained fairly steady but its velocity at



Sea Anchor

Lower Balloon

Meteorograph.

first increased to 38 m.p.h. and then decreased to 20 m.p.h. and finally took up an average velocity of approximately 28 m.p.h. The sextant was used for all these observations, the observers being the Captain of the *Fitzroy* and other officers.

H.M.S. *Fitzroy*.  
Pilot Balloon Ascent, North Sea (Lat. 53° 27' N., Long. 0° 21' E.)  
July 22nd, 1925.

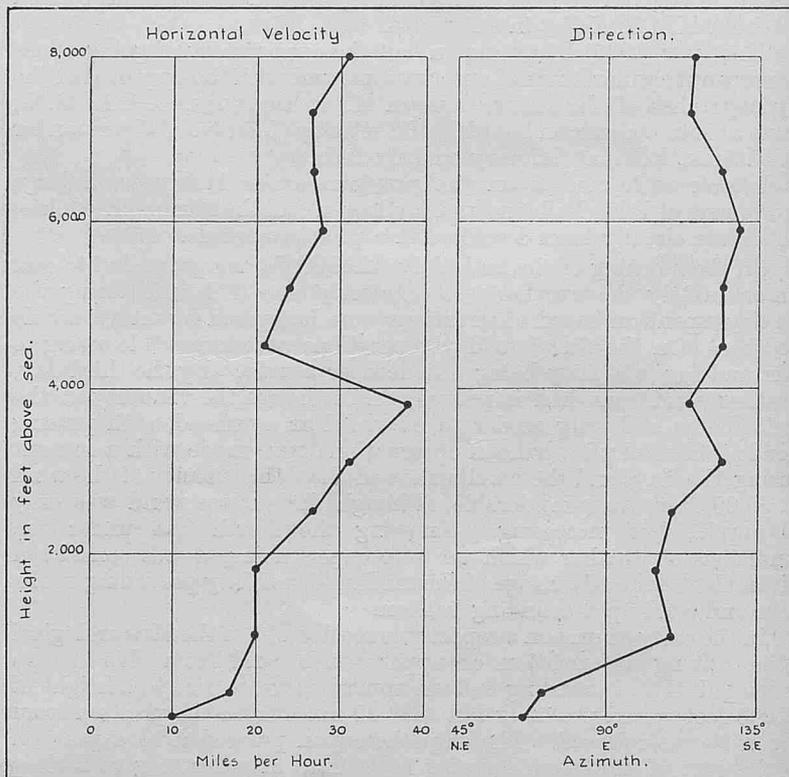
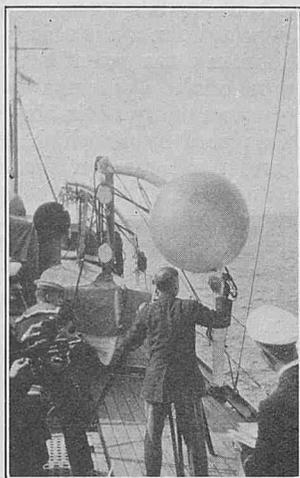


Figure 1.

Experiments were carried out with the Mirror Theodolite during the above ascents, but owing to the ill-defined horizon it was not possible to obtain any good results. Great assistance was given by the Captain and officers of H.M.S. *Fitzroy* throughout the experiments and it was indeed unfortunate that the weather remained so unfavourable during the whole of the time spent on board.



Pilot Balloon ready to "let go."

Had the weather been more favourable I had intended to carry out experiments with another method of pilot balloon observations known as the Tail method, which I will now describe.

The ordinary method of observing pilot balloons at sea, that is, by following the balloon with a sextant or Mirror Theodolite is open to many inaccuracies at heights over 5,000 feet. The assumption has to be made that the balloon rises uniformly at a rate which depends upon its weight and free lift, but there is really very little information available regarding the rate of ascent of Pilot Balloons over the oceans and the formulæ used to obtain the rate of ascent over the land is true only on the average. Sometimes there are relatively large ascending and descending currents which appreciably affect the rate; if the balloon leaks the rate of ascent is also affected especially at high levels.

If it were possible to obtain the angular altitude and azimuth of a balloon simultaneously from two ships, the distance apart of which

is accurately known, the rate of ascent could be checked, but this is rarely likely to be possible. The Tail Method, however, should be practicable on board ship when the Mirror Theodolite is used.

In this method a tail of known length is attached to the balloon and the angle it subtends is measured by a suitable graticule or micrometer at the eyepiece of the theodolite. The tail consists of a thread fastened to the balloon with a sheet of paper or other visible object fastened to the other end—the longer the tail the greater the proportionate accuracy of the estimated length, but on the other hand, when the balloon is quite near, a long tail may more than cover the field of view. This can be overcome, however, by attaching a subsidiary short tail and taking observations of it for the first few minutes. It is found that a tail of 30 feet gives reliable estimates of height up to 5,000 feet.

It will be readily seen that this method would not be of much use in light winds when the balloon rises to an altitude of over 40° as the angle observed would be acute.

It is hoped on some future occasion that experiments may be made with this method, which, if found to be practicable, should greatly increase the accuracy of the observations.

Pilot Balloon observations carried out by Lieutenant-Commander W. TENNANT, R.N., Navigating Officer of H.M.S. *Repulse*, have recently been received; these are very encouraging and the Meteorological Office is indebted to this officer for the excellent observations which he has obtained. During the cruise he made in all twenty Pilot Balloon ascents and although the average height reached was not great it must be noted that the ship was usually steaming 14 kts. and the balloon had often to be released when the ship was going in the opposite direction (*i.e.*, into a head wind) to the travel of the balloon, and was therefore naturally lost to sight owing to the horizontal distance being so rapidly increased. Smoke from the funnel was another difficulty and often spoilt what would otherwise have been a good record.

One of the most interesting ascents was obtained in Latitude 24° 30' S., Longitude 5° 15' E. in the region of the S.E. Trade, and in this case the counter trade was observed at the low height of 4,000 feet, FIGURE 2.

H.M.S. *Repulse*.

Pilot Balloon Ascent, South Atlantic (Lat. 24° 30' S., Long. 5° 15' E.) August 1st, 1925.

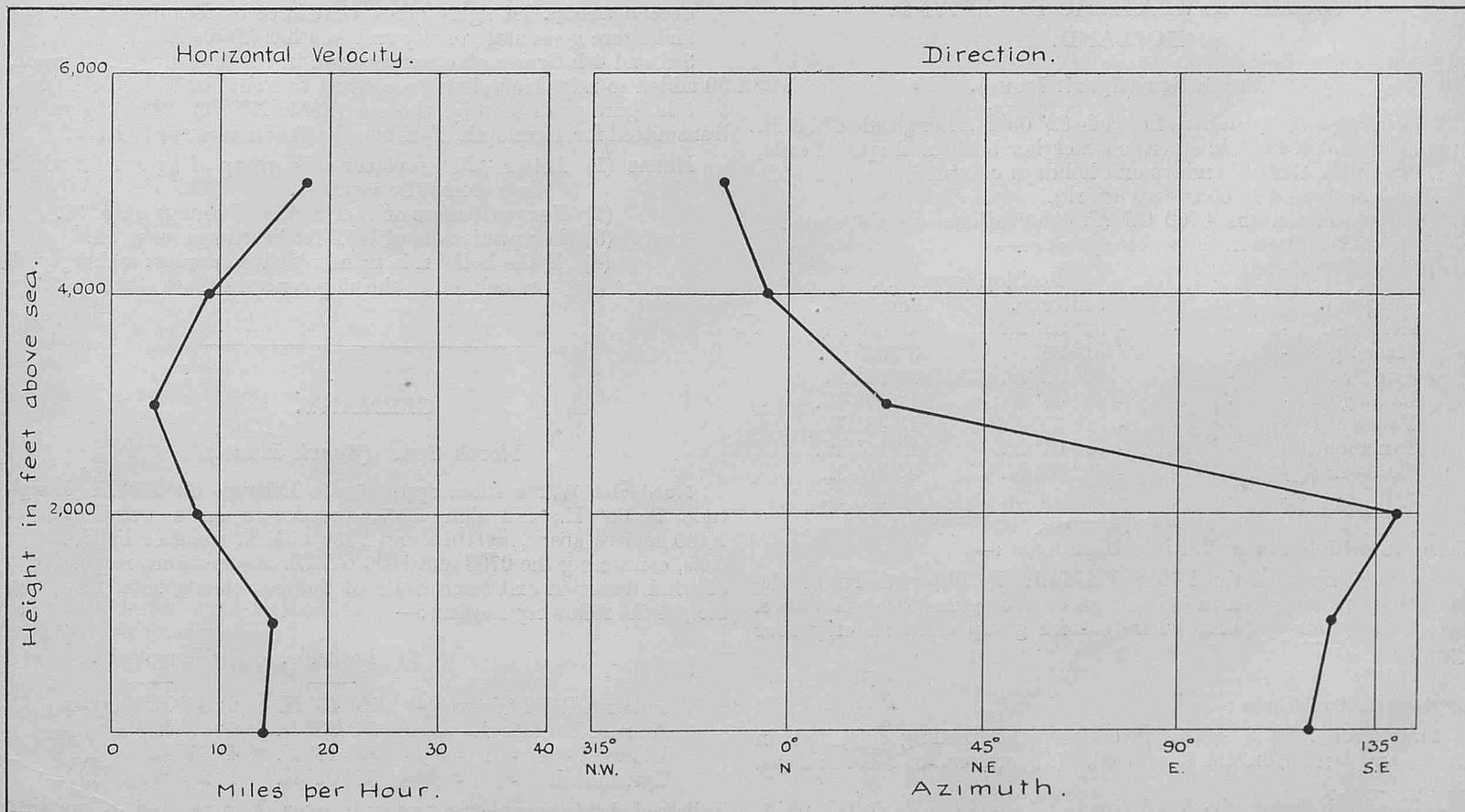


Figure 2.

From this graph it will be seen that the wind at the surface was blowing from the S.E. at 14 m.p.h., at 3,000 ft. it had backed through east to north, its velocity decreasing to only 4 m.p.h., at 5,000 feet the wind had increased again to 18 m.p.h. but its direction remained more or less steady. The existence of this counter Trade and that in the Northern Hemisphere was definitely proved by M. TESSERENC DE BORT from the Yacht *Otavia* in which he explored the regions of the Trades. Other proofs of its existence above the N.E. Trades are found in the fact that, at the Peak of Teneriffe there are constant S.W. winds on the summit, although the N.E. Trade is blowing at the Sea Level; also ashes from a volcano in Central America have been deposited four days later in Jamaica in the teeth of the Trade Wind.

The vertical height of the Trades is about 3,300 feet, but the height at which the counter Trade is found is very variable. Above the N.E. Trade it has been observed to exist up to 23,000 or 25,000 feet, the height decreasing towards the Equator. In the neighbourhood of the Canaries it is found at about 10,000 feet and at Cape Verde at 6,000 feet.

The mean distribution of pressure over the Atlantic Oceans is well known to seamen and the course of the wind at the surface can be traced round these areas in accordance with BUYS BALLOT'S Law, but it may be of interest to recall the causes that produce the Trades\* and Counter Trades.

The primary cause of all winds is, of course, the differences of

temperature in the horizontal. Air warmer than its surroundings rises and the ascent of warm damp air is always accompanied by the formation of cloud, and of rain if the ascent is continued to a sufficient height. The frequent rains of the Doldrums may be taken as strong evidence of the ascent of warm damp air in this region.

This ascending air is replaced by air which drifts southward in the Northern Hemisphere, and northward in the Southern Hemisphere towards the Doldrums and owing to the rotation of the earth is deviated to the right in the Northern Hemisphere and to the left in the Southern Hemisphere and gives the N.E. and S.E. Trades. It can be readily seen that these N.E. and S.E. winds would cause a vast accumulation of air in the Equatorial regions if there was no outward flow from the Equator in the upper levels.

The air which flows in towards the Equator as the N.E. and S.E. Trade Winds rises in the regions of the Doldrums and on reaching a considerable altitude flows away towards the pole, and being deflected towards the right in the northern hemisphere in the course of its travel becomes the S.W. counter Trade, and in a similar way, being deflected to the left in the southern hemisphere, becomes the N.W. counter Trade. A part at least of this northerly current returns to the surface in about Latitude 30° N. and S. and helps to maintain the sub-tropical anticyclones and to feed the Trade Winds. It is possible that some of the air continues its poleward drift into higher latitudes, but the whole problem of the general circulation of the upper air is much involved and will not be completely elucidated until more observations over all parts of the world, over ocean and land, have been accumulated.

\* See Charts of World, Wind and Pressure, Vol. I., No. VII.

## WEATHER SIGNALS.

### II WIRELESS WEATHER SIGNALS.

#### WIRELESS WEATHER BULLETINS. HOLLAND.

##### North Sea (Spark Issue).

Scheveningen W/T station, Latitude 52° 06' N., Longitude 4° 16' E. (approx.) call sign PCH, broadcasts a weather bulletin in special code, at 1115 G.M.T., daily (Sundays and holidays excepted).

Wavelength used 1,800 metres (spark).

The bulletin contains 0700 G.M.T. observations of eight stations, which are transmitted in the following order:—

Station.	Position (approx.).	
	Latitude.	Longitude.
Helder - - - -	52° 58' N.	4° 45' E.
Flushing - - - -	51° 26' N.	3° 34' E.
Gris Nez - - - -	50° 54' N.	1° 35' E.
La Hague - - - -	49° 43' N.	1° 57' W.
Yarmouth - - - -	52° 35' N.	1° 43' E.
Tynemouth - - - -	55° 01' N.	1° 25' W.
Skudesnaes - - - -	59° 08' N.	5° 16' E.
Sylt - - - -	54° 54' N.	8° 21' E.

#### Form in which the bulletin is broadcast:—

Commencing with the letters K.N.M.I. the observations of the above stations are given in two groups of five figures for each station (except last four stations, where second group contains only four figures).

#### Explanation of Code:—

**First Group.** 1st 3 figures give barometer reading corrected, in mms., and tenths, initial 7 omitted. (To convert to mbs. and ins. see Table XV.)

4th and 5th figures give wind direction true (from Table III, p. 17, Vol. III. No. 25 of this Journal.)

**Second Group.** 1st figure gives wind force by Beaufort Scale.

2nd figure gives state of sky and weather (Table XVI).

3rd and 4th figures give temperature in whole degrees Centigrade, 50 added to negative values (to convert to Fahr. see Table XVII).

5th figure gives state of the sea (Table XVIII). This figure not transmitted for Yarmouth, Tynemouth, Skudesnaes nor Sylt.

NOTES (1) Letter "X" replaces each group of figures for which data cannot be supplied.

(2) For particulars of W/T Storm Warnings see p. 51.

(3) For particulars of W/T Ice Warnings see p. 52.

(4) If the bulletin is transmitted on request a charge will be debited to the ship concerned.

#### GERMANY.

##### North Sea. (Spark Issue.)

Norddeich W/T station, approximate Latitude 53° 36' N. Longitude 7° 08' E., call sign KAV, broadcasts on a wavelength of 1,100 metres spark, at 1015 and 2130 G.M.T. weather bulletins, *en clair*, containing the 0700 and 1800 G.M.T. observations, respectively, of wind direction and force, state of the sea, clouds, rain, mist, fog, etc., of the following stations:—

	Latitude.	Longitude.
Borkum Riff Light vessel	53° 45' N.	6° 04' E. (approx.)
Amrum Bank Light vessel	54° 33' N.	7° 53' E. "
Utsire - - - -	59° 18' N.	4° 53' E. "
Tynemouth - - - -	55° 01' N.	1° 25' W. "

Followed by atmospheric pressure over Europe and a weather forecast for the North Sea.

**Western and Middle Baltic. (Spark Issue.)**

Swinemünde W/T station, approximate Latitude 53° 55' N., Longitude 14° 16' E., call sign KAW, broadcasts on a wavelength of 1,100 metres spark, at 1030 and 2145 G.M.T. weather bulletins, *en clair*, containing the 0700 and 1800 G.M.T. observations, respectively, of wind direction and force, state of the sea, etc.—as for Norddeich, of the following stations:—

	Latitude.	Longitude.
Bülk - - - -	54° 27' N.	10° 12' E. (approx.)
Adlergrund Light vessel -	54° 50' N.	14° 22' E. "
Skagen - - - -	57° 45' N.	10° 38' E. "
Visby - - - -	57° 39' N.	18° 18' E. "

Followed by a general review of the weather, and a forecast for the western and middle Baltic.

**Eastern Baltic. (Spark Issue.)**

Pillau W/T station, approximate Latitude 54° 39' N. Longitude 19° 53' E., call sign KAP, broadcasts on a wavelength of 1,650 metres, C.W., at 1130 G.M.T., a weather bulletin, *en clair*, containing the 0700 G.M.T. observations of wind direction and force, state of the sea, etc., as for Norddeich, of the following stations:—

	Latitude.	Longitude.
Pillau - - - -	54° 39' N.	19° 53' E. (approx.)
Brusterort - - - -	54° 56' N.	19° 56' E. "
Memel - - - -	55° 44' N.	21° 06' E. "
Visby - - - -	57° 39' N.	18° 18' E. "

Followed by a general review of the weather, and a forecast for the eastern Baltic.

**DENMARK.**

**North Sea and Baltic. (C.W. Issue.)**

Lyngby W/T station, approximate Latitude 55° 46' N. Longitude 12° 29' E., call sign OXE, broadcasts weather bulletins, in code, containing observations of the undermentioned stations, and ships as follows:—

Wavelength, 3,650 metres, C.W.

Times of transmission:—

0735 G.M.T. (observations at 0700 G.M.T., land stations and ships).

1335 G.M.T. (observations at 1300 G.M.T., land stations and ships).

1835 G.M.T. (observations at 1800 G.M.T., land stations and ships).

Observation stations.

Index Numbers.	Name.	Latitude.	Longitude.
01	Copenhagen - -	55° 42' N.	12° 37' E. (approx.)
02	Skagen - - - -	57° 46' N.	10° 38' E. "
03	Hantsholm - - -	57° 07' N.	8° 36' E. "
04	Blaavandshuk - -	55° 33' N.	8° 05' E. "
05	Hammeren - - -	55° 17' N.	14° 46' E. "

Code and Form of individual bulletins—New International Code used; bulletins commence with the words "Météo Danois" and are in two parts:—

0735 Bulletin—Part I (Land Station observations), expressed by symbols, is as follows:—

$I_n I_n$  BBBDD FwwTT cbWVH ALAnh RRSV<sub>gr</sub>

where,

$I_n I_n$  = Index number of station.

BBB = Corrected barometer reading in millimetres and tenths, initial 7 omitted. (To convert to mbs. and ins. see Table XV.)

DD = Wind direction, true (from Table III, p. 17, Vol. III., No. 25, of this Journal).

- F = Wind force, by Beaufort scale Forces 9 and above sent as 9.
- ww = Present weather (from Table V, p. 17, Vol. III, No. 25, of this Journal).
- TT = Air temperature, Centigrade. (See Table XVII to convert to Faht.)
- c = Characteristic of barometer tendency during the 3 hours previous to the time of observations (Table XIX).
- b = Amount of barometric tendency during last 3 hours in half-millimetres.
- W = Past weather (from Table XI, p. 19, Vol. III, No. 25, of this Journal).
- V = Visibility (Table XX).
- H = Relative humidity of the air (Table XXI).
- A = Cloud form *lowest* in the table of cloud forms (from Table IX, p. 18, Vol. III, No. 25, of this Journal).
- L = Amount of sky covered by cloud form "A."
- a = Cloud form *highest* in the table of cloud forms (from Table IX, p. 18, Vol. III, No. 25, of this Journal).
- N = Total amount of cloud (from Table X, p. 19, Vol. III, No. 25, of this Journal).
- h = Height of base of lowest cloud present (Table XXII).
- RR = Rainfall during last 13 hours, in whole millimetres. (See also Table XXIII.)
- S = State of sea and swell (Table XXIV).
- V<sub>s</sub> = Visibility seawards (Table XX).
- r = Time of commencement of precipitation (Table XXV).

Part II (Ships' observations, preceded by the word "Navires"):

PQLLL LLLGG BBDDF wvwKd CNTTT Wrtrt,

in which the first four groups have the same meanings, as given on the "Decode Form," p. 16, Vol. III, No. 25, of this Journal, barometric pressure being in millimetres. Remaining symbols as follows:—

- C = Cloud predominating (from Table IX, p. 18, Vol. III, No. 25, of this Journal).
- N = Cloud amount (from Table X, p. 19, Vol. III, No. 25, of this Journal).
- TTT = Air temperature in degrees and tenths, 500 added to negative values Centigrade. (See Table XVII for conversion to Faht.)
- W = Past weather (from Table XI, p. 19, Vol. III, No. 25, of this Journal).
- r = Time of commencement of precipitation (Table XXV).
- ttt = Sea temperature in degrees and tenths Centigrade.

1335 Bulletin—Part I, same as in 0735 bulletin, group RRSV<sub>gr</sub> omitted. Part II, same as in 0735 bulletin.

1835 Bulletin—Parts I and II, same as in 0735 bulletin.

NOTE.—An extra group relating to upper air observations may be added at the end of Part I in each bulletin.

**SWEDEN.**

**North Sea and Baltic (C.W. Issues).**

Karlsborg W/T station, Latitude 58° 29' N., Longitude 14° 29' E. (approx.), call sign SAJ, broadcasts weather bulletins for shipping as follows:—

at 1050 G.M.T. } Wavelength 2,500 metres (C.W.).  
at 2030 G.M.T. }

The bulletins are similar in arrangement to the British "Weather Shipping" message which was explained in Vol. III, No. 26, pp. 31-4, of this Journal. The two bulletins combined provide complete weather information in a simple form for the coasts of N.W. Europe, and on this account are strongly recommended to Mariners.

The 1050 G.M.T. bulletin is based upon observations made at 0700 G.M.T., and that broadcast at 2030 G.M.T. upon observations made at 1800 G.M.T.

The bulletins commence with the words "Weather Report" and are divided into four parts, viz. :—

### Part I, in code. (New International).

Contains observations made at nine Swedish and four Danish and Norwegian coast stations (*see* List below) and from ships in the North Sea.

Coast Stations' observations broadcast in two five-figure groups for each station as follows :—

$I_n K' ww V_s B B D D F$ .

$I_n$  = Index number of observation station.

$K'$  = Barometer tendency (Table XXVI).

$ww$  = Present weather (from Table V, p. 17, Vol. III, No. 25, of this Journal).

$V_s$  = Visibility (Table XX).

$BB$  = Barometer pressure, corrected, in whole millimetres, initial 7 omitted (*see* Table XV to convert to mbs. and ins.).

$DD$  = Wind direction, true (from Table III, p. 17, Vol. III, No. 25, of this Journal).

$F$  = Wind force (from Table IV, p. 17, Vol. III, No. 25, of this Journal).

Observations from ships in the North Sea, contained in four five-figure groups for each ship are sent next as follows :—

$P Q L L L I I I G G d_s K w w v B B D D F$

in which the symbols have the same meanings as are given on the "Decode Form" p. 16, Vol. III, No. 25, of this Journal, **except that the barometer readings (BB) are given in millimetres, initial 7 omitted and  $d_s$  = direction of ship's movement :—**

1 NE	3 SE	5 SW	7 NW
2 E	4 S	6 W	8 N

### List of Observation Stations.

Index Number.	Station.	Position (approx.).	
		Latitude N.	Longitude E.
2	Bjurö klubb	64° 28'	21° 34'
3	Holmögadd	63° 35'	20° 45'
4	Bremö	62° 13'	17° 44'
5	Örskär	60° 31'	18° 22'
6	Sandhamn	59° 17'	18° 55'
7	Visby	57° 39'	18° 18'
8	Skånör	55° 24'	12° 49'
9	Kullen	56° 18'	12° 27'
0	Vinga	57° 38'	11° 36'
1	Hammershus	55° 16'	14° 47'
2	Hanstholm	57° 07'	8° 36'
3	Utsire	59° 18'	4° 53'
4	Kinn	61° 34'	4° 47'

### Part II, en clair (English).

A General Inference of weather conditions in N.W. Europe and adjacent seas.

### Part III, en clair (English).

Weather forecasts for 12 hours for the following areas :—

- 1 Eastern part of the North Sea (E. of Longitude 5° E.).
- 2 Sweden, West Coast (Skagerrak, Kattegat and the Sound).
- 3 Baltic (Southern Baltic; South Skane, Bleking and Oland; Northern Baltic; East Gotaland, Svealand and Gottland).
- 4 Gulf of Bothnia (Bothnia Sea; Bothnia Bay).

### Part IV, en clair (English).

Gale warning for areas 2, 3 and 4 (above) for particulars, *see* p. 52.

## SPECIAL WEATHER TELEGRAPHY TABLES, NOT NEW INTERNATIONAL CODE.

Table XV.

Conversion of Millimetres into Millibars and Inches.

Mm.	Mb.	In.	Mm.	Mb.	In.	Mm.	Mb.	In.
695	926.6	27.37	743	990.6	29.25	759	1011.9	29.88
700	933.2	27.56	744	991.9	29.29	760	1013.2	29.92
705	939.9	27.76	745	993.2	29.33	761	1014.6	29.96
710	946.6	27.95	746	994.6	29.37	762	1015.9	30.00
715	953.2	28.15	747	995.9	29.41	763	1017.2	30.04
720	959.9	28.35	748	997.2	29.45	764	1018.6	30.08
725	966.6	28.54	749	998.6	29.49	765	1019.9	30.12
730	973.2	28.74	750	999.9	29.53	766	1021.2	30.16
735	979.9	28.94	751	1001.2	29.57	767	1022.6	30.20
736	981.2	28.98	752	1002.6	29.61	768	1023.9	30.24
737	982.6	29.02	753	1003.9	29.65	769	1025.2	30.28
738	983.9	29.06	754	1005.2	29.69	770	1026.6	30.32
739	985.2	29.10	755	1006.6	29.73	775	1033.2	30.51
740	986.6	29.13	756	1007.9	29.76	780	1039.9	30.71
741	987.9	29.17	757	1009.2	29.80	785	1046.6	30.91
742	989.2	29.21	758	1010.6	29.84			

Table XVI.

State of Sky and Weather (Scheveningen Bulletin).

Code Figure.	Code Figure.
0 = Fine.	5 = Rain.
1 = Slightly cloudy.	6 = Snow.
2 = Cloudy.	7 = Misty.
3 = Very cloudy.	8 = Fog.
4 = Overcast.	9 = Storm.

Table XVII.

Conversion of Centigrade Temperatures into Fahrenheit.

Cent.*	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.
Trans-		Trans-		Trans-		Trans-	
mitted.		mitted.		mitted.		mitted.	
—	—	00	32	10	50	21	70
51	30	01	34	11	52	22	72
52	28	02	36	12	54	23	73
53	27	03	37	13	55	24	75
54	25	04	39	14	57	25	77
55	23	05	41	15	59	26	79
56	21	06	43	16	61	27	81
57	19	07	45	17	63	28	82
58	18	08	46	18	64	29	84
59	16	09	48	19	66	30	86
				20	68		

\* 50 is added to the amount to indicate minus temperatures Centigrade.

Table XVIII.

State of the Sea (Scheveningen Bulletin).

Code Figure.	Code Figure.
0 = calm.	5 = rough.
1 = very smooth.	6 = very rough.
2 = smooth.	7 = high.
3 = slight.	8 = very high.
4 = moderate.	9 = phenomenal.

NEW INTERNATIONAL CODE, WEATHER TELEGRAPHY TABLES.

Table XIX.

c.—Characteristic of Barometer tendency during last 3 hours.

Code Figure.			
0 = 0 or +	Steady or rising	} The barometer is now higher than, or the same as, 3 hours ago.	}
1 = + 0	Rising then steady		
2 = + -	Rising then falling		
3 = - + or 0 +	Falling or steady then rising		
4 = Unsteady +	Unsteady but rising	} The barometer is now lower than, or the same as, 3 hours ago.	}
5 = -	Falling		
6 = - 0	Falling then steady		
7 = - +	Falling then rising		
8 = 0 - or + -	Steady or rising then falling		
9 = Unsteady -	Unsteady but falling		

Table XX.

V and V<sub>s</sub>—Visibility.

Code Figure.		
0 =	Objects not visible at	50 metres (55 yards).
1 =	" " "	200 metres (220 yards).
2 =	" " "	500 metres (550 yards).
3 =	" " "	1,000 metres (1,100 yards).
4 =	" " "	2,000 metres (1 1/4 miles).
5 =	" " "	4,000 metres (2 1/2 miles).
6 =	" " "	10,000 metres (6 1/4 miles).
7 =	" " "	20,000 metres (12 1/2 miles).
8 =	" " "	50,000 metres (31 1/4 miles).
9 =	Objects visible at	50,000 metres or more.

Table XXI.

H.—Relative humidity.

Code Figure.			
0	- - - - -	95 to 100 per cent.	
9	- - - - -	90 " 94 "	
8	- - - - -	80 " 89 "	
7	- - - - -	70 " 79 "	
6	- - - - -	60 " 69 "	
5	- - - - -	50 " 59 "	
4	- - - - -	40 " 49 "	
3	- - - - -	30 " 39 "	
2	- - - - -	20 " 29 "	
1	- - - - -	10 " 19 "	

Table XXII.

h.—Height of base of lowest cloud present.

Code Figure.		Metres.		Feet.
0	- - - - -	0 to 50		0 to 150
1	- - - - -	50 " 100		150 " 300
2	- - - - -	100 " 200		300 " 600
3	- - - - -	200 " 300		600 " 1,000
4	- - - - -	300 " 600		1,000 " 2,000
5	- - - - -	600 " 1,000		2,000 " 3,000
6	- - - - -	1,000 " 1,500		3,000 " 5,000
7	- - - - -	1,500 " 2,000		5,000 " 6,500
8	- - - - -	2,000 " 2,500		6,500 " 8,000
9	- - - - -	No low cloud		No low cloud.

Table XXIII.

Amount of Rainfall. (Used for amounts 0.1—0.6 mm.)

Code Figures.		Meaning.
91 - - - -	-	0.1 mm.
92 - - - -	-	0.2 "
93 - - - -	-	0.3 "
94 - - - -	-	0.4 "
95 - - - -	-	0.5 "
96 - - - -	-	0.6 "
97 - - - -	-	Some rain, but not measurable.
98 - - - -	-	More than 90 millimetres.
99 - - - -	-	Measurement impossible or unreliable.

Amounts of 0.7 mm. or more are coded as whole millimetres, e.g., 17.2 mm. coded as 17.

Table XXIV.

S.—State of Sea and Swell (Coast Stations).

Code Figure.			
0	- - - -	No swell	} Calm or slight sea.
1	- - - -	Moderate swell	
2	- - - -	Heavy swell	
3	- - - -	No swell	} Moderate sea.
4	- - - -	Moderate swell	
5	- - - -	Heavy swell	
6	- - - -	Rather rough sea.	
7	- - - -	Rough sea.	
8	- - - -	Very rough sea.	
9	- - - -	Mountainous sea.	

Table XXV.

r.—Time of commencement of Precipitation.

Code Figure.		
0	- - - -	No rain.
1	- - - -	0 to 1 hour before time of observation.
2	- - - -	1 to 2 hours before time of observation.
3	- - - -	2 to 3 " " "
4	- - - -	3 to 4 " " "
5	- - - -	4 to 5 " " "
6	- - - -	5 to 6 " " "
7	- - - -	6 to 8 " " "
8	- - - -	8 to 10 " " "
9	- - - -	Above 10 hours before time of observation.
—	- - - -	No observation.

Table XXVI.

K'—Barometer Tendency (millimetres and millibars).

Code Figure.		
0	Barometer steady.	(The barometer has not fallen or risen more than 1/4 mm. in 3 hours.)
1	Do. rising slowly.	The barometer has risen 1/4 to 1 1/4 mm. (0.7-2.0 mb.) in last 3 hours.
2	Do. rising.	Do. do. 1 1/4 to 3 1/4 mm. (2.0-4.7 mb.) do.
3	Do. rising quickly.	Do. do. 3 1/4 to 6 mm. (4.7-8.0 mb.) do.
4	Do. rising very rapidly.	Do. do. over 6 mm. (8.0 mb.) do.
5	Do. falling slowly.	Do. has fallen 1/4 to 1 1/4 mm. (0.7-2.0 mb.) do.
6	Do. falling.	Do. do. 1 1/4 to 3 1/4 mm. (2.0-4.7 mb.) do.
7	Do. falling quickly.	Do. do. 3 1/4 to 6 mm. (4.7-8.0 mb.) do.
8	Do. falling very rapidly.	Do. do. over 6 mm. (8.0 mb.) do.

WIRELESS STORM WARNINGS.

HOLLAND.

North Sea. (Spark Issue.)

Scheveningen W/T station, call sign PCH, transmits a storm warning when necessary, both in Dutch and English, immediately after the daily weather bulletin at 1115 G.M.T., and also at 2315 G.M.T. Wavelength used is 1,800 metres (spark). If the warning should be sent out on Sundays and holidays (when the station does not transmit a weather bulletin) it will be preceded by the letters KNMI.

The warnings are sent three times in succession, the first quickly, the second and third slowly.

NOTE.—If the storm warning is sent on request a charge will be debited to the ship concerned.

**GERMANY.**

**North Sea. (Spark Issue.)**

Norddeich W/T station, call sign KAV, broadcasts storm warnings, when necessary, for the North Sea at 0515, 1015 (immediately after the daily weather bulletin), 1630 and 2130 (after the daily weather bulletin), on a wavelength of 1,100 metres, spark. All times are G.M.T.

They will contain information as to the type of the disturbance, together with the direction and force of the wind.

The warnings are broadcast, *en clair*, twice in succession immediately *after receipt*, and at the four scheduled times unless previously cancelled.

**Western and Middle Baltic (Flensburg to Leba). (Spark Issue.)**

Swinemünde W/T station, call sign KAW, broadcasts storm warnings, when necessary, for the western and middle Baltic at 0530, 1030 (after the weather bulletin), 1650 and 2145 (after the weather bulletin), on a wavelength of 1,100 metres, spark. The routine of transmission is the same as for Norddeich W/T station.

All times are G.M.T.

**Eastern Baltic. (C.W. Issue.)**

Pillau W/T station, call sign KAP, broadcasts storm warnings, when necessary, for the eastern Baltic, at 0530, 1130 (after the weather bulletin) and 1730 on a wavelength of 1,650 metres, C.W.

The warnings are broadcast, *en clair*, thrice in succession, immediately *after receipt*, as well as at the scheduled times.

All times are G.M.T.

**DENMARK.**

**North Sea and Baltic. (Spark Issues.)**

	Blaavand.		Copenhagen.	
	Lat.	Long.	Lat.	Long.
Positions (approx.)	55° 34' N.	8° 05' E.	55° 41' N.	12° 37' E.
Call Signs	-	OXB.	-	OXA.
Wavelengths	-	600 metres (spk.)	-	600 metres (spk.)
Times of transmission	0100	0500	0300	0700
G.M.T.	0900	1300	1100	1500
	1700	2100	1900	2300
Warnings directed to	CQ.		CQ.	

When necessary, gale warnings are broadcast from **Blaavand** and **Copenhagen** W/T Stations in the form of a six-figure group. Each of the first five figures refers to a district as follows:—

- 1st Figure = West coast of Denmark (W. Jutland south of Lim fjord and adjacent parts of the North Sea).
- 2nd ,, = Skagerrak (N. Jutland, Skagerrak and adjacent parts of the North Sea).
- 3rd ,, = Kattegat (including islands and surrounding coasts).
- 4th ,, = Western Baltic (West of Gjedser).
- 5th ,, = Baltic, between Gjedser and Bornholm.

The meaning of the figure is as follows:—

- 0 = No warning.
- 1 = Probably strong winds from N.E.
- 2 = ,, ,, ,, E.
- 3 = ,, ,, ,, S.E.
- 4 = ,, ,, ,, S.
- 5 = ,, ,, ,, S.W.
- 6 = ,, ,, ,, W.
- 7 = ,, ,, ,, N.W.
- 8 = ,, ,, ,, N.
- 9 = ,, ,, direction uncertain.

The sixth figure of the group gives additional information as follows:—

- 0 = Strong wind probably of short duration
  - 1 = ,, ,, long ,,
  - 2 = Duration doubtful - - - -
  - 3 = Strong wind probably of short duration
  - 4 = ,, ,, long ,,
  - 5 = Duration doubtful - - - -
  - 6 = Strong wind probably of short duration
  - 7 = ,, ,, long ,,
  - 8 = Duration doubtful - - - -
  - 9 = Information regarding probable duration or change in direction not yet available.
- } Wind veering.  
} Wind backing.  
} No change in wind direction.

The group 000009 denotes "unsettled weather, no district definitely threatened." This group is always transmitted when the outlook is threatening and it is desired to draw attention to unsettled weather conditions.

NOTE:—The warnings are broadcast immediately they are received by the W/T Station from the Danish Meteorological Institute, as well as at the scheduled times above, until withdrawn.

**SWEDEN.**

**Baltic. (C.W. Issues.)**

Karlsborg W/T station broadcasts warnings, *en clair*, of strong winds or gales (Beaufort scale 8, or more) for the following areas:—

- (a) Sweden, West Coast (Skagerrak, Kattegat and the Sound).
- (b) Baltic (Southern Baltic; South Skane, Bleking and Oland; Northern Baltic; East Gotaland, Svealand and Gottland).
- (c) Gulf of Bothnia (Bothnia Sea; Bothnia Bay).

The warnings are valid for the ensuing 24 hours and form Part IV of the weather bulletins broadcast by **Karlsborg** W/T at 1050 and 2030 G.M.T., explained on p. 49.

**LATVIA.**

**Eastern Baltic and Gulf of Riga. (Spark Issue.)**

Riga W/T station, approximate Latitude 56° 27' N., Longitude 24° 05' E., call sign KCA, broadcasts a storm warning, when necessary, for the eastern Baltic and Gulf of Riga, *en clair*, in English, at 1005 G.M.T. on a wavelength of 600 metres, spark.

**WIRELESS ICE WARNINGS.**

**HOLLAND.**

**Spark Issues.**

Scheveningen W/T Station, call sign PCH, broadcasts, when necessary, data concerning ice conditions in some Dutch harbours and approaches, daily as follows:—

at 1115 G.M.T. after the daily weather bulletin and storm warning;  
Wavelength 1,800 metres, spark.

The ice report which is broadcast in code will contain the ice conditions for the following harbours:—

Delfzijl (Ems).	Helder (Zuider Zee).
Harlingen (Zuider Zee).	Rotterdam (Waterway).
Amsterdam (North Sea Canal).	Dordrecht (North).
Laandam (Voorzaan).	Dordrecht (Mallegat).

The report commences with the words "Ijsbericht, Ice report."  
 The code consists of two four-figure groups.  
 The ice information for the harbours is always broadcast in the order given in the foregoing list.  
 Each code figure therefore gives by its position the navigational conditions existing in the different harbours.

Code Figure.	Navigational Conditions.
1	Navigation practicable.
2	„ difficult for sailing vessels.
4	„ closed to sailing vessels; but still possible for steamers.
6	„ closed to small steamers and motor vessels.
8	„ closed.

**Example.**

*Ijsbericht, ice report* 4611 1111

Meaning:—*Delfzijl*. Navigation closed to sailing vessels; but still possible for steamers.

*Harlingen*. Navigation closed to small steamers and motor vessels. For the remaining harbours navigation is practicable.

NOTE:—The broadcast of the ice reports will begin when navigation is closed to small steamers and seagoing motor vessels at any of the harbours mentioned in the list, and will cease when navigation is re-opened.

**GERMANY.**

**Baltic. (Spark and C.W. Issues.)**

*Kiel—Friedrichsort* W/T station, approximate Latitude 54° 24' N., Longitude 10° 11' E., call sign **KBK**, transmits information regarding ice conditions in the Baltic, on request. Wavelength 600 metres, spark.

*Pillau* W/T station, call sign **KAP**, transmits information regarding ice conditions in the Baltic, on request. Wavelength 1,650 metres, C.W.

**DANZIG FREE STATE.**

*Danzig* W/T station, approximate Latitude 54° 21' N., Longitude 18° 39' E., call sign **KAZ**, transmits ice information for the Baltic coast, on request. Wavelength 600 metres, spark.

**DENMARK.**

**Danish Waters. (Spark Issues.)**

The following W/T stations broadcast a summary of ice conditions in Danish waters, during winter, *en clair* (English). Wavelength 600 metres, spark.

*Blaavand* W/T station, call sign **OXB**, at 0100 and 1300 G.M.T.

\**Copenhagen* W/T station, call sign **OXA** at 1100 and 2300 G.M.T.

\***Ice Breakers.**—The Danish Government's ice breaker *Isbjorn* (call signal **OXF**) listens continuously. No charge is made for this service. The call signal for the Copenhagen Harbour Authority's ice breaker *Væderen* is **OYK**.

**IV. VISUAL STORM WARNINGS.**

**DAY SIGNALS.**

Netherlands, Germany, Denmark, Norway.

Signal.	Meaning.
	Indicates that a gale is expected, or is probable from S.W.

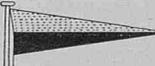
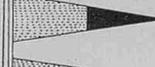
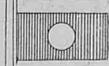
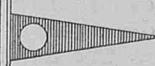
Signal.	Meaning.
	Indicates that a gale is expected, or is probable from S.E.
	Indicates that a gale is expected, or is probable from N.W.
	Indicates that a gale is expected, or is probable from N.E.
	"Atmospheric disturbance, be alert and look out for further information." Germany:—Displayed for benefit of fishing vessels and small craft. It denotes that the wind is expected to increase in strength to force 6-7 (Beaufort scale).
	Germany only:—Indicates the probability of a storm of which the direction of approach is not indicated.

A red or black flag indicates (except Sweden) that the wind may be expected to veer during the gale.  
 Two red or black flags indicate (except Sweden) that the wind may be expected to back during the gale. Red flags exhibited at German, Danish and Norwegian stations. Black flags by Dutch stations.

**DENMARK.**

**Additional Storm Signals.**

When a gale is blowing at Blaavands Huk, Hanstholm, the Skaw, Fornæs, Gjedser or Hammeren (Bornholm), the signals below are displayed at Esbjerg Aalborg, Copenhagen and other places in the Baltic. The place and force of the wind, according to the Beaufort scale, are indicated by coloured flags, as follows:—

Place.	Force of the Wind.	
	7-9.	10-12.
Blaavands Huk		
Hanstholm		
The Skaw		
Fornæs		
Gjedser		
Hammeren		

Legend:  
 Yellow.  
 Red.  
 Black.  
 White.

## SWEDEN.

	Gale expected, no direction indicated.		Storm expected, no direction indicated.
	Gale expected between South and West.		Storm expected between South and West.
	Gale expected between North and East.		Storm expected between North and East.

NOTE:—Sweden. A gale is considered as having a force of from 7-9 and a storm as having a force of from 10-12, according to the Beaufort scale.

## NIGHT SIGNALS.

## Holland, Germany.

Signal.	Meaning.
Two <i>white</i> lights vertical - -	Gale probable from S.W'd.
Two <i>red</i> lights vertical - -	Gale probable from N.W'd.
A <i>white</i> light over a <i>red</i> light - -	Gale probable from S.E'd.
A <i>red</i> light over a <i>white</i> light - -	Gale probable from N.E'd.
One <i>red</i> light - - - -	"Atmospheric disturbance, be alert and look out for further information."

NOTE:—Germany. Two *red* lights, horizontal, are hoisted at Heligoland, Marienleuchte and Arkona instead of the one *red* light.

## Storm Signals by Searchlight.

## Germany.

Storm warning signals are made by searchlight at List on Sylt island, Heligoland, Arkona and Pillau. At Heligoland, however, these signals are not (1924) made between the hours of 0200 and 0600.

The signals are made by searchlight directed towards the sky at an elevation of about 35°, and are repeated in various directions at intervals.

The day storm signals, indicated by cones, are made by long and short flashes. A short flash of about *three seconds'* duration corresponds with the point of the cone, and a long flash of about *nine seconds'* duration corresponds with the base of the cone; thus the day storm signals, indicated by cones, are made as follows:—

- One cone point down — .
- Two cones points down — . — .
- One cone point up . —
- Two cones points up . — . —
- Two cones bases towards each other . — . — .

The day storm signal, indicated by a red flag, is made by a circular movement of the beam of light on the sky in a clockwise direction.

The day storm signal, indicated by two red flags, is made by a circular movement of the beam of light on the sky in an anti-clockwise direction.

The day storm signal, indicated by a ball, is made by a circular movement of the beam of light on the sky in a direction alternately clockwise and anti-clockwise.

The cone signal is preceded and followed by the flag signal. When no flag signal is made, the cone signal is preceded and followed by

the ball signal, indicating that no direction of shift of wind can be given.

The warnings hold good for a distance of about 50 miles from the vicinity of the signal station; they continue in force until the evening of the day following the day of issue.

## Norway.

Signal.	Meaning.
Three <i>white</i> lights, triangle point up -	Gale from N.W.
Three <i>white</i> lights, triangle point down -	Gale from S.W.
Four <i>white</i> lights, triangle point up (one light above) - - - -	Gale from N.E.
Four <i>white</i> lights, triangle point down (one light below) - - - -	Gale from S.E.
One <i>red</i> light - - - -	"Atmospheric disturbance, be alert and look out for further information."

## Sweden.

Night signals are not displayed.

## Special Notices regarding Personnel.

*The Marine Superintendent will be glad to receive information of special distinctions gained and retirements, &c., of Marine Observers.*

## Captain H. F. David, R.D., R.N.R. (Retired).

Captain DAVID, late Commander of R.M.S. *Olympic*, has been appointed an Assessor on Enquiries under the Merchant Shipping Acts.

## Captain C. A. Smith, C.B.E., R.D., R.N.R. (Retired).

Captain SMITH, late Commander of R.M.S. *Berengaria*, has been appointed an Assessor on Enquiries under the Merchant Shipping Acts.

Before their retirement both these officers were keen members of the Corps of Voluntary Marine Observers.

## Captain D. H. Hoskins.

Captain D. H. HOSKINS, late Commander of the R.M.S. *Windsor Castle* has recently retired after 45 years' service in the Castle and Union Castle Lines.

Captain HOSKINS on leaving the *Worcester* joined DONALD CURRIE'S sailing ships in 1881. In 1886 he changed to steam, sailing as fourth officer of the old *Garth Castle*, and in 1907 obtained his first command of one of the Company's intermediate steamers. Since then he has commanded many of the finest vessels of the Union Castle Line.

He has been a member of the Corps of Marine Observers since 1905, contributing several "excellent" logs.

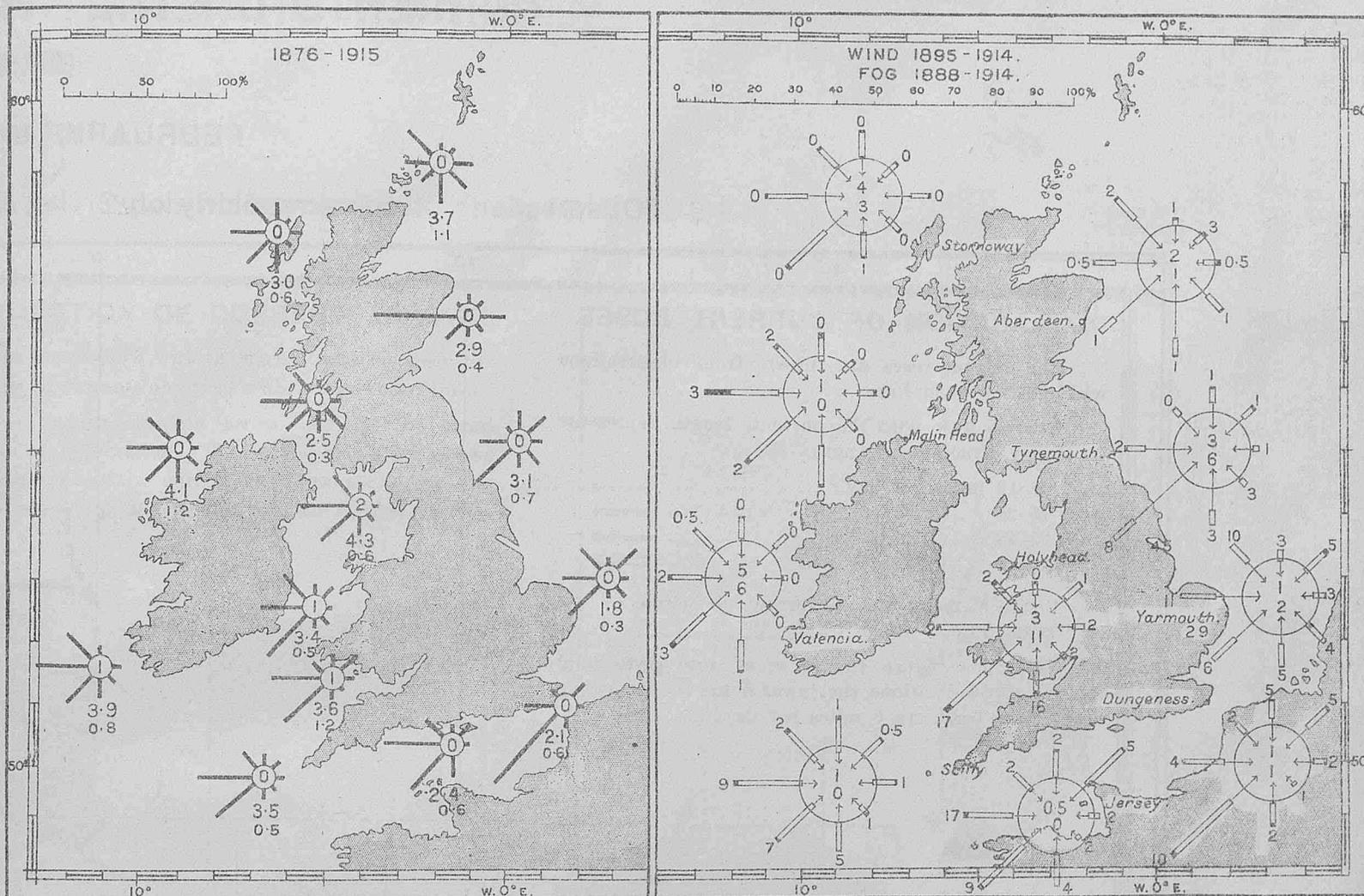
Marine Observers will join the Marine Division in wishing Captain HOSKINS many years of health and happiness in his well-earned retirement.

## Obituary.

The death of Captain W. L. ROSSETER of "Rusticus," Lyminge, Kent, which took place recently is noted with regret.

Captain ROSSETER was a regular marine observer for the Meteorological Office between the years 1883 and 1895, when he retired from active service afloat and contributed 19 logs of which 18 were classed excellent.

WIND AND FOG AT COAST STATIONS. GREAT BRITAIN AND IRELAND



WIND, FOG AND MIST.

S.W. APPROACHES TO GREAT BRITAIN AND IRELAND.

Frequency of fog per thousand observations for each 2 points of compass 1921-1924.

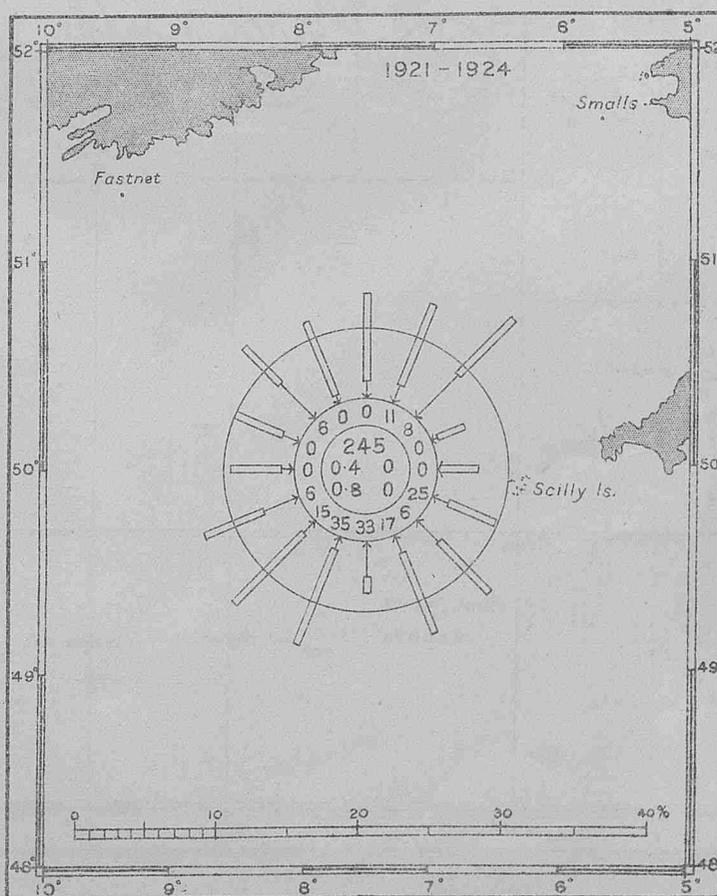
Latitude 48°-52°N.

Longitude 5°-10°W.

Direction. Frequency.

N	0
NNE	8
NE	8
ENE	0
E	0
ESE	12
SE	4
SSE	12
S	12
SSW	29
SW	12
WSW	4
W	0
WNW	0
NW	4
NNW	0
Calm	0
Var	0
Total	105

Percentage frequency of fog and mist for area = 11%.

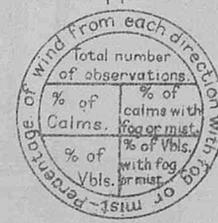


Mean and Maximum number of days with fog during the month at the different stations.

Station.	Mean.	Max.
Stornoway	0.3	3
Malin Head	1.1	7
Valencia	0.6	3
Holyhead	3.9	7
Scilly	2.7	9
Jersey	3.7	11
Dungeness	4.3	9
Yarmouth	3.8	11
Tynemouth	1.8	6
Aberdeen	0.7	4

For explanation of charts see Vol. III, N° 25. page 10, of this Journal

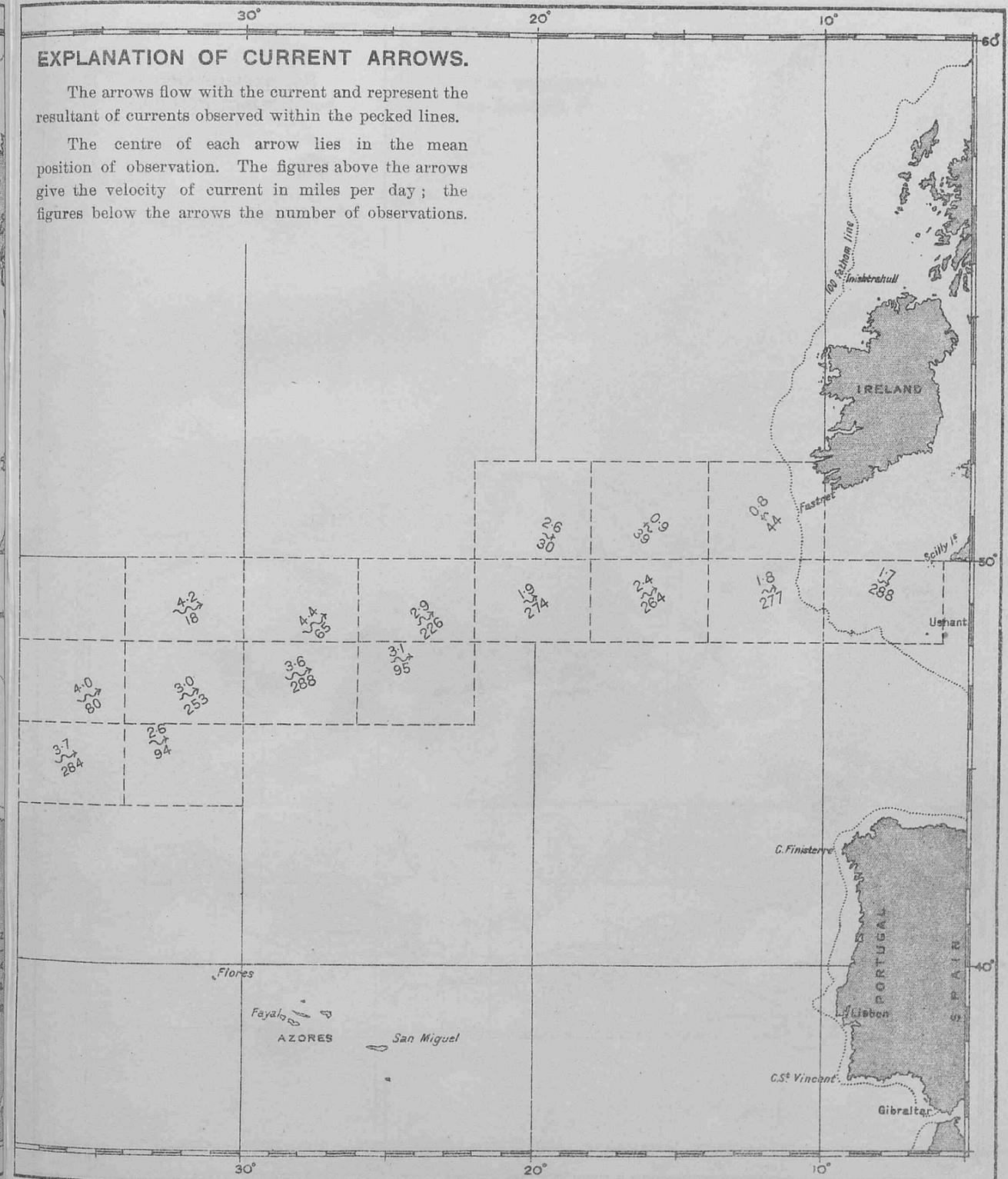
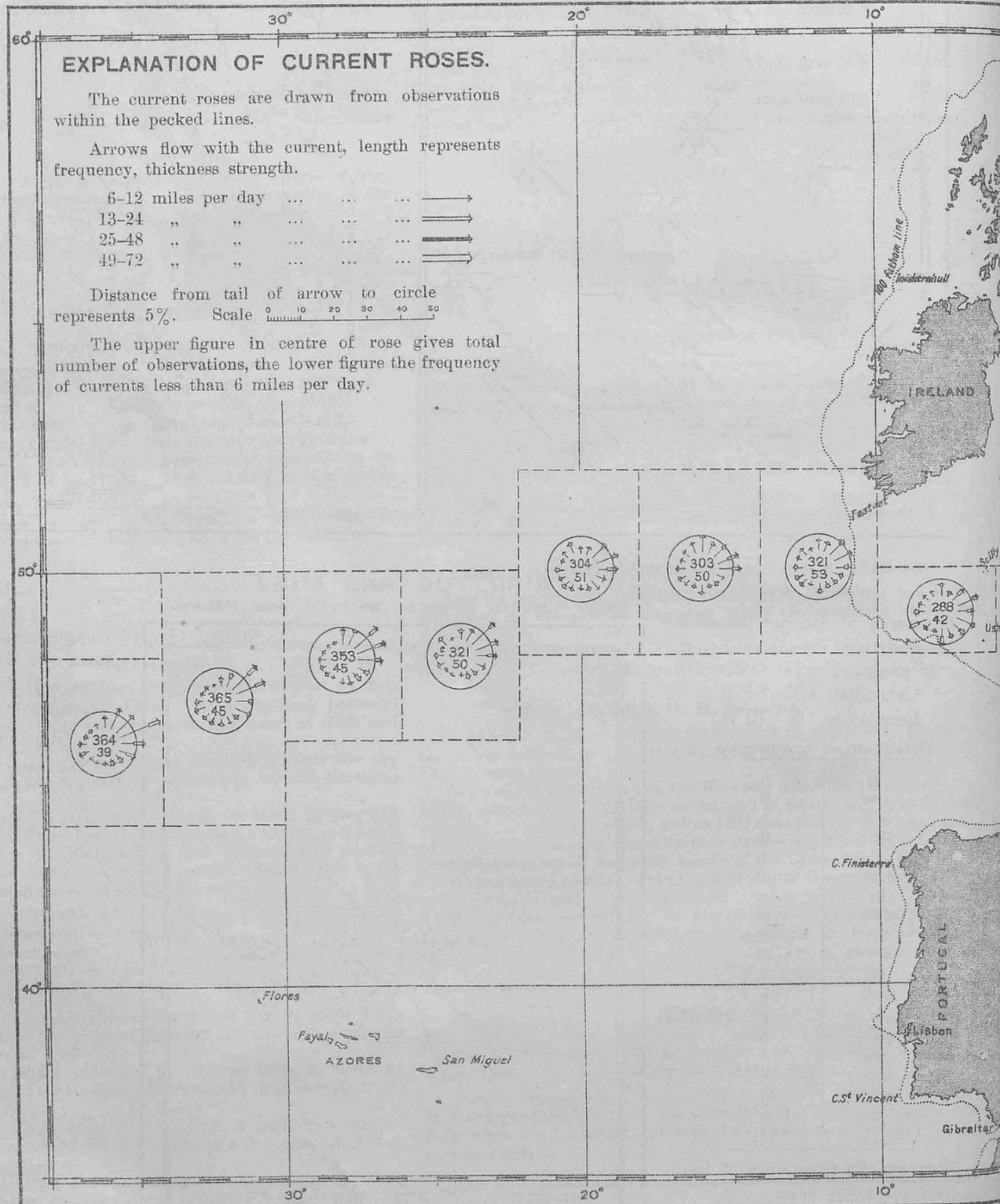
Key to numbers in rose, S.W. Approaches.



# CURRENTS ON THE TRANS NORTH ATLANTIC TRACKS (EASTERN PORTION)

FEBRUARY, MARCH AND APRIL.

Observations of ships regularly observing for the British and Dutch Meteorological Offices, 1910-1924.

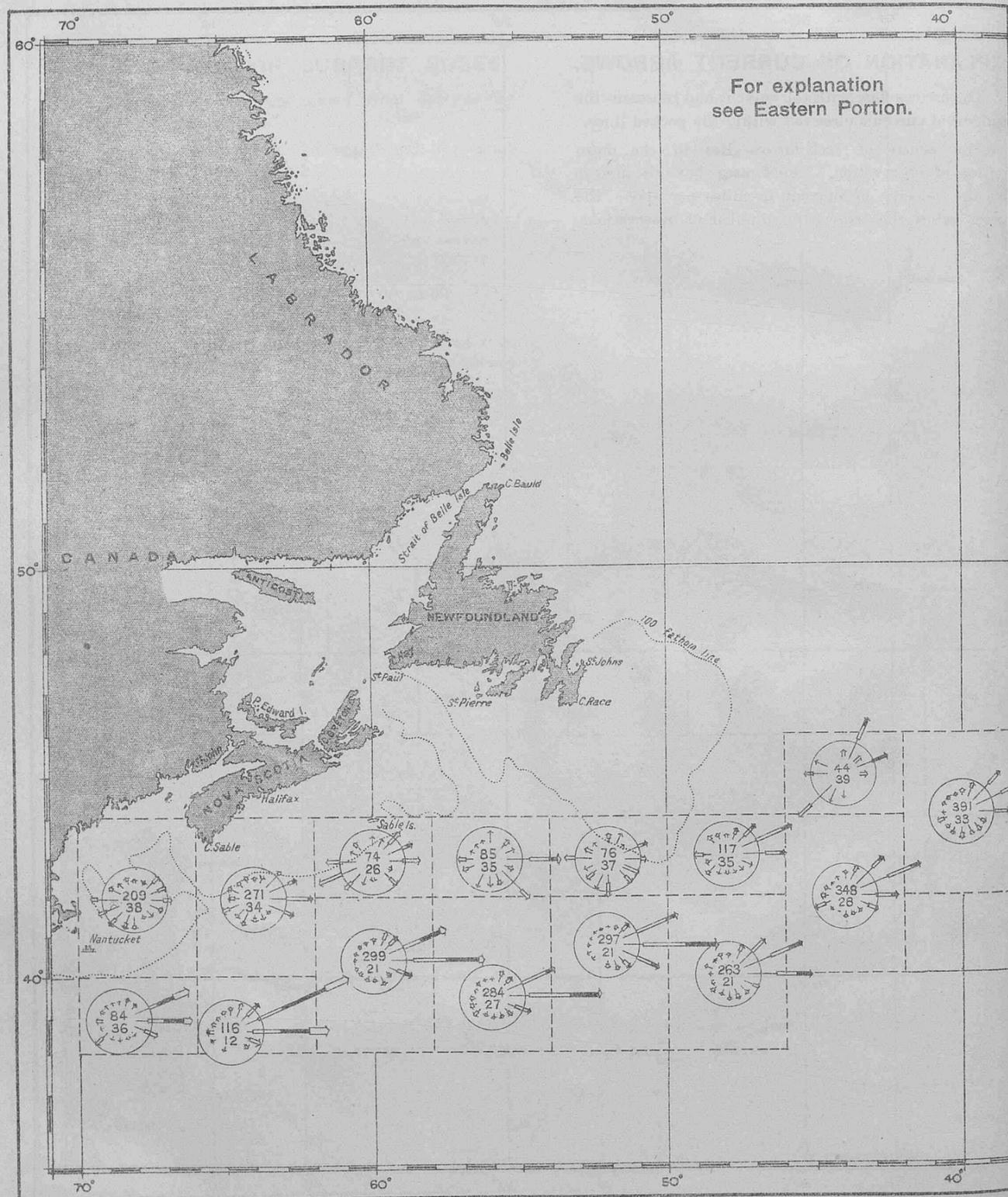


# CURRENTS ON THE TRANS

(WESTERN

FEBRUARY, MARCH

Observations of ships regularly observing for the

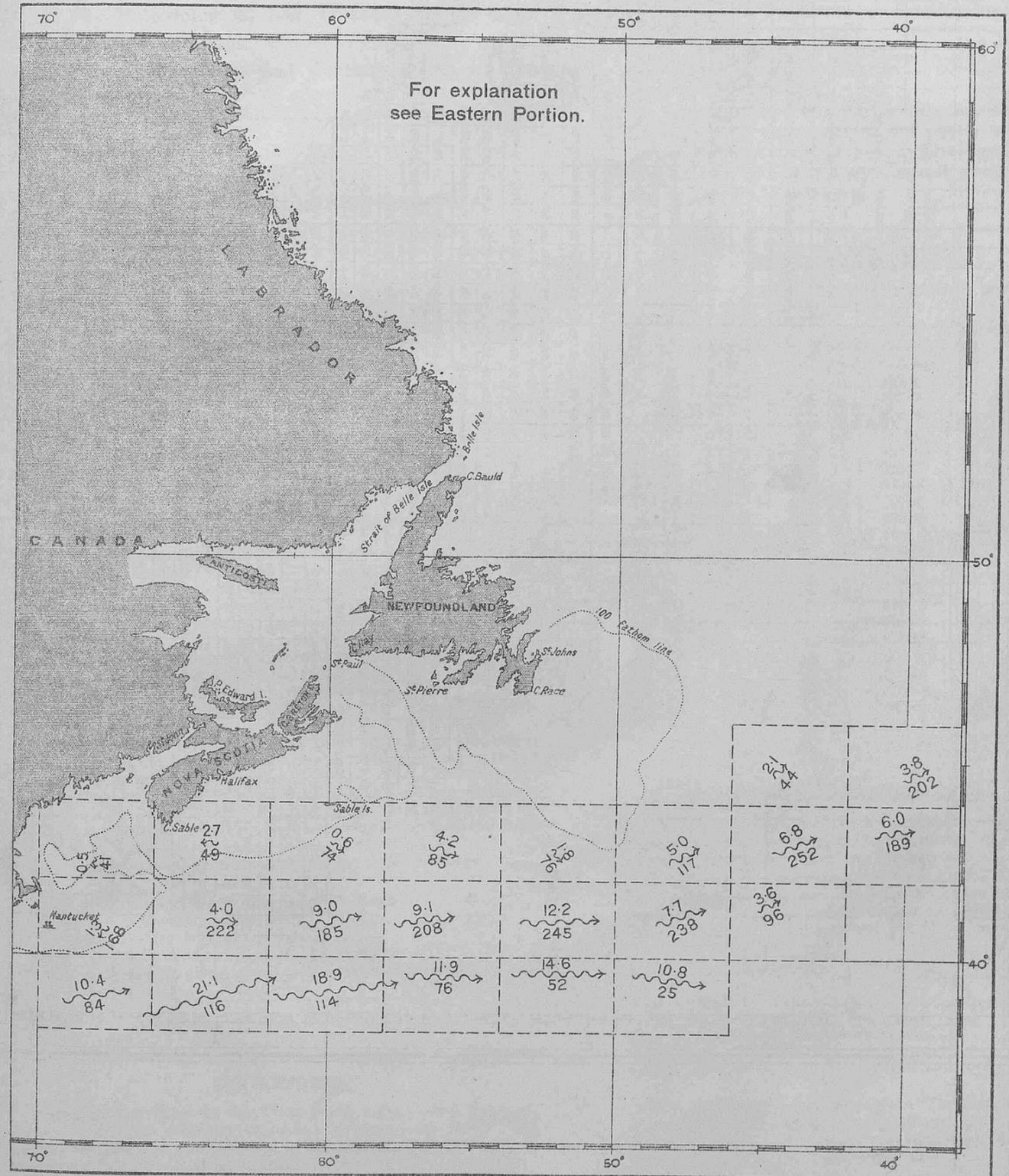


# NORTH ATLANTIC TRACKS

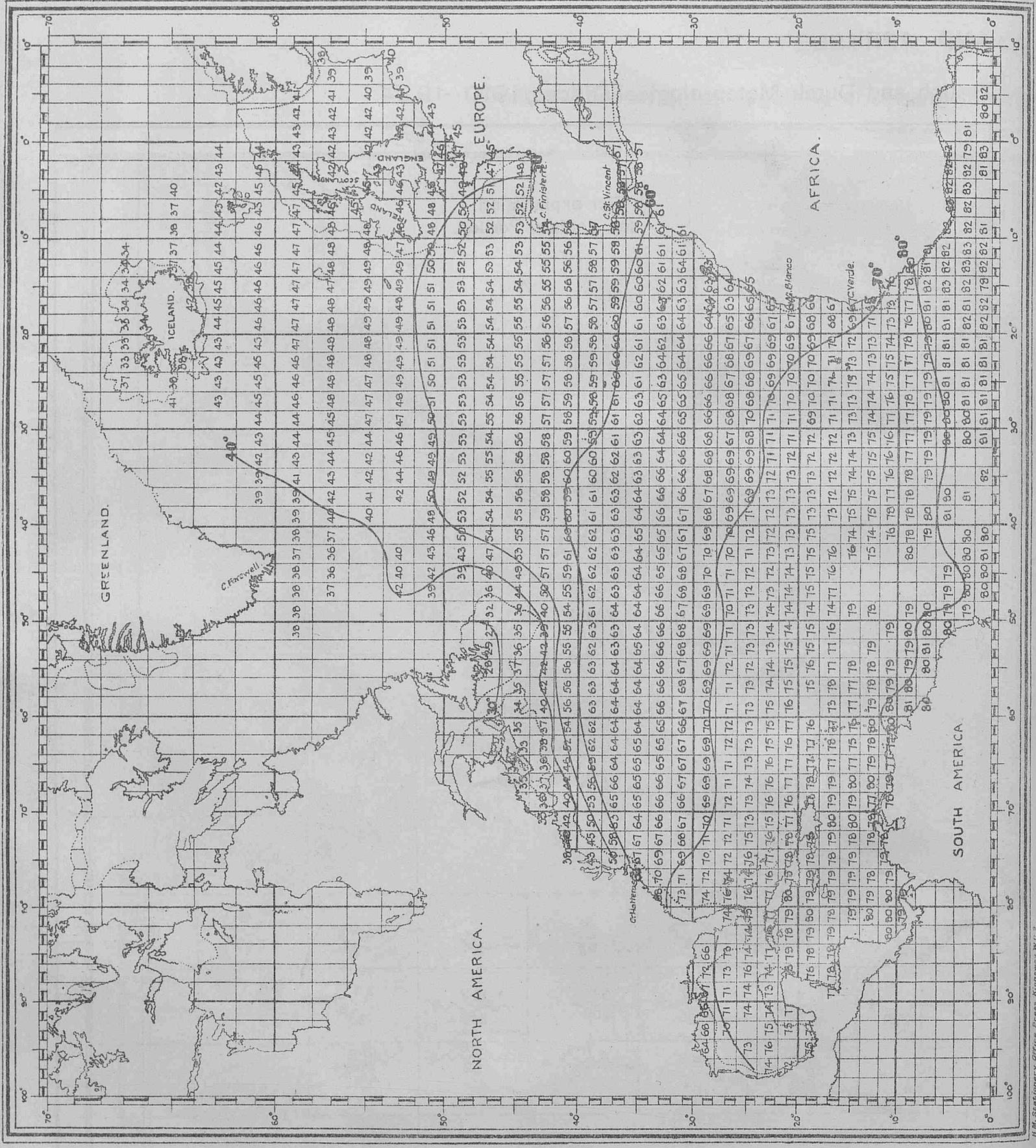
PORTION)

AND APRIL.

British and Dutch Meteorological Offices, 1910-1924.



MEAN SEA SURFACE TEMPERATURES FOR MONTH OF MARCH COMPUTED FROM ALL AVAILABLE SOURCES DURING THE PERIOD 1855 TO 1917. NORTH ATLANTIC.



U.S. Stationery Office, Press, Kingway, W. G. 2. P. 2055/1242, U.S.A. D. 10194/P. 1266, 1900, 1/26

**IMPORTANT.**

With a view to promoting the interest and usefulness of this Journal, Marine Observers are requested to send in when possible accounts of interesting experiences, remarks upon special phenomena observed, and matters of interest, especially those which affect navigation.

A page for additional remarks will be found at the end of the Meteorological Log, or these can be made separately in manuscript.

Photographs, sketches and weather charts will be most welcome.

**ILLUSTRATIONS FOR THE MARINE OBSERVER.**

When making sketches, charts or plans, Marine Observers will give us great assistance if they will give consideration to reproduction in "The Marine Observer."

The size of any chart or drawing should not, if possible, exceed that of a page of "The Marine Observer," and if charts and drawings of all kinds are made with Indian Ink upon white drawing paper their reproduction will be greatly facilitated.

When photographs are sent in it would give us great assistance if they are accompanied by the plate or film, which will be returned if desired.

**INVITATION TO MARINE OBSERVERS.**

The Marine Superintendent will be pleased to see the Captains of Observing Ships or their Observing Officers when they are in London, between 10 a.m. and 4 p.m. at Room 319, Adastral House, Kingsway, W.C.2. Telephone No., Holborn 3434, Extension 421. Telegrams, Marine Superintendent, Weather, London. (Nearest Station, Temple, District Railway.)

Personal touch is not only conducive to efficient work, but by this means we may be better able to advance upon lines which will further the practice of Meteorology in Navigation and at the same time provide the most suitable data for the general needs of Meteorological Science.

Those Marine Observers who do not come to London wishing to discuss matters connected with Marine Meteorology, are asked to consult the Agents at the Ports.

The Marine Agencies in Great Britain and Ireland are visited at least once a year by the Marine Superintendent, and it is hoped by these means to further promote voluntary co-operation between ships at sea, and with the Meteorological Office.

Usually the Marine Superintendent visits the Marine Agencies as follows:—

- Southampton and Cardiff, first week of March.
  - Liverpool, last week of May.
  - Dublin and Glasgow, mid October.
  - Leith, North Shields and Hull, mid November.
- Marine Agencies are given about two weeks notice of exact dates.

**ICE REPORTS.**

Commanders of ships in the Trans-North Atlantic and Southern Ocean Trades are earnestly requested to have the Ice Report Form 912 completed and returned at the end of each passage. A nil return is desired if no ice is seen.

These forms are supplied with "The Marine Observer" each month to regular observing ships in these Trades.

**THE BAROMETER.**

Before barometer readings are compared with the normal isobars shown on the Meteorological Ocean Charts, transmitted by W/T or plotted on Weather Charts, mercurial barometers should be corrected for height, gravity, temperature and index error, for which tables are given on pp. 80 to 83 and 84 to 86 of the Marine Observer's Handbook; see also pp. 177-8, Vol. II, No. 23, of this Journal. A table for converting inches to millibars is also given below.

Aneroids require to be corrected for height and index error only. They should be frequently compared, as the mechanism is liable to get out of adjustment without detection.

Readings of the barometer should be entered in the Meteorological Log as read—i.e., uncorrected—and the attached thermometer should also be recorded. A column is now given for the corrected reading, and it will be of great assistance if this is also completed.

While a difference from the pressure values shown on the charts does not necessarily mean unusual weather, when there is a divergence the mariner should be on the alert, particularly within cyclone regions.

It is strongly urged that Marine Observers, whether using Official or Ship's Barometers, for W/T reports, Meteorological Logs or Forms 911, will complete and send in the Blue Post Card, at least once every voyage, so that an effectual check may be kept on the index error.

**CONVERSION TABLE.**

To Convert Inches into Millibars.

Inch.	mb.	Inch.	mb.	Inch.	mb.
27.50	931.2	28.65	970.2	29.85	1,010.8
27.55	932.9	28.70	971.9	29.90	1,012.5
27.60	934.6	28.75	973.6	29.95	1,014.2
27.65	936.3	28.80	975.3	30.00	1,015.9
27.70	938.0	28.85	976.9	30.05	1,017.6
27.75	939.7	28.90	978.6	30.10	1,019.3
27.80	941.4	28.95	980.3	30.15	1,021.0
27.85	943.1	29.00	982.0	30.20	1,022.7
27.90	944.8	29.05	983.7	30.25	1,024.4
27.95	946.5	29.10	985.4	30.30	1,026.1
28.00	948.2	29.15	987.1	30.35	1,027.7
28.05	949.9	29.20	988.8	30.40	1,029.4
28.10	951.6	29.25	990.5	30.45	1,031.1
28.15	953.2	29.30	992.2	30.50	1,032.8
28.20	954.9	29.35	993.9	30.55	1,034.5
28.25	956.6	29.40	995.6	30.60	1,036.2
28.30	958.3	29.45	997.3	30.65	1,037.9
28.35	960.0	29.50	999.0	30.70	1,039.6
28.40	961.7	29.55	1,000.7	30.75	1,041.3
28.45	963.4	29.60	1,002.4	30.80	1,043.0
28.50	965.1	29.65	1,004.0	30.85	1,044.7
28.55	966.8	29.70	1,005.7	30.90	1,046.4
28.60	968.5	29.75	1,007.4	30.95	1,048.1
		29.80	1,009.1		

**POSTAL ARRANGEMENTS.**

"The Marine Observer" is published, when circumstances permit, on the first Wednesday of the month previous to that to which the number refers.

If captains of observing ships will forward to the Office the particulars required hereunder, endeavour will be made as far as mails permit to post the latest number for use on their homeward passage.

S.S..... Captain.....

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

When this information is not given "The Marine Observer" is addressed to the Commanding Officer, s.s..... c/o the owners, and captains are requested to make their own arrangements for forwarding.

# ICE CHART. WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE

- (A) Eastbound. From 25th March to 7th July, inclusive.
- (B) Westbound. From 1st February to 31st March, inclusive.
- (C) Eastbound. From 1st February to 24th March, inclusive.
- (D) From 15th February to 10th April, inclusive.

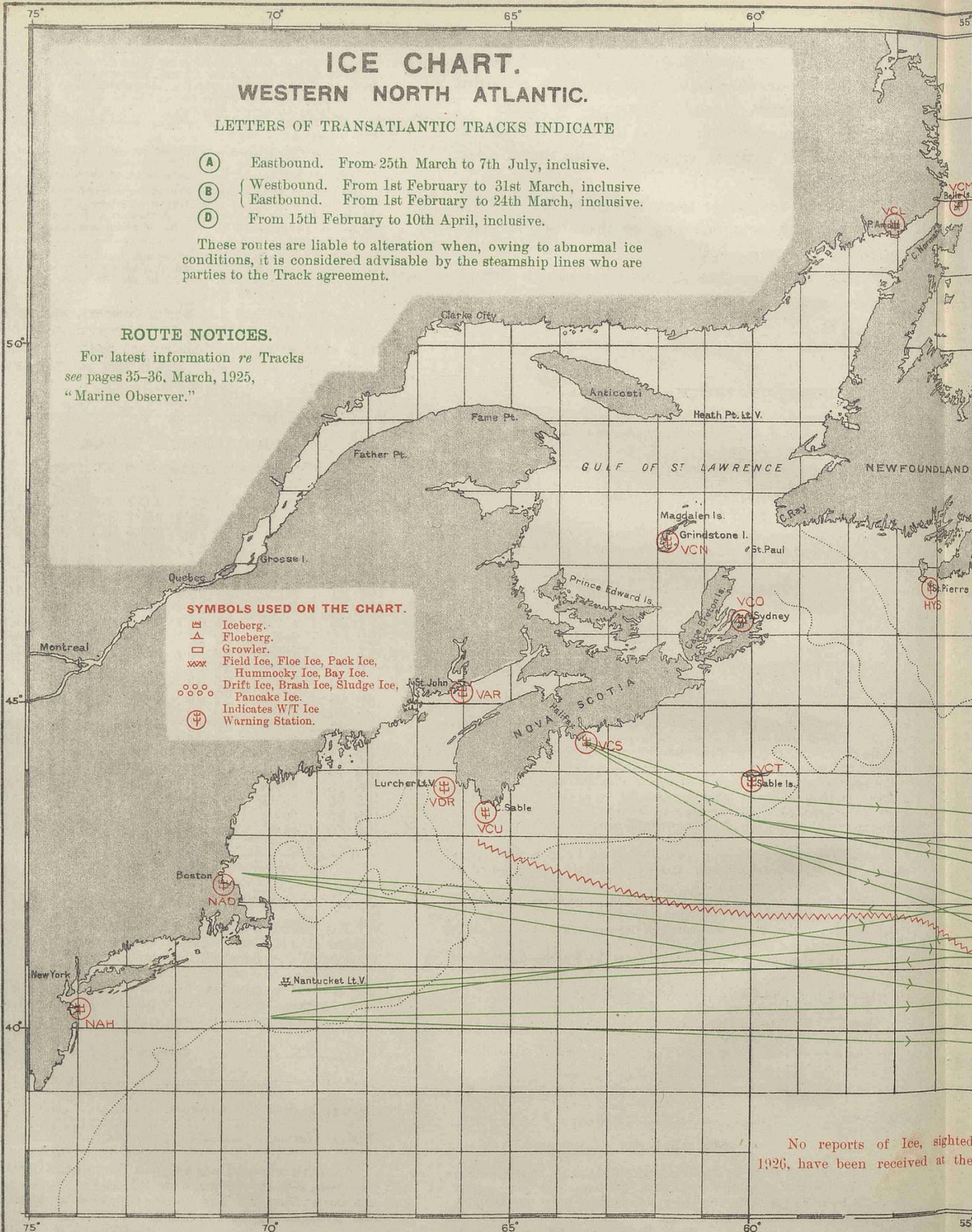
These routes are liable to alteration when, owing to abnormal ice conditions, it is considered advisable by the steamship lines who are parties to the Track agreement.

## ROUTE NOTICES.

For latest information *re* Tracks see pages 35-36, March, 1925, "Marine Observer."

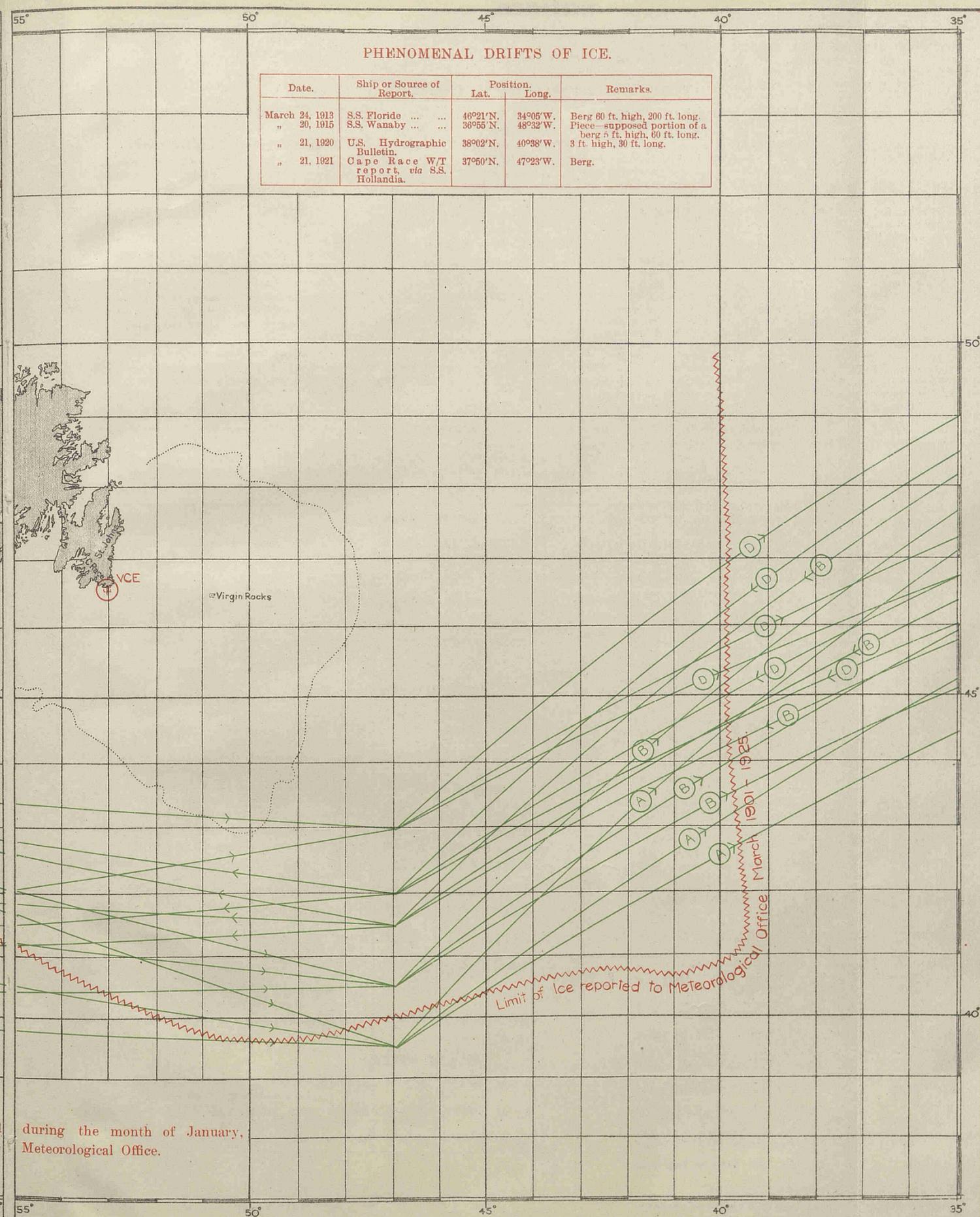
## SYMBOLS USED ON THE CHART.

- ▣ Iceberg.
- △ Floeberg.
- Growler.
- xxx Field Ice, Floe Ice, Pack Ice, Hummocky Ice, Bay Ice.
- Drift Ice, Brash Ice, Sludge Ice, Pancake Ice.
- ⊕ Indicates W/T Ice Warning Station.



## PHENOMENAL DRIFTS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
March 24, 1913	S.S. Floride ... ..	48°21' N.	34°05' W.	Berg 60 ft. high, 200 ft. long.
" 20, 1915	S.S. Wanaby ... ..	36°55' N.	48°32' W.	Piece—supposed portion of a berg 5 ft. high, 80 ft. long.
" 21, 1920	U.S. Hydrographic Bulletin.	38°02' N.	40°38' W.	3 ft. high, 30 ft. long.
" 21, 1921	Cape Race W/T report, via S.S. Hollandia.	37°50' N.	47°23' W.	Berg.



No reports of Ice, sighted during the month of January, 1926, have been received at the Meteorological Office.

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

The Director of the Meteorological Office is authorised to lend tested Instruments to Captains of British-owned ships who undertake to make 4 hourly observations and keep Meteorological Logs for the Office.

The instruments supplied for this purpose are one barometer, four thermometers with screen, two hydrometers and in some cases a Barograph and rain gauge is added to the equipment.

Tested instruments are also lent to a number of British Atlantic Liners which make special coded W/T weather reports to the Office.

The number of ships co-operating with the M.O. using official tested instruments on loan is limited.

Vessels observing regularly for the Meteorological Office to which office instruments are not lent, keep Form 911, Ship's Meteorological Report, using the ship's instruments, the barometer being compared with Standards. The number of ships regularly contributing approved forms of all descriptions to the Marine Division is limited to 500.

Captains and Officers who wish to co-operate with the Meteorological Office should apply *by letter* to The Director, Meteorological Office, Air Ministry, Kingsway, London, W.C.2; or *in person* between the hours of 10 a.m. and 4 p.m., to the Marine Superintendent at the same address or to any of the gentlemen whose names and addresses are given below acting as agents at the respective ports. A waiting list is kept of the names of ships whose commanders have offered to regularly co-operate.

Marine Observers (*i.e.*, Captains and Officers who regularly observe for the Meteorological Office) will greatly assist if they will send in Meteorological Logs immediately on completion through the Port Meteorological Officer or Agent, at the same time notifying him of any possible instrumental defects.

Defective instruments will then be replaced and new Log Books, etc., provided.

In London and at base ports where there is not an Agency, notification of defects should be sent to headquarters on arrival, with the Meteorological Log.

Vessels making voyages of less than two months' duration are requested to retain their logs until nearly filled up, but the log should be returned in all cases at least twice yearly.

W/T Registers and Forms 911 should in all cases be sent directly to the Meteorological Office, London. The Port Meteorological Officer at Liverpool and the Visiting Officer in London board vessels co-operating with the Meteorological Office, and the agents visit ships at their ports when circumstances permit.

Postage abroad incurred on behalf of the Meteorological Office in returning logs will be refunded. Postage from British Empire ports need not be prepaid, if the envelope is marked O.H.M.S., and addressed to the Director, Meteorological Office, London.

Captains and Officers whether they observe regularly for the Meteorological Office or not are urged to report exceptional phenomena in air or sea. Reports of weather experienced in or near Tropical Cyclones or hurricanes, also abnormal currents are specially desired.

Masters who wish to assist in developing the rapid interchange of Meteorological information and Weather Forecasting at sea can do so by using the standard form, **not** in code, of W/T Weather Report suggested in "Weather Signals," given in Vol. III, No. 25, pages 14 and 15. For this purpose a mercurial barometer of which the index error has been ascertained is essential.

THE MARINE OBSERVER is sent monthly to all ships regularly contributing Logs, Forms and W/T Registers to the Meteorological Office. It is hoped that each ship will preserve *all* her copies. Personal copies of Numbers are sent to those whose special contributions are published in them. A suitable cover may be obtained from H.M. Stationery Office, price 2s.

Marine Agencies and Port Meteorological Officers.

LIVERPOOL	(Port Meteorological Office), Lieut.-Commander M. Crosswell, R.N.R., Dock Office, Telephone No.: Bank 3969.
CARDIFF	Captain T. Johnston, Technical College.
GLYDE	Captain M. C. Corrance, Board of Trade Surveyor's Office, 73, Robertson Street, Glasgow.
DUBLIN	(Captain M. H. Clarke, Chief Surveyor, Ministry of Industry and Commerce, Marine Department, 27, Eden Quay.
HULL	Captain Geo. B. Sturdy, c/o Mr. W. Hakes, Commercial Road.
LEITH	Captains G. Black and C. G. Bonner, V.O., D.S.C., Leith Salvage and Towing Co., Ltd., 2, Commercial Street.
SOUTHAMPTON	Captain D. Forbes, Nautical Academy, 1, Albion Place.
TYNE	Commander E. S. Macleod, R.D., R.N.R., Board of Trade Surveyor's Office, North Shields.
HONG KONG	Lieut.-Commander C. R. H. Harvey, O.B.E., R.N. Superintendent, Admiralty Chart and Chronometer Depot.
VANCOUVER	T. S. H. Shearman, Esq., Room 40, Post Office Building.
AUSTRALIA	The Commonwealth Meteorologist.

The Deputy Directors of Navigation act as sub-agents as follows:—

FREMANTLE	Captain J. J. Airey, Dalgety's Buildings.
MELBOURNE	Captain L. J. Bolger, Electricity Commissioners Building, 23, William Street.
SYDNEY	Captain G. D. Williams, D.S.O., Customs House.

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
<b>NORTH SEA.</b>			
3.1.26	6 miles W. of W. Hinder.		Large boat, painted black, dismasted and abandoned.
13.1.26	53°38½'N.	1°54'E.	Part of mast, about 6 feet above water, presumably attached to submerged hull.
17.1.26	53°46'N.	3°19'E.	Spar projecting 5 feet, apparently attached to wreckage.
18.1.26	53°34'N.	4°37'E.	Black cylindrical buoy unmarked.
22.1.26	56°47'N.	5°41'E.	Broken mast, 3 feet above water, apparently attached to wreckage.
<b>ENGLISH CHANNEL.</b>			
9.1.26	50°09'N.	3°53'W.	Red conical buoy.
17.1.26	50°10'N.	3°47'W.	Floating wreckage, apparently stern of vessel.
<b>BRISTOL CHANNEL.</b>			
7.1.26	51°10'N.	4°28'W.	Drifting light buoy extinguished, dangerous to navigation.
<b>IRISH CHANNEL.</b>			
2.1.26	53°03'N.	5°54'W.	Derelict, hull proj. 8 feet.
14.1.26	51°58'N.	5°38'W.	Large spar with barrel and ropes attached.
<b>NORTH ATLANTIC.</b>			
1.1.26	47°13'N.	34°54'W.	Three masted schooner <i>Myrtle Piercy</i> .
1.1.26	47°54'N.	25°51'W.	Black whistle buoy with high superstructure, whistle sounding loudly.
1.1.26	32°31'N.	77°24'W.	Survey beacon adrift with pole about 10 feet high and black square cotton covered target.
1.1.26	42°30'N.	68°54'W.	Derelict wooden vessel about 40 feet long, decks awash, showing about 4 feet out of water.
2.1.26	38°31'N.	74°44'W.	Spar projecting about 15 feet out of water.
3.1.26	50°46'N.	6°34'W.	Drifting cylindrical buoy capsized.
4.1.26	28°05'N.	61°55'W.	British bqtne. <i>Maid of England</i> on fire.
4.1.26	32°—N.	77°35'W.	Gasolene schooner <i>Clem</i> abandoned, menace to navigation.
6.1.26	36°31'N.	66°35'W.	Schooner <i>Eugenia Owen Mackay</i> waterlogged.
8.1.26	40°54'N.	71°42'W.	Yellow deckhouse showing 5 feet out of water, apparently attached to a submerged barge.
9.1.26	48°22'N.	10°40'W.	Large black can buoy with cage, dangerous to navigation.
10.1.26	10 m. N.W. (mag.) from Burling Is. Lt.		Heavy spar.
12.1.26	49°15'N.	8°10'W.	Light buoy adrift, painted red and marked <i>Twenty-three silve</i> (remainder of lettering not discernible).
13.1.26	48°58'N.	22°33'W.	Large unlighted gas buoy.
<b>GULF OF MEXICO.</b>			
2.1.26	28°—N.	85°40'W.	Obstruction awash, apparently wooden vessel about 100 feet long, bottom up.
4.1.26	28°18'N.	92°10'W.	Derelict motor vessel, with decks awash, pilot house and mast standing.
7.1.26	28°30'N.	95°30'W.	Red buoy with top of superstructure gone.

LIST OF VOLUNTARY OBSERVING SHIPS.

The following is a complete list of ships regularly contributing observations to the Meteorological Office.

The names of the Captains and Officers, as ascertained from logs and reports received, are given with the date and description of last log, register or report received up to the time of going to press.

Marine Observers are requested to take this as complete and grateful acknowledgment for the work they have contributed, as it has been found necessary to reduce as far as possible the correspondence of the Marine Superintendent, which was largely composed of letters acknowledging logs and reports, in order that more time may be devoted to obtaining results from the data received.

Only in special cases will individual letters be sent.

Excellent awards will be made at the end of the financial year. The names of Commanders and Officers gaining these awards will be published in a special list in THE MARINE OBSERVER.

Ships not contributing logs or reports within a reasonable period will automatically be removed from the list and the free issue of THE MARINE OBSERVER discontinued; it is, therefore, earnestly requested that changes of service, probable periods of lay up or transfer of Commanders may be notified whenever possible.

A waiting list is kept of the names of vessels whose Commanders have offered to regularly co-operate.

The number of voluntary observing ships is limited to a maximum total of 500.

Commanders are requested to point out any errors which may occur in the list.

Unless otherwise stated, vessels on the following list are s.s.

M.L. = Equipped with tested Instruments for keeping Meteorological Log.

W.T. = Equipped with tested Instruments for making coded W/T reports to the Meteorological Office, London.

No. = Keeps Ship's Meteorological Report Form 911 with ship's instruments. Letter M after No. indicates ship's barometer Mercurial; A. ship's barometer Aneroid.

C.C. = Equipped with tested Instruments for making Cross Channel Telegraphic Reports to the Meteorological Office, London.

The numbers which appear before the names of ships equipped for making coded W/T reports to the Meteorological Office, London, are used for the purpose of identification when the observations are re-transmitted in synoptic messages by Wireless or Cable.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Aba</i> ...	Hughes, J. ...	G. Pugh Williams, R. Wilkinson, J. R. Jones.	M.L.	Elder Dempster ...	Met. Log. 22.7.25 to 25.10.25...	11.11.25.
<i>Abinsi</i> ...	Wright, J. B. ...	E. Kingan ...	No. A.	" " ...	Form 911 14.10.25 to 20.11.25	23.11.25.
<i>Achilles</i> ...	Hill, R. ...	D. MacTavish ...	" A.	A. Holt ...	" 8.10.25 to 19.10.25...	18.11.25.
<i>Actor</i> ...	Haylett, E. ...	A. Frew, J. McKay, H. W. Stanley.	M.L.	Harrison ...	Met. Log. 7.8.25 to 13.10.25 ...	22.10.25.
<i>Adda</i> ...	Toft, J. T. ...	J. Swords ...	No. M.	Elder Dempster ...	" 26.11.25 to 1.1.26 ...	6.1.26.
<i>50 Adriatic</i> ...	Beadnell, F. E., Capt., R.N.R.	R. Collins, A. C. I. Anson, R. G. Roberts.	W.T.	White Star ...	W.T. Reg. 25.10.25 to 13.11.25 Form 911 25.10.25 to 14.11.25	18.11.25. 18.11.25.
<i>Aeneas</i> ...	Wallace, W. K. ...	" " " " " "	No.	A. Holt ...	" " " " " "	" " " " " "
<i>Agapenor</i> ...	Ramsay, J. ...	A. T. Gillard ...	" A.	" " " " " "	Form 911 20.11.25 to 6.12.25...	11.1.26.
<i>Alban</i> ...	Whayman, W. ...	C. D. Lane, A. T. Douglas ...	" A.	Booth ...	" 6.12.25 to 22.12.25 ...	4.1.26.
<i>Albania</i> ...	Gronow, S. ...	L. Harper ...	" A.	Cunard ...	" 29.8.25 to 22.9.25 ...	24.9.25.
<i>Alberian Prince</i> ...	Shaw, D. C. ...	G. Potts ...	" A.	Prince ...	" 17.3.25 to 31.3.25 ...	6.4.25.
<i>Altipore</i> ...	Gordon, L. M., R.D., Commr., R.N.R.	F. R. W. Page ...	" M.	P. and O. ...	" 3.8.25 to 22.8.25 ...	21.9.25.
<i>Almanzora</i> ...	Mackenzie, G. A. ...	E. S. Dunch, E. Hewitt ...	" A.	R.M.S.P. ...	" 3.10.25 to 15.11.25...	18.11.25.
<i>Alondra</i> ...	Prendergast, J. J. ...	H. Peters ...	" A.	Yeoward ...	" 19.12.25 to 9.1.26 ...	4.1.26.
<i>Ampetco</i> ...	Vandenkerckhove, A. ...	A. Aspeslugh ...	" A.	American Petroleum... A. Holt ...	" 20.10.25 to 12.11.25 " 27.7.25 to 6.10.25 ...	2.12.25. 21.10.25.
<i>Antilochus</i> ...	Wilkinson, H. ...	E. T. Bayes ...	" A.	A. Holt ...	" 27.7.25 to 6.10.25 ...	21.10.25.
<i>Aorangi</i> ...	Crawford, R. ...	R. B. Denniston, A. Lansley, J. W. Bray.	M.L.	Canadian-Australasian	Met. Log. 4.6.25 to 17.9.25 ...	19.10.25.
<i>Appam</i> ...	Yardley, H. A., D.S.C.	S. C. Fry, J. A. McGough, W. Page.	"	Elder Dempster ...	" 24.6.25 to 5.12.25 ...	24.12.25.
<i>30 Aquitania</i> ...	Charles, Sir J. T., W., K.B.E., C.B., R.D., Commodore, R.N.R.	J. L. Croasdaile, J. Locke, L. T. Simpson.	W.T.	Cunard ...	W.T. Reg. 2.11.25 to 16.11.25... " 22.11.25 to 8.12.25...	18.11.25. 10.12.25.
<i>62 Arabic</i> ...	Davies, J. ...	R. Walker, H. G. Morgan, W. Clements.	"	White Star ...	" 13.10.25 to 5.11.25... Form 911 19.11.25 to 11.12.25	7.11.25. 14.12.25.
<i>Arafura</i> ...	Gordon, A. S. ...	R. Lloyd Harry ...	M.L.	Eastern and Australian Lampart & Holt ...	Form 911 7.6.25 to 8.7.25 ...	9.7.25.
<i>Archimedes</i> ...	Taylor, F. C. ...	F. W. Johnson ...	No. A.	Union Castle ...	Met. Log. 31.1.25 to 22.7.25 ...	8.8.25.
<i>Armada Castle</i> ...	Millard, L. A., Knight, A.	M. M. Tomkins, R. F. Bayer, C. H. Williams.	M.L.	" " " " " "	" " " " " "	" " " " " "
<i>Arracan</i> ...	Willis, M. ...	R. McInnes, M. S. Stuart, A. McCullum.	"	P. Henderson ...	" 2.7.25 to 27.11.25...	10.12.25.
<i>Arundel</i> ...	Short, H. ...	Mr. Hill ...	C.C.	Southern Rly. ...	Telegraphic Report 14.1.26 ...	14.1.26.
<i>Arundel Castle</i> ...	Hague, J. W., Commr., R.N.R.	G. Blaiklock, C. Lloyd, F. Granger.	M.L.	Union Castle ...	Met. Log. 24.5.25 to 7.10.25 ...	22.10.25.
<i>Assyria</i> ...	Donald, D. R. ...	A. Middleton ...	No. A.	Aehor ...	Form 911 16.8.25 to 7.9.25 ...	9.9.25.
<i>Astronomer</i> ...	Booth, W. M. ...	J. Rae, H. Thomas, E. Shatton.	M.L.	Harrison ...	Met. Log. 29.8.25 to 12.1.26 ...	14.1.26.
<i>Athenic</i> ...	Davies, E. ...	W. Hill ...	No. A.	White Star ...	Form 911 1.12.25 to 17.12.25...	23.12.25.
<i>Atrous</i> ...	Salter, G. H. ...	J. C. Podmore ...	" A.	A. Holt ...	" 15.11.25 to 30.11.25 ...	4.1.26.
<i>Atsuta Maru</i> ...	Furuhashi, M. ...	S. Mizoguchi ...	" A.	Nippon Yusen Kaisha ...	" 6.9.25 to 4.10.25 ...	19.10.25.
<i>Auditor</i> ...	Owen, W. T. ...	T. E. Steel ...	" M.	Harrison ...	" 17.11.25 to 19.12.25 ...	22.12.25.
<i>Ausonia</i> ...	Gibbons, G., R.D., Commr., R.N.R.	E. R. B. Freeman ...	" A.	Cunard ...	" 10.12.25 to 1.1.26 ...	4.1.26.
<i>Author</i> ...	Kinloch, R. ...	" " " " " "	" M.	Harrison ...	Form 911 " " " " " "	" " " " " "
<i>Avon</i> ...	Adam, C., R.D., Commr., R.N.R.	T. Bolland ...	" M.	R.M.S.P. ...	Form 911 15.11.25 to 28.12.25	13.1.26.
<i>Balfour</i> ...	Rothwell, A. ...	" " " " " "	No. A.	Canadian Pacific ...	" " " " " "	" " " " " "
<i>51 Baltic</i> ...	White, E. R. ...	F. Laws, J. Law, J. Farrell	W.T.	White Star ...	W.T. Reg. 7.12.25 to 25.12.25... Form 911 7.12.25 to 27.12.25...	29.12.25. 30.12.25.
<i>Bambra</i> ...	Buckeridge, G. ...	H. W. Norris, J. E. Turner, F. Humble.	M.L.	State Service, Australia	Met. Log. 12.8.25 to 22.11.25...	28.12.25.
<i>Bampton Castle</i> ...	Hutchings, A. H. ...	M. J. Castle ...	No.	Union Castle ...	" 2.5.25 to 21.8.25 ...	2.5.25.
<i>Banbury Castle</i> ...	Singelsen, E. A., D.S.C., R.D., Commr., R.N.R.	" " " " " "	No.	" " " " " "	" " " " " "	" " " " " "

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Banffshire</i> ...	Wynne, R. H. ...	J. M. Bowie ...	No. A.	Turnbull Martin ...	Form 911 13.9.25 to 24.10.25...	7.11.25.
<i>Baron Cawdor</i> ...	Cairns, W. ...	A. Campbell ...	" A.	Hogarth & Sons ...	" 26.7.25 to 16.10.25...	20.10.25.
<i>Harpeta</i> ...	Denne, G. A. ...	J. W. Knight ...	" M.	British India ...	" 19.11.25 to 18.12.25 ...	4.1.26.
<i>Baychimo</i> ...	Cornwall, S. A. ...	S. Jackson ...	" A.	Hudson's Bay Co. ...	" 18.11.25 to 9.1.26 ...	13.1.26.
<i>Beaufort</i> ...	Rice, W. V., D.S.O., D.S.C., Commr., R.N.	J. Taylor ...	" L.	His Majesty's Ship ...	Met. Log. 14.8.25 to 13.11.25...	11.1.26.
59 <i>Belgenland</i> ...	Bradshaw, J. ...	C. J. Murray, J. M. Appleby,	W.T.	Red Star ...	W.T. Reg. 4.10.25 to 21.10.25... Form 911 3.10.25 to 21.10.25 ...	23.10.25. 23.10.25.
<i>Benalder</i> ...	Cole, J. H., D.S.C....	T. S. Rawlingson ...	No. A.	Ben Line ...	" 21.11.25 to 9.12.25...	4.1.26.
<i>Bendigo</i> ...	Nicholl, R. N. C. ...	J. K. Crane ...	" M.	P. & O. Branch ...	" 29.8.25 to 28.10.25...	11.11.25.
<i>Bengloe</i> ...	McCorquodale, A. ...	G. M. Duff ...	" A.	Ben Line ...	" 12.8.25 to 29.8.25 ...	30.9.25.
31 <i>Berengaria</i> ...	Irvine, W. R. D., R.D., Capt., R.N.R.	J. A. Myles, W. C. A. Robson, E. W. Connell.	W.T.	Cunard ...	W.T. Reg. 8.11.25 to 23.11.25... 29.11.25 to 14.12.25...	25.11.25. 16.12.25.
<i>Bernini</i> ...	Evans, W. ...	H. L. Rudd ...	No. A.	Lamport & Holt ...	Form 911 21.11.24 to 31.1.25...	16.2.25.
<i>Berrima</i> ...	Townshend, W. P. ...	T. Ferguson ...	" M.	P. & O. Branch ...	" 22.11.25 to 7.1.26 ...	12.1.26.
<i>Bervyn</i> ...	McCombie, J. ...	... ..	" A.	Canadian Pacific ...	... ..	...
<i>Bintang</i> ...	Scudamore, M. F. ...	A. A. H. Blankestyn ...	" M.	Nederland ...	Form 911 9.10.25 to 25.10.25...	7.12.25.
<i>Bogota</i> ...	Dunn, R. E., O.B.E.	T. R. Thomas ...	" M.	R.M.S.P. Co. ...	" 8.10.25 to 28.10.25...	5.11.25.
<i>Bolingbroke</i> ...	Jones, D. C. ...	C. A. Mott ...	" M.L.	Canadian Pacific ...	Met. Log. 19.11.24 to 27.5.25...	27.6.25.
<i>Borda</i> ...	Holland R. ...	... ..	No. M.	P. & O. Branch ...	Form 911 12.2.25 to 19.6.25 ...	25.6.25.
<i>Bothwell</i> ...	Jones, D. J. C. ...	G. Mowatt ...	" A.	Canadian Pacific ...	" 12.10.25 to 30.11.25 ...	8.12.25.
<i>Brandon</i> ...	Henderson, W. ...	J. M. Roche ...	" A.	" " ...	" 1.10.25 to 19.11.25...	25.11.25.
<i>Brecon</i> ...	Newman, J. ...	J. Mackenzie, H. C. Waters, T. J. Webster, D. Durin, N. B. Goater, T. Golby.	" A.	" " ...	... ..	...
<i>Brenda</i> ...	Murdoch, R. G. ...	F. R. Ness ...	" A.	Scottish Fishery Board	Form 911 1.12.25 to 31.12.25...	6.1.26.
<i>Brighton</i> ...	Hill, A. ...	Mr. Munton ...	C.C.	Southern Railway ...	Telegraphic Report 13.1.26 ...	13.1.26.
<i>British Advocate</i> ...	Taylor, R. J. ...	C. J. Metcalf ...	No. M.	British Tankers ...	Form 911 13.8.25 to 12.10.25...	14.10.25.
<i>British Engineer</i> ...	Joures, T. W. ...	M. J. Grieves ...	" M.	" " ...	" 1.8.25 to 14.11.25 ...	7.1.26.
<i>British Judge</i> ...	Putt, R. O. ...	H. Westlake ...	" M.	" " ...	" 19.11.25 to 27.12.25 ...	7.1.26.
<i>Browning</i> ...	Connorton, C. A. ...	W. E. Johnston ...	" A.	Lamport & Holt ...	" 17.11.25 to 6.2.25 ...	23.2.25.
<i>Bruyere</i> ...	Denson, W. ...	R. Mowbray ...	" A.	" " ...	" 24.10.25 to 11.11.25	29.12.25.
<i>Cambria C.S.</i> ...	Wightman, H. G. E., D.S.C.	E. N. L. Staples ...	M.L.	Eastern Tel. Co. ...	Met. Log. 8.7.24 to 5.10.24 ...	27.1.25.
<i>Cambria</i> ...	Telfer, J.E. ...	V. S. Phillips ...	C.C.	L.M. & S. Rly. ...	Telegraphic Report 9.1.26 ...	9.1.26.
<i>Canito</i> ...	Scudamore, J. H. H., D. S. C., R. D., Commr., R.N.R.	R. M. Cossantine, R. Suther- land, P. C. Congdon.	M.L.	Elders & Fyffes ...	Met. Log. 11.5.25 to 6.9.25 ...	10.9.25.
<i>Canada</i> ...	Jones, T. ...	A. Thompson ...	No. M.	White Star-Dominion	Form 911 14.11.25 to 6.12.25...	11.12.25.
<i>Canadian Importer</i>	Wallace, C. ...	C. W. Gilding ...	" A.	Canadian Govt. Mer- cantile Marine.	" 1.6.25 to 7.7.25 ...	24.7.25.
<i>Canadian Inventor</i>	Roberts, R. P. ...	T. Edgar ...	" A.	" " " ...	" 25.9.25 to 23.10.25...	13.11.25.
<i>Canadian Miller</i>	McConehy, W. T. ...	B. D. Ranns ...	" A.	" " " ...	... ..	...
<i>Canadian Raider</i>	Dixon, C. C. ...	C. J. Carp ...	" A.	" " " ...	Form 911 16.3.25 to 22.4.25 ...	5.5.25.
<i>Canadian Scottish</i>	Wallace, C. ...	C. W. Gilding ...	" A.	" " " ...	" 16.9.25 to 14.10.25...	28.10.25.
<i>Canadian Skir- misher.</i>	Millar, W. H. ...	R. J. Watson ...	" A.	" " " ...	" 23.10.25 to 9.12.25...	16.12.25.
<i>Canadian Winner</i>	Hocking, N. P. ...	R. Girling, J. Cochrane ...	" M.	Union Castle ...	" 29.10.25 to 11.12.25 ...	29.12.25.
<i>Carlow Castle</i> ...	Whitfield, G. J. ...	J. W. Kirby ...	" M.	" " " ...	" 8.5.25 to 2.6.25 ...	8.6.25.
35 <i>Carmania</i> ...	McNeil, S. G. S. R.D., Capt., R.N.R.	W. M. Stewart, A. T. Hamer, W. B. Tanner.	W.T.	Cunard ...	W.T. Reg. 4.10.25 to 24.10.25... Form 911 6.9.25 to 26.9.25 ...	27.10.25. 30.9.25.
34 <i>Caronia</i> ...	Hossack, W. H., R.D., Capt., R.N.R.	R. F. Bovey, R. Cambell, D. M. MacLean.	"	" " ...	W.T. Reg. 26.10.25 to 13.11.25 ... Form 911 26.10.25 to 14.11.25...	17.11.25. 17.11.25.
52 <i>Cedric</i> ...	Hickson, V. W. ...	S. Weller, W. Nicoll ...	"	White Star ...	W.T. Reg. 2.11.25 to 23.11.25... Form 911 1.11.25 to 23.11.25...	26.11.25. 25.11.25.
53 <i>Celtic</i> ...	Berry, G. ...	J. W. Peters, R. H. Shaw, F. E. Patchett.	"	" " ...	W.T. Reg. 19.10.25 to 12.11.25 ... Form 911 1.12.25 to 20.12.25...	16.11.25. 29.12.25.
<i>Centaur</i> ...	Rose, A. F. ...	L. Johnstone, E. D. Potts ...	No. M.	A. Holt & Co. ...	" 10.10.25 to 29.11.25 ...	29.12.25.
<i>Ceramic</i> ...	Roberts, J., C.B.E., D.S.O., R.D., Capt., R.N.R.	D. W. Chamberlain ...	" A.	White Star ...	" 17.11.25 to 21.12.25 ...	23.12.25.
<i>Changsha</i> ...	Gambrill, F. G. ... Thomas, R. D. ...	A. M. Frame, F. G. Strat- ford, H. Lishman, L. A. Baillie, W. Baillie.	M.L.	Yuill & Co. ...	Met. Log. 25.4.24. to 2.10.24...	10.3.25.
<i>Change</i> ...	Gambrill, F. C. ...	... ..	"	" " ...	... ..	...
<i>China</i> ...	Cossey, W. F. ...	E. R. Chaffin ...	No. M.	P. & O. ...	Form 911 13.11.25 to 4.12.25...	29.12.25.
<i>Chindwara</i> ...	Brisley, P. L. ...	W. Welch ...	" M.	British India ...	" 29.8.25 to 17.12.25...	11.1.26.
<i>Chindwin</i> ...	Esslemont, C. ...	J. Summers, W. Wilson, J. G. Walker.	M.L.	P. Henderson ...	Met. Log. 18.4.25 to 5.7.25 ...	20.7.25.
<i>City of Alexandria</i>	Bedford, G. B. ...	T. Telleson ...	No. M.	Ellerman ...	Form 911 14.3.25 to 7.4.25 ...	5.5.25.
<i>City of Baroda</i> ...	Houghton, W. ...	A. Beaton, J. Cook, H. N. Jones.	M.L.	" " ...	Met. Log. 27.5.25 to 13.8.25...	17.8.25.
<i>City of Batavia</i> ...	Nancollas, H. E. ...	S. J. Nash ...	No. A.	" " ...	Form 911 27.12.24 to 25.1.25...	9.3.25.
<i>City of Benares</i> ...	Wyper, J. ...	C. G. Inglis ...	" A.	" " ...	" 21.11.25 to 25.11.25 ...	16.12.25.
<i>City of Brisbane</i> ...	Seaborne, F. O., D.S.C.	W. E. Fletcher ...	" A.	" " ...	" 3.10.25 to 4.11.25 ...	8.12.25.
<i>City of Canterbury</i>	Bremner, D. M. ...	A. M. Hamilton ...	" A.	" " ...	" 3.4.25 to 24.6.25 ...	29.6.25.
<i>City of Chester</i> ...	Letton, F. W. ...	F. C. Wilson, E. Garner, H. Asher.	M.L.	" " ...	Met. Log. 3.6.25 to 15.10.25 ...	22.10.25.
<i>City of Edinburgh</i>	Spencer, H. ...	J. D. MacDonald ...	No. M.	" " ...	Form 911 4.6.25 to 2.7.25 ...	18.8.25.
<i>City of London</i> ...	Martin, D. ...	J. J. McTigue ...	" A.	" " ...	" 16.11.25 to 8.12.25...	11.12.25.
<i>City of Marseilles</i>	Brown, G. ...	W. A. MacAdams, G. F. L. Coates.	" A.	" " ...	" 5.12.25 to 30.12.25...	4.1.26.
<i>City of Rangoon</i> ...	Dunning, T. W. J. ...	A. Gibb, V. S. Turner, A. H. Cosker, E. J. Sawyer, G. Lawrey.	M.L.	" " ...	Met. Log. 16.6.25 to 17.11.25...	9.12.25.
<i>City of Valencia</i> ...	Williamson, W. A., R.D., Lieut.- Commr. R.N.R.	C. C. Duncan ...	No. M.	" " ...	Form 911 5.3.25 to 3.4.25 ...	2.6.25.
<i>City of Yokohama</i>	McDonald, W. D. ...	R. Moloney ...	" A.	" " ...	" 7.11.25 to 11.12.25...	21.12.25.
<i>Clan Cumming</i> ...	McLean J. G. ...	S. M. Werrey Easterbrook ...	" A.	Clan ...	" 25.12.24 to 29.1.25...	9.3.25.
<i>Clan Lamont</i> ...	McCornish, A. B. ...	C. W. Banbury, A. F. Martin	" A.	" " ...	" 16.11.25 to 10.12.25 ...	5.1.26.
<i>Clan Lindsay</i> ...	Willits, J., Commr.	J. C. Carter ...	" A.	" " ...	" 26.11.25 to 19.12.25 ...	11.1.26.
<i>Clan Macbeth</i> ...	Young, A. H., R.D., Lieut.-Commr., R.N.R.	J. T. Bell ...	" A.	" " ...	" 1.11.25 to 1.12.25 ...	22.12.25.
<i>Clan Macfadyen</i>	Stenson, F. J., R.D., Capt., R.N.R.	K. T. Roper ...	" A.	" " ...	" 7.11.25 to 24.12.25...	30.12.25.
<i>Clan Macgillivray</i>	West, W. F. ...	P. G. de Gruchy ...	" A.	" " ...	Form 911 7.11.25 to 20.11.25...	14.12.25.
<i>Clan Macindoe</i> ...	Law, A. ...	F. G. Darnborough ...	" A.	" " ...	" 3.8.25 to 1.9.25 ...	3.9.25.
<i>Clan Mackellar</i> ...	Scotland, A. ...	D. McAllister ...	" A.	" " ...	" 16.9.25 to 26.10.25...	9.11.25.
<i>Clan Mackinnon</i>	Mackie, R. W. ...	W. F. Isaac, S. Y. Strange, S. H. Danson.	M.L.	" " ...	Met. Log. 20.6.25 to 28.9.25 ...	22.10.25.

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Clan Macphee</i> ...	Gourlay, J. B. ...	D. S. Rae, A. W. Jones, J. J. Millar.	M.L.	Clan ...	Met. Log. 28.12.24 to 24.7.25...	4.8.25.
<i>Clan Macnaughton</i> ...	Thomson, W. ...	A. J. Storkey ...	No. A.	" ...	Form 911 25.10.25 to 21.11.25	22.12.25.
<i>Clan MacTaggart</i> ...	Gray, J. N. ...	W. J. Henderson ...	" A.	" ...	" 29.9.25 to 31.10.25...	3.11.25.
<i>Clan MacTavish</i> ...	Higgins, C. J. ...	" ...	" A.	" ...	" ...	" ...
<i>Clan Macvicar</i> ...	Phillips, G. P. ...	L. S. Murrin ...	" A.	" ...	Form 911 14.7.25 to 2.8.25 ...	24.8.25.
<i>Clan Malcolm</i> ...	Neill, G. A. ...	S. M. Werrey Easterbrook ...	M.L.	" ...	" ...	" ...
<i>Clan Morrison</i> ...	Porterfield, W. M. ...	G. Morren ...	No. A.	" ...	Form 911 21.7.25 to 13.10.25...	15.10.25.
<i>Clan Murdoch</i> ...	Miller, W. ...	P. McMillan ...	" A.	" ...	" 22.10.25 to 8.12.25...	4.1.26.
<i>Clan Ranald</i> ...	Openshaw, L. G. ...	T. E. Woodall ...	" A.	" ...	" 5.10.25 to 30.10.25...	25.11.25.
<i>Clan Ross</i> ...	Jones, R. C. ...	G. Short ...	" A.	" ...	" 8.11.25 to 10.12.25...	29.12.25.
<i>Clan Sinclair</i> ...	Neill, G. A. ...	J. Brittain ...	" A.	" ...	" 10.3.25 to 29.7.25 ...	5.8.25.
<i>Clan Urquhart</i> ...	Gibb, A. F. W. ...	T. G. Mitchell ...	" A.	" ...	" 26.11.25 to 28.12.25 ...	30.12.25.
<i>Colonia, C.S.</i> ...	Garnham, S. A. ...	A. S. Muir, F. Bolingbroke, J. M. Matthews, W. Sangwine.	M.L.	Telegraph Construction & Maintenance.	Met. Log. 29.8.25 to 1.10.25 ...	9.10.25.
<i>Colonian</i> ...	Gittins, R. P. ...	T. A. Schofield-Miller ...	No. A.	Leyland ...	Form 911 6.11.25 to 30.11.25...	9.12.25.
<i>Columbia</i> ...	Erskine, R. ...	C. L. Seaman ...	" A.	Anchor ...	" 28.6.25 to 19.7.25 ...	27.7.25.
<i>Concordia</i> ...	Morris, J. ...	T. Philip, J. McIntosh, J. Davies.	M.L.	Anchor Donaldson ...	Met. Log. 7.3.25 to 30.6.25 ...	20.7.25.
<i>Comino</i> ...	Nuttall, E. L. ...	J. Woodward ...	No. A.	Furness Withy Glen & Co. ...	Form 911 23.8.25 to 21.11.25...	8.12.25.
<i>Copenhagen</i> ...	Kerr, J. E. ...	" ...	" ...	" ...	" ...	" ...
<i>Corinthic</i> ...	Hart, F. ...	F. Kean, M. Bennett, F. G. Rogers.	M.L.	White Star ...	Met. Log. 4.4.25 to 18.7.25 ...	27.7.25.
<i>Cornwall</i> ...	Haines, F. P. ...	Mr. Maltby, Mr. Ray ...	No. A.	Downie, J., & Co. ...	Form 911 4.7.25 to 13.8.25 ...	21.9.25.
<i>Crawford Castle</i> ...	Morgan, A. O., R.D., Commr. R.N.R.	J. E. R. Wilford ...	" A.	Union Castle ...	" 6.11.25 to 10.12.25...	11.1.26.
<i>Culebra</i> ...	Mackay, A. S. ...	P. Cooper, J. W. Duncan, C. A. Payne.	M.L.	R.M.S.P. Co. ...	Met. Log. 4.5.25 to 15.12.25 ...	1.1.26.
<i>Cuthbert</i> ...	Barlow, F. P. ...	S. G. Edwards ...	No. A.	Booth ...	Form 911 25.9.25 to 20.12.25...	22.12.25.
<i>Cyclops</i> ...	Cosker, W. ...	A. Brotherton ...	" A.	A. Holt ...	" 4.6.25 to 28.8.25 ...	31.8.25.
<i>Dardanus</i> ...	Williams, D. T. ...	W. K. Kerr ...	" A.	" ...	" 16.11.25 to 11.12.25 ...	11.1.26.
<i>Darian</i> ...	Masters, W. ...	A. S. Holland ...	" A.	Leyland ...	" 6.12.25 to 17.12.25 ...	21.12.25.
<i>Darro</i> ...	Smith, W. E., D.S.O., R.D., Capt., R.N.R.	L. Peterson ...	" M.	R.M.S.P. Co. ...	" 15.11.25 to 9.1.26 ...	14.1.26.
<i>Daytonian</i> ...	Walker, C. J., D.S.C.	" ...	" A.	Leyland ...	" 30.3.25 to 13.5.25 ...	21.5.25.
<i>Demerara</i> ...	Willan, F. C. L. ...	A. Nicholls ...	" M.	R.M.S.P. Co. ...	" 19.10.25 to 13.12.25 ...	17.12.25.
<i>Demosthenes</i> ...	Orriss, F. A. ...	S. J. Buckland ...	" M.	Aberdeen ...	" 2.11.25 to 17.11.25...	29.12.25.
<i>Deseado</i> ...	Hannam, F. S. ...	H. B. Bennett, A. H. Phillipson	" M.	R.M.S.P. Co. ...	" 25.9.25 to 13.11.25...	20.11.25.
<i>Desna</i> ...	Huff, G. F. ...	J. W. Smith ...	" M.	" ...	" 3.10.25 to 29.11.25...	3.12.25.
<i>Deucalion</i> ...	Findlay, J. ...	L. E. Brown ...	" A.	A. Holt ...	" 3.10.25 to 14.10.25...	15.1.26.
<i>Dieppe</i> ...	Marmery, S. ...	Mr. Parsons ...	C.C.	Southern Railway ...	Telegraphic Report 15.1.26 ...	15.1.26.
<i>Dimboola</i> ...	Roy, C. M. ...	G. A. Molyneux ...	No. A.	Melbourne S.S. Co. ...	Form 911 30.10.25 to 24.11.25	29.12.25.
<i>Discoverer</i> ...	Ling, J. T. ...	H. Hall ...	" M.	Harrison ...	" 17.9.25 to 9.12.25 ...	18.12.25.
<i>Discovery, R.R.S.</i> ...	Stenhouse, J. R., D.S.O., D.S.C., O.B.E., R.D., Commr. R.N.R.	" ...	M.L.	Discovery Expedition	" ...	" ...
<i>Domala, M.V.</i> ...	Buswell, W. ...	C. E. Merchant ...	No. M.	British India ...	Form 911 27.9.25 to 8.10.25 ...	15.10.25.
<i>61 Doric</i> ...	S. Bolton, D.S.C., R.D., Commr. R.N.R.	O. V. Lucas, W. F. Dennison, R. H. Shaw.	W.T.	White Star ...	W.T. Reg. 21.12.25 to 10.1.26	12.1.26.
<i>Doric Star</i> ...	Thomas, R. T. ...	T. Williams ...	No. M.	Blue Star ...	" 1.8.25 to 15.9.25 ...	12.1.26.
<i>Dorington Court</i> ...	Isaacs, W. A. ...	E. D. A. Gibbs ...	" A.	Haldin & Co. ...	" 12.9.25 to 6.11.25 ...	16.9.25.
<i>Dorset</i> ...	Kettlewell, C. R. ...	E. Smith, H. S. Rogers, S. T. Woodhouse.	M.L.	New Zealand S.S. Co. ...	Met. Log. 13.6.25 to 29.12.25...	20.11.25.
<i>Dorsetshire</i> ...	Adamson, B. W. ...	C. H. Griffiths, W. A. Kent, R. Cuming, J. Logan.	"	Bibby ...	" 3.10.25 to 7.1.26 ...	12.1.26.
<i>Dromore Castle</i> ...	Vincent, E. S., R.D., Commr. R.N.R.	S. S. Smith ...	No. A.	Union Castle ...	Form 911 8.12.25 to 26.12.25...	30.12.25.
<i>Dryden</i> ...	Major, T. W. ...	A. Hewitt ...	" M.	Lampert & Holt ...	" 1.9.25 to 17.9.25 ...	7.10.25.
<i>Duendes</i> ...	Cox, F. D. ...	H. Jones ...	" M.	P.S.N. Co. ...	" 7.11.25 to 26.11.25...	4.1.26.
<i>Dundrum Castle</i> ...	Kershaw, H. J. ...	R. May ...	" A.	Union Castle ...	" 3.5.25 to 28.5.25 ...	12.6.25.
<i>Dunrobin</i> ...	Ramsay, J. D. ...	M. M. Ramsay ...	" A.	Glen & Co. ...	" 27.9.25 to 7.11.25 ...	18.11.25.
<i>Duquesa</i> ...	Ellis, F., D.S.C.	C. P. Lane ...	" M.	Furness Withy ...	" 12.9.25 to 13.11.25...	18.11.25.
<i>Duenda</i> ...	Wilson, W. ...	W. H. Creese ...	" M.	British India ...	" 31.1.25 to 28.4.25 ...	12.5.25.
<i>Edinburgh Castle</i> ...	Morton Betts, W. ...	" ...	M.L.	Union Castle ...	Met. Log. 5.9.25 to 27.12.25 ...	30.12.25.
<i>El Cordobes</i> ...	Noton, F. G. ...	J. W. Elkins ...	No. A.	British & Argentine S.N. Co.	Form 911 26.9.25 to 16.12.25...	19.12.25.
<i>Elmina</i> ...	Allen, E. E. ...	R. A. Roberts, J. A. Jones, C. V. Evans.	M.L.	Elder Dempster ...	Met. Log. 9.9.25 to 3.11.25 ...	16.11.25.
<i>El Paraguay</i> ...	Smith, F. C. ...	W. E. Williams ...	No. M.	Houlder Bros. ...	Form 911 7.9.25 to 3.11.25 ...	5.11.25.
<i>Elpenor</i> ...	T. W. Hannay ...	R. L. Phillips, R. Harries, C. Shaw, W. Rankin, G. Houchin.	M.L.	A. Holt ...	Met. Log. 25.5.25 to 24.9.25 ...	28.9.25.
<i>Empress of Asia</i> ...	Douglas, L. D., R.D., Lt. Commr., R.N.R.	R. H. Foley, R. Dobbin, L. Johnston, L. C. Hogg, T. M. W. Golby.	"	Canadian Pacific ...	" 28.5.25 to 9.9.25 ...	19.10.25.
<i>Empress of Australia</i> ...	Hailey, A. J. ...	" ...	"	" ...	" 21.3.25 to 17.12.25...	12.1.26.
<i>Empress of Canada</i> ...	Robinson, S., C.B.E., R.D., Commr., R.N.R.	W. S. Halliday, L. C. Barry, J. W. Thomas.	"	" ...	" 15.5.25 to 21.9.25 ...	16.12.25.
<i>Empress of France</i> ...	Griffiths, E. ...	O. Pennington, E. Roberts, A. W. Patrick, W. Ewens.	"	" ...	" 21.6.25 to 17.11.25...	24.11.25.
<i>Empress of Russia</i> ...	Holland, A. J., R.D., Lt. Commr., R.N.R.	" ...	"	" ...	" 25.6.25 to 6.10.25 ...	14.11.25.
<i>Empress of Scotland</i> ...	Latta, R. G. ...	B. Grant, D. Loram, W. Bacon, K. Hutchings, F. G. Hutchings.	"	" ...	" 3.5.25 to 7.10.25 ...	3.11.25.
<i>Endeavour</i> ...	Commr. S. A. Geary-Hill, D.S.O., R.N.	M. L. Harrison, E. V. B. Baker, E. H. B. Baker, J. Torlesse.	"	His Majesty's Ship ...	" 26.5.25 to 24.6.25 ...	13.7.25.
<i>Essequibo</i> ...	Duncan, B. E. ...	G. Pattison ...	No. M.	R.M.S.P. Co. ...	Form 911 13.8.25 to 23.11.25...	1.12.25.
<i>Eumaeus</i> ...	Read, J. W. ...	W. J. Ryan ...	" A.	A. Holt ...	" 17.10.25 to 27.10.25...	18.11.25.
<i>Euripides</i> ...	Collins, P. J., O.B.E.	H. S. Cox, G. R. Fisher, A. J. Terry.	M.L.	Aberdeen ...	Met. Log. 27.2.25 to 18.6.25 ...	29.6.25.
<i>Eurybates</i> ...	Carnon, C. G. ...	C. Napier ...	No. A.	A. Holt ...	Form 911 19.10.25 to 12.11.25	14.12.25.
<i>Explorer</i> ...	Lamont, A. ...	Scientific Staff ...	M.L.	Scottish Fishery Board	Met. Log. 2.3.25 to 17.10.25 ...	29.12.25.
<i>Ferndale</i> ...	Daniel, F. ...	D. Jones ...	No. M.	Commonwealth Govt. His Majesty's Ship ...	Form 911 18.10.25 to 17.11.25	19.12.25.
<i>Fitzroy</i> ...	Silk, H. V., Lt. Commr., R.N.	M. E. Welby ...	M.L.	" ...	Met. Log. 25.8.25 to 16.11.25...	21.11.25.
<i>Flandria</i> ...	Veldkamp, G. J. ...	T. Doornbosch ...	No. M.	Holland Lloyd ...	Form 911 30.10.25 to 16.12.25	19.12.25.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Flinders</i> ...	Henderson, D. A., Lt.-Commr., R.N.	H. E. Turner ...	M.L.	His Majesty's Ship ...	Met. Log. 23.8.25 to 20.11.25...	2.12.25.
<i>Francisco Freya</i> ...	Williams, J. C. ...	J. C. Nettleship ...	No. A.	Ellerman Wilson ...	Form 911 5.11.25 to 12.12.25...	18.12.25.
	Angus, W. ...	J. H. Hennessey ...	" A.	Scottish Fishery Board ...	" 26.11.25 to 19.12.25	29.12.25.
<i>Gallymore</i> ...	Ledsome, J. S. ...	N. Goubrough ...	" M.	Furness Withy ...	" 5.3.25 to 15.3.25 ...	18.3.25.
<i>Garoot</i> ...	Visser, C. W. ...	C. J. Vandenberg ...	" M.	Rotterdam Lloyd ...	" 11.7.25 to 17.9.25 ...	8.10.25.
<i>Gascoyne</i> ...	Rutt, W. N. ...	R. Simpson ...	" A.	Dalgely & Co. ...	" 28.9.25 to 8.11.25 ...	19.12.25.
<i>Gelria</i> ...	Bakker, T. J. ...	K. H. Schilp ...	" M.	Holland Lloyd ...	" 13.11.25 to 30.12.25	4.1.26.
<i>Glenamoy, M.V.</i> ...	Angier, J. ...	R. H. Bishop ...	" A.	Glen Line ...	" 4.11.25 to 18.11.25...	23.11.25.
<i>Glenapp, M.V.</i> ...	Roberts, W. E. ...	S. W. Bell ...	" A.	" ...	" 14.11.25 to 27.12.25	4.1.26.
<i>Glenluce, M.V.</i> ...	Barkley, E. ...	J. D. Richards ...	" A.	" ...	" 22.2.25 to 24.3.25 ...	30.3.25.
<i>Glenishane</i> ...	Bennett, J. H. ...	R. A. Dale ...	" A.	" ...	" 28.11.25 to 11.12.25	21.12.25.
<i>Gloucestershire</i> ...	Robin, E. ...	M. W. Simmons ...	" A.	Bibby ...	" 1.12.25 to 1.1.26 ...	5.1.26.
<i>Gorgon</i> ...	Hughes, J. W. ...	E. W. Powell ...	" A.	A. Holt & Co. ...	" 16.11.25 to 4.12.25...	5.1.26.
<i>Gourko</i> ...	Aspinall, A. E. ...	G. B. Bray, S. N. Stokes, J. D. Birch.	No.	Ellerman Wilson ...	Met. Log. 16.5.25 to 1.11.25 ...	10.12.25.
<i>Haliartus</i> ...	Marsh, L. V. ...	W. H. Upton ...	No. A.	R. P. Houston ...	Form 911 12.9.25 to 10.10.25...	19.10.25.
<i>Harmonides</i> ...	Hughes, W. J. ...	D. L. Roberts ...	" A.	" ...	" 1.3.25 to 16.3.25 ...	30.4.25.
<i>Harmony, Auxy.</i> ...	Jackson, J. C. ...	A. W. Bush ...	" A.	Moravian Mission ...	" 1.12.25 to 18.12.25...	29.12.25.
<i>Hatarana</i> ...	Woodget, H. T. ...	J. L. Durkee, F. Wells, H. Harrison, H. J. O'Donohoe.	M.L.	British India ...	" 7.10.24 to 22.4.25 ...	4.5.25.
<i>Hauraki, M.V.</i> ...	Frew, J. D. ...	J. A. Pearson ...	No. M.	Union S.S. Co., N.Z. ...	" 10.9.25 to 10.10.25...	25.11.25.
<i>Henry Holmes, C.S.</i> ...	Bicker Caarten, A.	R. J. M. Pearce ...	" M.	W. I. & Panama Telegraph Co.	" 7.7.25 to 5.9.25 ...	23.9.25.
<i>Herald</i> ...	Harvey, J. R., O.B.E., Commr., R.N.	W. C. Jenks ...	M.L.	His Majesty's Ship ...	Met. Log. 1.6.25 to 24.9.25 ...	24.12.25.
<i>Herefordshire</i> ...	Mann, R. P. ...	J. E. Cullen, G. Whitworth, P. S. Cooper.	No.	Bibby ...	" 10.10.25 to 17.12.25	14.1.26.
<i>Herschel</i> ...	Davies, G. W. ...	J. M. Edgar ...	No. A.	Lampert & Holt ...	Form 911 14.10.25 to 15.12.25	29.12.25.
<i>Hibernia</i> ...	Tanner, E. B. ...	R. Woodall ...	C.C.	L.M. & S. Rly. ...	Telegraphic Report, 14.1.26 ...	14.1.26.
<i>Highland Enterprise</i> ...	Pond, R. H. ...	J. H. Titton ...	No. A.	Nelson ...	Form 911 31.1.25 to 26.4.25 ...	12.5.25.
" <i>Glen</i> ...	Jones, T. J. ...	C. M. Best ...	" A.	" ...	" 20.7.25 to 12.9.25 ...	24.9.25.
" <i>Heather</i> ...	Powell, G. A. ...	J. H. Cables, F. Jeyes ...	No.	" ...	Met. Log. 10.12.24 to 1.6.25 ...	16.6.25.
" <i>Laddie</i> ...	Alford, C. ...	R. Simpson ...	No. A.	" ...	Form 911 5.11.25 to 4.1.26 ...	6.1.26.
" <i>Piper</i> ...	Collings, D. ...	A. S. Jones, J. S. Collins, W. T. Breen, E. F. Smart.	M.L.	" ...	Met. Log. 20.6.25 to 3.11.25 ...	18.11.25.
" <i>Pride</i> ...	Davies, G. A. ...	F. Falconer, R. R. Soanes, G. E. Leech.	"	" ...	" 28.8.25 to 17.11.25...	25.11.25.
" <i>Rover</i> ...	Ashby Graves, F. ...	F. W. Harvey, H. Thomas, F. Abbott.	No.	" ...	" 24.9.25 to 23.11.25...	2.12.25.
" <i>Warrior</i> ...	Robinson, R. H. ...	G. I. Evans ...	No. M.	" ...	Form 911 1.6.25 to 29.7.25 ...	10.8.25.
<i>Hildebrand</i> ...	Maddrell, J. ...	A. Allan ...	" A.	Booth ...	" 18.11.25 to 31.12.25 ...	14.1.26.
<i>Hobsons Bay</i> ...	Kydd, O. J. ...	J. E. Williams, O. J. Edwards, M. P. Pearce, J. Scott, G. M. Coote.	M.L.	Commonwealth Govt. }	Met. Log. 31.3.25 to 11.7.25 ...	5.11.25.
					" 28.7.25 to 31.10.25...	5.11.25.
<i>Holbein</i> ...	Gough, W. A. ...	H. L. Rudd ...	No. A.	Lampert & Holt ...	Form 911 21.8.25 to 22.10.25...	3.11.25.
<i>54 Homeric</i> ...	Holme, A. ...	A. E. Dyer, A. Griffiths, S. A. Jones, S. B. Morfee.	W.T.	White Star ...	W.T. Reg. 3.12.25 to 18.12.25...	21.12.25.
					" 24.12.25 to 8.1.26 ...	12.1.26.
<i>Honorius</i> ...	Samuels, C. ...	J. B. Martin, W. G. Iddes ...	No. A.	R. P. Houston ...	Form 911 27.7.25 to 27.8.25 ...	31.8.25.
<i>Hubert</i> ...	Buck, R. H. ...	G. H. Jordan ...	" A.	Booth ...	" 6.8.25 to 28.8.25 ...	14.9.25.
<i>Hurunui</i> ...	Burton Davies, J. ...	J. C. Tuckett, C. D. Watt, F. Pover, G. R. Hogg.	M.L.	New Zealand S.S. Co.	Met. Log. 20.11.24 to 17.5.25...	9.6.25.
<i>Ibex</i> ...	Langdon, C. ...	" ...	C.C.	G.W. Railway ...	Telegraphic Report. 19.3.25 ...	19.3.25.
<i>Ikala</i> ...	Meetham, J. T. ...	E. Lightfoot, C. W. Smithurst	No. A.	J. H. Welsford & Co.	Form 911 22.5.25 to 5.6.25 ...	16.7.25.
<i>Ingoma</i> ...	Barrow, R. K. ...	O. Stanhope ...	" A.	Harrison ...	" 24.9.25 to 6.11.25 ...	9.11.25.
<i>Intaba</i> ...	Gibbings, W. A. ...	A. M. Hughes ...	" A.	" ...	" 30.10.25 to 16.12.25	23.12.25.
<i>Iris, C.S.</i> ...	Hughes, H. R. ...	" ...	M.L.	Pacific Cable Board ...	" ...	"
<i>Iroquois</i> ...	Jackson, A. L., Commr., R.N.	A. K. Baxendell ...	"	His Majesty's Ship ...	Met. Log. 19.4.25 to 16.8.25 ...	28.9.25.
<i>Ixion</i> ...	Williams, R. J. ...	A. S. Brotherton ...	No. A.	A. Holt ...	Form 911 19.10.25 to 7.11.25...	14.12.25.
<i>Jervis Bay</i> ...	Chaplin, W. R. ...	R. W. Laycock ...	" M.	Commonwealth Govt. }	" 4.11.25 to 23.11.25...	14.12.25.
<i>John Pender, C.S.</i> ...	Gibson, L. ...	A. E. Everall ...	" A.	Eastern Tel. Co. ...	" 31.10.25 to 19.11.25	9.12.25.
<i>Junin</i> ...	Benson, C. W. ...	A. Beharrel ...	" A.	Pacific S.N. Co. ...	" 16.5.25 to 5.6.25 ...	17.6.25.
<i>Kaikoura</i> ...	McNish, R. ...	H. E. Reilly, H. Neagle, D. Glegg, S. Toyne.	M.L.	New Zealand S.S. Co.	Met. Log. 26.1.25 to 8.8.25 ...	26.8.25.
<i>Kaisar-i-Hind</i> ...	Manley, G. ...	G. R. Baker ...	No. M.	P. & O. ...	Form 911 17.10.25 to 8.12.25...	18.12.25.
<i>Kamo Maru</i> ...	Shiratori, S. ...	" ...	" A.	Nippon Yusen Kaisha	" 10.10.25 to 8.11.25...	19.12.25.
<i>Kangaroo</i> ...	Norris, H. C. ...	R. J. Sinclair, V. Gilbert, J. Egglestone.	M.L.	State Service Australia	Met. Log. 11.4.25 to 20.9.25 ...	2.11.25.
<i>Kashmir</i> ...	Stringer, R.H., O.B.E., Commr., R.N.R.	T. C. Fairham ...	No. M.	P. & O. ...	Form 911 21.11.25 to 14.12.25	11.1.26.
<i>Kathlamba</i> ...	Mordue, J. A. ...	" ...	" A.	Ellerman Bucknall ...	" 10.12.25 to 10.1.26...	13.1.26.
<i>Kellett</i> ...	Maxwell, P. S. E., Commr., R.N.	D. G. V. Williams...	M.L.	His Majesty's Ship ...	Met. Log. 29.7.25 to 16.11.25...	18.11.25.
<i>Kenilworth Castle</i> ...	Chave, Sir B., K.B.E., George J., O.B.E.	" ...	"	Union Castle ...	" 8.2.25 to 26.8.25 ...	12.1.26.
<i>Khiva</i> ...	Randall, H.W., R.D., Capt., R.N.R.	M. R. Little, A. H. Cole, L. A. Hill.	"	P. & O. ...	" 29.8.25 to 9.12.25 ...	12.12.25.
<i>Khyber</i> ...	Collyer, R. M. M., R.N.R., Commr.	J. B. Child ...	No. M.	" ...	Form 911 4.7.25 to 29.10.25 ...	7.11.25.
<i>Kia Ora</i> ...	McIntosh, A. ...	A. E. Lockhart ...	" A.	Shaw Savill & Albion	" 28.4.25 to 10.9.25 ...	25.9.25.
<i>Kildonan Castle</i> ...	Wilford, T.H. ...	G. H. Pickering ...	" A.	Union Castle ...	" 30.10.25 to 20.12.25	22.12.25.
<i>Kitano Maru</i> ...	Gotoh, M. ...	M. Hara ...	" A.	Nippon Yusen Kaisha	" 12.9.25 to 6.10.25 ...	13.11.25.
<i>Knight Companion</i> ...	Beale, H. E. ...	J. J. Daniel, A. M. Hunter...	" M.	A. Holt ...	" 8.7.25 to 23.7.25 ...	24.8.25.
<i>Kovno</i> ...	Dosser, W. A. ...	J. Marshall, T. Tindell, J. J. Collier, F. T. Shaw.	M.L.	Ellerman Wilson ...	Met. Log. 26.4.25 to 3.10.25 ...	10.11.25.
<i>Kyogle</i> ...	Brown, A. M. ...	" ...	"	" ...	"	"
	Coalstad, C. ...	C. B. Odman, E. W. Hughes	No. A.	Commonwealth Light-house Service.	Form 911 17.8.25 to 9.11.25 ...	14.12.25.
<i>Lady Denison Pender, C.S.</i> ...	West, G. W. ...	F. Lawrence ...	" A.	Eastern Tel. Co. ...	Met. Log. 28.8.25 to 6.10.25 ...	30.10.25.
<i>Laquna</i> ...	Pape, E. R. ...	W. P. Boon ...	" A.	Pacific S.N. Co. ...	" 30.10.25 to 25.11.25	30.11.25.
<i>Lalande</i> ...	Hamill, H. ...	" ...	" A.	Lampert & Holt ...	" 28.6.25 to 3.9.25 ...	31.10.25.
<i>Lancashire</i> ...	Beckett, F. W. ...	W. M. S. Higginson ...	" A.	Bibby ...	" 14.8.25 to 22.10.25...	27.10.25.
<i>36 Lancastria</i> ...	Brown, F. G. ...	P. J. Robinson, L. Harper...	W.T.	Cunard ...	W.T. Reg. 12.10.25 to 1.11.25...	5.11.25.
					Form 911 11.10.25 to 1.11.25...	4.11.25.
<i>Laomedon</i> ...	Blues, A. ...	H. Howe... ...	No. A.	A. Holt ...	" 12.10.25 to 8.11.25...	2.12.25.
<i>La Paz, M.V.</i> ...	Ross, J. ...	F. T. Gale ...	" M.	Pacific S.N. Co. ...	" 8.12.25 to 29.12.25...	11.1.26.
<i>Laplace</i> ...	Shaw, W. ...	W. Boyde, R. B. Langley ...	" A.	Lampert & Holt ...	" 19.4.25 to 19.7.25 ...	18.8.25.

LIST OF VOLUNTARY OBSERVING SHIPS

V

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
55 <i>Lapland</i> ...	Howell, T. ...	E. Cornellie, F. Good, — Flett.	W.T.	Red Star ...	W.T. Reg. 18.10.25 to 7.11.25... Form 911 17.10.25 to 7.11.25...	9.11.25 9.11.25
<i>Lassell, M.V.</i> ...	Hickman, V. T. ...	F. J. Durrant ...	No. A.	Lampport & Holt ...	1.11.25 to 18.11.25...	14.12.25.
<i>Leicestershire</i> ...	English, G. L. ...	J. Ineson, P. H. Potter, D. Y. Sharrock, J. Tradewell.	M.L.	Bibby ...	Met. Log. 26.9.25 to 5.12.25 ...	12.12.25.
<i>Leighton, M.V.</i> ...	Lindesay J. M. ...	H. A. Bolding, T. O. Jones	No. A.	Lampport & Holt ...	Form 911 15.11.25 to 4.12.25	4.1.26.
<i>Leitrim</i> ...	Robertson, A. ...	E. F. C. Higgins ...	" A.	Dowie, J., & Co. ...	" 14.7.25 to 4.8.25 ...	16.9.25.
<i>Loch Katrine</i> ...	Shillitoe, B. ...	C. Noakes, K. Whitaker ...	" M.	R.M.S.P. Co. ...	" 18.7.25 to 16.10.25 ...	26.10.25.
<i>London Commerce</i> ...	Young, H. J., D.S.C.	H. P. Longland ...	" A.	Furness Withy ...	" 6.12.25 to 4.1.26 ...	11.1.26.
<i>London Importer</i> ...	Williamson, J. M. ...	G. Lusty ...	M.L.	" ...	" ...	" ...
<i>Loriga, M.V.</i> ...	Barkley, E. ...	W. N. Anders ...	No. A.	Pacific S.N. Co. ...	Form 911 22.5.25 to 6.8.25 ...	25.8.25.
<i>Losada, M.V.</i> ...	Meldrum, G. W. ...	E. Baxter ...	" M.	" ...	" 1.11.25 to 20.11.25	22.12.25.
<i>Macedonia</i> ...	Potter, H. W., R.D., Commr., R.N.R.	E. R. Bodley ...	" M.	P. & O. ...	" 14.11.25 to 14.12.25	12.1.26.
<i>Macharda</i> ...	Richardson, T. ...	P. Yates ...	" A.	Brocklebank ...	" 6.11.25 to 4.12.25 ...	14.12.25.
<i>Mahana</i> ...	Kershaw, W. A. R. ...	F. M. Smith, J. C. K. Rogers	" A.	Shaw, Savill & Albion	" 27.10.25 to 23.11.25	9.1.26.
<i>Maharaja</i> ...	Elliott, G. ...	D. M. Swaine ...	" M.	Asiatic S.N. Co. ...	" 3.11.25 to 13.12.25	11.1.26.
<i>Maihar</i> ...	Rowe, J. P. ...	C. Shaw, H. T. Scoins, R. G. Widdon.	M.L.	Brocklebank ...	Met. Log. 15.8.24 to 29.4.25 ...	7.5.25.
<i>Maimyo</i> ...	Richardson, T. ...	P. Yates ...	No. A.	" ...	Form 911 23.7.25 to 13.10.25...	3.11.25.
<i>Maine</i> ...	Seymour, H. ...	A. S. Smith ...	" A.	Atlantic Transport ...	" 20.4.25 to 26.5.25 ...	15.6.25.
<i>Maiwara</i> ...	Brown, T. M. ...	" ...	M.L.	Burns Philp ...	" ...	" ...
58 <i>Majestic</i> ...	Metcalfe, G. R. ...	L. Thompson, W. Pearson, C. J. Wartire, J. A. Macnaughton.	W.T.	White Star ...	W.T. Reg. 17.12.25 to 2.1.26 ... Form 911 17.12.25 to 2.1.26 ...	5.1.26. 5.1.26.
<i>Makambo</i> ...	Brown, T. M. ...	F. C. Ree, J. B. Norris ...	M.L.	Burns Philp ...	Met. Log. 10.9.24 to 28.2.25 ...	17.11.25.
<i>Makura</i> ...	Worrall, L. C. H. ...	J. D. Lundie, D. Todd, A. R. Noble.	"	Canadian-Australasian	" 11.3.25 to 2.7.25 ...	21.9.25.
<i>Malakuta</i> ...	Maugham, J. W. ...	J. H. Round ...	No. M.	Brocklebank ...	Form 911 21.10.25 to 16.11.25	18.11.25.
<i>Malancha</i> ...	Whitham, F. ...	A. Hill ...	" M.	" ...	" 4.9.25 to 4.10.25 ...	7.10.25.
<i>Malda</i> ...	Gray, T. N. ...	H. Butler ...	" M.	British India ...	" 9.9.25 to 14.10.25 ...	26.10.25.
<i>Manchester Corporation.</i>	Everest, J. E. ...	W. L. Lavers ...	" A.	Manchester Liners ...	" 13.12.25 to 24.12.25...	29.12.25.
<i>Manchester Hero</i>	Riley, J. E. ...	" ...	M.L.	" ...	" ...	" ...
<i>Manchester Merchant.</i>	Struss, F. D. ...	R. A. Walker ...	No. A.	" ...	Form 911 18.10.25 to 6.12.25 ...	11.12.25.
<i>Manchester Shipper</i>	Dormer, A. E. ...	" ...	M.L.	" ...	" ...	" ...
<i>Manipur</i> ...	Scurr, T. W. ...	H. Willington ...	No. M.	Brocklebank ...	Form 911 20.6.25 to 23.9.25 ...	25.9.25.
<i>Mantua</i> ...	Butler, G. E. ...	J. Paice ...	" M.	P. & O. ...	" 1.10.25 to 30.11.25...	17.12.25.
<i>Manzanares</i> ...	Maxwell Brown, W.E.	G. S. Gracie ...	" A.	Elders & Fyffes ...	" 10.11.25 to 25.11.25	4.1.26.
29 <i>Marburn</i> ...	Stewart, A. ...	R. Biggs, W. R. Thorburn ...	W.T.	Canadian Pacific	W.T. Reg. 7.11.25 to 27.11.25 Form 911 7.11.25 to 27.11.25	1.12.25. 1.12.25.
<i>Marella</i> ...	Mortimer S. ...	J. A. Street ...	M.L.	Burns Philp ...	Met. Log. 2.4.25 to 25.8.25 ...	1.12.25.
<i>Marengo</i> ...	Wilkins, J. ...	F. Eglin, J. E. Stott, J. Donovan.	"	Ellerman Wilson ...	" 14.3.25 to 5.9.25 ...	9.10.25.
<i>Margha</i> ...	Collins, T. ...	" ...	"	" ...	" ...	" ...
<i>Margha</i> ...	Milne, A. R., R.D., Commr., R.N.R.	J. Strachan, P. Wright, H. E. Evans, B. Paul.	"	British India ...	" 15.2.25 to 12.5.25 ...	20.5.25.
<i>Marglen</i> ...	Griffiths, J. N. ...	E. Eastley ...	No. A.	Canadian Pacific ...	Form 911 19.2.25 to 9.4.25 ...	14.4.25.
<i>Maryland</i> ...	Hutt, F. C. ...	A. C. Clay ...	" A.	Atlantic Transport ...	" 16.1.25 to 18.2.25 ...	24.2.25.
<i>Matakana</i> ...	Thurston, H. P. ...	A. Chrystal ...	" A.	Shaw, Savill & Albion	" 26.7.25 to 3.1.26 ...	8.1.26.
<i>Mataram</i> ...	Hillman, E. J. ...	K. L. Thompson ...	" A.	Burns Philp & Co. ...	" 18.6.25 to 18.7.25 ...	31.8.25.
<i>Matheran</i> ...	Columbine, F. F. ...	J. A. Embley, R. E. Gartside, G. T. Hogg, D. Newton.	M.L.	Brocklebank ...	Met. Log. 14.7.25 to 13.10.25...	2.11.25.
<i>Mathura</i> ...	Hanna, R. G. ...	H. H. Armstrong ...	No. M.	" ...	Form 911 14.8.25 to 30.10.25...	3.11.25.
<i>Matiana</i> ...	Langlands, D. H. ...	W. R. Sobey ...	" M.	British India ...	" 1.11.25 to 21.11.25...	23.12.25.
<i>Maunganui</i> ...	Worrall, L. C. H. ...	A. R. Noble ...	" M.	Union S.S. Co. of N.Z.	" 8.8.25 to 3.9.25 ...	28.9.25.
<i>Mauretania</i> ...	C.B.E., R.D., A.-d.-C., Capt., R.N.R.	E. R. Taylor, A. Mackellar, J. A. Quarrie.	W.T.	Cunard ...	W.T. Reg. 9.12.25 to 20.12.25...	24.12.25.
<i>Media</i> ...	Mallett, R. ...	S. C. Cramb ...	No. A.	T. & J. Brocklebank...	Form 911 20.10.25 to 20.11.25...	14.12.25.
56 <i>Megantic</i> ...	Trant, E. L., Commr. R.N.R.	F. A. Billiard, J. Clarke, A. H. Young.	W.T.	White Star ...	W.T. Reg. 29.11.25 to 18.12.25	24.12.25.
22 <i>Melita</i> ...	Freer, A. ...	J. McLennan, D. Dunn, F. N. Stell.	"	Canadian Pacific	" 30.11.25 to 17.12.25	21.12.25.
<i>Memnon</i> ...	Evans, D. L. ...	L. S. Evans ...	No. A.	A. Holt ...	Form 911 30.11.25 to 17.12.25	21.12.25.
<i>Memoninee</i> ...	Pollard, W. F., D.S.O., R.D., Capt. R.N.R.	R. Day ...	" A.	Atlantic Transport ...	" 25.8.25 to 18.10.25...	28.10.25.
<i>Mercian</i> ...	Gardner, J. ...	R. Hughes ...	" A.	Leyland ...	" 12.9.25 to 20.9.25 ...	23.9.25.
21 <i>Metagama</i> ...	Griffiths, E. ...	R. Walker, A. Mansey ...	W.T.	Canadian Pacific ...	W.T. Reg. 29.11.25 to 18.12.25	21.12.25.
<i>Miami</i> ...	Makepeace, S. ...	A. F. Woodhouse, J. W. Kendall.	No. A.	Elders & Fyffes ...	Form 911 20.10.25 to 21.11.25	24.11.25.
<i>Minderoo</i> ...	Richardson, E. ...	B. J. Bennie, W. J. McPhedron, J. H. Oxtan.	M.L.	West Australia Nav. Co.	Met. Log. 31.5.25 to 9.11.25 ...	12.1.26.
<i>Minna</i> ...	Mackenzie, G. G. ...	D. Rattray ...	No. A.	Scottish Fishery Board	Form 911 24.10.25 to 15.12.25...	18.12.25.
<i>Minnetonka</i> ...	Gates, T. F., C.B.E.	H. E. McCartney ...	" M.	Atlantic Transport ...	" 6.12.25 to 26.12.25	29.12.25.
<i>Minnewaska</i> ...	Claret, F. H., C.B.E., Commr., R.N.R.	J. W. Grier ...	" M.	" ...	" 10.10.25 to 17.10.25	24.10.25.
<i>Mirror, C.S.</i> ...	Gibson, L. ...	C. E. F. St. John ...	" M.	Eastern Tel. Co. ...	" 2.4.25 to 29.5.25 ...	30.6.25.
<i>Mississippi, M.V.</i> ...	Wylie, J. T. J. ...	H. K. Cockerill ...	" A.	Atlantic Transport ...	" 17.5.25 to 28.5.25 ...	3.6.25.
<i>Moldavia</i> ...	Ohlson, B. J. ...	H. M. Flint ...	" M.	P. & O. ...	" 10.10.25 to 13.11.25	23.12.25.
<i>Mongolian Prince</i>	Durrant, G. D. ...	M. Gibson ...	" A.	Prince ...	" 13.9.25 to 15.10.25...	26.10.25.
<i>Monkbarns, Ship</i>	Davies, W. ...	R. Baise ...	" A.	J. Stewart & Co. ...	" 23.10.25 to 16.11.25	29.12.25.
24 <i>Montcalm</i> ...	Sibbons, H. ...	H. McFadyen ...	W.T.	Canadian Pacific ...	W.T. Reg. 1.11.25 to 19.11.25...	23.11.25.
25 <i>Montclare</i> ...	Webster, G. S., R.D., Commr., R.N.R.	R. Fegan, H. S. Knight, J. Biggs.	"	" ...	" 6.12.25 to 22.12.25	29.12.25.
<i>Montferland</i> ...	Van Noppen, C. D.	Van der Mast ...	No. M.	Holland Lloyd ...	Form 911 6.12.25 to 23.12.25	29.12.25.
27 <i>Montnairn</i> ...	Turnbull, J., C.B.E., R.D., Capt., R.N.R.	F. E. Williams, A. G. Harrison, T. Jones.	W.T.	Canadian Pacific ...	W.T. Reg. 22.9.25 to 17.10.25...	22.10.25.
<i>Montoro</i> ...	Donaldson, A. ...	K. Morris ...	No. A.	Burns, Philp & Co. ...	" 2.9.25 to 19.10.25 ...	14.12.25.
26 <i>Montrose</i> ...	Landy, E. ...	A. Watt, C. Clarke, F. H. Carter.	W.T.	Canadian Pacific ...	" 22.12.25 to 7.1.26 ...	14.1.26.
<i>Montroyal</i> ...	Freer, A., Commr., R.N.R.	J. H. Tudor, R. W. Jones, F. H. Carter.	"	" ...	Form 911 26.6.25 to 17.7.25 ...	20.7.25.
<i>Moresby</i> ...	Latta, R. G. Edgell, J. A., O.B.E., Capt. R.N.	" ...	M.L.	His Majesty's Ship ...	W.T. Reg. 29.8.25 to 17.9.25 ...	14.1.26.
					" 26.9.25 to 15.10.25	14.1.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Morvada</i> ...	Mills, T. L., O.B.E., R.D., Commr., R.N.R.	...	No.	British India	...	...
<i>Mulbera</i> ...	Steadman, W. R. ...	H. W. Norris, H. E. Brown	No. M.	"	Form 911 27.8.25 to 3.11.25 ...	12.11.25.
<i>Nagara</i> ...	Purvis, A. ...	E. N. Giller ...	" M.	R.M.S.P. Co.	" 26.6.25 to 2.9.25 ...	7.9.25.
<i>Nagoya</i> ...	Davis, H. C. ...	P. Haworth ...	" M.	P. & O.	" 27.10.25 to 13.11.25 ...	30.11.25.
<i>Nardana</i> ...	Moth, F. L. ...	S. C. T. Smith ...	" M.	British India	" 15.9.25 to 25.10.25 ...	31.10.25.
<i>Narica</i> ...	Buret, T. J. C. ...	E. Delahay, E. I. Fletcher, R. S. Wooley, H. Trenchard, W. Hughes.	M.L.	R.M.S.P. Co.	Met. Log. 1.5.25 to 24.6.25 ...	8.7.25.
<i>Nellore</i> ...	Hignett, A. H., R.D., Lt. - Commr., R.N.R.	F. Squire ...	No. M.	P. & O.	Form 911 14.11.25 to 16.12.25	11.1.26.
<i>Nestor</i> ...	Owen, R. D., O.B.E.	W. H. Newby, R. Wilks, F. J. Silva.	M.L.	A. Holt	Met. Log. 22.3.25 to 23.7.25 ...	5.8.25.
<i>Nevasa</i> ...	Swanson C. J. ...	W. G. Bussey ...	No. M.	British India	Form 911 18.11.25 to 4.1.26 ...	11.1.26.
<i>Newby Hall</i> ...	Edge T. P. ...	R. H. Stewart, G. E. M. Jenkins, R. M. Redhead.	M.L.	Ellerman	Met. Log. 2.5.25 to 24.10.25 ...	25.11.25.
<i>Niagara</i> ...	Showman, A. C. ...	T. A. Macpherson, J. Dawson, A. P. Cousin.	"	Canadian-Australian...	" 7.5.25 to 20.8.25 ...	10.9.25.
<i>Ningchow</i> ...	Wilson, C. A. ...	G. H. Oldridge ...	No. A.	A. Holt	Form 911 7.9.25 to 4.11.25 ...	8.12.25.
<i>Norna</i> ...	Wright, J. ...	T. Mather ...	" A.	Scottish Fishery Board	" 22.11.25 to 29.12.25	4.1.26.
<i>Norseman, C.S.</i> ...	Douglas, W. ...	R. Forrest, E. Pearse, J. A. Barter, H. O. ...	M.L.	Western Tel. Co.	Met. Log. 16.2.25 to 1.9.25 ...	28.9.25.
<i>Nubian</i> ...	Watmough, T. M. ...	H. R. Gaskill ...	No. M.	Leyland	Form 911 11.11.25 to 12.12.25	16.12.25.
<i>Nyanza</i> ...	Norman, W. A. ...	R. H. Hand, R. G. Freeman, R. E. Mackay.	M.L.	P. & O.	Met. Log. 7.10.25 to 24.12.25...	31.12.25.
<i>Oaklands Grange</i> ...	Routledge, R. ...	E. J. Longheed ...	No. A.	Houlder Bros.	Form 911 30.11.25 to 28.12.25	5.1.26.
<i>42 Ohio</i> ...	Parker, W. H., C.B.E., R.D., Capt. R.N.R.	P. M. Burrell, R. W. Stoney, L. D. Jennings.	W.T.	R.M.S.P. Co.	W.T. Reg. 14.9.25 to 1.10.25 ...	5.10.25.
<i>Olympia</i> ...	Caldwell, R. ...	D. R. Urquhart, G. Lynas, W. Proudfoot.	M.L.	Anchor	Form 911 12.10.25 to 30.10.25	9.11.25.
<i>57 Olympic</i> ...	Marshall, W., C.B., D.S.O., R.D., Capt., R.N.R.	H. J. C. Day, C. J. Warltire, W. Fitzgerald.	W.T.	White Star	W.T. Reg. 1.10.25 to 15.10.25... Form 911 1.10.25 to 15.10.25...	19.10.25. 19.10.25.
<i>Orama</i> ...	Staunton, H. G., C.B.E., R.D., Commr. R.N.R.	L. J. Vesty, F. Butler, F. L. Hubbard, T. L. Shurrock...	M.L.	Orient	Met. Log. 28.6.25 to 30.10.25...	3.11.25.
<i>Oranian</i> ...	Hoskins, W. ...	R. H. Theaker ...	No. A.	Leyland	Form 911 16.8.25 to 3.9.25 ...	17.9.25.
<i>Orari</i> ...	Robinson, F. W. ...	F. Longheed, C. Wilkinson, W. Tarr.	M.L.	New Zealand S.S. Co.	Met. Log. 7.3.25 to 11.8.25 ...	15.8.25.
<i>40 Orbita</i> ...	Warner, G. E., R.D., Commr. R.N.R.	B. C. Dodds, H. G. Whittle, H. M. Rennie, H. Baylis.	W.T.	R.M.S.P. Co.	W.T. Reg. 19.10.25 to 9.11.25 Form 911 17.10.25 to 10.11.25	12.11.25. 12.11.25.
<i>Oreoma</i> ...	Dominy, R. H., C.B.E., Commr. R.N.R.	G. B. Wardale, R. H. Sissons, W. Billington.	M.L.	Pacific S.N. Co.	Met. Log. 20.8.25 to 4.11.25 ...	13.11.25.
<i>41 Orduna</i> ...	Warner, G. E., R.D., Commr., R.N.R.	J. Vivian, H. G. Whittle, J. Chamberlain, J. Horan.	W.T.	R.M.S.P. Co.	W.T. Reg. 14.12.25 to 7.1.26 ... Form 911 13.12.25 to 6.1.26 ...	14.1.26. 12.1.26.
<i>Oriana</i> ...	Mander, T. ...	W. Pearce, R. D. Eckford, T. H. McGill.	M.L.	Pacific S.N. Co.	Met. Log. 11.8.25 to 19.10.25...	28.10.25.
<i>Orita</i> ...	Splatt, W. A. ...	J. G. Harvey, T. R. Scott, D. W. Hutchinson, C. P. D. Dean.	"	"	" 19.12.24 to 29.5.25...	12.6.25.
<i>Ormonde</i> ...	Knowles, C. H., D.S.O., Commr., R.N.	A. M. Hughes ...	"	His Majesty's Ship	" 4.9.25 to 4.12.25 ...	22.12.25
<i>Ormonde</i> ...	Shelford, W. S., Lt.-Commr., R.N.R.	N. A. Whinfield, W. A. Wickham, A. H. Dyer.	"	Orient	" 4.1.25 to 7.4.25 ...	15.4.25.
<i>Ormuz</i> ...	O'Sullivan, J. ...	...	"	"	...	...
<i>Oronsay</i> ...	Owens, A. L., R.D., Lt. Commr., R.N.R.	C. Dodgson, P. R. Murphy, R. K. Rogerson.	"	"	Met. Log. 20.9.25 to 26.12.25...	31.12.25.
<i>Oroya</i> ...	Pearce, A. ...	S. Lewis	No. M.	Pacific S.N. Co.	Form 911 28.10.25 to 3.1.26 ...	9.1.26.
<i>Orsova</i> ...	Matheson, C. G., D.S.O., R.D., Commr., R.N.R.	A. J. Croft Cohen, C. V. Dodgson, C. Fox	M.L.	Orient	Met. Log. 5.4.25 to 8.7.25 ...	11.7.25.
<i>Ortega</i> ...	Pleignier, H. S. ...	C. Leatherbarrow ...	No. M.	Pacific S.N. Co.	Form 911 9.12.24 to 16.2.25 ...	25.2.25.
<i>Orvieto</i> ...	Simner, G. L., R.D., Commr., R.N.R.	A. O. H. O'Bryen, Hawker, A. H. Dyer.	M.L.	Orient	Met. Log. 4.5.25 to 4.8.25 ...	8.8.25.
<i>Osterley</i> ...	Cameron, E. P. ...	H. Tanner, J. E. Goldworthy, G. L. Carter.	"	"	" 31.5.25 to 31.8.25 ...	16.9.25.
<i>Othello</i> ...	Montgomery, H. ...	G. Binks ...	No. A.	Ellerman Wilson	Form 911 19.4.25 to 28.7.25 ...	12.8.25.
<i>Otira</i> ...	Elford, H. E. ...	J. H. Fuller ...	" M.	Shaw, Savill & Albion	" 16.10.25 to 3.12.25...	8.12.25.
<i>Otranto</i> ...	Simner, G. L., R.D., Commr., R.N.R.	...	No.	Orient	...	...
<i>Ovid</i> ...	Groom, A. C. B. ...	...	" A.	Shakespeare Shipping Co.	Form 911 12.11.25 to 28.11.25	2.12.25.
<i>Oxfordshire</i> ...	Crumplin, W. E. ...	F. C. Brooks ...	" A.	Bibby Bros.	" 7.11.25 to 6.12.25 ...	11.1.26.
<i>Pacific Shipper, M.V.</i> ...	Newman, G. W. A.	H. G. Dupont ...	" A.	Furness Withy	" 13.10.25 to 13.11.25	18.11.25.
<i>Pakeha</i> ...	W. P. Clifton Mogg	R. K. Vandervard, E.T. Baker, R. James.	M.L.	Shaw, Savill & Albion	Met. Log. 22.4.25 to 20.8.25 ...	26.8.25.
<i>Paparoa</i> ...	Dowse, F. ...	C. J. Brewer ...	No. M.	New Zealand S.S. Co.	Form 911 14.11.25 to 6.1.26 ...	9.1.26.
<i>Pareora</i> ...	Evans, J. O. ...	R. F. Hillings ...	" A.	Hain S.S. Co.	" 22.9.25 to 26.10.25...	14.12.25.
<i>Paris</i> ...	Cook, C. L. ...	Mr. Biles... ..	" C.	Southern Rly.	Telegraphic Report. 30.10.25 ...	30.10.25.
<i>Patia</i> ...	Bostock, R. J. ...	W. McIlwaine ...	No. A.	Elders & Fyffes	Form 911 4.7.25 to 8.8.25 ...	12.8.25.
<i>Patrol, C.S.</i> ...	Welsh, T. K. ...	W. H. S. Clark, H. F. P. Albrecht, W. G. MacBryde, A. T. Morrell.	M.L.	Eastern Extension (A. & C.) Telegraph Co.	Met. Log. 1.10.24 to 12.1.25 ...	16.4.25.
<i>Persic</i> ...	Bulman, J. B. ...	H. G. Morgan ...	No. A.	White Star	Form 911 8.2.25 to 19.6.25 ...	23.6.25.
<i>Peshawar</i> ...	Hester, C. W., R.D., Commr., R.N.R.	D. G. Baillie, E. J. R. North, R. D. Whyte-Mackay.	M.L.	P. & O.	Met. Log. 18.7.25 to 22.11.25...	24.11.25.
<i>Pharos</i> ...	Ewing, T. N. ...	A. McLachlan ...	No. A.	Northern Lighthouse Board.	Form 911 29.6.25 to 14.8.25 ...	18.8.25.
<i>Philadelphian</i> ...	Baker, J. A. ...	W. T. Godwin ...	" A.	Leyland	" 9.10.25 to 1.11.25 ...	16.11.25.
<i>Polycarp</i> ...	Evans, T. G. ...	S. E. Adam ...	" A.	Booth	" 18.7.25 to 12.8.25 ...	16.9.25.
<i>Polyphemus</i> ...	Hatfield, J. ...	R. E. Wilkes ...	" A.	A. Holt	" 1.2.25 to 23.2.25 ...	25.2.25.
<i>Port Adelaide</i> ...	Hayter S W. ...	E. Catchpole, G. Lovegrove, C. Hodson.	M.L.	Commonwealth & Dominion.	Met. Log. 21.8.25 to 28.12.25...	7.1.26.
<i>Port Albany</i> ...	Robinson, C. A. ...	E. A. Leavett, A. G. Newbury, W. Eastoe, J. L. Richardson.	"	"	" 16.5.25 to 28.9.25 ...	12.10.25.

LIST OF VOLUNTARY OBSERVING SHIPS

vii

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.1.26.	Date Received.
<i>Port Auckland</i> ...	Durham, R. S. ...	R. B. Stannard ...	No. A.	Commonwealth & Dominion.	Form 911 15.5.25 to 26.7.25 ...	4.9.25.
<i>Caroline</i> ...	Renaut, F. A. ...	T. Copeland, E. Fenton, C. Chamberlin.	M.L.		Met. Log. 24.1.25 to 13.6.25 ...	22.7.25.
<i>Chalmers</i> ...	Enright, W. J. ...	...	...	...	...	...
<i>Curtis</i> ...	Van den Bergh, C. ...	W. H. Miles ...	No. A.	...	Form 911 14.12.24 to 25.4.25 ...	2.6.25.
<i>Darwin</i> ...	Sawbridge, I. R. ...	E. T. N. Lawrey, G. F. Pannett.	A.	...	25.11.25 to 10.1.26 ...	13.1.26.
<i>Denison</i> ...	Ferris, J. ...	W. H. Sadler, J. C. Goddard	M.	...	15.6.25 to 14.8.25 ...	21.9.25.
<i>Dunedin</i> ...	...	E. G. Jones ...	No.	...	...	...
<i>Hacking</i> ...	Hoard, A. C. ...	C. Newton ...	No. A.	...	Form 911 18.11.25 to 2.1.26 ...	5.1.26.
<i>Hunter</i> ...	Cottell, S. C. ...	A. Cooper, C. F. Post, J. T. Weldin.	M.L.	...	Met. Log. 2.4.25 to 13.9.25 ...	29.9.25.
<i>Lincoln</i> ...	...	...	No.	...	...	...
<i>Melbourne</i> ...	Kearney, F. J. ...	D. G. H. Bradley, J. A. Fairbairn, A. G. Starkey.	M.L.	...	Met. Log. 26.4.25 to 7.9.25 ...	10.9.25.
<i>Nicholson</i> ...	Jack, J. ...	...	...	...	...	...
<i>Pirie</i> ...	Higgs, W. G. ...	H. C. Jeffery, W. G. Jones, J. T. Nicholson, E. G. L. Jones.	...	...	12.2.25 to 29.6.25 ...	11.7.25.
<i>Sydney</i> ...	Lea, W. H. ...	A. W. Sams, C. Groves, A. M. Stanton	...	...	13.12.24 to 19.5.25...	25.5.25.
<i>Victor</i> ...	Swan, L. H. ...	E. G. Fullick, W. Howe, W. Renouf.	...	...	5.4.25 to 14.8.25 ...	22.8.25.
<i>President Jackson</i> ...	Quinn, T. P. ...	H. G. Holland ...	No. A.	Pacific Mail S.S. Co...	Form 911 22.10.25 to 22.11.25	6.1.26.
<i>President Jefferson</i> ...	Griffith, J. ...	...	...	...	...	...
<i>Protea, H.M.S.A.S.</i> ...	Nichols, F. R. ...	C. H. Moen ...	A.	Admiral Oriental Line	30.8.25 to 27.10.25...	30.11.25.
<i>Pyrrhus</i> ...	Woodhouse, A. F. B., Lt.-Commr., R.N.	F. J. S. Scott-Stokes ...	A.	South African Naval Service.	1.8.25 to 29.8.25 ...	12.11.25.
<i>Pyrrhus</i> ...	Elford, W. J. ...	J. L. Millar ...	A.	A. Holt ...	12.9.25 to 6.1.26 ...	11.1.26.
<i>60 Regina</i> ...	Smith, R. G. ...	G. W. Couch, H. Daman, H. Hawkins.	W.T.	White Star-Dominion	W.T. Reg. 14.12.25 to 2.1.26 ...	7.1.26.
<i>Reindeer</i> ...	Mulhall, W. ...	...	C.C.	G.W. Railway	Form 911 14.12.25 to 2.1.26 ...	6.1.26.
<i>Rhodesian Transport.</i> ...	Fowler, W. H. ...	W. Heritage ...	No. A.	Houlder Bros. ...	Telegraphic Report 14.1.26 ...	14.1.26.
<i>Rimutaka</i> ...	Henning, F. A. ...	H. Horwood, R. S. Cox, O. M. Watts.	M.L.	New Zealand S.S. Co.	Form 911 24.7.25 to 14.10.25...	27.10.25.
<i>Risaldar</i> ...	Park, G. ...	A. J. Cavallo, H. Hardwick, C. M. Knight.	...	Asiatic S.N. Co. ...	Met. Log. 12.10.24 to 1.4.25 ...	6.4.25.
<i>Romney</i> ...	Syms, G. ...	H. Trodden ...	No. A.	Lampport & Holt ...	Form 911 9.10.25 to 21.10.25...	30.11.25.
<i>Rotorua</i> ...	Hunter, J. B. ...	C. A. H. Landfield ...	M.	N.Z.S. Co. ...	27.6.25 to 1.8.25 ...	13.8.25.
<i>Royal Fusilier</i> ...	Dawson, J. ...	J. Fraser ...	A.	London & Edinburgh S.S. Co.	9.12.25 to 27.12.25...	30.12.25.
<i>Royal Transport...</i> ...	Deve, J. ...	R. Martin ...	A.	Houlder Bros. ...	17.11.25 to 17.12.25	21.12.25.
<i>Ruapahu</i> ...	McKellar, A. W., R.D., Capt., R.N.R.	E. P. Aslin, J. D. Tooms, A. J. Webb, J. Russel.	M.L.	New Zealand S.S. Co.	Met. Log. 2.5.25 to 1.10.25 ...	7.10.25.
<i>Sachem...</i> ...	Westgarth, W. A. D.S.C.	C. Waldron, E. Saintry, G. R. Watson.	...	Furness Withy ...	30.6.25 to 10.12.25...	17.12.25.
<i>St. Albans</i> ...	Pilcher, E. ...	W. McIntyre ...	...	Eastern and Australian	...	...
<i>St. Helier</i> ...	Mulhall, W. ...	C. Bell ...	C.C.	G.W. Railway ...	Telegraphic Report 12.11.25 ...	12.11.25.
<i>St. Julien</i> ...	Langdon, C. H. ...	C. Joy ...	...	...	24.10.25 ...	24.10.25.
<i>St. Patrick</i> ...	Bearpark, E. W. ...	J. Hill ...	No. A.	Rankin Gilmour ...	Form 911 8.11.25 to 24.11.25	10.12.25.
<i>Salaga ...</i> ...	Sola, P., D.S.O. ...	G. E. Dutton ...	A.	Elder Dempster ...	15.11.25 to 28.11.25	19.12.25.
<i>Samaria</i> ...	McNeil, S. G. S. ...	H. L. Pryse ...	A.	Cunard ...	28.11.25 to 21.12.25	29.12.25.
<i>Sandown Castle</i> ...	Jackson, C. R. ...	P. G. MacIver ...	A.	Union Castle ...	31.10.25 to 27.11.25	22.12.25.
<i>10 Saturnia</i> ...	Mitchell, W. ...	D. Macqueen ...	W.T.	Anchor Donaldson ...	W.T. Reg. 17.10.25 to 6.11.25	11.11.25.
<i>Saxoleine</i> ...	King, A. ...	B. Johnsen ...	No. A.	Hunting & Son ...	Form 911 16.10.25 to 7.11.25	11.11.25.
<i>Saxon</i> ...	Owen, S. H. ...	F. O. Wilbraham ...	A.	Union Castle ...	6.12.25 to 21.12.25	4.1.26.
<i>Scholar</i> ...	McCullum, J. ...	J. D. Grieves ...	M.	Harrison ...	17.7.25 to 7.9.25 ...	8.9.25.
<i>Scindia</i> ...	Mathews, W. ...	R. S. Paton ...	A.	Anchor ...	1.4.25 to 20.6.25 ...	2.7.25.
<i>Scotia ...</i> ...	Pritchard, S.D. ...	O. W. L. Jones ...	C.C.	L.M. & S. Rly. ...	12.8.25 to 26.10.25	31.10.25.
<i>Scottish Bard</i> ...	McDonnell S. ...	S. W. Watts ...	No. M.	Tankers Ltd. ...	Telegraphic Report 23.12.25 ...	23.12.25.
<i>33 Scythia</i> ...	Prothero, W. ...	T. Parry, J. C. Munro, J. W. Caunce.	W.T.	Cunard ...	Form 911 30.8.25 to 18.9.25 ...	21.9.25.
<i>Sheaf Mount</i> ...	Groves, C. V. ...	C. A. Goold ...	No. A.	W. A. Souter ...	W.T. Reg. 19.10.25 to 9.11.25	13.11.25.
<i>Sheaf Spear</i> ...	Whitfield G. A., O.B.E.	W. H. Grisewood, N. Thompson.	M.L.	...	Form 911 18.10.25 to 9.11.25	13.11.25.
<i>Sicilia ...</i> ...	Davis, H. C., D.S.C., R.D., Commr., R.N.R.	G. C. Bateman ...	No. M.	P. & O. ...	Met. Log. 13.12.25 to 19.12.25	9.1.26.
<i>Socrates</i> ...	Taylor, F. C. ...	W. E. Jordan ...	A.	Lampport & Holt ...	Form 911 7.12.24 to 16.7.25 ...	19.8.25.
<i>Soekaboemi</i> ...	Z. W. Flach ...	C. van Reenen ...	M.	Rotterdam Lloyd ...	15.9.25 to 14.11.25...	7.12.25.
<i>Somerset</i> ...	Barnett, H. ...	...	M.	N.Z.S. Co. ...	14.10.25 to 9.11.25...	4.1.26.
<i>Somersetshire</i> ...	De Legh, P. ...	P. Hawkins, R. C. Leitch, H. G. Walton.	M.L.	Bibby ...	28.9.25 to 2.11.25 ...	7.11.25.
<i>Somme...</i> ...	Miles, F. R., Commr., R.N.R.	A. P. Portsmouth ...	No.	R.M.S.P. Co. ...	14.11.25 to 13.12.25	29.12.25.
<i>Songster</i> ...	Jackson, J. ...	W. Weatherall, W. Wilford, L. Bull.	M.L.	Harrison ...	Met. Log. 24.7.25 to 7.11.25 ...	11.11.25.
<i>Spectator</i> ...	Harding, C. H. J. ...	D. Fraser, J. G. F. Betson ...	No. A.	...	30.8.25 to 16.11.25...	29.12.25.
<i>Spero ...</i> ...	Norton, W. J. ...	T. E. Fea, R. O. Otley ...	M.L.	Ellerman Wilson ...	Form 911 6.3.25 to 16.5.25 ...	29.5.25.
<i>Stephan C.S.</i> ...	Carlton, G. F., O.B.E., Commr., R.N.R.	F. B. Bolingbroke, W. E. Allen, T. J. Horan.	...	Telegraph Construction & Maintenance	Met. Log. 10.5.25 to 11.9.25 ...	1.10.25.
<i>Stockwell</i> ...	Kershaw, R. W. ...	W. Baxter ...	No. A.	Brocklebank ...	Met. Log. 22.5.25 to 6.12.25 ...	10.12.25.
<i>Stuart Prince</i> ...	Durrant, G. D. ...	W. C. Freeman ...	A.	Prince ...	24.2.25 to 7.4.25 ...	28.4.25.
<i>Surrey ...</i> ...	Field, H. G. B. ...	C. P. Jackson, C. Welch, H. Harris.	M.L.	Federal ...	Form 911 20.9.25 to 9.10.25 ...	21.10.25.
<i>Suwa Maru</i> ...	Okuno, Y. ...	H. Yamashita ...	No. A.	Nippon Yusen Kaisha	Met. Log. 9.5.25 to 22.10.25 ...	26.10.25.
<i>Taini</i> ...	Hartman, W. H. ...	P. S. Horwood ...	A.	Shaw, Savill & Albion	Met. Log. 9.5.25 to 22.10.25 ...	26.10.25.
<i>Tairoa...</i> ...	Summers, W. G. ...	S. A. Bannister ...	A.	...	Form 911 10.11.25 to 2.1.26 ...	11.1.26.
<i>Tahiti</i> ...	Aldwell, B. L. ...	G. F. C. Muford ...	A.	Union S.S. Co. of N.Z.	9.11.25 to 15.12.25...	18.12.25.
<i>Talhybius</i> ...	Ireland, T. R. ...	P. Elder ...	A.	A. Holt ...	2.7.25 to 10.8.25 ...	12.10.25.
<i>Tanda ...</i> ...	Pilcher, E. ...	C. G. Holdaway, J. Kean, Laing, J. O.	M.L.	E. & A. S.S. Co. ...	10.9.25 to 23.10.25 ...	14.12.25.
		R. Lloyd Harry, B. Dun.			19.9.25 to 26.10.25...	2.11.25.
					Met. Log. 18.7.25 to 1.12.25 ...	8.1.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 15.12.26.	Date Received.
<i>Tambora</i> ...	Huisman, N. ...	H. Van Manen ...	No. M.	Rotterdam Lloyd ...	Form 911 22.10.25 to 9.12.25...	22.12.25.
<i>Telamon</i> ...	Beswick, W. ...	... ..	No.	A. Holt ...	... ..	... ..
<i>Teucer</i> ...	Hodgson, R. N. ...	A. Lightbody ...	" A.	... ..	Form 911 10.11.25 to 8.12.25...	21.12.25.
<i>Themistocles</i> ...	Jernyn, W. M. ...	W. F. Sargent ...	" M.	Aberdeen ...	" 20.6.25 to 30.7.25 ...	4.9.25.
<i>Theseus</i> ...	Jones, E. ...	J. T. Fettes ...	" A.	A. Holt ...	" 12.11.25 to 29.11.25	4.1.26.
<i>Titan</i> ...	Wilkinson, T. G. ...	S. C. Tinmouth, J. Morris, N. L. Thompson.	M.L.	" ...	Met. Log. 19.4.25 to 11.9.25 ...	6.10.25.
<i>Tolmie</i> , S.F.Bqtn.	Stewart, J. C. ...	E. F. Collins ...	No. A.	B. C. Mills, Tug and Barge Co.	Form 911 1.11.24 to 24.12.24...	2.3.25.
<i>Tongariro</i> ...	... ..	C. B. H. Jones ...	" M.	New Zealand S.S. Co.	... ..	... ..
<i>Trematon</i> ...	Evans, B. ...	S. Smith, C. Mayberry, J. Bell.	M.L.	Hain S.S. Co. ...	Met. Log. 21.10.24 to 16.7.25...	11.8.25.
<i>Turakina</i> ...	... ..	W. Dickinson ...	No.	New Zealand S.S. Co.	... ..	... ..
<i>Tuscama</i> ...	Gemmell, W. J. ...	G. H. Squires ...	No. A.	Anchor ...	Form 911 3.10.25 to 11.10.25...	20.10.25.
<i>Tyndareus</i> ...	Slater, H. N. ...	C. Broad, A. C. H. Jones, S. A. Beith.	M.L.	A. Holt ...	Met. Log. 16.7.25 to 16.12.25...	12.1.26.
<i>Ulysses</i> ...	McHutcheon, W. ...	H. A. Standfield ...	No. A.	" ...	Form 911 7.11.25 to 26.11.25...	22.12.25.
<i>Umvolosi</i> ...	Barnes, E. W. ...	H. Green ...	" A.	Bullard King ...	" 17.10.25 to 18.12.25...	11.1.26.
<i>Valacia</i> ...	Doyle, M. ...	N. Grayson ...	" M.	Cunard ...	" 19.10.25 to 25.11.25	3.12.25
<i>Valdura</i> ...	Mitchell, A. ...	H. J. Maughan, J. Anderson, A. M. S. Well.	M.L.	Gow Harrison ...	Met. Log. 19.6.24 to 20.11.24...	8.12.24.
<i>Varadua</i> ...	Hughes, W. ...	A. Watts ...	No. A.	Cunard ...	Form 911 14.9.25 to 21.10.25...	26.10.25.
<i>Vasconia</i> ...	Inch, F. ...	G. Watts ...	" A.	" ...	" 5.10.25 to 16.10.25...	28.10.25.
<i>Vellacia</i> ...	Fear, E. T. C. ...	J. E. Deans ...	" A.	" ...	" 1.11.25 to 14.11.25...	16.11.25.
<i>Ventura de Lar- rinaga.</i>	Keay, W. S. ...	H. J. Kay ...	" A.	Larrinaga ...	" 3.12.24 to 28.3.25 ...	19.5.25.
<i>Verbania</i> ...	Pooley, T. S. M. ...	W. Bradley ...	" A.	Cunard ...	" 8.11.25 to 18.12.25...	21.12.25.
<i>Verentia</i> ...	Wray, C. M. ...	F. H. Wood ...	" A.	" ...	" 29.11.25 to 27.12.25	5.1.26.
<i>Vigilant</i> ...	Simpson, E. S. S. ...	J. Hunter ...	" A.	Scottish Fishery Board	" 6.12.25 to 29.12.25...	5.1.26.
<i>Waimana</i> ...	Andrews, C. M. ...	T. A. Smith ...	" A.	Shaw, Savill & Albion	... ..	... ..
<i>Waiotapu</i> ...	Norton, A. ...	W. Johnson ...	" A.	Canadian-Australasian	" 14.11.25 to 18.12.25	4.1.26.
<i>Walmer Castle</i> ...	Stanley, W. F., R.D. Commr., R.N.R.	H. A. Deller ...	" A.	Union Castle ...	" 12.9.25 to 16.11.25...	23.11.25.
<i>Wangaratta</i> ...	Scutt, W. ...	T. W. Wordingham, W. C. Cripps, K. M. Morrison, N. A. Pope.	M.L.	British India ...	Met. Log. 21.1.25 to 19.7.25 ...	4.1.26.
<i>Warfeld</i> ...	Steel, R. ...	H. Coffey ...	No. A.	" ...	Form 911 26.9.25 to 10.10.25...	29.10.25.
<i>Welshman</i> ...	Rollerson, W. ...	W. A. Fletcher ...	" M.	White Star-Dominion	" 30.10.25 to 24.11.25	30.11.25.
<i>Westmoreland</i> ...	... ..	... ..	" ...	Federal ...	... ..	... ..
<i>White Heather, Ketch</i>	Glenister, S. L. ...	F. R. Smith ...	"	S. L. Glenister ...	... ..	... ..
<i>Windsor Castle</i> ...	Strong, H., R.D., Commr., R.N.R.	... ..	"	Union Castle ...	... ..	... ..
<i>Winifredian</i> ...	Harrocks, W. ...	G. P. Boyle ...	" M	Leyland ...	Form 911 11.10.25 to 14.11.25	24.11.25.
<i>Woodarra</i> ...	Reilly, J. V. ...	L. D. Graham, G. Hyland ... L. C. Comber, J. Wallace.	M.L.	British India ...	Met. Log. 7.3.25 to 19.8.25 ...	26.8.25.
<i>Yorkshire</i> ...	Millson, G. C. ...	E. E. Jones ...	No. A.	Bibby ...	Form 911 29.8.25 to 5.10.25 ...	9.11.25.
<i>Zealand</i> ...	Thomas, A. J. ...	N. Lee ...	" M.	Red Star ...	" 13.12.25 to 3.1.26 ...	5.1.26.
<i>Conway</i> H.M.S.	Broadbent, H. W., R.D. Capt., R.N.R.	The Senior Cadets... ..	Cadets' M.L.	... ..	Cadets' Met. Log. 20.9.25 to 12.12.25	21.12.25.
<i>Pangbourne Nauti- cal College.</i>	Tracy, A. F. G., Commr., R.N.	" ... ..	"	... ..	Cadets' Met. Log. 21.9.25 to 12.12.25	17.12.25.
<i>Worcester</i> , H.M.S.	Sayer M. B., O.P.E., R.D., Capt., R.N.R.	" ... ..	"	... ..	Cadets' Met. Log. 25.9.25 to 15.12.25	21.12.25.
<i>Abaco</i> ...	... ..	The Keepers ... ..	Lighthouse Register.	... ..	Lighthouse Register 15.1.25 to 30.6.25	14.10.25.
<i>Cay Lobos</i> ...	... ..	" ... ..	"	... ..	Lighthouse Register 1.1.25 to 30.6.25	9.11.25.
<i>Double Headed Shot</i>	... ..	" ... ..	"	... ..	Lighthouse Register 1.1.25 to 30.6.25	9.11.25.
<i>Inagua</i> ...	... ..	" ... ..	"	... ..	Lighthouse Register 19.1.25 to 30.6.25	14.10.25.
<i>Sombrero</i> ...	... ..	" ... ..	"	... ..	Lighthouse Register 1.1.25 to 30.6.25	7.8.25
<i>Watling Island</i> ...	... ..	" ... ..	"	... ..	Lighthouse Register 8.1.25 to 12.7.25	14.10.25.
<i>Cape Pembroke</i> (Falkland Is.).	... ..	" ... ..	"	... ..	Lighthouse Register 1.1.25 to 30.6.25	9.9.25.

LIST OF SHIPS CO-OPERATING THROUGH THE METEOROLOGICAL OFFICE WITH THE  
MINISTRY OF AGRICULTURE AND FISHERIES (FISHERIES LABORATORY, LOWESTOFT)  
IN THE COLLECTION OF WATER SAMPLES, ETC.

Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., Received up to 31.12.25.	Date Received.
<i>Herschel</i> ...	Davies, G. W. ...	T. Lester Guy ...	Lampont & Holt ...	Water Samples ...	31.12.25.
<i>Hildebrand</i> ...	Maddrell J. ...	A. Allan ...	Booth ...	" " ...	9.11.25.
<i>Holbein</i> ...	Gough, W. A. ...	G. P. Kitto ...	Lampont & Holt ...	" " ...	27.10.25.
<i>Manzanares</i> ...	Maxwell Brown, W. E. ...	G. S. Gracie ...	Elders & Fyffes ...	" " ...	21.12.25.
<i>Miami</i> ...	Makepeace, S. ...	W. E. Grant ...	" " ...	" " ...	2.12.25.

March M.O., 1926.