

TABLE OF PRINCIPAL CONTENTS.

	PAGE	
Charts of Currents for the Routes from Latitude of Cape St. Vincent to Latitude of Cape Blanco	21	Lithographic Illustrations after page 36.
The Marine Observer's Log (with illustrations)	22	Weather Charts IV to VIII, Mornings of February 21st to 25th, 1925 , Eastern North Atlantic.
How a Great Port meets the needs of Navigation	26	Charts of Wind and Fog at Coast Stations, Great Britain and Ireland, and Wind, Fog and Mist, S.W. Approaches to Great Britain and Ireland, February .
Weather Charts—Eastern North Atlantic—February 1925	28	Chart of Currents on Routes from Latitude of Cape St. Vincent to Latitude of Cape Blanco, compiled from observations made by ships using the Routes from the Channel to S. Africa and S. America, February, March, April, 1910-1914, 1920-1924 , and explanation.
Local Winds—I	28	Chart showing Mean Sea Surface Temperatures, North Atlantic, for month of February computed from all available sources during the period 1855 to 1917.
Weather Signals, Great Britain and Ireland :—		
II. Wireless Weather Signals ("Weather Shipping" Bulletin C.W., Spark, and Wireless Telephony issues) and W/T Storm Warnings	30	
IV. Visual Storm Warnings	35	

CHARTS OF CURRENTS FOR THE ROUTES FROM LATITUDE OF CAPE ST. VINCENT TO LATITUDE OF CAPE BLANCO.

THESE CHARTS will complete the routes from the Channel to the Cape and the Brazils.

The observations have been grouped so as best to represent the set and drift experienced on two mean routes south of the latitude of Madeira where according to destination or ports of call ships work along tracks which may be widely separated. The pecked lines on the charts show how the observations were separated and the resultant arrows placed by finding the mean of mid-positions of all current observations used.

Marine Observers are invited to send in general remarks of their experience of current upon this section of the routes in order that they may be embodied in a report in a later Number if desirable.

Current Observations in All Oceans.

Generally the observation of set and drift of current has greatly improved of late years; there are, however, several points which require attention.

The introduction in the Meteorological Log of a column in which to enter the set and drift ascertained during shorter intervals than the day from noon to noon has been the means of providing much useful data, but unless used judiciously this may sometimes prove a doubtful advantage.

It will be generally conceded that a stellar fix obtained from observations taken shortly after sunset or before sunrise especially if altitudes are taken of stars to the northward, southward, eastward and westward, will usually give a very accurate position at sea. If when such positions are obtained the Dead Reckoning is considered reliable, then the set and drift deduced during the interval may be considered as reliable as is possible to obtain in ordinary circumstances at sea.

But suppose that a stellar position which is known to be accurate is obtained before sunrise, it will often be inadvisable to enter in the Meteorological Log the set and drift deduced between the twilight

position and noon, for after all a sight can only give a position line and the noon position is usually but a running fix.

It is impossible to lay down hard and fast rules for current observation, especially by the method of deduction between course and distance steered and course and distance made. No one knows better than the Captain of a ship what leeway she will make under varying conditions and he is the most experienced in the selection or rejection

of sights and other data; therefore young observers would do well when there can be any doubt as to position by account or observation to obtain their Commander's approval before entering the set and drift in the log. It is hoped that all marine observers will enter the set and drift whenever it can be accurately obtained. Observations are required from all oceans.

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.

SWELL INDICATING APPROACHING CYCLONE.

In the Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Clan Malcolm*, Captain C. J. HIGGINS, Fremantle to Suez:—

"February 20th, 1925. Noon, Latitude 17° 48' S., Longitude 91° 23' E., 3 p.m. Indications of a N.W. swell observed to be running against rough S.E. sea.

"February 21st. Swell gradually increasing and now definitely from N.W. P.M., very high. Moderate easterly winds. Sky heavily clouded, frequent showers. Noon position, Latitude 15° 21' S., Longitude 88° 04' E.

"February 22nd. Very heavy W.N.W. swell, steamer diving bows under and shipping heavy water. 5 p.m. altered course to N. 10° W. True to avoid seas and the probability of running into a stationary or slow moving cyclonic storm: light N.E'ly winds. Noon position, Latitude 13° 23' S., Longitude 84° 58' E.

"February 23rd. Swell now westerly and more confused but less. Squalls of moderate force and frequent rain from N.N.W.: gradually brought vessel back to course (N. 55° W.). Noon position Latitude 10° 35' S., Longitude 83° 21' E. No serious barometric disturbance at ship on any of above days.

"The following is a copy of radio message received from Captain SCOTT of the S.S. *Bradford City* on 23rd showing weather he had encountered.

'Noon. Lat. 10° 02' S., Long. 82° 37' E. Past two days we have had gales between S.E., S.W. and N.W. with heavy seas now moderating. Bound Sabang from Durban.'

REFRACTION.

In the Persian Gulf.

THE following is an extract from the Meteorological Report of S.S. *Barpeta*, Captain T. S. BEEDLE, Basra to Bombay. Observer Mr. W. G. RAWLINGSON, 2nd Officer.



"24th February, 1925. Approaching Kuwait, Latitude 29° 23' N. Longitude 48° 00' E. from the S.E'ward, 2-4 p.m. Terrestrial objects to the northward greatly refracted and distorted and frequently

changing in form.

"It appeared as though the stratum of different temperatures became visible as narrow bands of haze, inclining slightly upwards towards their eastern extremities.

"Refraction appears to lessen with advance of cloud towards refracted objects.

"Wind Var. 0-1. Barometer 30.280 (uncorrected) steady. Temperature of air: 4 a.m., 52°: 8 a.m., 54°: Noon, 60°: 4 p.m., 64°: 8 p.m., 61°: Midnight, 60°. Temperature sea water: 8 a.m., 57°: Noon, 61°: 4 p.m., 62°: 8 p.m., 62°. 4 p.m. Clouds banking to the S.W. $\frac{\text{Ci., St-Cu., Fr-Cu., I.}}{\text{S.W. (T)}}$. Light blue sky.

ELECTRIC STORM.

Off South African Coast.

THE following is an extract from the Meteorological Report of S.S. *Clan Ross*, Captain R. C. JONES, Liverpool to Durban. Observers: Mr. A. MACINTYRE, Chief Officer and Mr. G. SHORT, 3rd Officer.

"13th February, 1925.—Off Coast of South Africa, vicinity Bashee River.

"4.30 p.m. Latitude 32° 13' S., Longitude 28° 45' E. Wind N.E. 4. Sea rough. Sky overcast, Nb., Cu-Nb. Storm forming up over land to N.W.

"6.00 p.m. Wind N. to N.W. force 1-2. Sea moderate to slight and swell moderate from south. Continuous lightning over land and working seaward.

"7.00 p.m. Continuous vivid lightning in all directions with thunder. Large drops of warm rain falling slowly. Storm working overhead. Atmosphere fully charged with electricity constantly flicking sheet, chain and forked lightning all round with sharp thunder-claps at times without noticeable pause after flashes.

"7.30 p.m. Heavy rain with storm now overhead. Terrific flash of blinding intensity followed or accompanied by loud explosion and thunder-bolt passed across stern from north to south with crackling like gigantic rocket and disappeared into sea. Wind, W. 4. Sea, slight. During the whole storm the wind never increased to more than force 4, but the sound aloft seemed as if it were at least 9 or 10.

"8.00 to 9.00 p.m. Heavy rain continued to fall with frequent flashes of blinding lightning and heavy claps of thunder.

"After 9.00 p.m. rain took off and lightning and thunder became less, overcast sky became St-Cu. Stars began to show from N.E. Wind fell light and became a gentle wind from east. Lightning was visible up to midnight to the south."

CURRENT AND SEA TEMPERATURE.

Off West Coast of South Africa.

THE following is an extract from the Meteorological Log of S.S. *Clan Mackinnon*, Captain R. W. MACKIE, Lobito Bay to Cape Town, Observer Mr. W. F. ISAAC:—

"It is noticed that on 25th February, 1925, in Latitude 26° 44' S.,

Longitude 14° 47' E., when a strong inshore current was experienced, that the sea temperature dropped suddenly."

NOTE.—Marine Observers are referred to the remarks which appear in THE MARINE OBSERVER, Vol. I, No. 7, p. 91, and at the end of Chapter VIII of "Wireless and Weather an Aid to Navigation," Vol. I, No. 8, p. 110.

CURRENT OBSERVATIONS.

Off the Coast of Brazil.

THE following is an extract from the Meteorological Log of C.S. *Norseman*, Captain W. DOUGLAS, cable work off the coast of Brazil. Observer, Mr. E. PEARCE :—

"The following is an account of the current experienced on February 12th and 13th, 1925.

"On February 12th, whilst standing by a buoy in Latitude 6° 56' S., Longitude 35° 55' W. the ship was allowed to drift from 7–8 p.m. During this time a moderate S.E. wind was blowing. At 7 p.m. a careful bearing and distance was taken of the buoy and, similarly, at 8 p.m. the result being N. 55° W., 1.6 knots.

"Again on the same day the current was ascertained in a similar manner with the result N. 70° W., 1.6 knots.

"On the 13th instant from 4–5 a.m., the current ascertained was found to be N. 52° W. 1.15 knots. Not being satisfied with this method a flat board was thrown overside when ship was close to buoy, and by keeping up to board for 1 hour the set was found to be N. 60° W., 1.2 knots, and again from 10–11 a.m., with result N. 68° W., .72 knot.

"This latter method obviates all influence of wind and can be thoroughly relied upon."

HEAVY DOWNPOURS OF RAIN IN PERU AND THE HOLY CHILD CURRENT.

THE following are extracts from a report to the Foreign Office from Mr. JOHN P. TRANT, British Consul at Callao, Peru, dated March 24th, 1925, forwarded by the Hydrographer of the Navy :—

"The last two months the littoral regions of Peru have been subjected to severe rain storms, hitherto almost unknown here, which culminated in the last two weeks in heavy downpours, especially in the north and interior central regions, demolishing towns and villages in its intensity, and spreading desolation all over the valleys, through the overflow of the swollen rivers, which in their mad onrush toward the sea carried crops and cattle before them. The fact that the coastal region of the country is not subject to rains under normal conditions at all makes the disaster much more serious, for even in the larger cities the houses are constructed of nothing more durable than adobe or mud bricks, with flat roofs, and in many cases in the smaller villages, the huts are only of cane or willow reeds sufficient to keep out the rays of the sun."

* * * * *

"It is interesting to analyse the supposed cause of the unprecedented rains that have recently visited the coast of Peru. Nothing like it has been known here since the year 1891, and even in that year, according to records existing, the precipitation was nothing like so great nor the damage so extensive. It appears that in certain cycles or lunar periods occurring about every seven years a certain strong warm southerly current is precipitated from the Gulf of Guayaquil in a southerly direction down the coast of Peru. This current popularly known as the 'Corriente del Nino,' which properly translated means the current of the 'Holy Child,' so called because it usually begins to operate about Christmas time. This year this current has been particularly noticeable and ships coming south between Ecuador and Callao mostly reported that they have encountered this current running at about two miles an hour in their direction when they expected to find the HUMBOLDT current running north. The result has been that the warm 'Nino' current has come in contact with the frigid HUMBOLDT current somewhere about Latitude 10° S., and the result has been naturally a sudden precipitation which has caused these heavy rains. Others aver that the HUMBOLDT current has been diverted seawards from its usual course, and that, consequently, the northern warm current meeting the cooler air from the south has caused the precipitation in question. Whatever the cause may be, it must be an entirely abnormal one, due to some unusual physical motive. An interesting thing to note

that in accordance with observations made by Mr. ROBERT CUSHMAN MURPHY in his recent authoritative book called 'Bird Islands of Peru,' the guanaies or sea birds that create the principal Guano deposits in Peru have been dying off rapidly since the north current came down. This is said to be due either to the unaccustomed heat in the water to which they are not adapted or else to the fact that the hot current destroys the submarine vegetation upon which they largely feed. Whatever the cause may be it seems likely that their number have been greatly diminished during the present season and the guano harvest will thereby be unfavourably affected in the future."

FOG OFF RIVER PLATE.

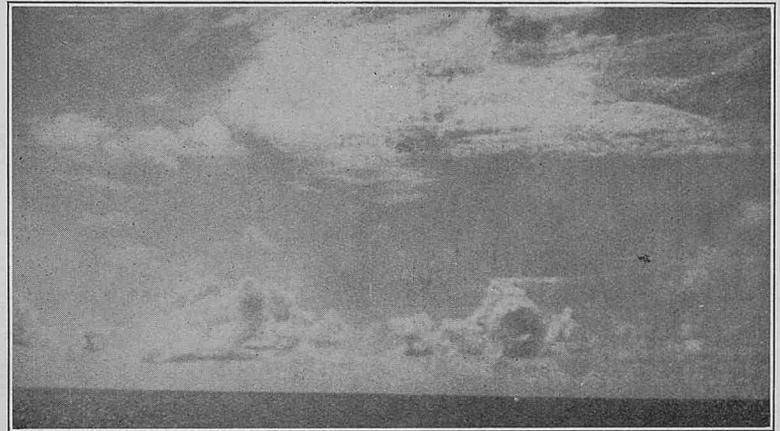
THE following is an extract from the Meteorological Report of S.S. *Harmonides*, Captain W. J. HUGHES, New York to River Plate, Observer, Mr. D. L. ROBERTS, 2nd Officer.

"On February 3rd, 1925, at 2 a.m., off Cape Santa Maria. Dense fog until 2.35 a.m.

"The fog mentioned above can be seen approaching for about 15 minutes. The vessel enters it as if it were a solid block, even the fore deck becoming invisible within about one minute. The same applies to coming out of the fog. You come out of it most abruptly and can see the fog appearing like a white wall behind you."

CLOUD PHOTOGRAPHS.

In the North Atlantic.



THE above photograph was taken on board S.S. *Author*, Captain KINLOCH, by Mr. H. F. WELLS, on 22nd February, 1925. Position of ship, Latitude 22° 13' N., Longitude 57° 48' W. At 8 a.m., previous to the above photograph being taken the wind was E.S.E., force 3, barometer 1024.0 mb.

Approaching West Australian Coast.



THE above photograph of Cirrus 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 27th February, 1925, at 5 p.m. in Latitude 39° 40' S., Longitude 111° 28' E. Weather at time: barometer, 1019 mb.; temperature, dry bulb 59°, wet bulb 56°; sea temperature, 58°; wind E. by S.; force 4.

LUNAR RAINBOW.

Off Ushant.

THE following report has been received from S.S. *Margha*, Commander R. A. MILNE, R.D., R.N.R., London to Port Said, Observer Mr. P. WRIGHT, 2nd Officer.

Lat. $48^{\circ} 39' N.$, Long. $5^{\circ} 11' W.$ Barometer 999.6 mb. Dry 47° , Wet 44.5° . Wind N.W. 4. Sea and swell N.W. moderate. At 2 a.m. I observed a faint glare in the sky to the west; this glare increased until it appeared as I have depicted in FIGURE 1, almost like the

" February 16th, 1925, at 2 a.m. A.T.S. (2.21 G.M.T.) in position

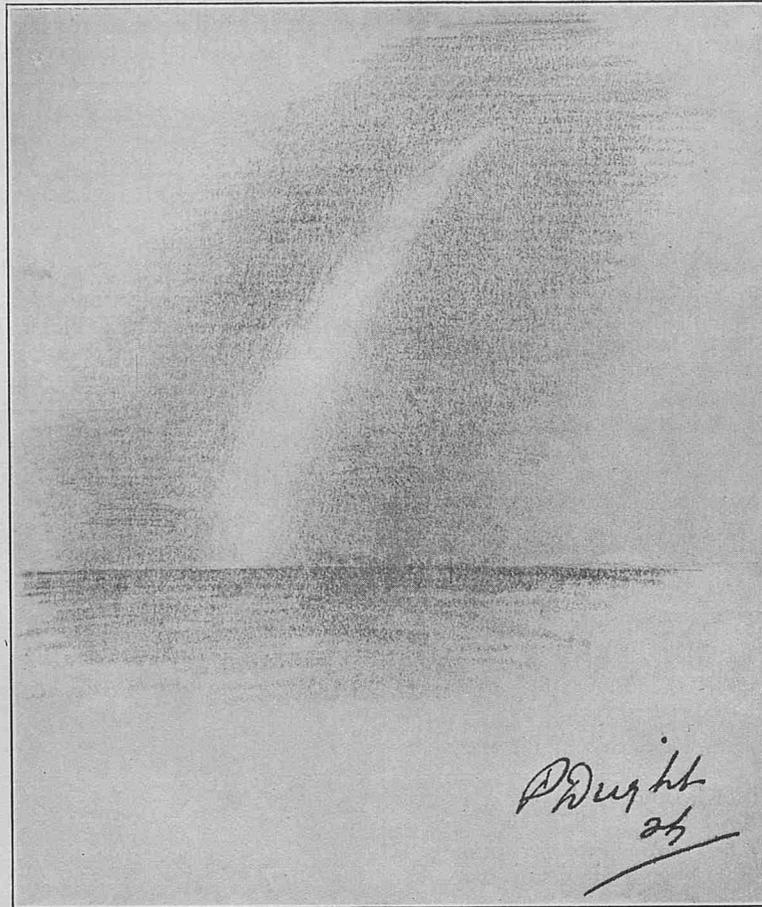


Figure 1.

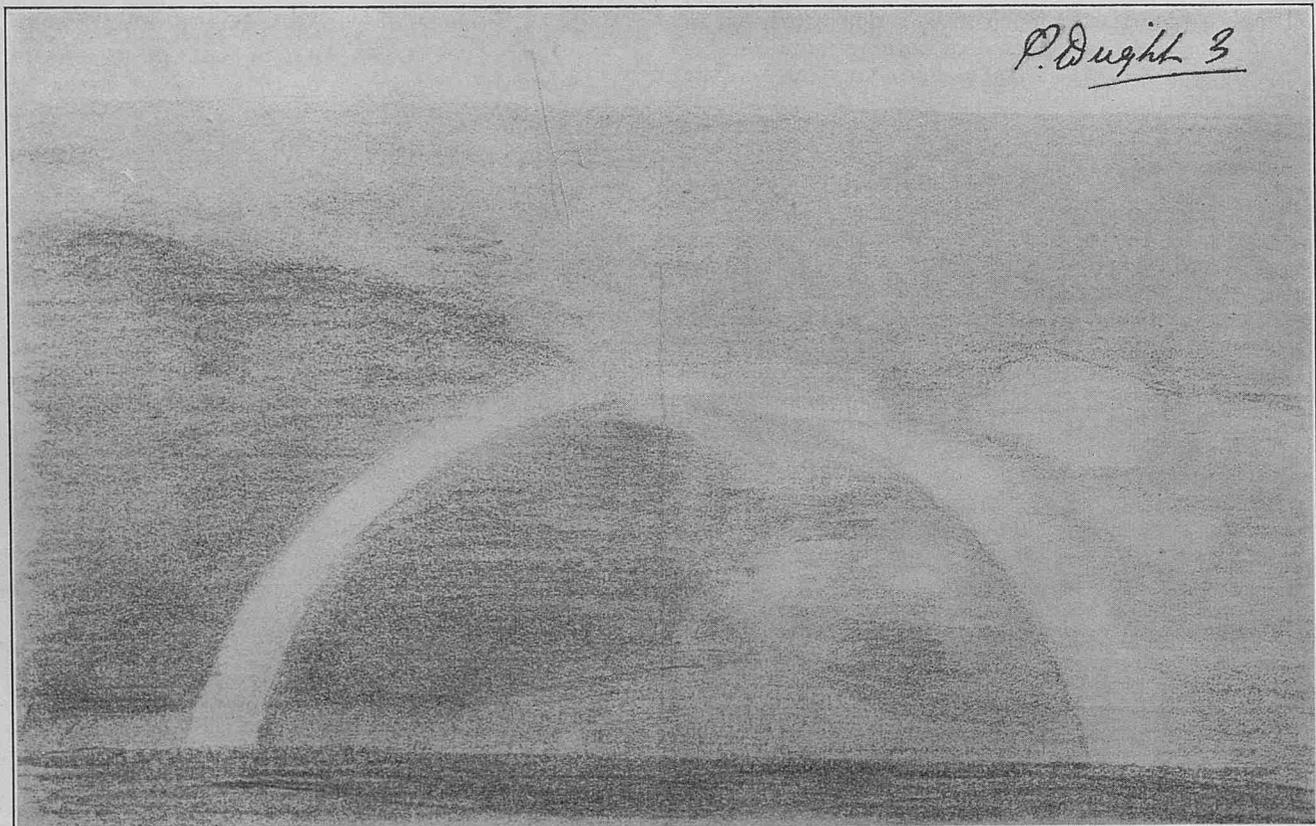


Figure 2.

tail of a comet; it remained so for several seconds and then quite suddenly a complete arc or semi-circle appeared in the sky as depicted in FIGURE 2, the original so-called glare forming the west leg of the semi-circle. On first appearing the complete arc was very faint but grew rapidly in clarity until it was well defined all round and then it as quickly disappeared, fading away from the summit, the last seen being where the legs met the horizon. The limbs where they met the horizon were much broader and more clearly defined than the summit, which was never at any time very distinct.

"The width of the limb at the base about 1° and at the summit about $\frac{1}{2}^\circ$.

"The whole thing, from first observing the faint glare until the last signs of the arc had vanished, occupied approximately $2\frac{1}{2}$ minutes. The complete distinct arc lasted only about 30 seconds, as by the time I had got my sextant they had faded beyond possibility of being measured.

"The moon had appeared a few minutes previous from behind a bank of St-Cu. cloud to the east, and was $9^\circ 54'$ in altitude and bore S. 55° E. (T).

"Shortly after the appearance of the phenomenon a violent rain squall broke over the ship from the large Nimbus cloud depicted in the sketch.

"February 17th, 1925, 2.54 a.m. A.T.S. (3.29 G.M.T.). Latitude $44^\circ 47'$ N., Longitude $8^\circ 25'$ W. Barometer 1010.2 mb. Dry 49.2° ,

Wet 48.2° . Wind N.W. 3. Sea N.W. 2. Swell W. slight.

"At 2.54 a.m. A.T.S., prevailing weather conditions identical to previous morning, a similar phenomenon appeared, this time the whole arc appearing at once, but otherwise similar in every detail to the phenomenon of the previous morning.

"The limbs bore N. 17° W. and west (true), the altitude of the summit was indeterminable, but in appearance the arc was a fair semi-circle.

"The limbs were broader, 1° , and brighter than the summit, which was $\frac{1}{2}^\circ$ approximately and not well defined, while on both occasions the west limb was the brighter and very clearly defined.

"The moon, as previously, had but shortly before appeared and bore S. 52° E. (T) in altitude $10^\circ 39'$.

"The arc was visible for 2 minutes, and was clearly defined for about 30 seconds.

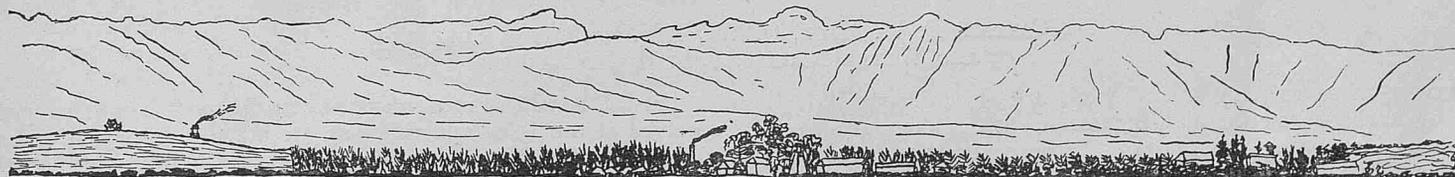
"It was, like the previous, followed shortly after by a violent rain squall from the Nimbus cloud. The cloud effect was the same on both occasions, a heavy Nimbus cloud in the west half and a lighter Cu-Nb. cloud in the north half, while between these clouds was more or less clear sky against which the summit of the arc showed faintly.

"There was no apparent darkening of the sky between the limbs, and I cannot recall observing any stars in that clear patch of sky beneath the summit."

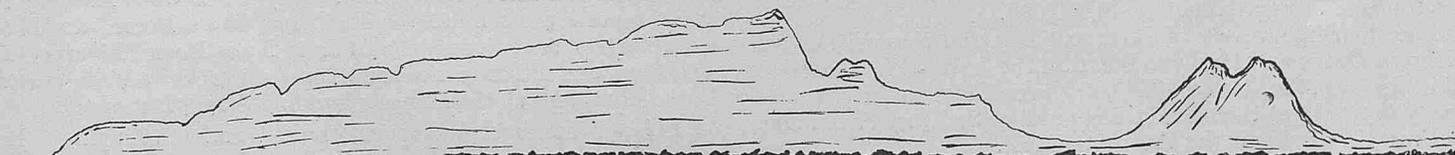
JAVA PORTS.

THE following sketches and remarks are contributed by Captain G. PARK, of the Asiatic Steam Navigation Co. :—

Pasaroean, Java.

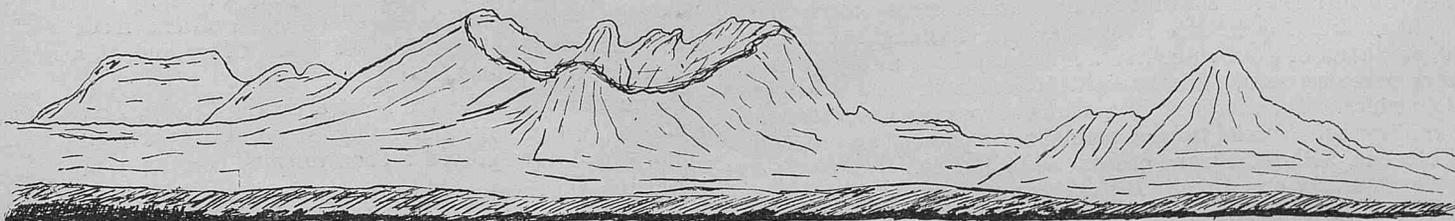


Pasaroean Lighthouse S 17° W 2° E



Mt Argapura 10,132'

Mt Turub 5,473'



Tide Gauge and House

"CHARTS. Island of Java, Eastern Portion No. 1654. Anchorages on North Coast of Java No. 3672.

"On making an anchorage you have no definite guide except the lead. Even on a very clear day you must use an element of caution by going slow and using the lead. The white godowns will help you and a possible factory chimney, but do not be certain of finding the Lighthouse. The clump of trees may help to guide you.

"Make a point of finding the Tide Gauge. Not a very conspicuous

object owing to the background, but the best there is, and useful. Anchor with the Tide Gauge bearing about S. in 6 fms. water.

"The background is of no value to you.

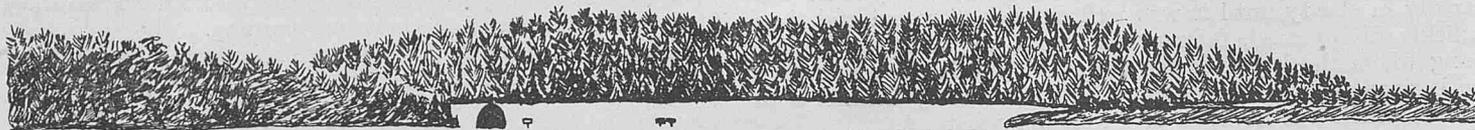
"Holding ground is very good.

"There is a bar at the entrance of the river which dries at low-water springs.

"The boat channel is marked by a black buoy. Lighters can only cross this bar when loaded towards high water. Spring rise $9'$."

Java Ports—continued.

Tjilatjap, Java.



Karang Bolong W 0.5

Two Beacons on the Sand Spit.

“CHARTS. Island of Java, Western Portion No. 1653. Harbours and Anchorages on Coast of Java No. 932.

“The stranger may think the Chart No. 932 is not sufficient. I conclude it is all that is necessary. Heave to, weather permitting, as per sketch, half a mile or 5 cables from Karang Bolong. If you are of light draft, you can edge more to the N. and E., until the Great Beacons are in line and which can be seen for a considerable distance.

“If the pilot has difficulty in reaching you, you may go towards him with the beacons in line. It sometimes happens with strong easterly winds the Pilot cannot reach you. Do not worry how close you go to any apparent danger as long as your beacons are in line. Do not wait to alter the course until the beacons are actually in line.

“With the main channel, 21 ft. is the least water. There is a strong flow and ebb tide at springs. If you reach the wharf on the flood, the Pilot will turn you off the wharf with your head ready to

leave again. If the ebb is too strong on your arrival, you can go alongside and turn at your leisure and pleasure, being a safe position to ‘heave to’ and wait for the Pilot. If there is a strong east wind, head east, also with flood tide. With the main shore beacons in line and to the north of position as per sketch there is a patch of 18 ft. sand and mud. Presuming your draft is about 18 ft., proceed with the two beacons on the sands in line. As you pass Karang Bolong and the beacon close to it, the Great Beacons will be seen and rapidly go into line. Swing to Port to keep these beacons in line and forget them by watching the lower beacons come into line. Swing rapidly to Port again to meet these beacons in line and watch similar beacons on your Port Beam. When in line ‘hard a port,’ quickly go towards the white conical beacon which marks the edge of the sand spit. You will then see the screen beacons right aft, and by keeping them in position, leads you direct mid-channel.”

HOW A GREAT PORT MEETS THE NEEDS OF NAVIGATION.

BY CAPTAIN F. W. MACE, O.B.E., R.N.R., MARINE SURVEYOR
AND WATER BAILIFF, PORT OF LIVERPOOL.

NAVIGATORS, when entering a large port, are able to appreciate the results of harbour science and invention, but seldom realise the continuous endeavours of a large Port Authority on their behalf.

A short description might be interesting of what is done at Liverpool to facilitate the entry and despatch of the 42,000 vessels which enter and leave the port per annum and which represent a total net tonnage of approximately 40,000,000.

There are four lightvessels in Liverpool Bay and channels, owned by the Mersey Docks and Harbour Board. The *North-West Lightship*, situated in the Bay, the *Bar Lightship*, at the entrance to the channels, the *Formby Lightship* at the first turning point of the Queen’s Channel, and the *Crosby Lightship* in the Crosby Channel.

In the main channel there are thirty-nine lighted buoys and seven lighted boat beacons. Most of these are lighted by compressed acetylene. Red Conical Buoys showing white flashing lights mark the *starboard* hand and Black Can Buoys showing flashing red lights mark the *port* hand of the channel, with few exceptions, they give one flash every three seconds, and the light is visible in clear weather about eight miles. The acetylene buoys are twelve months on station without recharging. Special turning points in the channel are marked by boat beacons, with focal plane of from 30 to 35 feet.

The *Bar*, *Formby* and *Crosby Lightships* are fitted with wireless telephony and in communication with Liverpool to report vessels should they desire it. At the Dock Office, Liverpool, operators are on duty night and day in telephonic communication with Seaforth Wireless Station, the General Post Office and the City, and messages are received at any post office in the United Kingdom for delivery *via* the lightships, to any vessel entering or leaving the channels and extensive use is made of this facility. The communication is of great assistance to vessels bound to the port, as a master desiring to know the weather at the Mersey Bar may send a message by wireless telegraphy to Seaforth Wireless Station for transmission to the *Bar Lightship* and in a very short time receive the information required.

The western or outermost pilot station where inward-bound vessels may obtain pilots for Liverpool is Point Lynus, on the coast of Anglesey, where the Mersey Docks and Harbour Board have a light-house and telegraph station in direct telegraphic communication with the Dock Office, Liverpool. Vessels in sight of this station may signal and get a report of the weather at the entrance to the Mersey Channels.

For the benefit of navigators leaving the port, weather reports are received at the Telegraph Office at 6 a.m., 9 a.m., noon, 3 p.m. and 5 p.m. from the three lightships, also from Point Lynus Lighthouse, Ormes Head Lighthouse near Llandudno and Hilbre Island Telegraph station, situated at the mouth of the River Dee. All these stations are owned and managed by the Mersey Docks and Harbour Board. These reports are sent to the Exchange News Room, the Liverpool Underwriters’ Association, the Atlantic News Room, Liverpool Cotton Exchange and Produce Exchange and shown on a slate outside the Dock Office, and at the Prince’s Landing Stage, Liverpool.

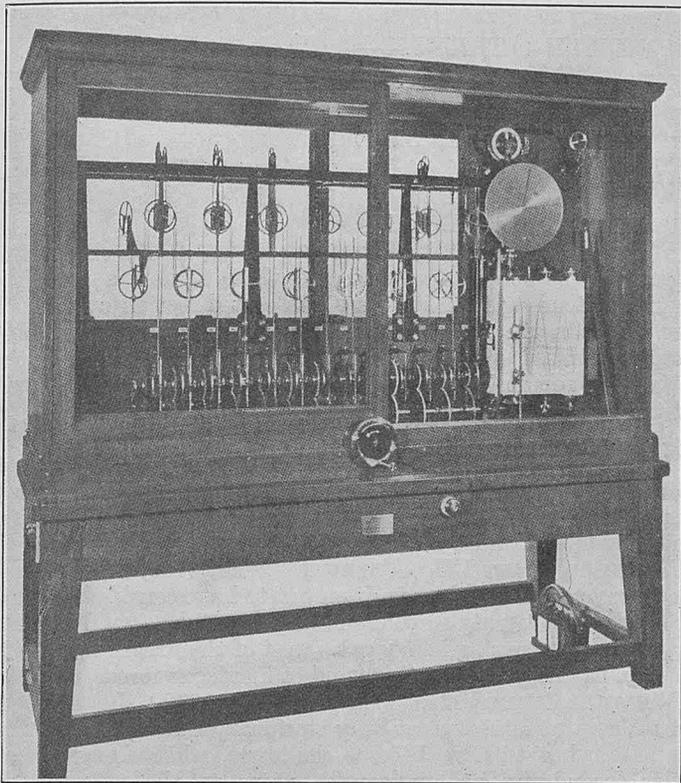
In addition to these reports the “Weather Shipping” Bulletin including forecasts of the weather, with station reports and an inference, is received each morning from the Meteorological Office, London, through the Port Meteorological Office by courtesy of the Cunard Co.’s co-operation, based on observations made at 7 a.m., G.M.T., and is shown outside the Dock Office and at a number of positions at the various Docks.

Storm warning cones are hoisted on the *Crosby*, *Formby* and *Bar Lightships*, the George’s Landing Stage, Liverpool, and at Hilbre Island, which have proved a boon to small coasting craft.

Bidston Observatory, owned by the Mersey Docks and Harbour Board and managed by a Joint Committee of the Mersey Docks and Harbour Board and the University of Liverpool, also materially contributes to the information for navigators with reports on rainfall, temperature, the barometer and the wind. At the present time, the Director, Mr. W. E. PLUMMER, is carrying out experiments to obtain reliable information of the upper air currents. Chronometers may be sent to the Observatory to be rated, and sextants may be sent for certificates. Greenwich Mean Time is given from the Observatory at 13 o’clock (G.M.T.) by a gun at the Morpeth Pier Head.

Closely associated with the Observatory and formed from members of the Observatory Joint Committee, is the Liverpool Tidal Institute, principal of the Staff of which being the Director, Professor J. PROUDMAN, F.R.S., M.A., D.Sc., and the Secretary, A. T. DOODSON, D.Sc., both of the Liverpool University, who are engaged in tidal research work.

In 1924, through the generosity of Liverpool shipowners, a tidal predicting machine was presented to the Tidal Institute and is housed at the Bidston Observatory. It was built by Messrs. KELVIN,



BOTTOMLEY AND BAIRD, of Glasgow, and has twenty-six components. The tides for Liverpool, as published in the local and other Almanacks, are predicted by this machine. Predictions are also made for other ports both British, Colonial and Continental; the predictions for Liverpool being from data obtained over a number of years from the automatic tide gauge at the George's Pier Head.

As a result of the tidal oscillations taking place in the Atlantic Ocean, two tidal streams enter the Irish Sea, one through the George's Channel and the other through the North Channel. These streams pursue their respective courses till they meet about seven hours later. The meeting place is termed the "Head of Tide," which is on an "imaginary line" through Barrow and Douglas to Ireland. At the junction of the two tides occurs the maximum ranges. For spring tides, the respective ranges are about 15 feet on the Irish and 30 feet on the English side.

The prevailing westerly winds blowing towards the "V" shaped estuary of the Mersey increase the height of the tide at Liverpool, whilst wind from the opposite quarter retards and "cuts" it; therefore, the data obtained from the tide gauges contain irregularities caused by the force and direction of the wind and atmospheric pressure as shown by the height of the barometer. The tidal observations are, however, extended for such a long period that these irregularities are to a great extent got rid of by averages.

Nevertheless, research work is being carried out with the view to predicting daily the amount of expected local meteorological tide so that the height and times of the tide as predicted for the particular day may be corrected in accordance with the meteorological phenomena expected from the known height of the barometer and the direction of the wind.

The ratio of the specific gravities of mercury to water being about 12 : 1, the fall in the barometer of 1 inch should increase the height of the tide 1 foot and a corresponding rise of the barometer depress it. There are recorded cases of strong westerly winds corresponding with a low barometer increasing the height of the tide as much as 4 feet.

The problem is not an easy one, being complicated by other factors which enter into it, as, in addition to local meteorological tides, there are interferences due to configuration of the coast, a meeting of the tides of two or more channels, obstructions of the tidal wave caused

by the friction of the sea bottom as the tidal wave entering the Mersey flows from a depth of about 20 fathoms to 5 fathoms also the height of the tide at Liverpool may not be affected by the height of the barometer or the direction of the wind near the Port or in the Irish Sea, but to gales and a barometric gradient far out in the Atlantic, therefore, it is obvious that these complications require most careful and lengthened investigation before they can be traced back to their sources.

There are a number of automatic tide gauges situated at places on the Mersey from the entrance to the harbour to the town of Warrington at the head of the river.

From these gauges data are obtained for the range of tide, etc., at different places. They are also used to reduce the soundings to the datum of the chart and to enable the slope of the tidal wave, the velocity of the current and the tidal capacity of the Estuary to be obtained.

In addition visual readings from tide poles are frequently taken.

The total tidal capacity of the Estuary at High Water of a Spring Tide is about 1,000,000,000 cubic yards, which fills up the large bottle-shaped Estuary from Garston to Warrington on the flood tide and returns to scour the Mersey Channels on the ebb.

The spring range at Liverpool is 30 feet, and flows through the narrows between Liverpool and Birkenhead at a rate of from 4-5 knots.

These tides, flowing up the main Mersey Channels from the Bar to the Rock Lighthouse, a distance of 13 miles between large sand-banks, pick up and carry large quantities of sand in suspension and deposit it at slack water, causing fluctuations in the depths, necessitating constant watchfulness.

The main buoyed channels from the *Bar Lightship* to near the Rock Lighthouse and 500 yards on either side of these channels are sounded monthly. Liverpool Bay is surveyed every year, a total area of 110 square miles, and a plan at a scale of 3 inches to a nautical mile is published annually by the Mersey Docks and Harbour Board.

Each important dock entrance is sounded monthly and one particular entrance every day, and plans of the sounding are supplied to Pilots and others. Further, a quinquennial survey is made from the Rock Lighthouse to Warrington, a total distance of about 24½ nautical miles, an area of 27 nautical square miles. Observations by float and current meter are frequently made to obtain the velocity and direction of the current, and samples of the water at different depths and states of the tide are taken so that the amount of matter in suspension may be determined.

This information is necessary to direct the work of the great suction dredgers, which lift the sand from the bed of the channels by powerful centrifugal pumps.

In 1890 there was only a depth of about 11 feet of water on the Bar at Low Water Spring Tides. Two small self-propelled pump suction hopper barges, each able to carry 400 tons of sand, were put to work on the Bar. In 1893 these two dredgers had increased the depth to 19 feet at Low Water Spring Tides.

Larger dredgers have since been built, the latest being the *Leviathan*, with a hopper capacity of 180,000 cubic feet and capable of filling herself with 10,000 tons of sand in 50 minutes from a maximum depth of 70 feet, and the present dredgers remove a maximum of 750,000 tons of sand from the river and channels in a week. Since 1890 the total has amounted to approximately 530,000,000 tons, and the depth of water on the Bar is now 28-30 feet at Low Water Spring Tides. This sand is carried out to sea and dumped.

Since 1911 a revetment or training bank, built of stone, has been built on the north side of the main channel, to train the tide, and further training banks are in the process of construction with a view to utilising the energy of the tides to scour and deepen the channels.

The foregoing is a very brief outline of some of the marine work required for a great port and which has progressed side by side with the needs of ships and seamen. New ideas and inventions are eagerly welcomed to increase efficiency and to enable the great ships which use the port to do so with ease and safety.

NOTE.—Plates produced by Lithographic process, including Charts and other large diagrams, will be found in each Number after "Weather Signals."

WEATHER CHARTS—EASTERN NORTH ATLANTIC—
February, 1925.

PREPARED IN THE MARINE DIVISION BY J. HENNESSY, SENIOR
NAUTICAL ASSISTANT.

IN February of last year the Canadian Pacific S.S. *Montlaurier*, Captain J. TURNBULL, C.B.E., R.N.R., when west of Ireland, outward bound for St. Johns, N.B., carried away her steering gear during heavy weather, causing her to put back to Queenstown.

The existing weather conditions in the Eastern North Atlantic during this time are shown on the following charts, which are drawn from data received from wireless reporting ships and from the British "Weather Shipping" Bulletin.

Montlaurier's position is only shown on the chart for the 23rd, after which no weather reports were received from her, the officers' time being too fully employed in working their disabled ship to port.

WEATHER CHART NO. IV FEBRUARY 21ST, 0700.—The day *Montlaurier* sailed from Liverpool, shows a depression to be centred just south of Iceland with a trough of low pressure, extending from it in a S.S.E. direction, in which a secondary depression is centred off the Bristol Channel.

The barometer tendencies at the southern shore stations indicate a movement of the secondary in a south-easterly direction, which is causing winds of gale force from a north to north-westerly direction off the south coast of Ireland, Bristol Channel and approaches.

WEATHER CHART V. FEBRUARY 22ND, 0700, shows a deep depression to be situated S.W. of Iceland while a ridge of high pressure extends north covering the south-western approaches to the British Isles. The depression is causing winds of gale force as reported by *Marloch*. The course and speed of the ships appearing on the chart not being reported, little can be obtained from their barometer tendencies, but the falling barometers at both Malin Head and Valencia indicate that the depression is spreading east, probably causing gales from a west to south-westerly direction to the west

and south-west of the British Isles.

WEATHER CHART VI. FEBRUARY 23RD, 0700, shows that the depression has spread eastward and there is now a trough of low pressure extending from it in a south-east direction over the British Isles. Within the trough secondaries are indicated over the south-western counties, also west of southern Ireland. Ships to the west of Ireland report strong north-westerly winds, while *Marloch*, in Latitude 52° 31' N, Longitude 22° 36' W., is experiencing a fresh gale.

It was during the afternoon of this day *Montlaurier*, situated on the southern edge of the depression met with the accident to her steering gear when she encountered winds of hurricane force, accompanied by mountainous seas.

WEATHER CHART VII. FEBRUARY 24TH, 0700, shows the depression to have maintained its position but to have considerably deepened during the past twenty-four hours, and as will be seen from the ship's observations, is causing heavy gales west of the British Isles to 30° W., one ship, the *Regina*, reporting wind of hurricane force.

WEATHER CHART VIII. FEBRUARY 25TH, 0700, shows the depression to have remained practically stationary during the past twenty-four hours, but to have become shallower, while along its southern border secondaries are indicated. Ships to the westward of the British Isles still report winds of gale force, while the passage of secondaries will probably cause unsettled weather conditions during the next twenty-four hours.

From the foregoing charts it will be seen that *Montlaurier*, shortly after leaving Liverpool, came under the influence of a well-developed cyclonic system which, remaining practically stationary for some days, caused continuous heavy gales and with the frequent passage of secondaries, developed a dangerous cross sea.

LOCAL WINDS—I.

PREPARED IN THE MARINE DIVISION BY H. KEETON, PRINCIPAL
CLERICAL ASSISTANT.

IN Chapter I of "Wireless and Weather, An Aid to Navigation" (Volume I, No. 1), there were given the following generalisations formulated by the late Hon. RALPH ABERCROMBY:—

"That independent of the shape of the isobars, the wind always takes a definite direction relative to the trend of these lines and the direction of the nearest low pressure.

"That the velocity of the wind is always nearly proportional to the closeness of the isobars."

These generalisations are true for the open ocean, away from the influence of land masses, but along many coasts and in the vicinity of oceanic islands, it is recognised that the prevailing winds are not entirely governed by the distribution of atmospheric pressure, but largely by the configuration of the land. Mountain ranges, valleys, deserts and prominent headlands are the cause of many local deviations from general wind conditions, while in many localities the contrast in air temperature over the sea and the land produce the familiar land and sea breezes.

The following brief notes of local winds are given in the hope that they may be of interest to marine observers. They are taken mainly from FINDLAY'S, MAURY'S, and other sailing directions, but there is a great lack of definite and detailed information on many coasts, and marine observers would give great assistance by forwarding remarks summarising their experiences of wind conditions on the various coasts to which they trade.

I. West Coast of South America.

General.—The winds which prevail on the western seaboard of South America depend mainly on three factors—

(1) The permanent high-pressure system of the South Pacific, which occupies an area extending from Latitude 15° S. to 40° S., between the meridians of 80° and 140° W. Longitude.

(2) The low-pressure area extending polewards from the southern edge of the permanent anticyclone, and which is subject to the passage of cyclonic disturbances, travelling eastward.

(3) The high mountain range of the Cordilleras (or Andes) which runs close and parallel to the coast from Panama almost to the Magellan Strait.

Applying the rule for the circulation of wind in the Southern Hemisphere, it will be seen that the general direction of the wind, to the southward of the area of high atmospheric pressure, is from the westward, until, striking against the Cordilleras, part of it is diverted to the northward and part to the southward. The line of separation in approximately Latitude 40° S. varies with the season, and marks the division of the *general* prevailing winds of the South American western coasts, viz., southerly winds north of Latitude 40° S. to the Equator, and north-westerly winds from Latitude 40° S. to Cape Horn.

This general condition of atmospheric pressure and resulting wind has a marked effect on the weather. The westerly winds on the southern edge of the anticyclone traverse some thousands of miles of ocean water, and are charged with water vapour. On striking the Cordilleras they produce abundance of rain, accompanied by squally, thick weather, which is the general feature of the coast southward of the line of demarcation between southerly and north-westerly winds. Northward of this line, the weather becomes gradually less and less rainy as the wind, having mostly discharged its water vapour on first meeting the mountain range, travels northward to a warmer region, until finally an area is reached which is practically rainless.

There are, of course, variations of these conditions, of which details are given below.

Gulf of Panama.

The climate, like most tropical ones, has its rainy and dry seasons; the former commencing in May and lasting till November, accompanied by many heavy thunderstorms.

The winds change with the season in quite a distinct manner. During the fine season, November to April, north-easterly to north-westerly winds "Northerners" predominate. These winds usually freshen during the afternoon, dying down towards midnight. They are not felt much on the coast, as, having come across the high ridges of the Cordilleras, they do not reach sea level until some 15 to 20 miles out at sea. Near the coast are regular land and sea breezes, alternating with calms.

Towards the middle of April, the northerly winds become less regular, being replaced by winds from a westerly direction, with calms, or land and sea breezes, and occasional squalls from the south-west. Later on these squalls become more frequent and stronger, and by the end of May the general rainy period commences, during which winds from between S. and S.W. mostly prevail. During the afternoons, however, there mostly springs up a wind from the N.W., so that vessels sailing from Panama will generally have, at all seasons, a fair wind until south of Cape Mala.

Colombia and Ecuador.

Between the Gulf of San Miguel and Cape Corrientes, variable winds in general prevail. The northerly winds associated with the fine season of the Gulf of Panama not uncommonly reach Cape Corrientes, but south-westerly winds are very frequent, and sometimes strong, and are nearly always accompanied by heavy rain.

The further south we go along the coast, the more frequent become the south-westerly winds, and more seldom the northerly winds occur.

From Cape Corrientes to Punta Guascama the prevailing winds during the whole year are from the S.W., but north-easterly and north-westerly winds are not uncommon. Of this stretch of coast, Captain DAMPIER says in his "Voyages" (1699): "It is a very wet coast, and rains abundantly all the year. There are but few fair days, for there is little difference in the seasons of the year between the wet and the dry; only in that season which should be dry the rains are less frequent and more moderate than in the wet season, for then it pours as out of a sieve."

Along the whole of the Ecuador coast, southward from Punta Guascama to Guayaquil, the alternation of dry and wet seasons is again apparent. The wind throughout the year is generally S.W. (S.S.E. to W.), following approximately the trend of the coast. Land and sea breezes are also common, while during the rainy season, December to April, light winds from N.W. and N.E. are experienced.

The land breeze, usually light, sets in about midnight from between E. and N., and continues through the night. By 8 a.m. the last remnant of the land breeze, now coming chiefly from south, alternates with calms. Between 10 a.m. and 11 a.m. this light southerly breeze veers to the westward, and increases to a fresh sea breeze, continuing until about 5 p.m., when it dies down to a calm.

Peru.

The prevailing winds on the rainless coast of Peru during the greater part of the year are from the south (between S.E. and S.S.W.). The wind seldom exceeds the force of a fresh breeze, and on certain parts of the coast is hardly sufficient to enable sailing ships to make a passage from port to port.

The sea breeze usually sets in at about 10 a.m., light and changeable at first, then gradually increases from S.S.W. to S. until 1 or 2 p.m. From that time there is a steady breeze until sunset, when it begins

to die away and soon becomes calm. About 8 or 9 p.m. light winds begin to come off the land, and persist until sunrise, when it again falls calm until the sea breeze sets in during the morning. Northward of Callao, the winds seem to be more reliable (especially the sea breeze, which seems to be stronger and more regular) than to the southward of this parallel, where at times during the summer, for three or four successive days, there is not a breath of wind.

Although light to moderate winds are the rule on the coast of Peru, yet sudden and heavy gusts, known as "Fall winds," often come down from the high land after the sea breeze sets in. In the ports, which are small, these winds may at times become dangerous to vessels moored.

During the winter, from April to August, light northerly winds may be frequently expected, and are often accompanied by thick damp fogs known as "Garuas." On the northern coasts of Peru, during these fogs, there sometimes occurs a black deposit which completely covers the exposed surfaces of a ship. So long as this black deposit is damp, it can be easily removed, but when allowed to dry, it sticks like pitch, and is known to seamen as "Peruvian Paint."

The effect of the general southerly winds of this coast, together with the current setting northward up the Chilean and Peruvian coasts (known of old as HUMBOLDT'S current), renders the climate of Peru much cooler than would be expected from its geographical position, and the desert-like nature of the land.

Chile.

The wind and weather conditions on the coast of Chile are perhaps the most constant in the world.

The South Pacific anticyclone is nearer the Equator in the Southern winter than in the Southern summer, the region of highest pressure in July being situated in about Latitude 30° S., and in winter in about Latitude 35° S. The northern part of the Chilean coast is situated on the east side of this anticyclone, while the southern portion of the coast is on the south-east side. In the first-named district the winds are therefore southerly, while in the south changeable westerly to north-westerly winds prevail. The further north one goes the rarer become the northerly winds, disappearing entirely north of Latitude 25° S. Similarly, the further south one travels, the rarer become the southerly winds, and these are not experienced south of Latitude 45° S.

The formation of the coast, mountains, and various local differences cause numerous departures from these general wind conditions. Thus at Copiapo there are only calms and N.W. winds; at Puerto Montt only N. and S. winds. The winds at Coquimbo differ from those of Caldera as well as from those of Valparaiso; while at the same moment, Valdivia and Corral, only 10 miles apart, often have different winds.

Even more important than these changes are those which are caused by the temperature contrast of sea and land. In the region of the southerly winds, the daily change is of remarkable regularity. Between 9 and 10 a.m. a sea breeze from the S.W., called the "Virazon" sets in, and increases in strength until 2 or 3 p.m., when it moderates, and by sundown has become calm. During the night there is either a calm, or a light land breeze, called the "Terral," or "Puelche," which dies down again at sunrise. In summer, the sea breeze sometimes blows very strongly, especially at Valparaiso MAURY describes it in his picturesque language as follows:—

"In the summer of the southern hemisphere the sea breeze is more powerfully developed at Valparaiso than at any other place to which my services afloat have led me. Here regularly in the afternoon, at this season, the sea breeze blows furiously, pebbles are torn up from the walks and whirled about the streets; people seek shelter; the Almendral is deserted, business interrupted, and all communication from the shipping to the shore is cut off. Suddenly the winds and the sea, as if they had again heard the voice of rebuke, are hushed, and there is a great calm."

The late Admiral R. FITZROY, R.N., who spent several years on survey work in the Magellan Strait and the West Coast of S. America, summarized the conditions on the Chilean coast north of Latitude 35° S. as follows:—

"From the parallel of 35° S., or thereabouts, to near 25° S. the wind is southerly or south-easterly during nine months out of the twelve. In the other three there are some calms and light variable breezes, but the remainder is really bad weather, northerly gales and heavy rains prevailing not only on the

coast, but far across the ocean in parallel latitudes.

"From September to May is the fine season, during which the skies of Chile are generally clear, and, comparatively speaking, but little rain falls. It is not, however, meant that there are not occasional exceptions to the general case; strong 'Northerners' have been known (though rarely) in summer. These interruptions are more rare, and of less consequence to the northward of 31° S. than south of that parallel, and indeed so nearly uniform is the climate of Coquimbo, that the city is called 'La Serena.'

"In settled weather a fresh southerly wind springs up a little before noon (an hour sooner or later) and blows till about sunset, occasionally till midnight. The wind is sometimes quite furious in the height of summer, so very strong that ships are often prevented from working into their anchorages, such as Valparaiso Bay.

"This is also the case with a southerly wind in the open sea, between the parallels above mentioned, but there it is neither so strong by day, nor does it die away at night.

"Within sight of land, a ship finds the wind freshen and decrease nearly as much as in the ports, where the nights are generally calm till a land breeze from the eastward springs up; but this latter is never troublesome, nor does it last many hours. With these winds the sky is almost always clear indeed; when the sky becomes cloudy in summer, it is a sure sign of little or no sea breeze, and probably a fall of rain; in the winter it foretells an approaching northerly wind with rain.

"In summer ships anchor close to the land, to avoid being driven out to sea by those strong southerly winds; but as the winter approaches a more roomy berth is advisable, though not too far out, because near the shore there is always an undertow, and the wind is less powerful.

"'Northerners' as they are called, give good warning; and overcast sky, little or no wind, unless easterly, a swell from the northward, water higher than usual, distant land remarkably visible, being raised by refraction, and a falling barometer, are their sure indications. All 'Northerners,' however, are not gales; some years pass without one that can be so termed, though few years pass in succession without ships being driven ashore on Valparaiso beach. Thunder and lightning are rare. Wind of any disagreeable strength from the east is unknown. Westerly winds are only felt while a 'Norther' is shifting round, previous to the sky clearing and the wind moderating. The violence of southerly winds lasts but a few hours, and even a northerly gale seldom continues beyond a day and a night, generally not so long."

On the coasts of the provinces of Valdivia, Llanquihue, and Chiloe the prevailing winds are from the westward; north-westerly winds prevailing in winter and south-westerly in summer. Winds from the northward are damp winds, and precursors of bad weather and rain; those from the southward and eastward bring fine weather. Winds from the eastward blow with but little force on the coast, but out at sea are occasionally very strong.

Between Chiloe and Magellan Strait.

On this coast during the whole year the prevailing winds are from between N.W. and S.W., those from N.W. predominating, especially

in winter. Frequently the wind continually backs and veers between N.W. and S.W., sometimes for two or three weeks at a stretch, owing to the passage of successive depressions to the southward.

Light airs frequently spring up from the N.E., freshening as they back to N.N.W. or N.W., and bringing rain. From that point, if it blows hard, the wind is liable to shift suddenly round to S.W. in a violent squall, and to blow still harder, raising a mountainous and often a cross sea. Before a shift of this kind, there is nearly always a clearing of the sky in the S.W., which the Spaniards call an "Eye," and this warning signal should be carefully watched for. After blowing a gale for some time from S.W., the wind will moderate and back, with a rising barometer, to S. and perhaps S.S.E., the weather clearing. The wind dies away as it approaches E., and after an interval of calm, generally of short duration, springs up again from N.E.

Should, however, the barometer remain low or unsteady, the wind will slowly veer from S.W. to the N.W. again, and blow strongly, and is always accompanied by bad weather.

In the winter months, June, July, and August, there are occasionally easterly winds or gales, caused by depressions passing to the northward. These depressions do not reach so low a latitude in other months of the year.

Tierra del Fuego and Cape Horn.

Gales of wind often succeed each other at short intervals, and last several days. At times the weather is fine and settled for a fortnight, but this is rare. Westerly winds prevail during the greater part of the year. Easterly winds occur chiefly in the winter months, and are then strong; they seldom occur in summer.

Winds from the eastward invariably begin light, and are accompanied at first with fine weather. As they gradually increase, the weather changes, and a determined heavy gale is often the result. More frequently, however, they only rise to a strong breeze, then die away gradually, or shift to another quarter, showing that the disturbance causing them has passed to the northward.

The winds prevailing generally during the summer months change continually from north to south, through west; and that season would hardly deserve the name of summer were not the days much longer and the weather somewhat warmer.

From the north the wind always begins to blow moderately, generally accompanied by small rain. Increasing in strength, it draws gradually to the westward, and blows hardest between N. and N.W., with heavy clouds, thick weather, and much rain.

When the fury of the north-wester is expended (which varies from 12 to 50 hours) or even while it is blowing hard, the wind sometimes shifts suddenly and violently into the S.W. quarter, blowing harder than before. This wind soon drives away the clouds, and in a few hours there is clear weather, with occasional heavy squalls. In the south-west quarter the wind may last several days, moderating towards the end, and giving two or three days of fine weather, showing that the centre of the depression has passed southward of the observer.

This process is constantly repeated, and the most usual weather in these latitudes is a fresh or strong wind between N.W. and S.W. with an overcast sky.

(To be continued.)

WEATHER SIGNALS.

II. WIRELESS WEATHER SIGNALS.

Bulletins:

It is necessary to make careful distinction between weather reports and weather forecasts.

A *weather report* is a statement, in plain language or code, of the observed conditions prevailing at a place at a given time.

A *weather forecast* is a statement, usually in plain language, of weather which may be expected at a place or over an area in the

near future.

For forecasts issued to shipping by wireless it is usual to publish full descriptions giving abbreviated names of areas with prescribed limits and the length of period; if such published description is not given, the place or area and the period to which the forecast applies are included in the message.

WIRELESS WEATHER BULLETINS,
GREAT BRITAIN AND IRELAND.

C.W. Issues, "Weather Shipping" Bulletin.

W/T Station, Air Ministry. Latitude 51° 27' 50" N.

Longitude 0° 01' 35" E.

Call sign G.F.A.

Wave length 4,100 metres, C.W.

Times of transmission 0900 G.M.T.* and 2000 G.M.T.

The message issued at 0900 G.M.T. is based upon 0700 G.M.T. observations. The message issued at 2000 G.M.T. is based upon 1800 G.M.T. observations.

During the time of S.O.S. lookout, from 0915 to 0918, and 2015 to 2018, there will be a pause in the transmission of these weather signals.

These messages are preceded by the words "Weather shipping" and consist of six parts. Part II. is in code, the remaining parts in plain language.

Part I. is a general inference of weather conditions over the British Isles, which usually includes information of the pressure system, with whereabouts, which influences the weather.

Part II is a report in code giving actual observations, with station number, of Barometer tendency, weather, visibility, Barometric Pressure, Direction and Force of Wind, at the ten British stations shown upon the accompanying Chartlet numbered from 1 to 10 (the initial 1 being omitted in the case of Station 10).

* All times are G.M.T. i.e., the day commencing at Midnight, and the hours reckoned from 00 to 23.

Two stations not shown on the Chartlet also follow in this part. They are No. 1, Reykjavik, Latitude 64° 09' N., Longitude 21° 55' W. (approx.) and No. 2, Thorshavn, Latitude 62° 03' N., Longitude 6° 45' W. (approx.) preceded by the word "Foreign."

Parts III., IV. and V. are forecasts of wind and visibility for the 12 hours following the time of observations for the areas shown upon the Chartlet.

Part VI. commencing "outlook" is a general statement as to expectation of weather after the period of the forecasts, when it can be made.

Note.—In order to avoid ambiguity between the words Ireland and Iceland, the latter word is always repeated whenever it occurs in Part I.

Explanation of Chartlet.

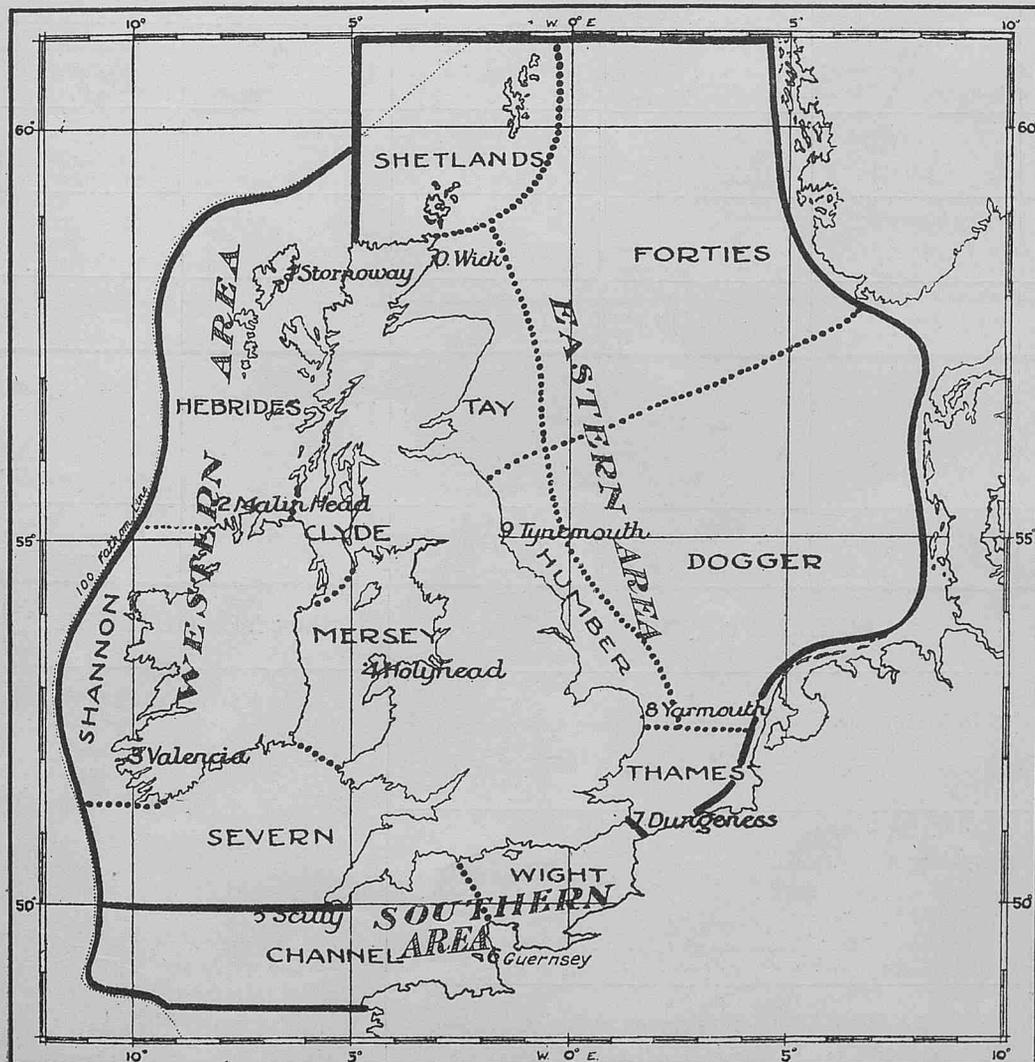
The numbers before the names of the stations indicate their code number (in the event of any station being substituted, the name of the substitute will be given in the message in place of this figure until such time as correction has been adequately made in Notices to Mariners and in THE MARINE OBSERVER).

The boundaries of the areas are defined by the plain black lines and the coast line.

These areas are sub-divided into districts, named after islands, rivers or banks within them, so that they may be readily memorised. The boundaries of these districts should only be taken as an approximate indication of their extent.

These districts are for the purpose of giving information of different weather within an area, without unduly lengthening the wording of a message.

CHARTLET SHOWING STATIONS, FORECAST AREAS AND DISTRICTS.



WESTERN AREA.

The sea and coasts eastward of the hundred fathom line from Cape Wrath to Seilly.

DISTRICTS.

HEBRIDES.—That part of Western which lies N. and W. of Bloody Foreland, Rathlin I. and Islay.

SHANNON.—West coast of Ireland from Bloody Foreland to the Fastnet.

SEVERN.—South coast of Ireland, Bristol Channel, and approaches.

MERSEY.—The Irish Sea and approaches.

CLYDE.—The North Channel and approaches to Clyde.

SOUTHERN AREA.

The English Channel from Dover to the 100 fathom line.

DISTRICTS.

CHANNEL.—West of Portland.

WIGHT.—East of Portland.

EASTERN AREA.

The North Sea south of Lat. 61° N., and east of Long. 5° W. to the north and to the Straits of Dover in the south.

DISTRICTS.

THAMES.—Thames Estuary and its approaches.

HUMBUR.—East coasts from Yarmouth to Tweed.

TAY.—East coast of Scotland, including Moray Firth.

SHETLANDS.—Orkneys and Shetlands.

FORTIES.—Eastward to Norway and N. of line Tweed to Naze.

DOGGER.—Eastward to coast of Denmark and S. of line Tweed to Naze.

For the purpose of decoding and recording the W/T Weather Bulletin for all coasts, the following form may be ruled and used with advantage. The code figures should be entered under the names of the Stations. An example is recorded and decoded on this form opposite.

Day.....

Month.....

Year.....

0700 G.M.T. 1800 G.M.T.

(Delete observation time which does not apply.)

Weather Shipping.

**Part I
INFERENCE**

**Part II
Station Reports
Code figures**

Key
Odd Groups I_nK'wwV_s Even Groups BBDDF

	Bar	Tendency	Weather	Visibility	Barometer	Wind	Force
1 Stornoway							
2 Malin Head							
3 Valencia							
4 Holyhead							
5 Scilly							
6 Guernsey							
7 Dungeness							
8 Yarmouth							
9 Tynemouth							
0 Wick							

Foreign

1 Reykjavik							
2 Thorshavn							

Part III

FORECAST

Part VI. OUTLOOK

District

Western Area
Hebrides
Clyde
Mersey
Severn
Shannon

Part IV

Southern Area
Channel
Wight

Part V

Eastern Area
Thames
Humber
Dogger
Tay
Shetlands
Forties

DESCRIPTION OF CODE
AND
INSTRUCTIONS FOR DECODING PART II.

The code is arranged in five-figure groups, which are paired. Each pair of groups refers to one station, and contains an odd and an even group.

Odd Groups. The 1st Figure indicates the station to which the pair of groups refers. From 1 to 9 and 0 for British stations. The Foreign groups being numbered 1 and 2 as above and indicated by the word "Foreign."

The 2nd Figure gives the Barometer tendency, Table XIV.

The 3rd and 4th Figures give the weather, Table V., p. 17, Vol. III, No. 25 of this Journal.

The 5th Figure gives the visibility, Table VI., p. 18, Vol. III, No. 25 of this Journal. Caution is necessary in the use of these visibility reports owing to the conditions of view to seaward at some stations. The two foreign stations' visibility reports are landward.

Even Groups. The 1st and 2nd Figures indicate the last two whole figures of the corrected barometer reading in millibars*. To convert to inches, see Table XIII., p. 19, Vol. III, No. 25 of this Journal.

The 3rd and 4th Figures give the True Direction of the Wind, Table III., p. 17, Vol. III, No. 25 of this Journal.

The 5th Figure gives the force of the wind by Beaufort scale. All forces 9 and above, as 9.

In all cases when a figure cannot be given, a — is given to preserve the order.

It will be of assistance in memorising the code if the following initial letters of the various elements are committed to memory.

<p style="text-align: center;">$I_n K' ww V_s$</p> <p>Thus I_n = Station. K' = Barometer tendency. ww = Weather. V_s = Visibility.</p>	<p style="text-align: center;">BB DD F.</p> <p>BB = Barometric Pressure. DD = Wind Direction. F = Wind Force.</p>
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It will be noticed that the above symbols and their meanings are taken from the Abridged Key to the New International Code which was published in Vol. III., No. 25 of this Journal.

This description of the British "Weather Shipping" Bulletin will serve as an example of the method of decoding Bulletins for other countries, where the New International Code is in use, given in future numbers.

Though at first decoding may be tedious a little practice will show that this can be done with ease and rapidity. A form ruled and used as suggested in the specimens shown on pp. 32 and 33 will be of great assistance.

A Sample Message.

Call Sign :—CQ CQ CQ V GFA GFA GFA (repeated twice).

Weather Shipping.

Inference A deep depression over the North Channel which is moving East North East will cause strong winds or gales in all districts with much rain at first. Improving weather will spread across the country in its rear.

Station	17535	99041	2155-	93283	34117	12266
Reports	46356	97208	55167	13267	65417	19185
	77124	15206	87526	14186	97275	99206
	0856-	00146	Foreign	1112-	96162	2012-05000

Forecasts Western Area Districts Mersey Severn Shannon westerly gale veering and moderating visibility becoming good Districts Clyde Hebrides strong northerly winds moderating

* It will be seen that the coded figures may represent two values of barometric pressure, but this only takes place with a very low or very high barometer, so that Mariners will be able to decide which value is intended.

visibility moderate full stop Southern area strong westerly to north westerly winds District Wight visibility poor District Channel visibility becoming good full stop Eastern Area Districts Dogger Humber Thames southwesterly gales visibility poor Districts Tay Forties southerly winds strong to Gale backing visibility poor District Shetlands fresh easterly winds visibility moderate full stop Outlook Eastern Area northerly gales western area temporary improvement.

Though these reports are intended for the use of ships at sea, they will be found useful to shipping and seamen at the ports, if intercepted by local wireless receiving stations and passed to Mercantile Marine Offices and Harbour Masters.

SPARK ISSUES.

"WEATHER SHIPPING" BULLETIN.

Certain portions of the "Weather Shipping" Bulletin described above are broadcast by coast W/T stations on spark as follows. The a.m. issues refer to 7 a.m. observations and p.m. issues refer to 6 p.m. observations, all times are G.M.T.

For the Western Area.

Valentia, Lat. 51° 56' N., Long. 10° 21' W. (approx.), call sign GCK, wavelength 600 metres spark. At 0948 G.M.T. and at 2048 G.M.T.

Seaforth, Lat. 53° 28' N. Long. 3° 01' W. (approx.), call sign GLV, wavelength 600 metres spark. At 0930 G.M.T. and at 2030 G.M.T.

Commencing Western Area followed by ten groups of figures which indicate observations made at the five stations numbered 1 to 5 in the "Weather Shipping" Bulletin followed by the word Forecast after which the 12-hour forecast for the Western Area will be given.

For the Southern Area.

Niton, Lat. 50° 35' N., Long. 1° 17' W. (approx.), call sign GNI, wavelength 600 metres spark. At 0930 G.M.T. and at 2030 G.M.T.

Commencing Southern Area followed by six groups of figures which indicate observations made at the three stations numbered 5, 6 and 7 in the "Weather Shipping" Bulletin, followed by the word Forecast, after which the 12-hour forecast for the Southern Area is given.

For the Eastern Area.

Cullercoats, Lat. 55° 02' N., Long. 1° 26' W. (approx.), call sign GCC, wave length 600 metres spark. At 0948 G.M.T. and at 2048 G.M.T.

Commencing Eastern Area, followed by eight groups of figures which indicate observations made at the four stations numbered 7, 8, 9 and 0 in the "Weather Shipping" Bulletin, followed by the word Forecast, after which the 12-hour forecast for the Eastern Area is given.

WIRELESS TELEPHONY (R/T) ISSUES.

"WEATHER SHIPPING" BULLETIN.

Certain portions of the "Weather Shipping" Bulletin described above, are broadcast from the British Broadcasting Company's stations by Wireless Telephony as follows :—

Daventry, Latitude 52° 15' N., Longitude 1° 08' W. (approx.) call sign 5XX, wavelength 1,600 metres (R/T). At 1030 G.M.T.

This station broadcasts Parts I, III, IV and V of the "Weather Shipping" Bulletin, i.e., a general inference, followed by 12-hour forecasts for the Western, Southern and Eastern Areas, based on observations at 0700 G.M.T.

Liverpool, Latitude 53° 25' N., Longitude 3° 00' W. (approx.) call sign 6LV, wavelength 315 metres (R/T). Between about 2220 and 2235 G.M.T.

This station broadcasts Part III. of the "Weather Shipping" Bulletin, *i.e.*, the 12-hour forecast for the Western Area, based on observations at 1800 G.M.T.

Bournemouth, Latitude 50° 43' N., Longitude 1° 52' W. (approx.) call sign **6BM**, wavelength 386 metres (R/T). Between about 2220 and 2235 G.M.T.

This station broadcasts Part IV of the "Weather Shipping" Bulletin, *i.e.*, the 12-hour forecast for the Southern Area based on observations at 1800 G.M.T.

Newcastle-on-Tyne, Latitude 54° 58' N., Longitude 1° 35' W. (approx.) call sign **5NO**, wavelength 403 metres (R/T). Between about 2220 and 2235 G.M.T.

This station broadcasts Part V of the "Weather Shipping" Bulletin, *i.e.*, the 12-hour forecast for the Eastern Area based on observations at 1800 G.M.T.

It should be noted that the B.B.C. Stations also broadcast forecasts for the general Public and Farmers and as these are for land areas it is necessary to distinguish them from the parts of the "Weather Shipping" Bulletin which give information for Mariners.

CHANGE FROM JANUARY 15th 1926.

Commencing from January 15th, 1926, in place of the evening messages issued through Liverpool, Bournemouth and Newcastle-on-Tyne, a similar message to that broadcast by Daventry in the morning will be broadcast by Daventry shortly after 2200 G.M.T. on weekdays, and 2100 G.M.T. on Sundays. The forecasts being based upon 1800 G.M.T. observations.

NEW INTERNATIONAL CODE, WEATHER TELEGRAPHY TABLE.

Table XIV. K'.—Barometer Tendency.

0	Barometer steady.	(The barometer has not fallen or risen more than 1/4 millibar in 3 hours.)
1	Do. rising slowly.	(The barometer has risen 1 to 1 1/2 mb. (.03-.04 in.) in last 3 hours.)
2	Do. rising.	Do. do. 2 to 3 1/2 (.06-.10 in.) do.
3	Do. rising quickly.	Do. do. 4 to 6 (.12-.18 in.) do.
4	Do. rising very rapidly.	Do. do. over 6 (.18 in.) do.
5	Do. falling slowly.	Do. fallen 1 to 1 1/2 (.03-.04 in.) do.
6	Do. falling.	Do. do. 2 to 3 1/2 (.06-.10 in.) do.
7	Do. falling quickly.	Do. do. 4 to 6 (.12-.18 in.) do.
8	Do. falling very rapidly.	Do. do. over 6 (.18 in.) do.

WIRELESS STORM WARNINGS.

Great Britain and Ireland.

These messages are broadcast in plain language and refer to the area which lies within about 150 miles of the station sending out the message.

The signals are made on 600 m. wavelength (spark) preceded by the International safety signal TTT. They are repeated three times at intervals of ten minutes. Should the signal be sent during the period when one-operator ships do not keep watch they are repeated at the commencement of the next single operator watch.

Stations making these signals.

Station.	Call Sign.	Latitude (approx.)	Longitude (approx.)
Niton (Isle of Wight)	- GNI	50° 35' N.	1° 17' W.
Land's End	- GLD	50° 07' N.	5° 40' W.
Fishguard	- GRL	52° 01' N.	4° 59' W.
Seaforth (Liverpool)	- GLV	53° 28' N.	3° 01' W.
Wick	- GKR	58° 26' N.	3° 06' W.
Cullercoats	- GCC	55° 02' N.	1° 26' W.
Valentia (Ireland)	- GCK	51° 56' N.	10° 21' W.
Malin Head (Ireland)	- GMH	55° 22' N.	7° 20' W.

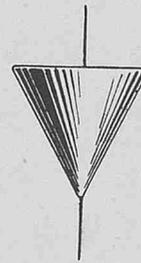
Example:—"Gale Warning. Deep depression off N.W. Ireland moving east. Gales from S.E. backing north probable north of latitude 54° Southerly gales veering N.W. other coasts."

IV. VISUAL STORM WARNINGS.

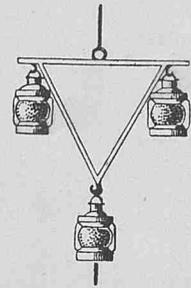
Great Britain and Ireland.

SOUTH CONE.

By Day.



By Night.

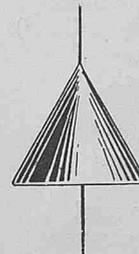


Hoisted for Gales.

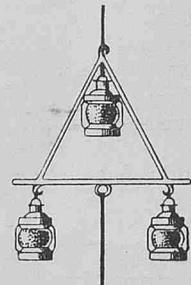
From S.E., veering to S.W., W., or N.W.
 „ S.W., veering to W. or N.W.
 „ W., veering to N.W.
 And also from E., veering to S. or S.W.

NORTH CONE.

By Day.



By Night.



Hoisted for Gales.

From S.E., E., or N.E., backing to N.
 „ N.W., veering to N., N.E. or E.
 „ N., veering to N.E. or E.
 „ N.E., veering to E.

When one of these signals is hoisted it indicates that a telegram has been received from the Meteorological Office by the station exhibiting the signal, that a gale is expected in the vicinity of the station.

At present only those stations marked † in the list show the night signal.

The stations are as follows:—

England, East Coast.

Berwick-upon-Tweed	Boston
Blyth	King's Lynn
Tynemouth	Sheringham
North Shields	Cromer
Souter point	Yarmouth
Sunderland	Gorleston
Seaham	Lowestoft
Hartlepool	Southwold
Middlesbrough	Orfordness
Redcar	Ipswich
Whitby	Gunfleet
Filey	Greenhithe (H.M.S. Worcester)
Flamborough head	Chatham
Bridlington	Sheerness
Spurn head	†Southend
Hull	Tilbury
Goole	Rotherhithe
Grimsby	

England, South Coast.

Reculvers	Portland
Ramsgate	Jersey
Deal	Exmouth
Dover	Torquay
Sandgate	Dartmouth
Dungeness	Berry head
Rye	Prawle point
Eastbourne	Salcombe
Beachy head	Plymouth
†Newhaven	Devonport
Brighton	Rame head
Littlehampton	Portwrinkle
Hayling island	Looe
Portsmouth	Fowey
Southampton	Gorran haven
Cowes	Mevagissey
Ryde	Coverack
St. Catherine point	St. Anthony
Needles (Freshwater)	Lizard
Poole	Mullion
Swanage	Porthleven
Anvil point	Tol Peden Penwith
Weymouth	Scilly (St. Mary's)

England, West Coast, and Wales.

Sennen	Caldy island
Godrevy	Pembroke dock
St. Ives	St. Ann's head
Newquay	Smalls lighthouse
Trevoise head	Newquay (Cardigan)
Padstow	Carnarvon
Port Isaac	South Stack
Lynmouth—Foreland	Holyhead
Bude	Point Lynus
Hartland point	Hilbre island
Lundy isle	Hoylake
Bull point	Bar light-vessel
Ilfracombe	Formby light-vessel
Weston-super-Mare	Crosby light-vessel
Newport (Mon.)	Runcorn
Cardiff	Liverpool
Penarth	Preston
Nells point	Blackpool
Barry dock	Fleetwood
Nash	Heysham
Briton ferry	Morecambe
Swansea (Mumbles lighthouse)	Barrow
Mumbles	Walney island
Rhos-sili	Douglas (Isle of Man)
Burry port	Ayre point (Isle of Man)
Tenby	Ramsey (Isle of Man)

Scotland, West Coast.

Stranraer	Mull of Cantyre
Mull of Galloway	Rinns of Islay
Corsewall point	Rudha Mhail
Ballantrae	Glas island
Ardrossan	Stornoway
Greenock	Ru Stoer
Campbeltown	

Scotland, North and East Coasts, with Orkneys and Shetlands.

Cape Wrath	Port Knockie
Lerwick	Portsoy
Sumburgh head	Banff
Fair Isle	Fraserburgh
Noup head	Peterhead
Kirkwall	Aberdeen
Stronsay	Nairn
Stromness (Orkney isles)	Girdleness
Cantick head	Scurdyness
Dunnet head	Anstruther
Wick	Methil
Helmsdale	Rosyth
Tarbetness	Grangemouth
Cromarty	Dunbar
Burghead	St. Abbs head
Lossiemouth	
Buckie	

Ireland, North and East Coasts.

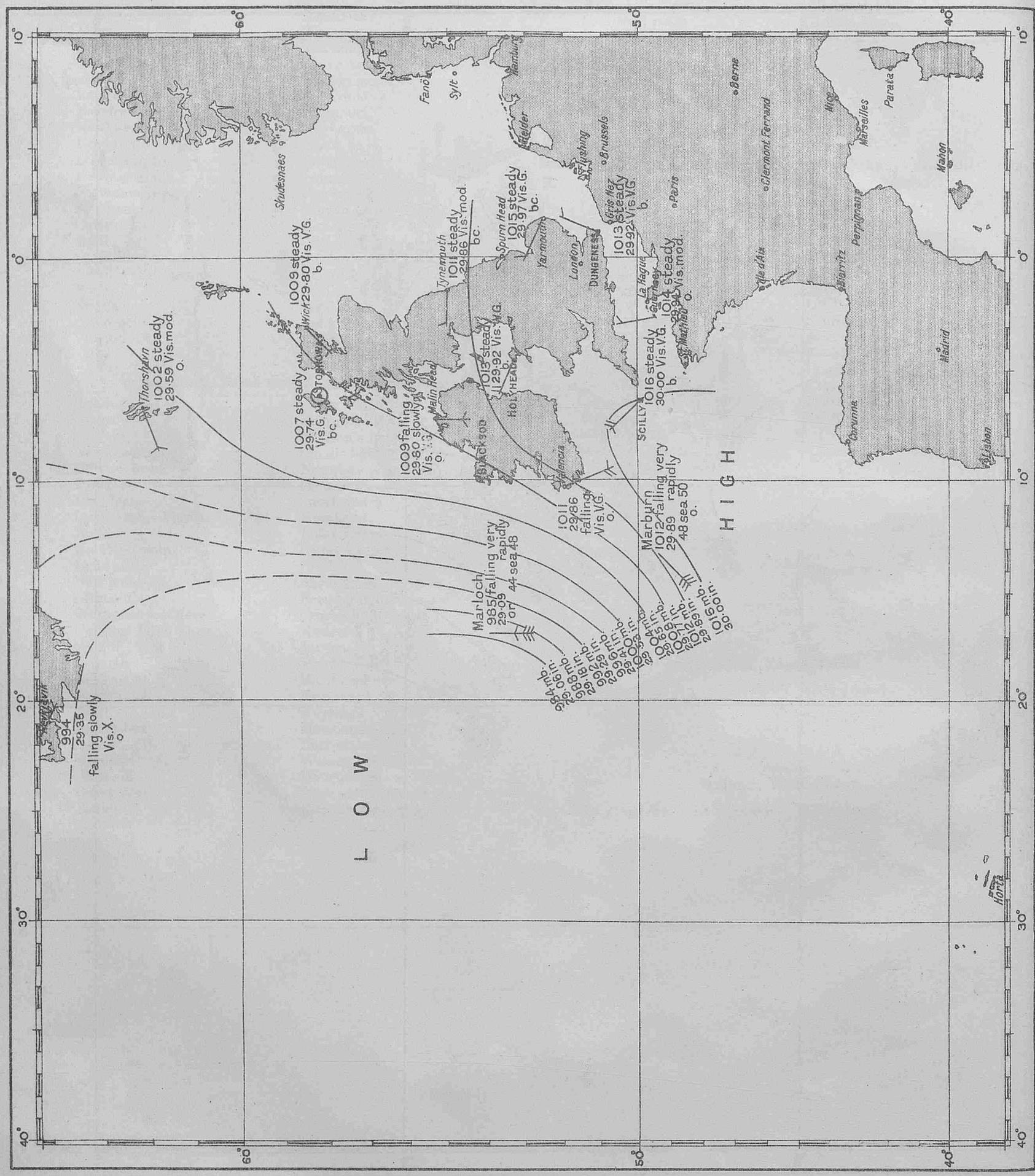
Rathmullen	Belfast
Malin head	Kingstown
Portrush	

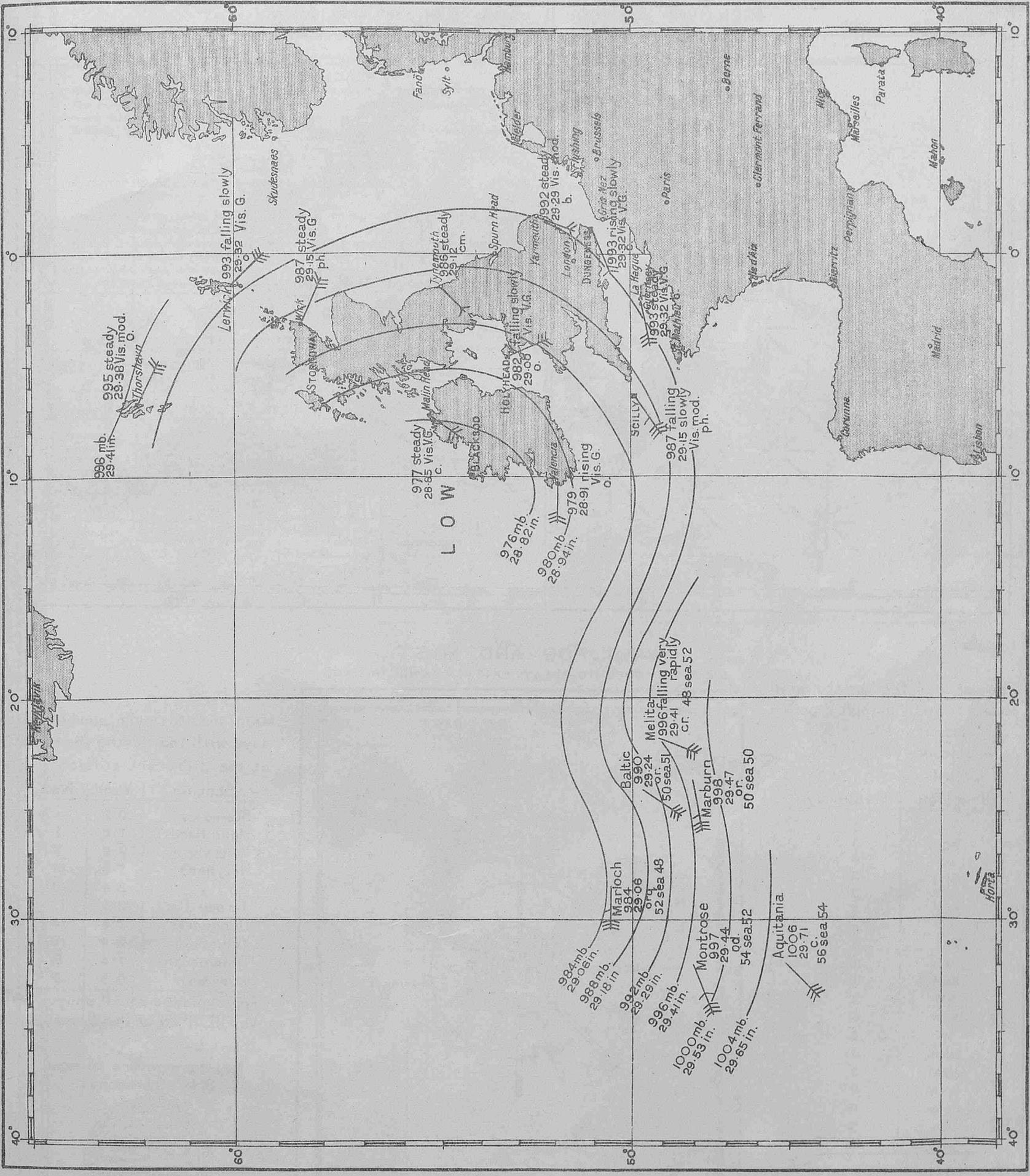
Ireland, South Coast.

Queenstown	Galley head
Cork	

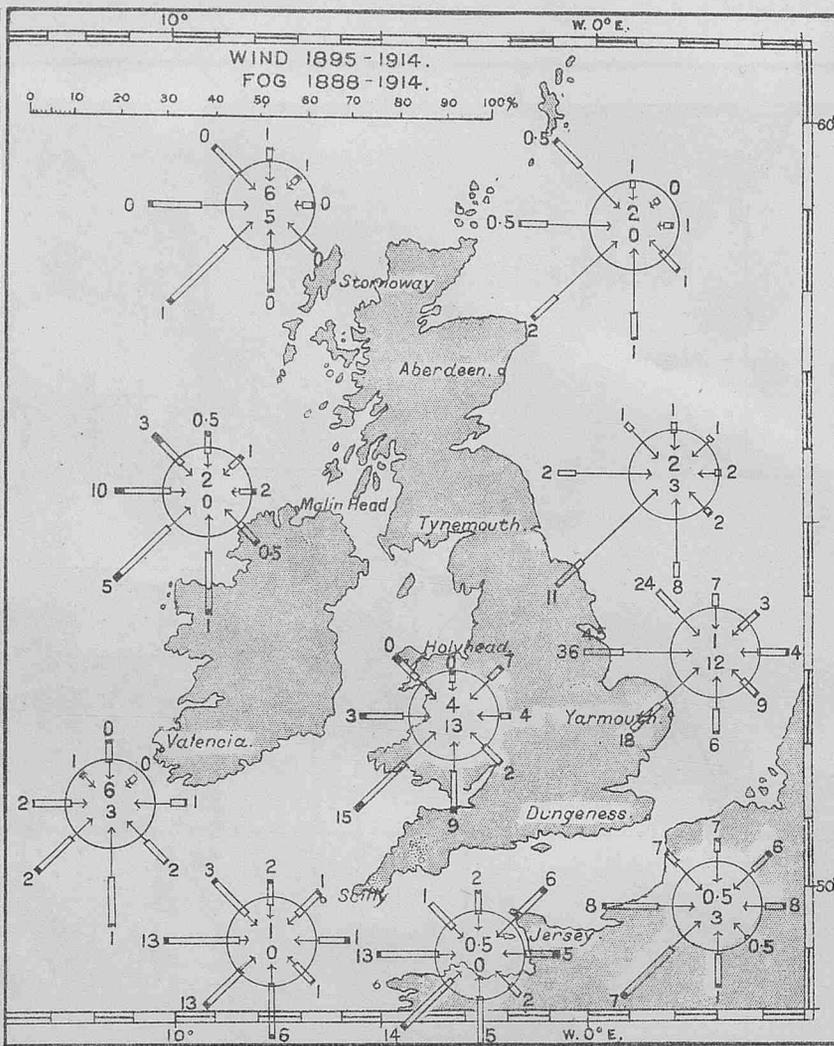
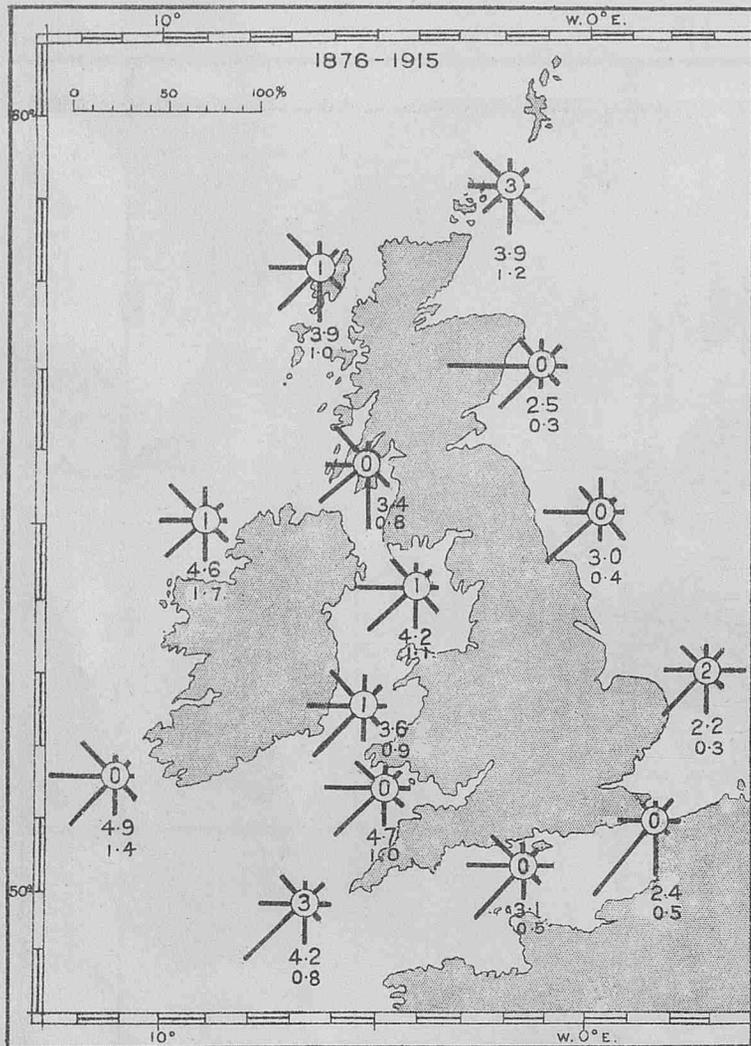
Ireland, West Coast.

Killybegs (St. John's point)	Loop head
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WIND AND FOG AT COAST STATIONS. GREAT BRITAIN AND IRELAND



WIND, FOG AND MIST.

S.W. APPROACHES TO GREAT BRITAIN AND IRELAND.

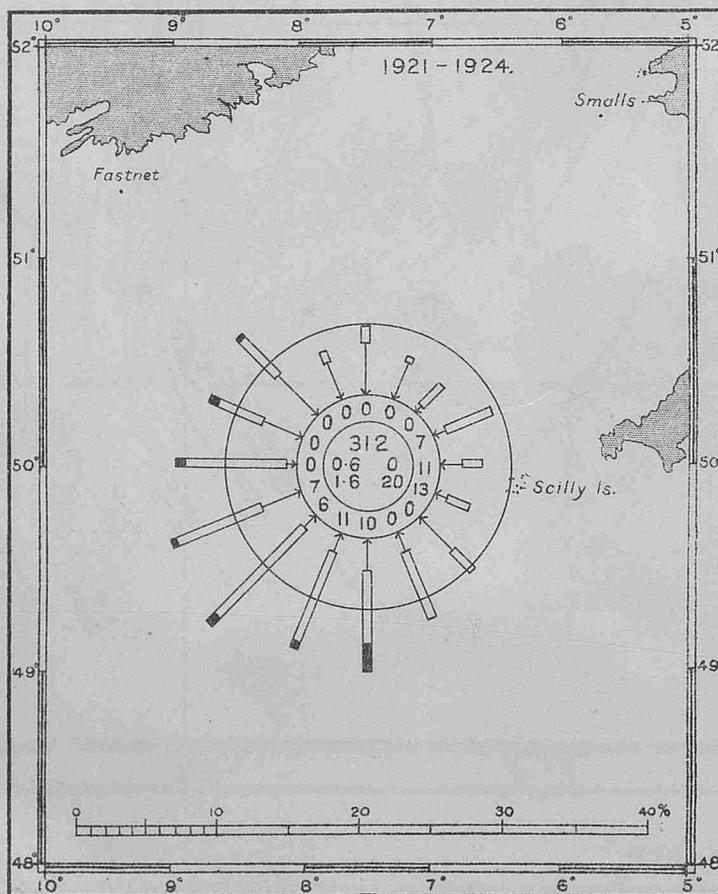
Frequency of fog per thousand observations for each 2 points of compass 1921-1924.

Latitude 48°-52°N.

Longitude 5°-10°W.

Direction.	Frequency.
N	0
NNE	0
NE	0
ENE	3
E	3
ESE	3
SE	0
SSE	0
S	10
SSW	10
SW	6
WSW	6
W	0
WNW	0
NW	0
NNW	0
Calm	0
Var.	3
Total	44

Percentage frequency of fog and mist for area = 4%.

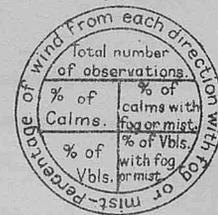


Mean and Maximum number of days with fog during the month at the different stations.

Station.	Mean.	Max.
Stornoway	0.2	1
Malin Head	1.0	5
Valencia	0.6	5
Holyhead	3.9	14
Scilly	2.0	10
Jersey	2.5	17
Dungeness	3.6	13
Yarmouth	5.4	12
Tynemouth	1.4	5
Aberdeen	0.3	2

For explanation of charts see Vol. III. No. 25, of this Journal, page 10.

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



CURRENTS on the routes from **LATITUDE OF CAPE ST VINCENT** to **LATITUDE OF CAPE BLANCO**.
Compiled from observations made by ships using the routes from the Channel to South Africa and South America.
FEBRUARY, MARCH, APRIL, 1910-1914, 1920-1924.

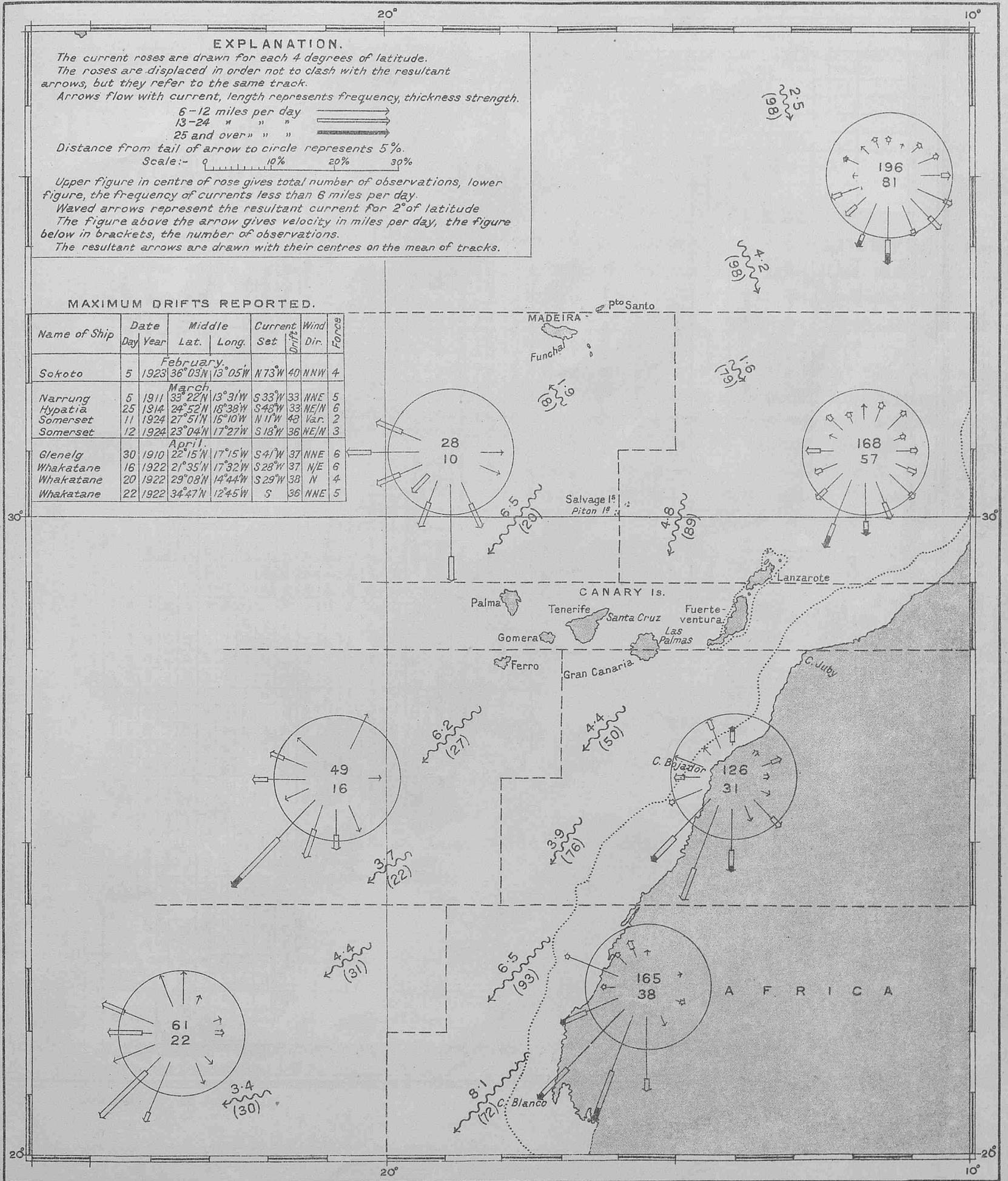
EXPLANATION.

The current roses are drawn for each 4 degrees of latitude.
 The roses are displaced in order not to clash with the resultant arrows, but they refer to the same track.
 Arrows flow with current, length represents frequency, thickness strength.
 6-12 miles per day
 13-24 " " " "
 25 and over " " " "
 Distance from tail of arrow to circle represents 5%.
 Scale: - 0 10% 20% 30%

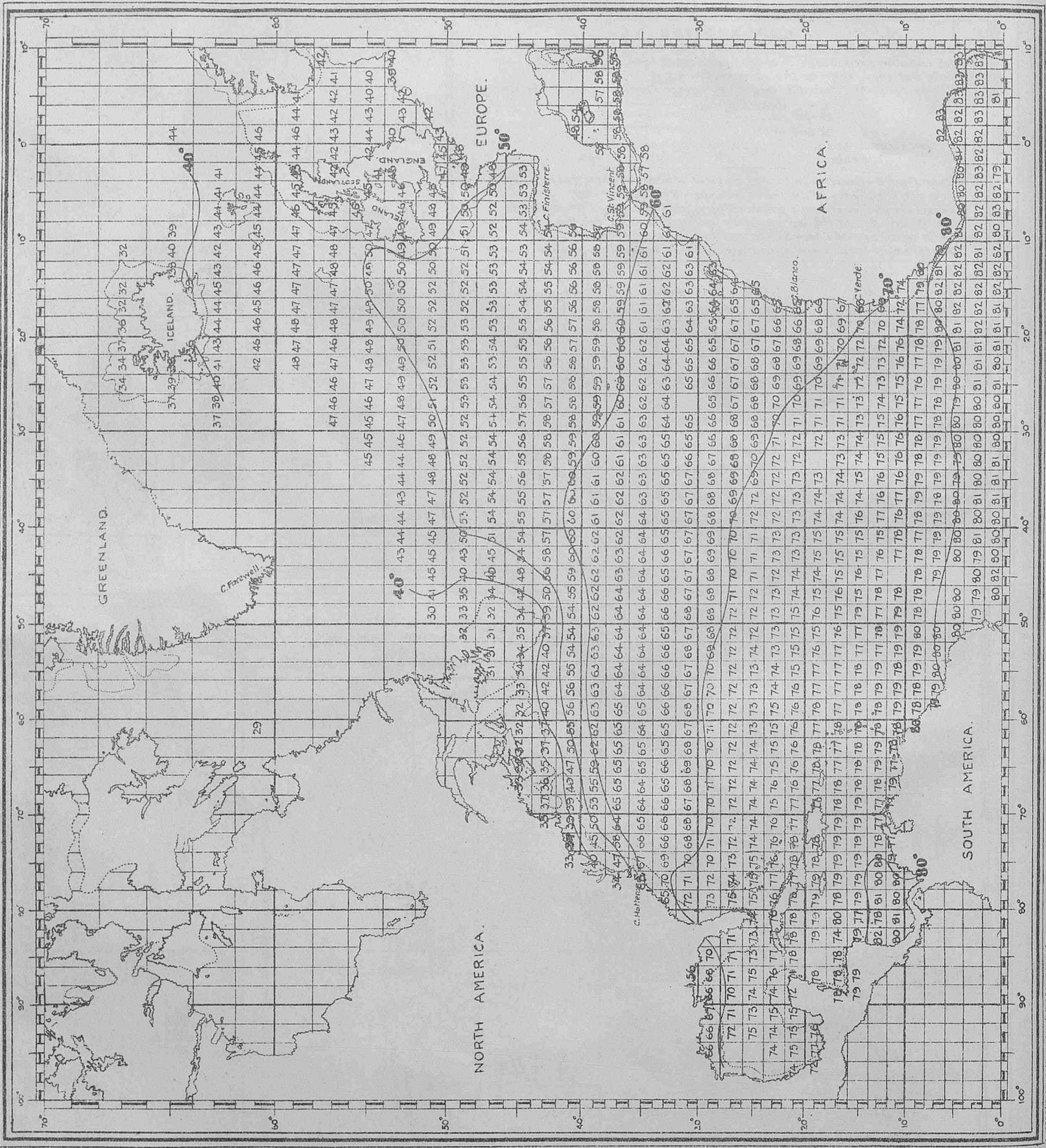
Upper figure in centre of rose gives total number of observations, lower figure, the frequency of currents less than 6 miles per day.
 Waved arrows represent the resultant current for 2° of latitude.
 The figure above the arrow gives velocity in miles per day, the figure below in brackets, the number of observations.
 The resultant arrows are drawn with their centres on the mean of tracks.

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date		Middle		Current Set	Wind Dir.	Force	
	Day	Year	Lat.	Long.				
Sokoto	February,		36° 03' N	13° 05' W	N 73° W 40	NNW	4	
	5	1923						
Narrung	March,		33° 22' N	13° 31' W	S 33° W 33	NNE	5	
	5	1911						
Hypatia	25	1914	24° 52' N	18° 38' W	S 48° W 33	NE/N	6	
Somerset	11	1924	27° 51' N	16° 10' W	N 11° W 48	Var.	2	
Somerset	12	1924	23° 04' N	17° 27' W	S 18° W 36	NE/N	3	
Glenelg	April,		22° 15' N	17° 15' W	S 47° W 37	NNE	6	
	30	1910						
Whakatane	16	1922	21° 35' N	17° 32' W	S 28° W 37	N/E	6	
Whakatane	20	1922	29° 08' N	14° 44' W	S 29° W 38	N	4	
Whakatane	22	1922	34° 47' N	12° 45' W	S	36	NNE	5



Vol. III N° 26.
 MEAN SEA SURFACE TEMPERATURES FOR MONTH OF FEBRUARY COMPUTED FROM ALL
 AVAILABLE SOURCES DURING THE PERIOD 1855 TO 1917.
 NORTH ATLANTIC.



NOTICES.

CURRENT OBSERVATION.

It is very desirable that good current data should be recorded. Spaces are provided for current experienced throughout the day and for current determined at shorter intervals in Meteorological Logs, while Form 911 provides for either or both.

Generally the difference between the *Dead Reckoning Position* at noon, reckoned from previous noon, and the *observed position* has been accepted as attributable to a single current for the whole 24 hours.

It is necessary to make careful distinction between *Dead Reckoning Position* and *Estimated Position*, the former being the position as reckoned from the last fix by courses steered and distances run, corrected for all known errors and disturbances *except* current. When a fix cannot be obtained, an estimation for current (when one is known generally to exist) is sometimes applied to the D.R.; the result may then be conveniently termed the *Estimated Position*.

If this estimated position is given in the Meteorological Log or Form 911, *it should be clearly stated*, otherwise it may be misleading.

Currents of varying velocity and direction may be experienced along the track made in 24 hours; therefore, when reliable fixes such as by Stellar observations at twilight are obtained, the current should be determined for the intervals, and all should be checked with the noon to noon result. Each of these currents determined at shorter intervals than 24 hours should be entered in the Meteorological Log in the appropriate column, and the time and latitude and longitude of each observation position should be given in the latitude and longitude columns. The times given on Form 911 indicate the interval. The period of short interval currents should usually not be less than, say, six hours. The best interval is probably from twilight to twilight.

It is desirable that whenever possible two methods of ascertaining the distance run through the water should be used, as recent investigation goes to show that with one means of measuring the speed the inclination has been to credit the ship. When possible it is recommended that both patent log and revolutions should be used.

For working out the set and drift of current the position *from* as well as the position *to* must always be *fixes*. Some observers have used an *estimated position from*, which makes the set and drift false. The same remarks apply to course allowances for set; the latter are naturally necessary to make an *estimated course*.

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 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.

COVER FOR MARINE OBSERVER.

Marine observers, regular recipients and subscribers to this Journal are hereby informed that a binding cover for Volume II of "The Marine Observer" may be obtained from H.M. Stationery Office, through any bookseller, price 2s.

The arrangements for assembling the numbers for binding was described in Volume I, No. 12, page 156.

It should be clearly understood that this cover is not the cover used for binding "Excellent" awards, which is far superior; but it will be found to be of good quality and a useful means of preserving the yearly numbers, for which a title page is issued with each December number.

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		

ICE CHART. WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE

- (B) Westbound. From 1st February to 31st March, inclusive.
- (E) Eastbound. From 1st February to 24th March, inclusive.
- (D) From 15th February to 10th April, inclusive.
- (E) From 15th November to 14th February.

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.

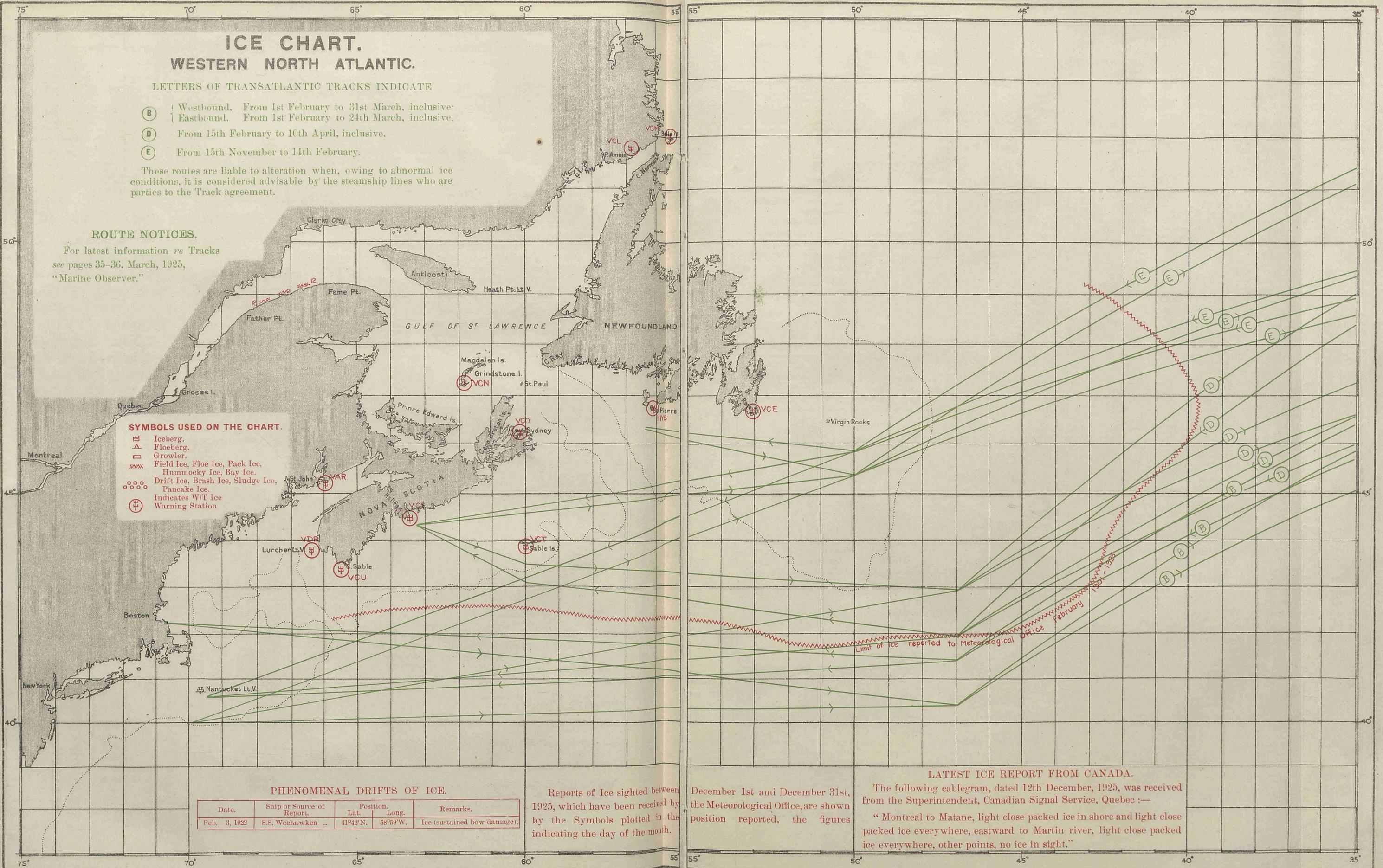
Date.	Ship or Source of Report.	Position.	Remarks.
		Lat. Long.	
Feb. 3, 1922	S.S. Weehawken	41°42' N. 58°59' W.	Ice (sustained bow damage).

Reports of Ice sighted between December 1st and December 31st, 1925, which have been received by the Meteorological Office, are shown by the Symbols plotted in the indicating the day of the month.

LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 12th December, 1925, was received from the Superintendent, Canadian Signal Service, Quebec:—

"Montreal to Matane, light close packed ice in shore and light close packed ice everywhere, eastward to Martin river, light close packed ice everywhere, other points, no ice in sight."



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, Ships 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. Cresswell, R.N.R., Dock Office. Telephone No.: Bank 8959.
CARDIFF	Captain T. Johnston, Technical College.
CLYDE	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.C., D.S.C., Leith Salvage and Towage 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. E. 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, 22, William Street.
SYDNEY	Captain G. D. Williams, D.S.O., Customs House.

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
NORTH SEA.			
1.12.25	53°34'N.	0°30'E.	Two spars looking like mast and derrick attached to submerged wreckage showing 10 feet above water. Dangerous to navigation.
3.12.25	54°—'N.	3°20'E.	Drifting buoy showing fixed white light.
4.12.25	53°36'N.	0°50'E.	Small schooner, partly submerged with broken foremast and bowsprit above water.
4.12.25	55°55'N.	2°—'W.	Large conical buoy with red top and black base.
4.12.25	54°55'N.	1°18'W.	Floating spar projecting 4 ft. out of water, apparently attached to wreckage.
5.12.25	3 m. W.N.W. of Dudgeon Bank buoy.		Some framed timbers with boards attached, partly submerged, no marks.
6.12.25	51°31'N.	0°51'E.	Mast with boom attached and bowsprit projecting, apparently attached to fishing vessel.
9.12.25	54°19'N.	1°58'E.	Upright spar showing 8 ft. out of water.
15.12.25	10 m. N.N.W. of Haisbro' Lt. V.		Small ship's boat floating bottom up, white, 20 ft. long.
ENGLISH CHANNEL.			
13.12.25	12 m. S.W. of Start Point.		Yellow conical buoy with black bottom.
13.12.25	49°09'N.	5°20'W.	White conical buoy with black bottom.
16.12.25	49°59'N.	3°55'W.	Red conical buoy.
22.12.25	5 m. S.W. (mag.) from Start Point Lt. H.		Wreckage, mast and boom topmast white, about 50 ft. long, dangerous to navigation.
IRISH CHANNEL.			
12.12.25	52°14'N.	5°28'W.	Large rusty spherical buoy.
MEDITERRANEAN.			
7.12.25	35°22'N.	16°48'E.	Floating mast apparently of small sailing vessel drifting S.E., dangerous to navigation.
NORTH ATLANTIC.			
1.12.25	31°40'N.	75°15'W.	About 60 mahogany logs weighing from 0.75 to 2.5 tons each were lost overboard.
3.12.25	26°12'N.	79°47'W.	Timber about 25 ft. long 2 ft. square.
4.12.25	18°42'N.	66°15'W.	Bunch of piling about 50, standing upright, about 15 ft. out of water.
6.12.25	32°44'N.	77°07'W.	Damaged derelict motor launch, white, 25 ft. long 8 ft. wide.
6.12.25	30°17'N.	79°34'W.	Tree with branches and roots projecting 3 ft. out of water.
9.12.25	36°32'N.	68°43'W.	Red bell buoy.
17.12.25	49°30'N.	11°31'W.	Whistling buoy, dangerous to navigation.
20.12.25	48°02'N.	8°26'W.	Red globular buoy.
22.12.25	51°08'N.	17°55'W.	Large gas buoy surmounted with frame-work about 10 ft. high, dangerous.
GULF OF MEXICO.			
6.12.25	28°46'N.	88°23'W.	Numerous logs forming a long line extending in a N. and S. direction some apparently 25 ft. long and 4 ft. diameter.
11.12.25	27°24'N.	89°04'W.	Partly submerged wreckage about 30 ft. long, 3 ft. diameter, apparently part of large derrick.
12.12.25	25°17'N.	84°49'W.	Large log about 20 ft. long, covered with marine growth.
NORTH PACIFIC.			
1.12.25	37°52'N.	122°54'W.	Piece of wreckage showing about 6 ft. out of water.
BAY OF BENGAL.			
3.12.25	Off Point Pedro		Native brig <i>Delhi</i> reported dismasted, decks awash waterlogged.

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 18.12.25.	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.	" Holt " ...	Form 911 14.10.25 to 20.11.25	23.11.25.
<i>Achilles</i> ...	Hill, R. ...	D. MacTavish ...	" A.	Harrison ...	" 8.10.25 to 19.10.25...	18.11.25.
<i>Actor</i> ...	Haylett, E. ...	A. Frew, J. McKay, H. W. Stanley.	M.L.	" "	" 7.8.25 to 13.10.25 ...	22.10.55.
<i>Adda</i> ...	Toft, J. T. ...	W. Borrows ...	No. M.	Elder Dempster ...	" 1.10.25 to 5.11.25 ...	12.11.25.
<i>50 Adriatic</i> ...	Beadnell, F. E., Capt., R.N.R.	J. 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 7.11.25 to 18.11.25...	30.11.25.
<i>Alban</i> ...	Torrible, R. H. ...	G. E. Freeman ...	" A.	Booth ...	" 15.6.25 to 28.6.25 ...	3.7.25.
<i>Albania</i> ...	Gronow, S. ...	L. Harper ...	" A.	Cunard ...	" 29.8.25 to 22.9.25 ...	24.9.25.
<i>Algerian Prince</i> ...	Shaw, D. C. ...	G. Potts ...	" A.	Prince ...	" 17.3.25 to 31.3.25 ...	6.4.25.
<i>Alipore</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 ...	" 25.10.25 to 12.12.25	16.12.25.
<i>Ampetco</i> ...	Vandenkerckhove, A.	A. Aspelagh ...	" A.	American Petroleum...	" 20.10.25 to 12.11.25	2.12.25.
<i>Antiochus</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, G. H. George, P. Marriott.	"	Elder Dempster ...	" 7.1.25 to 9.6.25 ...	12.6.25.
<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 ...	"
<i>Archimedes</i> ...	Taylor, F. C. ...	F. W. Johnson ...	" A.	Union Castle ...	Met. Log. 7.6.25 to 8.7.25 ...	9.7.25.
<i>Armada Castle</i> ...	Millard, L. A., Knight, A.	M. M. Tomkins, R. F. Bayer, C. H. Williams.	M.L.	" "	Met. Log. 31.1.25 to 22.7.25 ...	8.8.25.
<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 8.12.25 ...	8.12.25.
<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.	Anchor ...	Form 911 16.8.25 to 7.9.25 ...	9.9.25.
<i>Astronomer</i> ...	Booth, W. M. ...	L. Harriman, H. Thomas, E. Shatton.	M.L.	Harrison ...	Met. Log. 16.3.25 to 17.7.25 ...	1.8.25.
<i>Athenic</i> ...	Davies, E. ...	W. Hill ...	No. A.	White Star ...	Form 911 15.8.25 to 29.8.25 ...	18.9.25.
<i>Atreus</i> ...	Salter, G. H. ...	J. C. Podmore ...	" A.	A. Holt ...	" 22.10.25 to 8.11.25...	14.12.25.
<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 ...	" 2.10.25 to 31.10.25...	23.11.25.
<i>Ausonia</i> ...	Gibbons, G., R.D., Commr. R.N.R.	E. R. B. Freeman ...	" A.	Cunard ...	" 8.11.25 to 29.11.25...	3.12.25.
<i>Author</i> ...	Kinloch, R. ...	" "	" M.	Harrison ...	" "	"
<i>Avon</i> ...	Nicholson, M. L. ...	T. Bolland ...	" M.	R.M.S.P. ...	Form 911 19.9.25 to 3.11.25 ...	5.11.25.
<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. 9.11.25 to 27.11.25... Form 911 8.11.25 to 29.11.25...	2.12.25. 2.12.25.
<i>Bambra</i> ...	Buckeridge, G. ...	H. W. Norris, J. E. Turner, F. Humble.	M.L.	State Service, Australia	Met. Log. 2.4.25 to 6.8.25 ...	7.9.25.
<i>Bampton Castle</i> ...	Hutchings, A. H. ...	M. J. Castle ...	No. "	Union Castle ...	" 2.5.25 to 21.8.25 ...	2 9.25.
<i>Banbury Castle</i> ...	Singeisen, E. A., D.S.C., R.D., Commr., R.N.R.	" "	"	" "	" "	"
<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

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.12.25.	Date Received.
<i>Baron Cawdor</i> ...	Cairns, W. ...	A. Campbell ...	No. A.	Hogarth & Sons ...	Form 911 26.7.25 to 16.10.25...	20.10.25.
<i>Barpeta</i> ...	Denne, G. A. ...	W. G. E. Rawlingson ...	" M.	British India ...	" 7.10.25 to 6.11.25 ...	1.12.25.
<i>Baychimo</i> ...	Cornwall, S. A. ...	S. Jackson ...	" A.	Hudson's Bay Co. ...	" 18.7.25 to 6.10.25 ...	13.11.25.
<i>Beaufort</i> ...	Rice, W. V., D.S.O., D.S.C., Commr., R.N.	J. Taylor ...	M.L.	His Majesty's Ship ...	Met. Log. 16.4.25 to 13.8.25 ...	1.9.25.
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.
<i>Benalder</i> ...	Cole J. H., D.S.C....	T. S. Rawlingson ...	No. A.	Ben Line ...	" 8.11.25 to 19.11.25...	30.11.25.
<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 ...	" 29.9.25 to 19.10.25...	14.12.25.
<i>Berwyn</i> ...	McCombie, J. ...	... ..	" M.	Canadian Pacific ...	... ..	... ..
<i>Bintang</i> ...	Morzer Bruyns, M. F. ...	A. A. H. Blankestyn ...	" M.	Nederland ...	" 9.10.25 to 25.10.25...	7.12.25.
<i>Bogota</i> ...	Dunn, R. E., O.B.E.	T. R. Thomas ...	" A.	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 ...	" 31.10.25 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.	M.L.	" " ...	Met. Log. 2.12.24 to 24.2.25 ...	4.3.25.
<i>Brenda</i> ...	Murdoch, R. G. ...	E. R. Ness ...	No. A.	Scottish Fishery Board	Form 911 1.11.25 to 30.11.25...	8.12.25.
<i>Brighton</i> ...	Hill, A. ...	Mr. Munton ...	C.C.	Southern Railway ...	Telegraphic Report 18.12.25 ...	18.12.25.
<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.	" " ...	" 7.5.25 to 13.7.25 ...	24.7.25.
<i>British Judge</i> ...	Putt, R. O. ...	H. Westlake ...	No. M.	" " ...	" 4.11.25 to 18.11.25...	25.11.25.
<i>Brouning</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. ...	C. E. Legg ...	" A.	" " ...	" 7.7.25 to 31.7.25 ...	22.9.25.
<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 17.12.25 ...	17.12.25.
<i>Camito</i> ...	Seadamore, 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> ...	McConechy, 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.	" " "	" 28.10.25 to 9.12.25...	16.12.25.
<i>Canadian Winner</i> ...	Hocking, N. P. ...	R. Girling ...	" A.	" " "	" 5.6.25 to 10.7.25 ...	25.7.25.
<i>Carlou Castle</i> ...	Whitfield, G. J. ...	J. W. Kirby ...	" A.	Union Castle ...	" 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 ...	W.T.	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 18.10.25 to 13.11.25...	16.11.25. 16.11.25.
<i>Centaur</i> ...	Rose, A. F. ...	L. Johnstone, E. D. Potts ...	No. M.	A. Holt & Co. ...	" 23.8.25 to 3.10.25...	2.11.25.
<i>Ceramic</i> ...	Roberts, J., C.B.E., D.S.O., R.D., Capt., R.N.R.	D. W. Chamberlain ...	" A.	White Star ...	" 13.9.25 to 15.10.25...	30.11.25.
<i>Changsha</i> ...	Gambrill, F. C. ... Thomas, R. D. ...	A. M. Frame, F. G. Strat- ford, H. Lishman, L. A. Ballie, W. Bailey.	M.L.	Yuill & Co. ...	Met. Log. 25.4.24. to 2.10.24...	10.3.25.
<i>Change</i> ...	Gambrill, F. C. ...	... ..	" M.	P. & O. ...	" " " "	" " " "
<i>China</i> ...	Cossey, W. F. ...	E. R. Chaffin ...	No. M.	British India ...	Form 911 4.9.25 to 28.10.25 ...	4.11.25.
<i>Chindwara</i> ...	Brisley, P. L. ...	W. Welch ...	" M.	" " ...	" 28.7.25 to 10.8.25 ...	14.9.25.
<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.	" " ...	" 18.10.25 to 24.11.25	30.11.25.
<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.	" " ...	" 22.10.25 to 3.12.25...	14.12.25.
<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> ...	McCormish, A. B. ...	... ..	No.	" " ...	" " " "	" " " "
<i>Clan Lindsay</i> ...	Willits, J., Commr.	G. H. Johnson ...	" A.	" " ...	" 27.9.25 to 10.10.25...	23.11.25.
<i>Clan Macbeth</i> ...	Young, A. H., R.D., Lieut.-Commr., R.N.R.	J. T. Bell... ..	" A.	" " ...	" 25.6.25 to 6.9.25 ...	18.9.25.
<i>Clan Macfadyen</i> ...	Stenson, F. J., R.D., Capt., R.N.R.	... ..	"	" " ...	" " " "	" " " "
<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 18.12.25.	Date Received.
<i>Clan Macphee</i> ...	Go urlay, 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 29.7.25 to 15.9.25	22.9.25.
<i>Clan MacLaggart</i> ...	Gray, J. N. ...	W. J. Henderson ...	" A.	" ...	" 29.9.25 to 31.10.25...	3.11.25.
<i>Clan Macvicar</i> ...	Phillips, G. P. ...	L. S. Murrin ...	" A.	" ...	" 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 ...	No. A.	" ...	" 1.10.25 to 20.10.25...	17.11.25.
<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.	" ...	" 22.8.25 to 6.9.25	1.12.25.
<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.	" ...	" 20.9.25 to 16.10.25...	2.11.25.
<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 ...	Form 911 23.8.25 to 21.11.25...	8.12.25.
<i>Copenhagen</i> ...	Kerr, J. E. ...	" ...	" ...	Glen & Co. ...	" ...	" ...
<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.	G. Montgomery ...	" A.	Union Castle ...	" 4.7.25 to 3.8.25 ...	11.8.25.
<i>Culebra</i> ...	Mackay, A. S. ...	C. Wolfenden, J. W. Duncan, R. Hocken.	M.L.	R.M.S.P. Co. ...	Met. Log. 10.11.24 to 10.4.25...	4.5.25.
<i>Cuthbert</i> ...	Barlow, F. P. ...	S. G. Edwards ...	No. A.	Booth ...	Form 911 26.8.25 to 4.9.25 ...	30.9.25.
<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.	" ...	" 15.8.25 to 8.10.25 ...	12.10.25.
<i>Darian</i> ...	Masters, W. ...	A. S. Holland ...	" A.	Leyland ...	" 8.11.25 to 19.11.25	2.12.25.
<i>Darro</i> ...	Smith, W. E., D.S.O., R.D., Capt., R.N.R.	F. W. M. Drew ...	" M.	R.M.S.P. Co. ...	" 5.9.25 to 31.10.25 ...	12.11.25.
<i>Daytonian</i> ...	Walker, C. J., D.S.C.	" ...	" A.	Leyland ...	" 30.3.25 to 13.5.25 ...	21.5.25.
<i>Demerara</i> ...	Willam, 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 ...	" 11.10.25 to 30.10.25	25.11.25.
<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>Devonian</i> ...	Findlay, J. ...	L. E. Brown ...	" A.	A. Holt ...	" 3.10.25 to 14.10.25...	19.10.25.
<i>Dieppe</i> ...	Marmery, S. ...	Mr. Parsons ...	" C.C.	Southern Railway ...	Telegraphic Report 17.12.25	17.12.25.
<i>Dimboola</i> ...	Roy, C. M. ...	G. A. Molyneux ...	No. A.	Melbourne S.S. Co. ...	Form 911 4.9.25 to 27.10.25 ...	14.12.25.
<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>Dogra</i> ...	Hartock, L. ...	E. C. Akers ...	No. M.	Asiatic S.N. Co. ...	Form 911 27.12.24 to 12.1.25...	2.2.25.
<i>Domala, M.V.</i> ...	Buswell, W. ...	C. E. Merchant ...	" M.	British India ...	" 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.	W. A. Calway, O. V. Lucas, W. F. Dennison, R. H. Shaw	W.T.	White Star ...	W.T. Reg. 25.10.25 to 14.11.25	18.11.25.
<i>Doric Star</i> ...	Thomas, R. T. ...	T. Williams ...	No. M.	Blue Star ...	Form 911 1.8.25 to 15.9.25 ...	16.9.25.
<i>Dorington Court</i> ...	Isaacs, W. A. ...	E. D. A. Gibbs ...	" M.	Haldin & Co. ...	" 12.9.25 to 6.11.25 ...	20.11.25.
<i>Dorset</i> ...	Kettlewell, C. R. ...	F. G. Capon, L. Cann, D. M. Lambert.	M.L.	New Zealand S.S. Co. ...	Met. Log. 24.11.24 to 20.4.25...	27.4.25.
<i>Dorsetshire</i> ...	Adamson, B. W. ...	C. H. Griffiths, W. A. Kent, R. Cuming.	"	Bibby ...	" 31.5.25 to 27.8.25 ...	31.8.25.
<i>Dromore Castle</i> ...	Vincent, E. S., R.D., Commr. R.N.R.	S. S. Smith ...	No. A.	Union Castle ...	Form 911 25.8.25 to 13.9.25 ...	30.10.25.
<i>Dryden</i> ...	Major, T. W. ...	A. Hewitt ...	" M.	Lampert & Holt ...	" 1.9.25 to 17.9.25 ...	7.10.25.
<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>Durenda</i> ...	Wilson, W. ...	W. H. Creese ...	" M.	British India ...	" 31.1.25 to 28.4.25 ...	12.5.25.
<i>Edinburgh Castle</i> ...	Strong, H., R.D., Commr., R.N.R.	A. Parker, T. Goldstone, C. S. Kean.	M.L.	Union Castle ...	Met. Log. 1.5.25 to 23.8.25 ...	5.9.25.
<i>El Cordobes</i> ...	Noton, F. G. ...	J. W. Elkins ...	No. A.	British & Argentine S.N. Co. ...	Form 911 23.6.25 to 3.9.25 ...	9.9.25.
<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. ...	C. Critchley, R. A. Leicester, A. B. Smith.	"	" ...	" 6.11.25 to 10.5.25 ...	3.6.25.
<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.	" ...	" 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 Commonwealth Govt.	Met. Log. 20.6.24 to 27.9.24 ...	24.10.24.
<i>Ferndale</i> ...	Daniel, F. ...	D. Jones ...	"	" ...	Form 911 15.8.25 to 20.9.25 ...	28.9.25.
<i>Fitzroy</i> ...	Silk, H. V., Lt. Commr. R.N.	M. E. Welby ...	No. M.	His Majesty's Ship ...	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 28.8.25 to 15.10.25...	19.10.25.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.12.25.	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</i> ...	Williams, J. C. ...	J. C. Nettleship ...	No. A.	Ellerman Wilson ...	Form 911 5.11.25 to 12.12.25...	18.12.25.
<i>Frey</i> ...	Angus, W. ...	J. H. Hennessey ...	No. A.	Scottish Fishery Board ...	" 26.10.25 to 20.11.25 ...	25.11.25.
<i>Galtymore</i> ...	Ledsome, J. S. ...	N. Goubrough ...	" M.	Furness Withy ...	" 5.3.25 to 15.3.25 ...	18.3.25.
<i>Garoe</i> ...	Visser, C. W. ...	C. J. Vandenoorn ...	" M.	Rotterdam Lloyd ...	" 11.7.25 to 17.9.25 ...	8.10.25.
<i>Gascoyne</i> ...	Rutt, W. N. ...	R. Simpson ...	" A.	Dalgety & Co. ...	" 9.8.25 to 17.9.25 ...	2.11.25.
<i>Gelria</i> ...	Bakker, T. J. ...	K. H. Schlip ...	" M.	Holland Lloyd ...	" 11.9.25 to 28.10.25...	31.10.25.
<i>Glenamoy, M.V.</i> ...	Anzier, 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.	" ...	" 25.8.25 to 17.9.25 ...	2.11.25.
<i>Glenluce, M.V.</i> ...	Barkley, E. ...	J. D. Richards ...	" A.	" ...	" 22.2.25 to 24.3.25 ...	30.3.25.
<i>Gloucestershire</i> ...	Bennett, J. H. ...	R. A. Dale ...	" A.	" ...	" 15.9.25 to 11.10.25...	16.11.25.
<i>Gorgon</i> ...	Robin, E. ...	M. W. Simmons ...	" A.	Bibby ...	" 18.7.25 to 27.9.25 ...	1.10.25.
<i>Gourko</i> ...	Hughes, J. W. ...	W. Simpson ...	" A.	A. Holt & Co. ...	" 21.9.25 to 9.11.25 ...	14.12.25.
	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 ...	" 8.9.25 to 11.11.25 ...	30.11.25.
<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. 1.2.25 to 27.5.25 ...	27.7.25.
<i>Herefordshire</i> ...	Stanley, W. ...	J. E. Cullen, G. Whitworth, P. S. Cooper, H. G. Walton	"	Bibby ...	" 28.3.25 to 13.9.25 ...	8.10.25.
<i>Herschel</i> ...	Davies, G. W. ...	J. M. Edgar ...	No. A.	Lampport & Holt ...	Form 911 19.7.25 to 20.9.25 ...	30.9.25.
<i>Hibernia</i> ...	Tanner, E. B. ...	R. Woodall ...	C.C.	L.M. & S. Rly. ...	Telegraphic Report, 21.11.25 ...	21.11.25.
<i>Highland Enterprise</i> ...	Pond, R. H. ...	J. H. Tilton ...	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 14.8.25 to 12.10.25	3.11.25.
" <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 ...	" 16.9.25 to 29.10.25...	4.11.25.
<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.	Lampport & 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.	W.T.	White Star ...	W.T. Reg. 29.10.25 to 13.11.25	16.11.25.
<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>Hororata</i> ...	Haines, F. P. ...	" ...	" M.	New Zealand S.S. Co. ...	" ...	" ...
<i>Hubert</i> ...	Buck, R. H. ...	G. H. Jordan ...	" A.	Booth ...	Form 911 6.8.25 to 28.8.25 ...	14.9.25.
<i>Hurumui</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>Ibez</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, E. K. ...	O. Stanhope ...	" A.	Harrison ...	" 24.9.25 to 6.11.25 ...	9.11.25.
<i>Intaba</i> ...	Gibbins, W. A. ...	A. M. Hughes ...	" A.	" ...	" 23.8.25 to 5.10.25 ...	10.10.25.
<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 ...	M.L.	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>Kaiser-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. ...	F. Takaku ...	" A.	Nippon Yusen Kaisha ...	" 8.8.25 to 8.9.25 ...	9.9.25.
<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 12.6.25 to 29.10.25...	23.11.25.
<i>Kathlamba</i> ...	Mordue, J. A. ...	" ...	" A.	Ellerman Bucknall ...	" 30.9.25 to 3.11.25 ...	7.12.25.
<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> ...	Millard, L. A. ...	A. E. Denn, W. M. Tonkins — May.	"	Union Castle ...	" 16.5.24 to 25.1.25 ...	6.2.25.
<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> ...	Collver, R. M. M., R.D., Commr., R.N.R.	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 ...	" 21.8.25 to 24.10.25 ...	27.10.25.
<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. Brown, A. M. ...	M.L.	Ellerman Wilson ...	Met. Log. 26.4.25 to 3.10.25 ...	10.11.25.
<i>Kyogle</i> ...	Brown, A. M. ...	Collier, F. T. Shaw.	"	" ...	" ...	" ...
	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>Laguna</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.	Lampport & 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 Lancasteria</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. ...	" 13.9.25 to 1.10.25 ...	12.11.25.
<i>Laplace</i> ...	Shaw, W. ...	W. Boyde, R. B. Langley ...	" A.	Lampport & 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 18.12.25.	Date Received.
55 <i>Lapland</i> ...	Howell, T. ...	E. Cornelle, 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 ...	Form 911 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 13.9.25 to 2.10.25 ...	7.11.25.
<i>Leitrim</i> ...	Robertson, A. ...	E. F. C. Higgins ...	" A.	Dowie, J., & Co. ...	Form 911 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 ...	" 23.10.25 to 25.11.25...	23.11.25.
<i>London Importer</i> ..	Williamson, J. M. ...	G. Lusty ...	" A.	" ...	" ...	" ...
<i>Loriga, M.V.</i> ...	Barkley, E. ...	W. N. Anders ...	" A.	Pacific S.N. Co. ...	" 22.5.25 to 6.8.25 ...	25.8.25.
<i>Losada, M.V.</i> ...	Meldrum, G. W. ...	A. H. Turner ...	" M.	" ...	" 29.6.25 to 9.9.25 ...	14.9.25.
<i>Macedonia</i> ...	Potter, H. W., R.D., Commr., R.N.R.	E. R. Bodley ...	" M.	P. & O. ...	" 22.8.25 to 12.9.25 ...	21.9.25.
<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	" 11.10.25 to 24.10.25 ...	17.11.25.
<i>Maharaja</i> ...	Perry, C. R. ...	E. Childs ...	" M.	Asiatic S.N. Co. ...	" 11.10.25 to 26.10.25 ...	23.11.25.
<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 ...	25.6.25.
58 <i>Majestic</i> ...	Metcalfe, G. R. ...	L. Thompson, W. Pearson, C. J. Warltire, J. A. Macnaughton.	W.T.	White Star ...	W.T. Reg. 5.11.25 to 19.11.25 26.11.25 to 10.12.25	21.11.25. 12.12.25.
<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> ...	Whigham, 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</i> ...	Everest, J. E. ...	W. L. Lavers ...	" A.	Manchester Liners ...	" 31.10.25 to 3.12.25...	14.12.25.
<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>Manistee</i> ...	Isaacson, J. M. ...	A. M. Houghton, F. R. Inch, L. Dobson.	M.L.	Elders & Fyffes	Met. Log. 2.5.25 to 30.8.25 ...	4.9.25.
<i>Mantua</i> ...	Butler, G. E. ...	J. Paice ...	No. M.	P. & O. ...	Form 911 1.10.25 to 30.11.25...	17.12.25.
<i>Manzanares</i> ...	Maxwell Brown, W.E.	G. S. Gracie ...	" A.	Elders & Fyffes	" 30.9.25 to 14.10.25...	7.11.25.
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.R.	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	" 1.2.25 to 30.5.25 ...	5.6.25.
<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. ...	G. Hopkins ...	No. M.	British India ...	" 26.8.25 to 1.10.25 ...	5.10.25.
<i>Maungamui</i> ...	Worrall, L. C. H. ...	A. R. Noble ...	" M.	Union S.S. Co. of N.Z.	" 8.8.25 to 3.9.25 ...	23.9.25.
32 <i>Mauritania</i> ...	Rostron, A. H., 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. 15.11.25 to 29.11.25	3.12.25.
<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. 1.11.25 to 20.11.25...	24.11.25.
22 <i>Melita</i> ...	" ...	J. McLennan, D. Dunn, J. Mackenzie.	"	Canadian Pacific	" 26.9.25 to 14.10.25...	19.10.25.
<i>Memnon</i> ...	Evans, D. L. ...	L. S. Evans ...	No. A.	A. Holt ...	" 25.8.25 to 18.10.25...	28.10.25.
<i>Menominee</i> ...	Pollard, W. F., D.S.O., R.D., Capt. R.N.R.	R. Day ...	" A.	Atlantic Transport ...	" 15.10.25 to 21.11.25...	25.11.25.
<i>Mercian</i> ...	Gardner, J. ...	R. Hughes ...	" A.	Leyland ...	" 12.9.25 to 20.9.25 ...	23.9.25.
21 <i>Metagama</i> ...	McQueen, D. ...	R. Walker, A. Mansey ...	W.T.	Canadian Pacific ...	W.T. Reg. 27.9.25 to 15.10.25...	19.10.25.
<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. 27.11.24 to 16.5.25...	15.7.25.
<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.
23 <i>Minnedosa</i> ...	Griffiths, J. N. ...	R. Antrobus ...	W.T.	Canadian Pacific ...	W.T. Reg. 8.11.25 to 27.11.25	30.11.25.
<i>Minnetonka</i> ...	Gates, T. F., C.B.E.	H. E. McCartney ...	No. M.	Atlantic Transport ...	Form 911 9.11.25 to 28.11.25	1.12.25.
<i>Minnewaska</i> ...	Claret, F. ...	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>Moena</i> ...	Merzer Bruvns, M. F.	G. H. Vander Roest ...	" M.	Nederland ...	" 18.12.24 to 6.2.25 ...	10.2.25.
<i>Moldavia</i> ...	Burleigh, C. W., D.S.O., Capt. R.N.R.	" ...	" M.	P. & O. ...	" ...	" ...
<i>Mongolian Prince</i> ...	Durrant, G. D. ...	M. Gibson ...	" A.	Prince ...	Form 911 13.9.25 to 15.10.25...	26.10.25.
<i>Monkbarns, Ship</i> ...	Davies, W. ...	R. Baise ...	" A.	J. Stewart & Co. ...	" 17.7.25 to 12.9.25 ...	14.10.25.
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, W. Phillips, H. S. Knight.	"	" ...	Form 911 7.11.25 to 26.11.25 7.11.25 to 26.11.25	28.11.25. 30.11.25.
<i>Montferland</i> ...	Van Noppen, C. D.	Van der Mast ...	No. M.	Holland Lloyd ...	" 22.9.25 to 17.10.25...	22.10.25.
27 <i>Mountairn</i> ...	Turnbull, J., C.B.E., R.D., Capt., R.N.R.	F. E. Williams, A. G. Harrison, T. Roberts.	W.T.	Canadian Pacific ...	W.T. Reg. 14.11.25 to 2.12.25...	5.12.25.
<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 ...	W.T. Reg. 24.10.25 to 14.12.25 Form 911 26.6.25 to 17.7.25 ...	16.12.25. 20.7.25.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.12.25.	Date Received.
20 <i>Montroyal</i> ...	Latta, R. G. ...	J. H. Tudor, A. K. Benham ...	W.T.	Canadian Pacific ...	W.T. Reg. 1.8.25 to 20.8.25 ...	24.8.25.
<i>Moresby</i> ...	Edgell, J. A., O.B.E., Capt. R.N.	... ..	M.L.	His Majesty's Ship ...	... ..	...
<i>Morvada</i> ...	Mills, T. L., O.B.E., R.D., Commr., R.N.R.	... ..	No.	P. & O. ...	... ..	...
<i>Mulbera</i> ...	Steadman, W. R. ...	H. W. Norris, H. E. Brown...	No. M.	British India ...	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>Nariva</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. ...	" 14.9.25 to 13.10.25...	19.10.25.
<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. A.	British India ...	Form 911 17.9.25 to 8.11.25 ...	16.11.25.
<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 ...	28.9.25.
<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 ...	No. A.	Scottish Fishery Board	Form 911 13.10.25 to 13.11.25	16.11.25.
<i>Norseman</i> , C.S.	Douglas, W. ...	R. Forrest, E. Pearse, J. A. Prosser.	M.L.	Western Tel. Co. ...	Met. Log. 16.2.25 to 1.9.25 ...	28.9.25.
<i>Nubian</i> ...	Barter, H. O. ...	H. R. Gaskill ...	No. A.	Leyland ...	Form 911 11.11.25 to 12.12.25	16.12.25.
<i>Nyanza</i> ...	Watmough, T. M. ...	R. H. Hand, R. G. Freeman, J. Metcalfe.	M.L.	P. & O. ...	Met. Log. 14.6.25 to 3.9.25 ...	8.9.25.
<i>Oaklands Grange</i> ...	Routledge, R. ...	E. A. Inslay ...	No. A.	Houlder Bros. ...	Form 911 18.10.24 to 2.2.25 ...	19.2.25.
42 <i>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.
57 <i>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...	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.
40 <i>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	12.11.25.
<i>Orcoma</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. ...	Form 911 17.10.25 to 10.11.25	12.11.25.
41 <i>Orduna</i> ...	Le Brecht, H. A. ...	J. Vivian, W. Lowe, R. Hey, J. Horan.	W.T.	R.M.S.P. Co. ...	Met. Log. 20.8.25 to 4.11.25 ...	13.11.25.
<i>Oriana</i> ...	Mander, T. ...	W. Pearce, R. D. Eckford, T. H. McGill.	W.T.	R.M.S.P. Co. ...	W.T. Reg. 5.10.25 to 25.10.25...	28.10.25.
<i>Orita</i> ...	Splatt, W. A. ...	J. G. Harvey, T. R. Scott, D. W. Hutchinson, C. P. D. Dean.	M.L.	Pacific S.N. Co. ...	Form 911 5.10.25 to 25.10.25...	28.10.25.
<i>Ormonde</i> ...	Knowles, C. H., D.S.O., Commr., R.N.	A. M. Hughes ...	"	" " ...	Met. Log. 11.8.25 to 19.10.25...	28.10.25.
<i>Ormonde</i> ...	Shelford, W. S., Lt.- Commr., R.N.R.	N. A. Whinfield, W. A. Wickham, A. H. Dyer.	"	His Majesty's Ship ...	" 19.12.24 to 29.5.25...	12.6.25.
<i>Ormuz</i> ...	O'Sullivan, J. ...	" " " " " " " "	"	" " " " " " " "	" 10.5.25 to 3.9.25 ...	28.9.25.
<i>Oronsay</i> ...	Owens, A. L., R.D., Lt. Commr., R.N.R.	J. C. K. Dowding, P. R. Murphy, R. K. Rogerson.	"	Orient ...	" 4.1.25 to 7.4.25 ...	15.4.25.
<i>Oroya</i> ...	Pearce, A. ...	S. Lewis ...	No. M.	Pacific S.N. Co. ...	Met. Log. ... 15.6.25 to 6.7.25 ...	24.8.25.
<i>Orsova</i> ...	Matheson, C. G., R.D., Commr., R.N.R.	A. J. Croft Cohen, C. V. Dodgson, C. Fox	M.L.	Orient ...	Form 911 28.7.25 to 6.10.25 ...	13.10.25.
<i>Ortega</i> ...	Pleignier, H. S. ...	C. Leatherbarrow ...	No. M.	Pacific S.N. Co. ...	Met. Log. 5.4.25 to 8.7.25 ...	11.7.25.
<i>Orvieto</i> ...	Simner, G. L., R.D., Commr., R.N.R.	A. O. H. O'Bryen, Hawker, A. H. Dyer.	M.L.	Orient ...	Form 911 9.12.24 to 16.2.25 ...	25.2.25.
<i>Osterley</i> ...	Cameron, E. P. ...	H. Tanner, J. E. Goldsworthy, G. L. Carter.	"	" " " " " " " "	Met. Log. 4.5.25 to 4.8.25 ...	8.8.25.
<i>Othello</i> ...	Montgomery, H. ...	G. Binks ...	No. A.	Ellerman Wilson ...	" 31.5.25 to 31.8.25 ...	16.9.25.
<i>Otira</i> ...	Elford, H. E. ...	J. H. Fuller ...	" M.	Shaw, Savill & Albion	Form 911 19.4.25 to 28.7.25 ...	12.8.25.
<i>Ovid</i> ...	Groom, A. C. B. ...	" " " " " " " "	" A.	Shakespeare Shipping Co.	" 16.10.25 to 3.12.25...	8.12.25.
<i>Oxfordshire</i> ...	Grumplin, W. E. ...	F. C. Brooks ...	" A.	Bibby Bros. ...	" 12.11.25 to 28.11.25	2.12.25.
<i>Pacific Shipper</i> , M.V.	Newman, G. W. A.	H. G. Dupont ...	" A.	Furness Withy ...	" 11.9.25 to 10.10.25...	19.10.25.
<i>Pakeha</i> ...	W. P. Clifton Mogg	R. K. Vandervard, E. T. Baker, R. James.	M.L.	Shaw, Savill & Albion	" 13.10.25 to 13.11.25	18.11.25.
<i>Paparoa</i> ...	Dowse, F. ...	G. Mathieson ...	No. M.	New Zealand S.S. Co.	Met. Log. 22.4.25 to 20.8.25 ...	26.8.25.
<i>Pareora</i> ...	Evans, J. O. ...	R. F. Hillings ...	" A.	Hain S.S. Co. ...	Form 911 20.5.25 to 21.6.25 ...	22.7.25.
<i>Paris</i> ...	Cook, C. L. ...	Mr. Biles ...	C.C.	Southern Ry. ...	" 22.9.25 to 26.10.25...	14.12.25.
<i>Patia</i> ...	Bostock, R. J. ...	W. McIlwaine ...	No. A.	Elders & Fyffes	Telegraphic Report. 30.10.25 ...	30.10.25.
<i>Patrol</i> , C.S.	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.	Form 911 4.7.25 to 8.8.25 ...	12.8.25.
<i>Persic</i> ...	Bulman, J. B. ...	H. G. Morgan ...	No. A.	White Star ...	Met. Log. 1.10.24 to 12.1.25 ...	16.4.25.
<i>Peshawar</i> ...	Hester, C. W., R.D., Commr., R.N.R.	D. G. Baillic, E. J. R. North, R. D. Whyte-Mackay.	M.L.	P. & O. ...	Form 911 8.2.25 to 19.6.25 ...	23.6.25.
<i>Pharos</i> ...	Ewing, T. N. ...	A. McLachlan ...	No. A.	Northern Lighthouse Board.	Met. Log. 18.7.25 to 22.11.25...	24.11.25.
<i>Philadelphun</i> ...	Baker, J. A. ...	W. T. Godwin ...	" A.	Leyland ...	Form 911 29.6.25 to 14.8.25 ...	18.8.25.
<i>Polycarp</i> ...	Evans, T. G. ...	S. E. Adam ...	" A.	Booth ...	" 9.10.25 to 1.11.25 ...	16.11.25.
<i>Polypemus</i> ...	Hatfield, J. ...	R. E. Wilkes ...	" A.	A. Holt ...	" 18.7.25 to 12.8.25 ...	16.9.25.
<i>Port Adelaide</i> ...	Hayter S. W. ...	E. Catchpole, E. Rogerson, C. Hodson.	M.L.	Commonwealth & Do- minion.	Met. Log. 1.2.25 to 23.2.25 ...	25.2.25.

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 18.12.25.	Date Received.
<i>Port Albany</i> ...	Robinson, C. A. ...	E. A. Leavett, A. G. Newbury, W. Eastoe, J. L. Richardson.	M.L.	Commonwealth & Dominion.	Met. Log. 16.5.25 to 28.9.25 ...	12.10.25.
" <i>Auckland</i> ...	Durham, R. S. ...	R. B. Stannard ...	No. A.	" " "	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. ...	W. H. Miles ...	No. A.	" " "	Form 911 14.12.24 to 25.4.25 ...	2.6.25.
" <i>Curtis</i> ...	Van den Bergh, C. ...	E. T. N. Lawrey ...	" A.	" " "	" 27.6.25 to 5.8.25 ...	16.9.25.
" <i>Darwin</i> ...	Sawbridge, I. R. ...	W. H. Sadler, J. C. Goddard	" A.	" " "	" 15.6.25 to 14.8.25 ...	21.9.25.
" <i>Denison</i> ...	Ferris, J. ...	C. Newton ...	" A.	" " "	" 2.8.25 to 3.10.25 ...	16.11.25.
" <i>Hacking</i> ...	Hoad, A. C. ...	A. Cooper, C. F. Post, J. T. Weldin.	M.L.	" " "	Met. Log. 2.4.25 to 13.9.25 ...	29.9.25.
" <i>Hunter</i> ...	Cottell, S. C. ...					
" <i>Lincoln</i> ...	Kearney, F. J. ...	D. G. H. Bradley, J. A. Fairbairn, A. G. Starkey.	No. M.L.	" " "	Met. Log. 26.4.25 to 7.9.25 ...	10.9.25.
" <i>Melbourne</i> ...	Jack, J. ...	H. C. Jeffery, W. G. Jones, J. T. Nicholson, E. G. L. Jones.	"	" " "	" 12.2.25 to 29.6.25 ...	11.7.25.
" <i>Nicholson</i> ...	Higgs, W. G. ...					
" <i>Pirie</i> ...	Lea, W. H. ...	A. W. Sams, C. Groves, A. M. Stanton.	"	" " "	" 13.12.24 to 19.5.25...	25.5.25.
" <i>Sydney</i> ...	Swan, L. H. ...	E. G. Fullick, W. Howe, W. Renouf.	"	" " "	" 5.4.25 to 14.8.25 ...	22.8.25.
" <i>Victor</i> ...	Griffith, J. ...	E. Walker ...	No. A.	Pacific Mail S.S. Co...	Form 911 24.8.25 to 23.9.25 ...	18.11.25.
<i>President Jackson</i>	Nichols, F. R. ...	C. H. Moen ...	" A.	Admiral Oriental Line	" 30.8.25 to 27.10.25...	30.11.25.
<i>Protea, H.M.S.A.S.</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>Pyrhus</i> ...	Elford, W. J. ...	W. Owen ...	" A.	A. Holt ...	" 13.5.25 to 1.8.25 ...	6.8.25.
<i>60 Regina</i> ...	Smith, R. G. ...	G. W. Couch, H. Daman, H. Hawkins.	W.T.	White Star-Dominion	W.T. Reg. 11.10.25 to 28.11.25	5.12.25.
<i>Reindeer</i>	Mulhall, W. ...	W. Heritage ...	C.C.	G.W. Railway	Form 911 8.11.25 to 28.11.25...	7.12.25.
<i>Rhodesian Transport</i>	Fowler, W. H. ...		No. A.	Houlder Bros.	Telegraphic Report. 17.12.25 ...	17.12.25.
<i>Rimutaka</i> ...	Hemming, 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.	Lampart & Holt ...	" 21.4.25 to 10.10.25...	17.11.25.
<i>Rotorua</i> ...	Hunter, J. B. ...	C. A. H. Landfield ...	" M.	London & Edinburgh S.S. Co.	Form 911 9.10.25 to 21.10.25...	30.11.25.
<i>Royal Fusilier</i> ...	Dawson, J. ...	J. Fraser ...	" A.	Houlder Bros. ...	" 27.6.25 to 1.8.25 ...	13.8.25.
<i>Royal Transport</i>	Dove, J. ...	R. Martin ...	" A.	New Zealand S.S. Co.	" 24.10.25 to 6.12.25...	9.12.25.
<i>Ruapehu</i> ...	McKellar, A. W., R.D., Capt., R.N.R.	E. P. Aslin, J. D. Tooms, A. J. Webb, E. Russel.	M.L.		" 14.9.25 to 13.10.25...	7.11.25.
<i>Sachem</i> ...	Westgarth, W. A. D.S.C.	C. Waldron, E. Saintry, G. R. Watson.	"	Furness Withy ...	Met. Log. 2.5.25 to 1.10.25 ...	7.10.25.
<i>St. Albans</i>	Pilcher, E. ...	W. McIntyre ...	" A.	Union Castle ...	" 17.7.25 to 14.9.25 ...	17.12.25.
<i>St. Helier</i>	Mulhall, W. ...	C. Bell ...	C.C.	Anchor Donaldson ...	W.T. Reg. 17.10.25 to 6.11.25	17.9.25.
<i>St. Julien</i>	Langdon, C. H. ...	C. Joy ...	"	Hunting & Son ...	Form 911 16.10.25 to 7.11.25	11.11.25.
<i>St. Patrick</i>	Bearpark, E. W. ...	J. Hill ...	No. A.	Union Castle ...	" 26.9.25 to 16.10.25	29.10.25.
<i>Salaga</i> ...	Sola, P., D.S.O.	G. E. Dutton ...	" A.		" 17.7.25 to 7.9.25 ...	8.9.25.
<i>Samaria</i>	Horsburgh, G., O.B.E., R.D., Commr., R.N.R.	H. L. Pryse ...	" A.	Harrison ...	" 1.4.25 to 20.6.25 ...	2.7.25.
<i>Sandown Castle</i>	Jackson, C. R. ...	E. H. de Heaume ...	" A.	Anchor ...	" 12.8.25 to 26.10.25 ...	31.10.25.
<i>10 Saturnia</i>	Mitchell, W. ...	D. Macqueen ...	W.T.	L.M. & S. Rly. ...	Telegraphic Report 11.12.25 ...	11.12.25.
<i>Saxoleine</i>	Biddick, E. ...	B. Johnsen ...	No. A.	Tankers Ltd. ...	Form 911 30.8.25 to 18.9.25 ...	21.9.25.
<i>Saxon</i> ...	Owen, S. H. ...	F. O. Wilbraham ...	" A.	Cunard ...	" 9.11.24 to 14.12.24...	3.1.25.
<i>Scholar</i>	McCullum, J. ...	J. D. Grieves ...	" M.		W.T. Reg. 19.10.25 to 9.11.25	13.11.25.
<i>Scindia</i>	Mathews, W. ...	R. S. Paton ...	" A.		Form 911 18.10.25 to 9.11.25	13.11.25.
<i>Scotia</i> ...	Prichard, S.D.	O. W. L. Jones ...	C.C.		" 29.10.25 to 17.11.25	7.12.25.
<i>Scottish Bard</i>	McDonnell, S. ...	S. W. Watts ...	No. M.		Met. Log. 7.12.24 to 16.7.25 ...	19.8.25.
<i>Scottish Strath</i>	French, A. L. ...	W. Black ...	" M.			
<i>33 Seythia</i>	Prothero, W. ...	T. Parry, J. C. Munro, J. W. Counce.	W.T.			
<i>Sheaf Mount</i>	Groves, C. V. ...	C. A. Goold ...	No. A.			
<i>Sheaf Spear</i>	Whitfield, G. A., O.B.E.	W. H. Grisewood, N. Thompson.	M.L.			
<i>Sicilia</i> ...	Davis, H. C., D.S.C., R.D., Commr., R.N.R.	G. C. Bateman ...	No. M.			
<i>Socrates</i>	Bibby, A. R. ...	W. E. Jordan ...	" A.			
<i>Soekaboemi</i>	Z. W. Plach ...	C. van Reenen ...	" M.			
<i>Somerset</i>	Barnett, H. ...	J. J. Youngs ...	" M.			
<i>Somersetshire</i>	De Legh, P. ...	P. Hawkins, R. O. Leitch, H. G. Walton.	M.L.			
<i>Somme</i> ...	Spriddell, F. G. ...	K. W. Simpton, H. Chamberlain, V. Hill, C. C. Prosser.	"			
<i>Songster</i>	Miles, F. R., Commr., R.N.R.					
<i>Spectator</i>	Jackson, J. ...	W. Weatherall, W. Wilford, L. Bull.	"			
<i>Spero</i> ...	Harding, C. H. J. ...	D. Fraser, J. G. F. Betson ...	No. A.			
<i>Stuart Prince</i>	Norton, W. J. ...	T. E. Fea, R. O. Otley ...	M.L.			
<i>Stephan C.S.</i>	Carlton, G. F., O.B.E., Commr., R.N.R.	F. B. Bolingbroke, W. E. Allen, T. J. Horan.	" A.			
<i>Stockwell</i>	Kershaw, R. W. ...	W. Baxter ...	No. A.			
<i>Surrey</i> ...	Durrant, G. D. ...	W. C. Freeman ...	" A.			
<i>Suwa Maru</i>	Field, H. G. B. ...	C. P. Jackson, C. Welch, H. Harris.	M.L.			
<i>Tainui</i>	Okuno, Y. ...	H. Yamashita ...	No.			
<i>Tairoa</i> ...	Hartman, W. H. ...	P. S. Horwood ...	" A.			
<i>Tahiti</i>	Summers, W. G. ...	S. A. Bannister ...	" A.			
	Aldwell, B. L. ...	G. F. C. Mugford ...	No. A.			

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.12.25.	Date Received.
<i>Talhybius</i> ...	Ireland, T. R. ...	P. Elder ...	No. A.	A. Holt ...	Form 911 19.9.25 to 26.10.25...	2.11.25.
<i>Tanda</i> ...	Pilcher, E. ...	H. Jeans, C. G. Holdaway, J. Kean, S. Quinn, E. Livingston, R. Lloyd Harry.	M.L.	E. & A. S.S. Co. ...	Met. Log. 23.2.25 to 20.7.25 ...	28.10.25.
<i>Tambora</i> ...	Huisman, N. ...	H. Van Manen ...	No. M.	Rotterdam Lloyd ...	Form 911 18.6.25 to 6.8.25 ...	22.8.25.
<i>Teiresias</i> ...	Holden, W. R. F. ...	R. S. Young ...	" A.	A. Holt ...	" 8.1.25 to 28.1.25 ...	2.2.25.
<i>Telamon</i> ...	Beswick, W. ...	" ...	No.	" ...	" ...	" ...
<i>Teucer</i> ...	Hodgson, R. N. ...	A. Lightbody ...	" A.	" ...	Form 911 18.10.25 to 9.11.25...	17.11.25.
<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 ...	" 31.10.25 to 11.11.25	18.11.25.
<i>Titan</i> ...	Wilkinson, T. G. ...	S. C. Timmouth, J. Morris, N. L. Thompson.	M.L.	" ...	Met. Log. 19.4.25 to 11.9.25 ...	6.10.25.
<i>Tolmie, S.F. Bqtne.</i>	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>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>Tuscania</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. 23.4.25 to 2.7.25 ...	4.8.25.
<i>Ulimaroa</i> ...	Wyllie, W. J. ...	J. Gilbertson ...	No. M.	Huddart Parker, Ltd.	Form 911 17.10.24 to 23.11.24	19.1.25.
<i>Ulysses</i> ...	McHutcheon, W. ...	T. R. Phillips ...	" A.	A. Holt ...	" 19.8.25 to 5.10.25...	9.10.25.
<i>Umvolosi</i> ...	Barnes, E. W. ...	H. Green ...	" A.	Bullard King ...	" 17.9.25 to 15.10.25...	17.11.25.
<i>Valacia</i> ...	Doyle, M. ...	N. Grayson ...	" M.	Cunard ...	Form 911 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>Vardulia</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>Vellavia</i> ...	Fear, E. T. C. ...	J. E. Deans ...	" A.	" ...	" 1.11.25 to 14.11.25...	16.11.25.
<i>Ventura de Larrinaga.</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 ...	" 29.9.25 to 29.10.25...	2.11.25.
<i>Verentia</i> ...	Jones, R. D. ...	F. H. Wood ...	" A.	" ...	" 5.11.25 to 12.11.25...	20.11.25.
<i>Vigilant</i> ...	Simpson, E. S. S. ...	J. Hunter ...	" A.	Scottish Fishery Board	" 15.10.25 to 5.12.25...	16.12.25.
<i>Waiotapu</i> ...	Davey, A. ...	R. N. Turner ...	" A.	Canadian-Australasian	" 18.5.25 to 21.8.25 ...	14.9.25.
<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 ...	20.7.25.
<i>Warfield</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>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 ...	" 6.11.25 to 27.11.25...	30.11.25.
<i>Conway H.M.S.</i>	Broadbent, H. W., R.D. Capt., R.N.R.	The Senior Cadets...	Cadets' M.L.	" ...	Cadets' Met. Log. 3.5.25 to 25.7.25	31.7.25.
<i>Pangbourne Nautical College.</i>	Tracy, A. F. G., Commr., R.N.	" ...	"	" ...	Cadets' Met. Log. 21.9.25 to 12.12.25	17.12.25.
<i>Worcester, H.M.S.</i>	Sayer M.B., O.B.E., R.D., Capt., R.N.R.	" ...	"	" ...	Cadets' Met. Log. 8.5.25 to 29.7.25	3.9.25.
<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 1.1.25 to 30.6.25	14.10.25.
<i>Sombrero</i> ...	" ...	" ...	"	" ...	Lighthouse Register 19.1.25 to 30.6.25	7.8.25.
<i>Watling Island</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.1.25 to 30.6.25	14.10.25.
<i>Cape Pembroke (Falkland Is.).</i>	" ...	" ...	"	" ...	Lighthouse Register 8.1.25 to 12.7.25	9.9.25.
					Lighthouse Register 1.1.25 to 30.6.25	

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 30.11.25.	Date Received.
<i>Herschel</i> ...	Davies, G. W. ...	T. Lester Guy ...	Lampart & Holt	Water Samples ...	15.10.25.
<i>Hildebrand</i> ...	Maddrell, J. ...	H. Welch ...	Booth ...	" " ...	9.11.25.
<i>Holbein</i> ...	Gough, W. A. ...	G. P. Kitto ...	Lampart & Holt	" " ...	27.10.25.
<i>Manzanares</i> ...	Maxwell Brown, W. E. ...	H. E. Lees ...	Elders & Fyffes	" " ...	9.11.25.
<i>Miami</i> ...	Makepeace, S. ...	H. H. Dunning ...	"	" " ...	19.10.25.

February M.O., 1926.