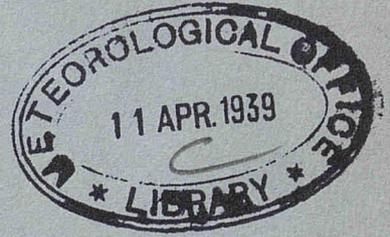


COPY FOR OFFICIAL USE

M03 *Physics Lib*
(thru M04)

London Library



THE MARINE OBSERVER



VOL. XVI

No. 134

Modus

PUBLISHED BY
THE AUTHORITY OF THE
METEOROLOGICAL COMMITTEE
AIR MINISTRY

Crown Copyright Reserved

APRIL

1939

THE MARINE OBSERVER

VOL. XVI.
No. 134



APRIL
1939

The Review of the Marine Division in co-operation with Voluntary Marine Observers

TABLE OF PRINCIPAL CONTENTS

	PAGE		PAGE
Marine Superintendent's Notes	44	Wireless Weather Signals :—	
The Investigation of Ocean Currents	44	Wireless Stations Detailed to receive Routine Coded Weather Reports from "A Selected Ships"	65
The Marine Observers' Log :		Wireless Stations Detailed to receive Routine Coded Weather Reports from "B Selected Ships"	67
April, May and June	45	British Isles, Coasts of Europe, N. and W. Coasts of Africa, and adjacent islands as far as Longitude 40° W.	70
Open Boat Voyages, by Commander M. Cresswell, R.N.R.	55	Personnel :—	
Summary of Ice Conditions, Western North Atlantic, 1938, by Commander J. HENNESSY, R.D., R.N.R.	59	Captain A. Rothwell	} Retirements 79
Currents of the Mediterranean Sea and South-eastern Portion of the North Atlantic Ocean (November to April), by E. W. BARLOW, B.Sc.	63	Captain M. J. Sarson	
Southern Ice Reports, April, May and June, 1938	64	Captain W. S. Colbourne, O.B.E., R.D., R.N.R., Obituary	79
		Lithographic illustrations after page 80 :—	
		Ships' Wireless Weather Signals, Chart of the World.	
		Currents in the North Atlantic, South-Eastern portion, February, March and April	
		Currents in the Mediterranean, February, March and April.	
		Chart of Limits of Ice, Western North Atlantic.	
		Chart of Exceptional Positions of Ice.	
		Ice Chart of the Southern Hemisphere, April, May and June	

MARINE SUPERINTENDENT'S NOTES.

On taking over Command of the Marine Division of the Meteorological Office from Captain BROOKE SMITH, I take this opportunity of introducing myself to the Corps of Voluntary Observers through the medium of this magazine and of stating that I look forward with pleasure to meeting as many as possible of the Masters and Officers of the ships concerned, personally. Commander HENNESSY and I will also welcome personal visits at my office in Victory House, Kingsway, where Observers will be able to witness some of the results of their labours and to discuss any problems which may arise. I feel that this personal contact is most valuable. I also intend visiting the ships whenever possible, for it is my earnest desire to maintain the happy relationship which existed between the Corps of Voluntary Observers and the Marine Division throughout Captain BROOKE SMITH's long tenure of office.

I have been very much struck with the highly efficient organization which he and you have built up and I only hope that we will be able, with our joint labours, to continue the good work in the same friendly spirit and obtain similar efficient results.

I feel that it is fitting here to pay a tribute to Captain BROOKE SMITH for his untiring efforts to enlarge the Fleet of Voluntary Observing Ships and to improve the efficiency of the Division generally, for the ultimate benefit of seamen and science, and for his great organizing ability. A special note of appreciation is due to him for reorganizing on modern and efficient lines the work of extracting data which

Merchant Seamen have sent into this Division for such a large number of years, supplemented by considerable additional data kindly supplied by our sister service the Royal Navy, with the ultimate aim of returning it to all seamen in the form of Meteorological and Current Charts for the whole world. It is to be hoped that he may be granted many years in which to enjoy his retirement.

The value of the work the Corps of Voluntary Observers is doing cannot be too strongly emphasized in view of modern conditions. It enables weather forecasting to be done for the benefit of seamen both Naval and Mercantile, for aircraft, military and civil, and for "landlubbers" too (with apologies to any readers who may be hurt by this quite harmless nautical expression). It provides data for the compilation of Meteorological and Current Charts for the use of seamen the world over—and for scientific research, both for the benefit of the Defence Forces and for numerous commercial interests. From the junior officer's point of view, this work undoubtedly helps him in preparing for his Board of Trade Certificates at sea. Last but not least it encourages all officers to interpret aright manifestations of the power of nature, be they for good or evil, which a seaman always has before him.

C. FRANKCOM,
Marine Superintendent.

2nd February, 1939.

THE INVESTIGATION OF OCEAN CURRENTS.

The investigation and re-charting of the currents of the South Pacific, which has occupied the attention of the Marine Division since 1936, was completed with the publication of the October, 1938, MARINE OBSERVER. The sectional charts so published have been combined into an Atlas of Ocean Currents of the South Pacific, and is now available to mariners in a form which, we hope, will prove of practical assistance in navigation, and repay all those of our Voluntary Corps of Marine Observers who contributed towards making this Atlas possible.

This Atlas, we think, is a definite contribution to our knowledge of the surface drifts of the oceans, for this is the first time that the currents of the South Pacific have been treated statistically.

The investigation into the currents of the South Pacific has brought out many important points which are summarized in the text, tables and graphs on the first page of the Atlas.

Sufficient observations were available to permit a complete unbroken picture of the South Equatorial current throughout its length to be obtained, and show this current to be the steadiest in set that the Marine Division has yet investigated in any ocean. Similarly, the seasonal variations of the strength of this current to a maximum twice yearly, indications of which were given in our investigations of the equatorial currents in other oceans, are fully borne out in the more complete examination we have been able to make in this instance.

Particular attention is drawn to the East Australian Coast Current, where it has been possible to establish the frequency of reverse (northerly) sets within the limits of this current and also the liability of onshore sets.

Broadly speaking, the seasonal variation and general character of

the main streams within the South Pacific Ocean are clearly established.

With the completion and publication of the South Pacific Ocean Current Atlas, the work of revision of the atlas of the currents of the North Atlantic has been undertaken, which together with the addition of currents within the Mediterranean Basin will occupy the activities of the Marine Division in this direction for the next three years.

This year the Mediterranean and the south-eastern North Atlantic, south of Latitude 38° N. and east of Longitude 46° W., are being charted, and will be published in each number of this volume of THE MARINE OBSERVER. Next year the south-western part of the North Atlantic will be proceeded with, followed in 1941 by the completion of that part of the ocean north of Latitude 38° N.

Navigation being mostly confined to well-defined tracks it is, generally speaking, difficult to obtain sufficient observations in the regions between these tracks to give reliable information on the charts. Especially is this the case with regard to the Mediterranean Basin.

Observations of the set and drift of current are therefore particularly desirable in regions off the usual shipping routes, and Marine Observers are asked to pay special attention to the recording of current observation when navigating such areas. In addition those who have had considerable experience of the current in any particular region are asked to send in generalized information regarding the peculiarities of the current derived from their experience.

The whole of this additional information is of the greatest value not only in enabling us to chart a greater extent of the ocean, but also to return fuller information regarding the general circulation of the ocean, for the benefit of all seamen.

Marine Superintendent.

The Marine Observers' LOG



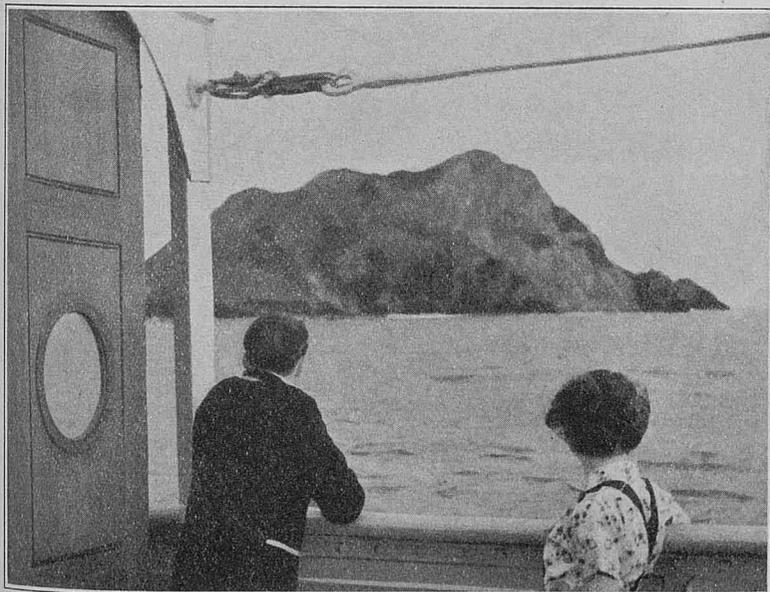
April, May and June.

It is hoped that these pages will be filled each quarter with a selection of the contributions of Mariners in manuscript, or remarks from the Logs and Records of regular Marine Observers.
Responsibility for statements rests with the Contributor.

HUNTER ISLAND.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Oronsay*. Commodore Sir CHARLES MATHESON, D.S.O., R.D., R.N.R. Brisbane to Suva. Observer, Lieutenant H. B. FOWLER, R.N.R.



9th June, 1938. At 06.00 A.T.S., the uninhabited Hunter Island which lies in the track of shipping between Brisbane and the Fiji Islands, was sighted.

The course was altered to pass close to and at 08.12 A.T.S. it was bearing 338°, distant one mile. From this position a pale yellow patch could be seen on the south-eastern grassy slopes, from which small puffs of apparently sulphurous vapour were rising.

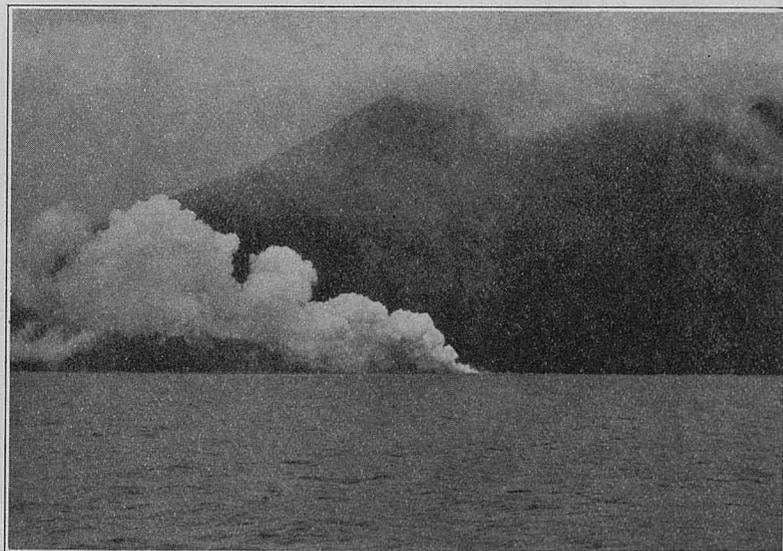
Position of ship, Latitude 22° 24' S., Longitude 172° 05' E.

w 19729

STROMBOLI IN ERUPTION.

THE following is an extract from the Meteorological Record of S.S. *Strathmore*. Captain F. E. FRENCH, R.D., R.N.R. Mediterranean Cruise. Observer, Mr. R. A. PERRY, Supernumerary 2nd Officer.

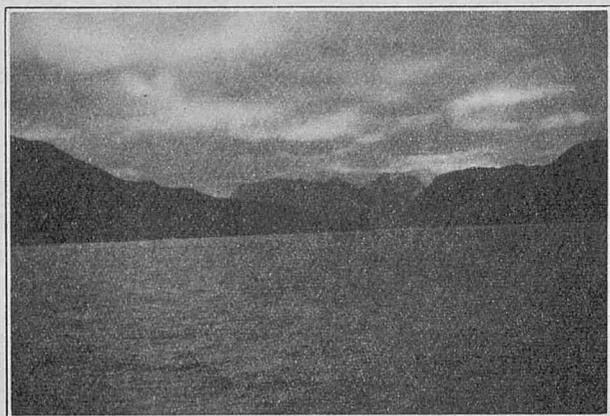
On the 23rd May, 1938, at 18.25 A.T.S., we passed half a mile to



the westward of Stromboli. It was observed to be in eruption and a steady stream of molten lava was pouring down the western slope. As it came into contact with the sea a dense cloud of steam was raised which drifted about half a mile to the northward before condensing. The photograph was taken from the westward.

PASSAGE THROUGH MAGELLAN STRAITS.

THE accompanying photographs, taken in the Patagonian Channels, have been received from S.S. *Hopestar*. Captain J. STEWARD. Observing Officers, Mr. W. A. WATSON, 2nd Officer, Mr. J. HAMILTON, 3rd Officer.



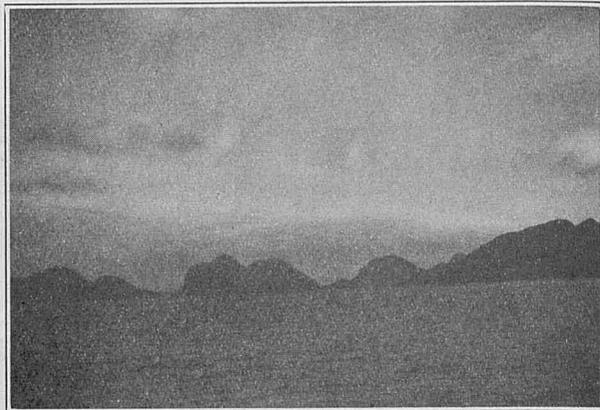
Somerset Hill.



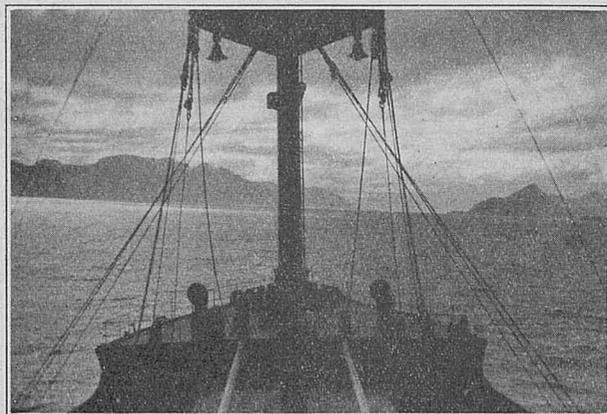
Tribune Bay.



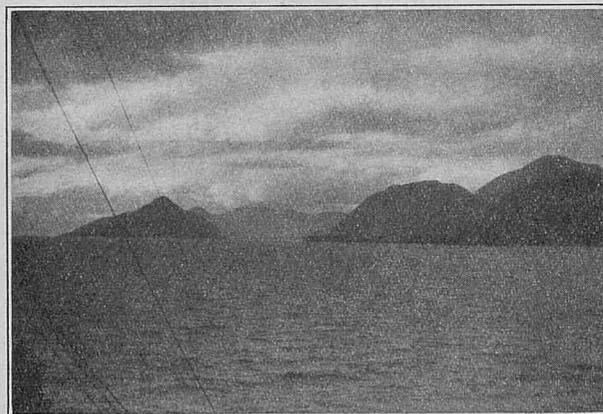
Chasm Reach.



Brassey Passage.



Wide Channel.



Lecky Inlet.

CURRENTS.

Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Benmohr*. Captain J. C. SINCLAIR. Malacca to Jidda, via One and Half Degree Channel. Observer, Mr. J. BROWN, 2nd Officer.

From Willemstoren (11th June, 1938, 6.30 p.m.), to Mafuri Island (16th June, 1938, 6.10 p.m.), only light to moderate southerly winds were experienced. Reliable sights were obtained, and the set for the first three days averaged 30° , $22\frac{1}{2}$ miles per day.

From 6.33 p.m. A.T.S., 14th June, Latitude $2^{\circ} 46' N.$, Longitude $81^{\circ} 44' E.$, to 2.28 p.m. A.T.S., 15th June, Latitude $2^{\circ} 01' N.$, Longitude $77^{\circ} 58' E.$, the current averaged 41° , rate 1.26 knots. In this area no current arrows are inserted on the Indian Ocean Current Chart for May, June, July. From 6.35 p.m. A.T.S., 15th June, Latitude $1^{\circ} 48\frac{1}{2}' N.$, Longitude $77^{\circ} 7\frac{1}{2}' E.$, to 6.35 p.m. A.T.S., 16th June, Latitude $1^{\circ} 18' N.$, Longitude $72^{\circ} 41' E.$, the current averaged 87° , 23 miles for 24.3 hours.

The photographs were taken about 4.0 p.m. on 2nd May, 1938. Weather at the time, Wind N.W., fresh to strong, overcast and cloudy, barometer 1001.5 mb., rising, temperatures, air $51^{\circ} F.$, sea $48^{\circ} F.$

From One and Half Degree Channel a westerly course was maintained and wind continued light to moderate, S.W. to W.S.W., with moderate confused swell, until the monsoon freshened in the evening on the 19th, and by the morning of the 20th was strongly established. Currents experienced conformed to arrows as shown on the Indian Ocean Current Chart.

Positions of ship :—11th June, 1938, 6.30 p.m., Willemstoren Light abeam; 16th June, 1938, 3.10 p.m., Mafuri Island abeam; 22nd June, 1938, 3.10 p.m., Cape Guardafui Lighthouse abeam.

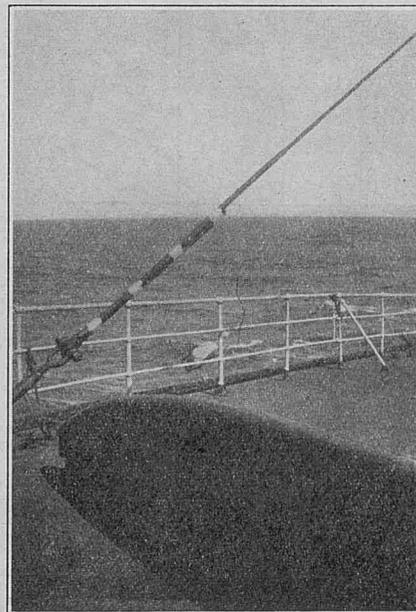
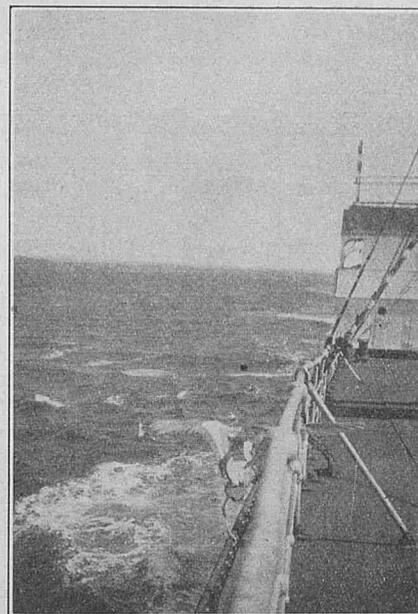
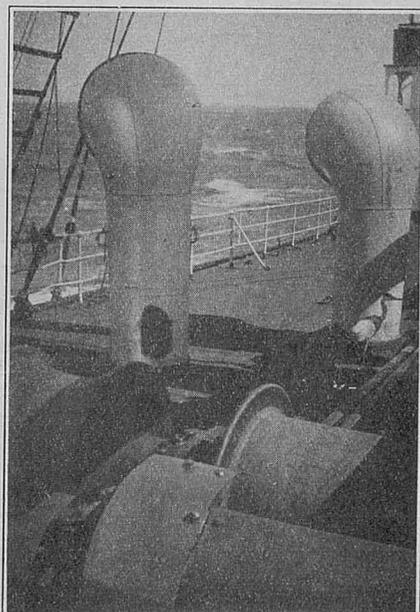
NOTE.—Absence of current arrows in this region in the Indian Ocean Current Atlas signifies scarcity of observations. Any further current observations in this area will be most valuable.

HERONS.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Clan Macphee*. Captain H. C. SIMPSON. Glasgow to Philadelphia. Observer, Mr. R. C. STEEL, 2nd Officer.

20th April, 1938. Latitude $46^{\circ} 55' N.$, Longitude $35^{\circ} 24' W.$ Wind E., force 4. At 7 a.m. A.T.S., two herons were observed flying around the ship. After a while they both landed on the fore deck. On sight of anyone approaching they flew off and around the ship until the fore deck was clear, they would then land again; both were exhausted, their wings drooping as they stood on deck. At 11 a.m.



it was possible to approach within six feet of one and photographs were taken. They were a light grey colour on the wings and back of the body, white breasts and necks with black markings, black crests about four inches long. In height, standing, would be two feet six inches and a wing spread of about four feet.

Both flew away at noon, but one returned about 2 p.m. and stayed until 7.30 p.m. when it flew away. The position at that time was Latitude $45^{\circ} 40' N.$, Longitude $37^{\circ} 50' W.$

The nearest land was the Azores, about 650 miles S.S.E.

CURRENT RIP.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Clan Macphee*. Captain H. C. SIMPSON. New York to Cape Town. Observer, Mr. R. C. STEEL.

On 20th May, 1938, in Latitude $2^{\circ} 40' N.$, Longitude $25^{\circ} 20' W.$, at 1610 G.M.T., crossed current demarcation between Guinea and Equatorial Currents. The line extended in a W.S.W. and E.N.E. direction, but this was not very clear on approaching, as there was very little chop on the sea, but on crossing it was plainly visible with a smooth water patch about 30 feet wide between the rips.

Barometer 1010.2 mb., corrected. Air temperature $84^{\circ} F.$, sea $80^{\circ} F.$, sea slight. Wind S.E., force 3.

WEATHER FORECASTING AT SEA.

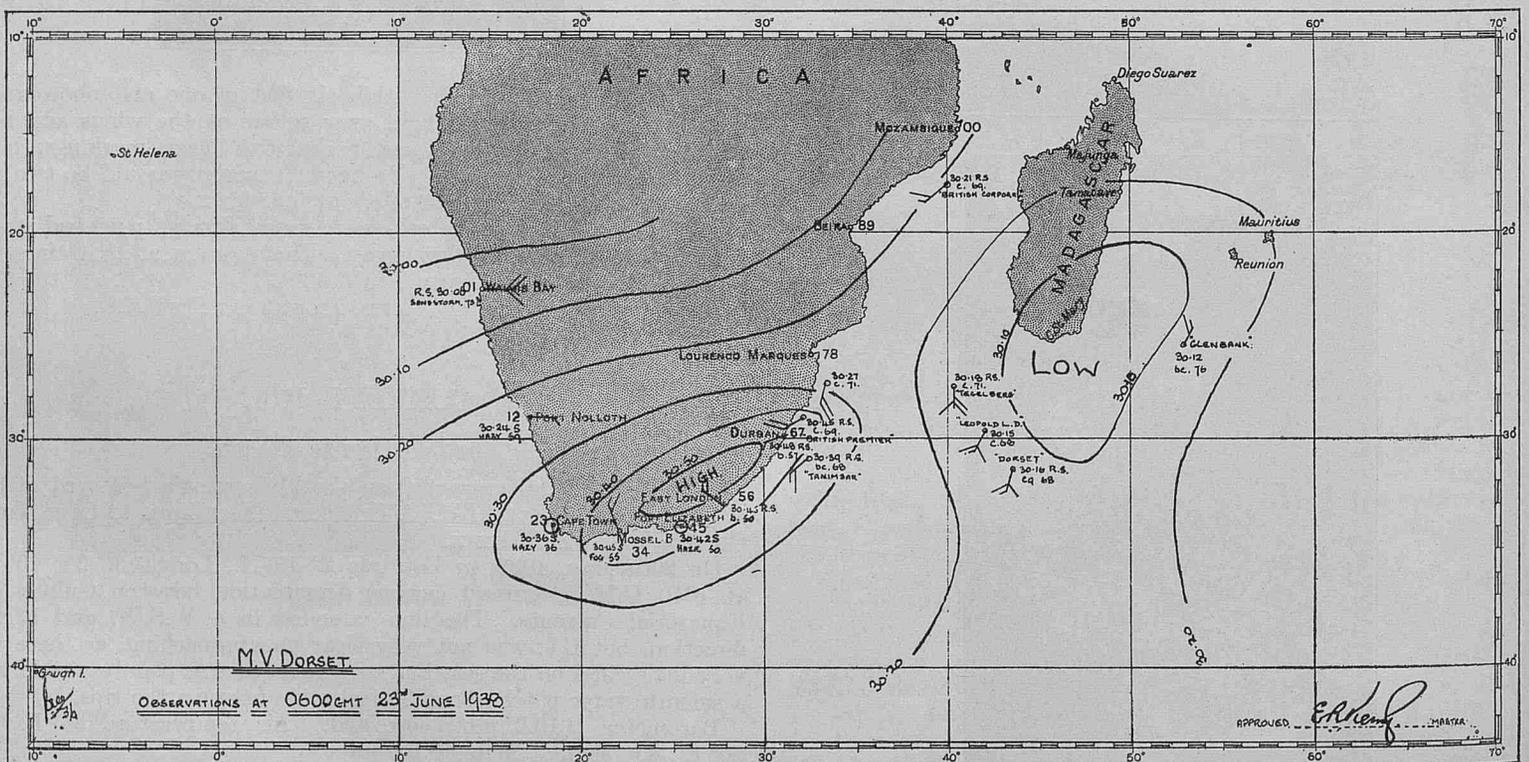
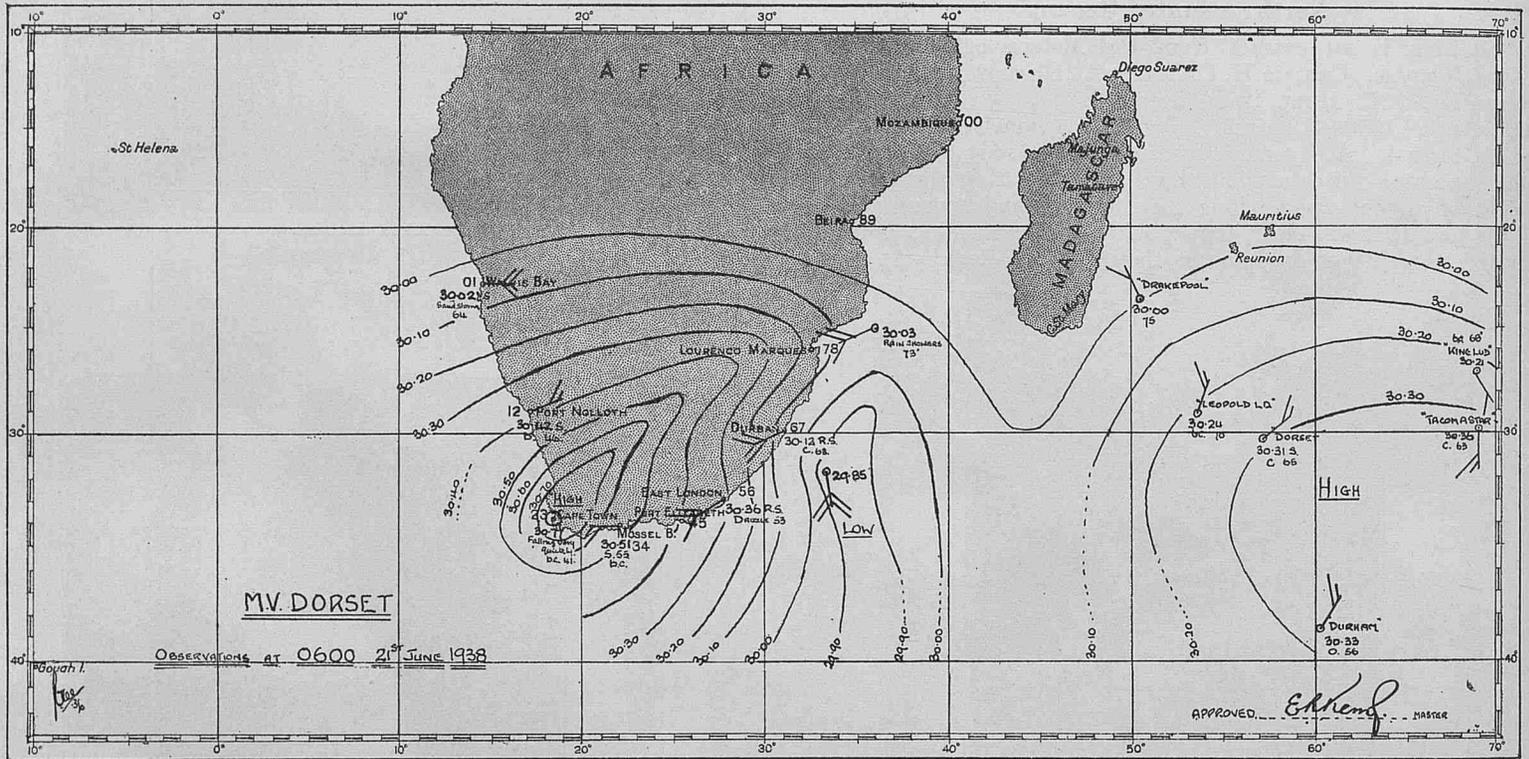
South African Waters.

M.S. Dorset. Captain E. R. KEMP. Observing Officer, Mr. J. CREE, 3rd Officer.

Weather experienced from 0600 G.M.T. 21st June, 1938, to 0600 G.M.T. 23rd June, 1938.

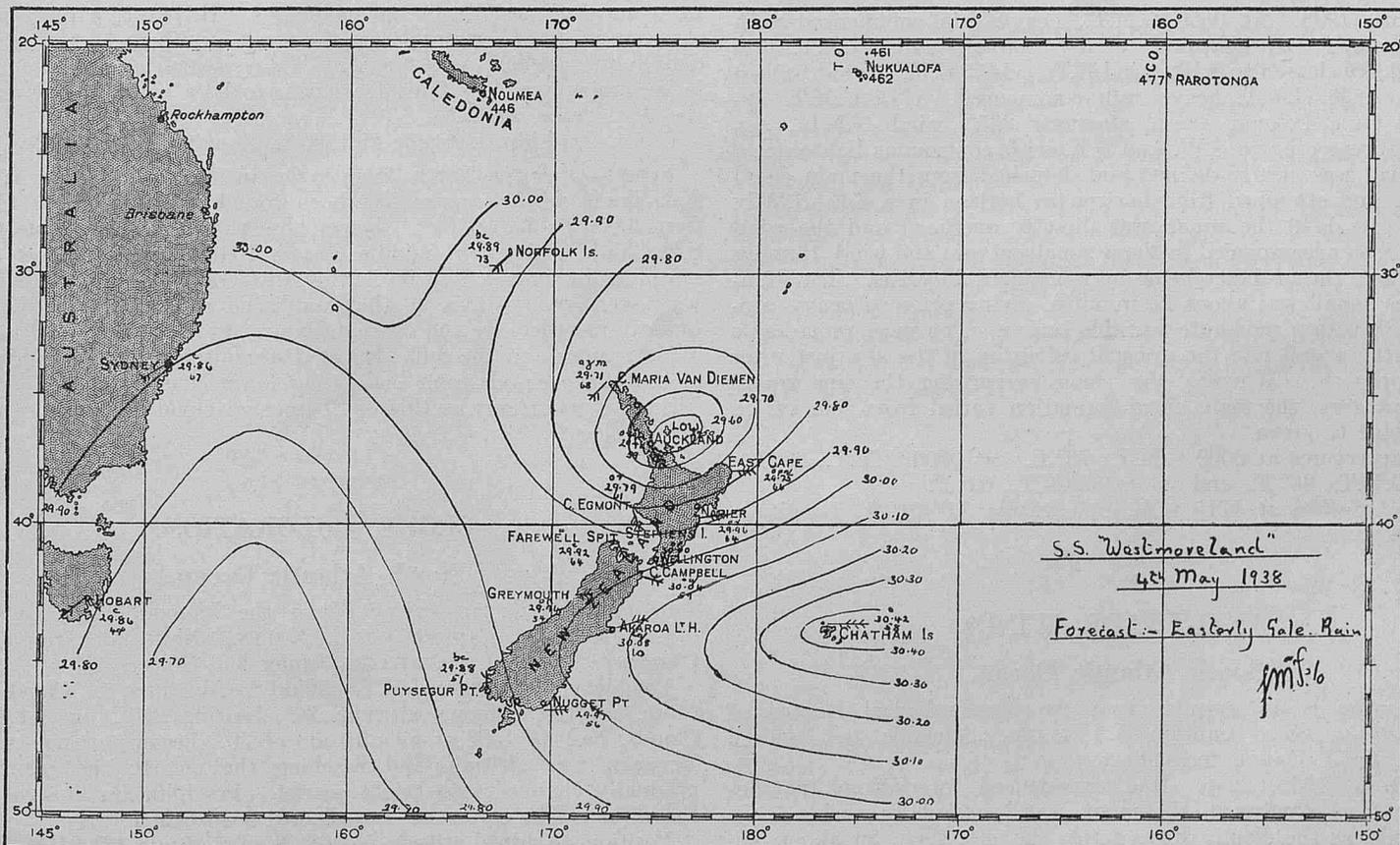
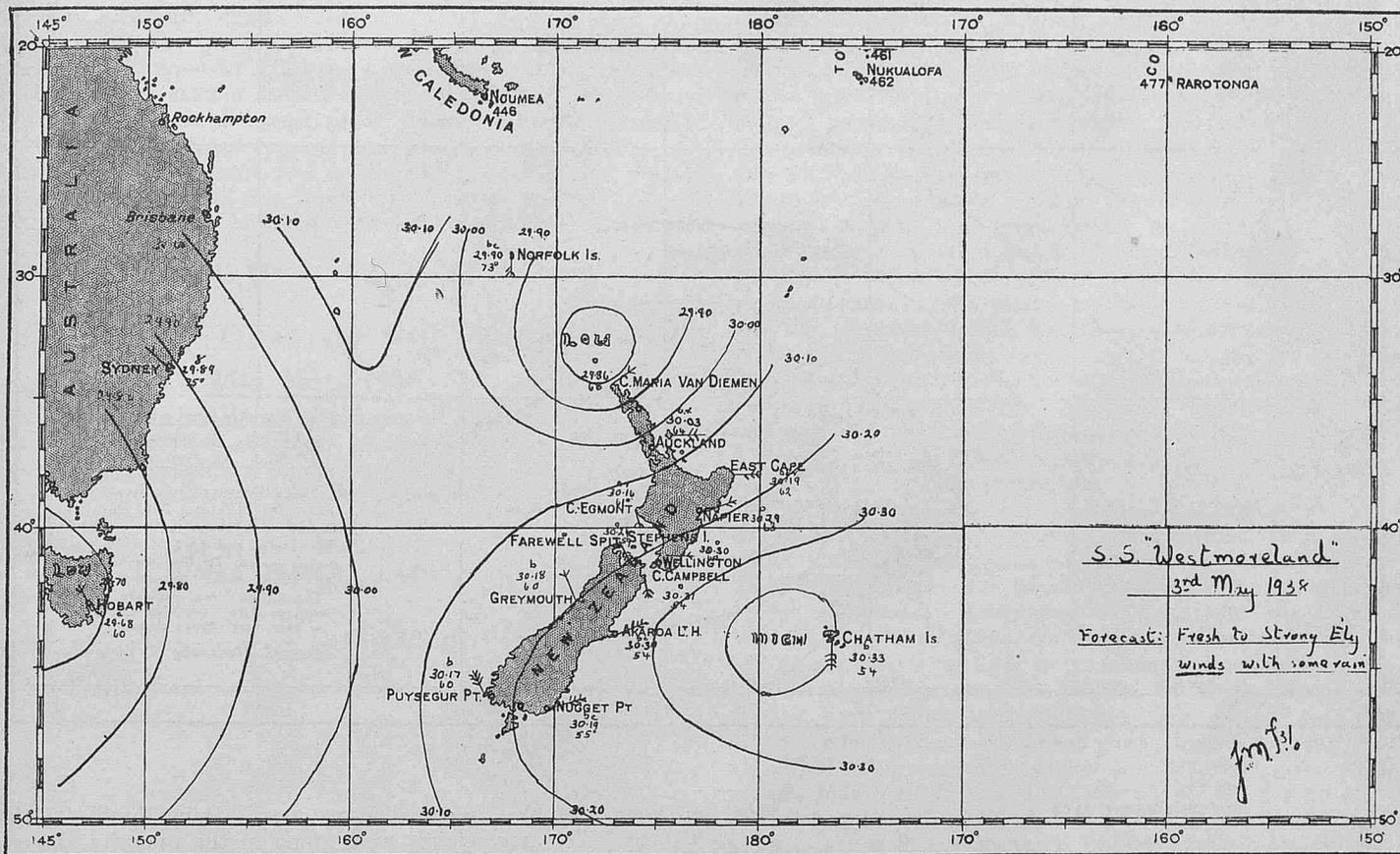
For 12 hours from 0600 G.M.T. on the 21st June, 1938, light northerly winds were experienced which then freshened from the N.N.W. with slight southerly swell and slowly falling barometer. Radio reception thereafter became exceedingly poor, and about 1400 G.M.T. on the 22nd., the vessel ran into a thunderstorm of great severity with excessive lightning and very heavy rain, which lasted until about

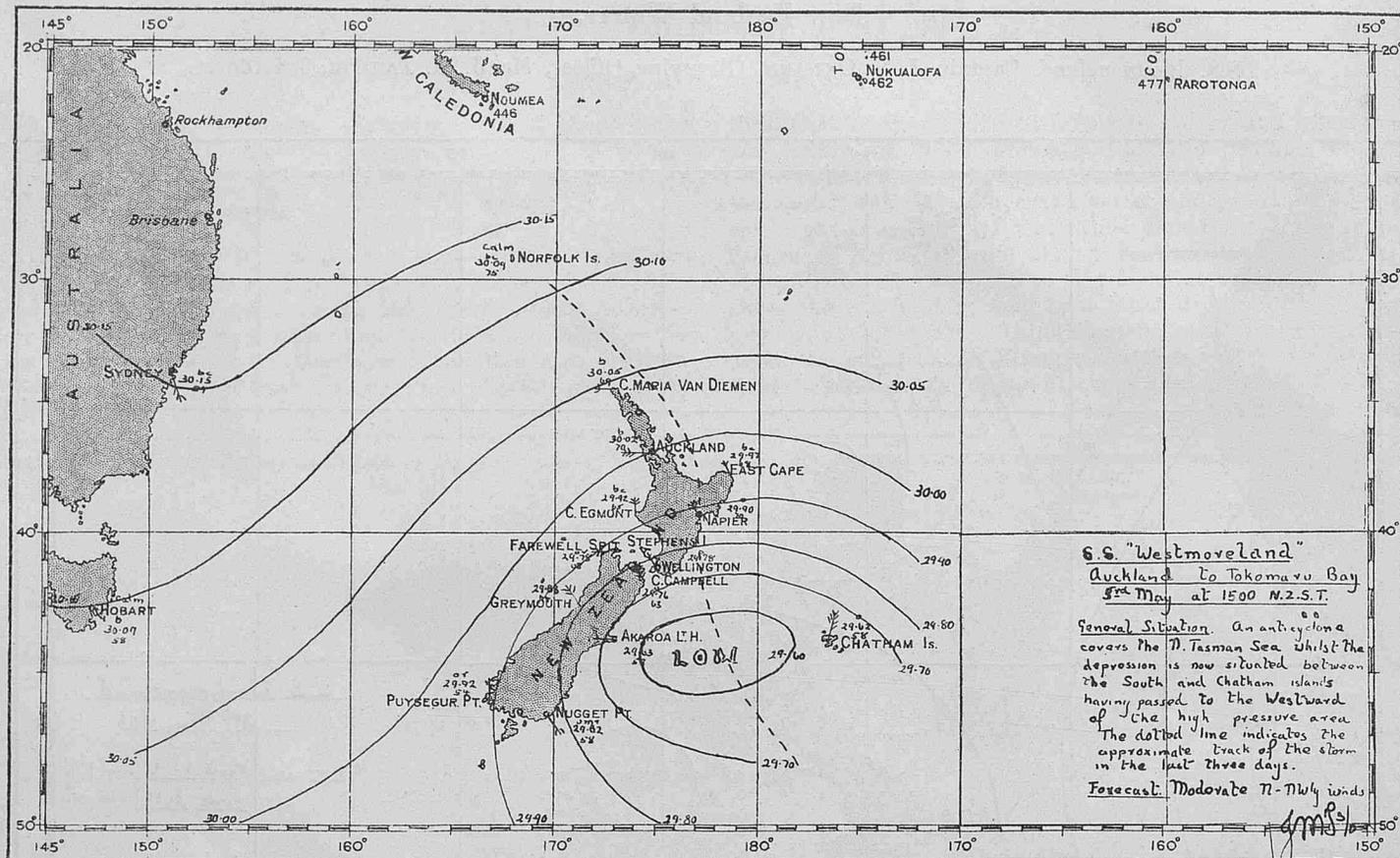
2100 G.M.T., the wind then falling to a calm and becoming variable, and finally, on the morning of the 23rd., coming away from the S.S.W. and freshening to force 6, with moderate S.W'ly. swell and a rising barometer, remaining in that quarter and gradually easing off. At the height of the storm, during which time the most vivid and brilliant flashes of lightning were almost continuous, an excellent example of St. Elmo's Fire was seen to play for more than a quarter of an hour, along the triatic stay, and, to a lesser degree on other parts of the rigging at intervals. Unfortunately, this electrical disturbance made the collecting of Wireless Weather Reports impossible on the 22nd, so that charts for the 21st and 23rd only were made.



New Zealand Waters.

S.S. *Westmoreland*. Captain J. S. OXNARD. Observing Officer, Mr. J. M. TAYLOR, 3rd Officer.





PAMPERO.

Uruguayan Waters.

THE following is an extract from the Meteorological Record of S.S. *Almeda Star*. Captain H. C. HOWARD. London to River Plate. Observer, Mr. J. L. ANSON.

2nd June, 1938. At 0650 G.M.T., heavy rain commenced with squalls, thunder and lightning, wind variable; 1130 G.M.T. rain ceased and sky cleared to S.W., wind N.W. 1455 G.M.T. wind backed to S.S.E. 1535 G.M.T. heavy rain commenced. 1715 G.M.T. approaching Cape Polonio, vessel steaming 225°, wind N.N.E., sky ugly and threatening to S.W. and S.E. with continuous lightning.

The squall was clearly defined and detached from the main cloud formation, and stretched from horizon to horizon in a S.E.-N.Wly direction. At 1740 the squall was directly overhead and the wind veered to S.E., accompanied by fierce squalls of rain and wind, thunder and lightning, the visibility being no more than 20 yards. The duration of the squall was about 25 minutes, giving place to heavy continuous rain with a moderate variable breeze. The most remarkable aspect of the squall was the unusual colouring of the sky just prior to its approach. Whereas the cloud comprising the line squall was a dark grey, the main cloud formation varied from rich varied tones of blue to green.

Air temperatures at 0000 G.M.T., 73° F.; at 0600 G.M.T., 69° F.; at 1200 G.M.T., 65° F., and at 1800 G.M.T., 62° F.

Position of ship at 1715 G.M.T., Latitude 34° 01' S., Longitude 52° 58' W.

ANTI-TRADE WINDS

South Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Australia Star*. Captain J. FISHER. Adelaide to London. Observer, Mr. J. DAVIS, 2nd Officer.

12th April, 1938, 2245. Had experienced intermittent patches of drizzle from windward, the moon was occasionally visible for a few seconds, as the clouds drove across the sky, then, for about half

an hour, blue sky appeared in patches, leaving Cunb. 4/10ths, Acu. 3/10ths. The Acu. clouds were going in the opposite direction (or nearly so) to the Cunb., which were travelling with the South-East Trades. This at first appeared to be an optical illusion, as the lower clouds were travelling at a good speed, making the middle clouds appear to travel in an opposite direction. Their speed was very pronounced, especially in the moonlight. However, patches of blue sky appeared further away from the moon, and here were Acu. clouds definitely travelling with the Anti-Trades which are known to exist in the upper regions. This I consider to be a very good example of the Anti-Trade winds.

Position of ship, Latitude 23° 34' S., Longitude 7° 46' E.

NOTE.—Over the North Atlantic Ocean the lowest height at which Anti-Trade winds appear has been found by observation to vary from 6,000 to 30,000 feet. Fewer observations are available for the S.E. Trade region, but middle clouds, 10,000 to 23,000 feet, would normally be expected to be in the Anti-Trade stratum. The reason why such observations as that published above are not more frequently recorded are the comparative rarity of middle cloud in Trade Wind regions and the difficulty of distinguishing the true movement of the higher clouds from that of the lower clouds.

Such observations as this or of unusual cloud motions are always most welcome.

CLOUD COLORATION.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Cameronia*. Captain G. B. KELLY. New York to Glasgow. Observer, Mr. J. D. MACKENZIE, Junior 2nd Officer.

12th May, 1938, 0000 G.M.T. Wind S.S.W., force 5. Cloud—Acu., Cunb. 9/10ths. Moon's altitude 20°, bearing 220°, age 11.8 days. Clouds, bearing 150° at an altitude of 30°, became orange-coloured. Between this altitude and reaching the zenith, the orange tint gradually changed into bright scarlet. Precipitation in sight under the moon. The coloration lasted until 0010 G.M.T.

Position of ship, Latitude 55° 08' N., Longitude 12° 04' W.

SUBMARINE EARTHQUAKE.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Oropesa*. Captain R. E. DUNN, O.B.E. Observer, Lt.-Commr. G. GERETY, R.N.R., 3rd Officer.

17th April, 1938, at 10.43 a.m. Ship's Time 75th Meridian, while on passage from Iquique to Arica on West Coast of South America, a severe earthquake tremor lasting about ten seconds was felt on board. The vessel trembled and shook violently, giving a similar sensation to that of a vessel running aground on a rocky shore. Although the vibration set up was considerable, no movable objects such as glasses, ink-wells, etc., were dislodged or upset.

No change in either the barometer reading or the amount of swell was noticeable.

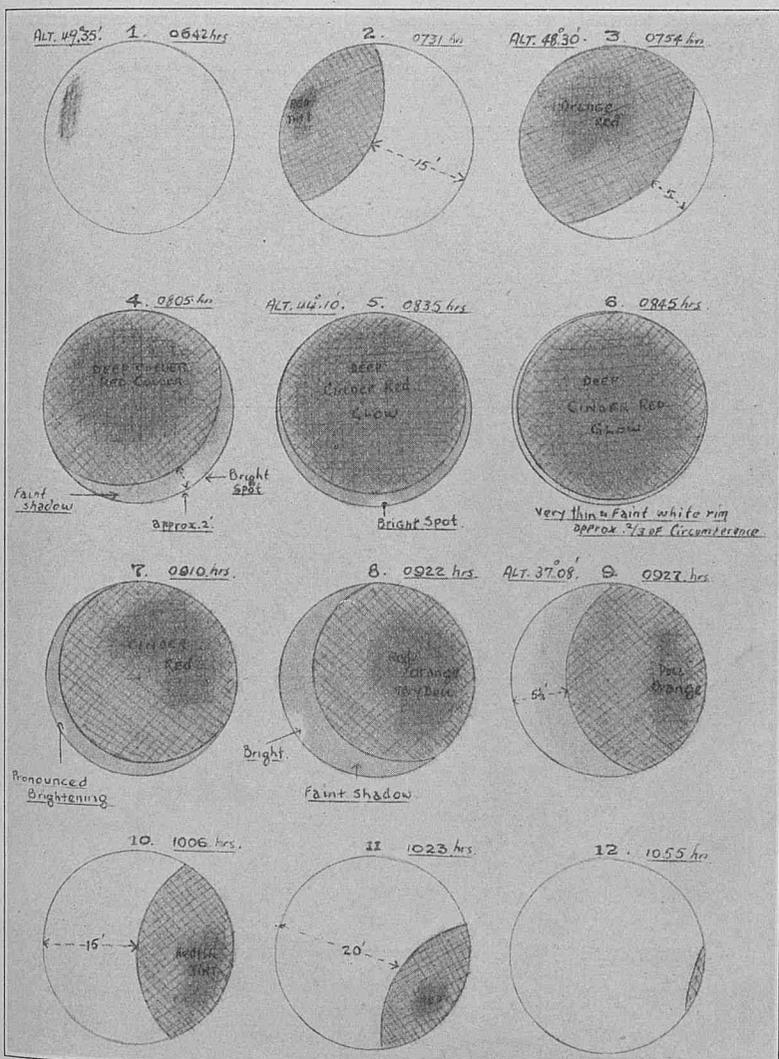
Position of ship, Latitude 19° 48' S., Longitude 70° 19' W.

TOTAL ECLIPSE OF THE MOON.

14th May, 1938.

Accounts of this eclipse have been received from eight ships. As space does not permit the publication of these in full, the observations of the colour of the eclipsed moon, which is the most interesting feature, have been extracted and are given below. G.M.T. times are given throughout. The period of total eclipse, which is independent of the locality, was from 0818 to 0909.

M.S. *Cape of Good Hope*. Position at 0642, Latitude 20° 51' N., Longitude 107° 44' W.



Total Eclipse of the Moon, 14th May, 1938.

M.S. "Cape of Good Hope."

Captain A. T. McGlashan. Observer, Mr. R. J. Carnochan, 2nd Officer.

EXPLANATION OF DIAGRAM.—FIGURE 1.—Shading indicates the first definite perception of the penumbral shadow. FIGURE 2.—Partial eclipse, a faint shade of red, just discernible, is indicated by deeper shading. FIGURE 3.—The edge of shadow became more definite as brilliance of moon was reduced. The pale reddish tint spread steadily, turning orange-red in colour. FIGURE 4.—The uneclipsed part of the moon showed one spot (as indicated) much brighter than the rest. FIGURE 5.—Nearing total eclipse; a deep glow of cinder red at the centre toned gradually to grey shadow towards the edge of the moon, a small bright spot being still visible. FIGURE 6.—General colour of the moon remained the same. The bright spot disappeared and a thin pale whitish rim was observed covering approximately two-thirds of the circumference. FIGURE 7.—Area of red colour diminished rapidly and became deeper, the bright spot reappeared further round the circumference, a small patch of cloud passed over the moon, and through it the bright spot was distinctly visible, having much the same appearance as a planet or first magnitude star when similarly viewed. FIGURES 8 and 9.—Coloured shadow slowly changed from cinder red to dull orange, decreasing and merging gradually into normal shadow. FIGURE 10.—Last half of eclipse; colour, pale reddish tint, fading rapidly, as the eclipse decreased. FIGURE 11.—Last red spot in centre of shadowed portion disappeared, from then onwards the shadow was grey. FIGURE 12.—A slightly flat edge was the only indication of the eclipse, now only penumbral.

S.S. *Tamaroa*.—Position at 0610, Latitude 0° 35' S., Longitude 38° 18' W. 0818 total eclipse. The complete moon was visible, the upper limb and two-thirds of the surface being red. At 0829 the lower left quadrant was bluish-white and the remainder rose-red.

M.S. *Rangitane*.—Position at 0657, Latitude 40° 17' S., Longitude 159° 17' W. Throughout the eclipse the whole moon was faintly visible, showing a peculiar brownish-orange colour.

M.S. *Clydebank*.—In the vicinity of East Cape, New Zealand. During total eclipse the moon was still visible as though viewed through a heavy shade or smoked glass; the shade being heaviest at the lower left-hand quadrant, where it had a reddish-brown tinge.

M.S. *Robert F. Hand*.—Latitude 21° 45' N., Longitude 85° 03' W. During total eclipse the whole moon was clearly defined, appearing reddish-brown in colour, the S.W. side retaining a whitish glow.

M.S. *Highland Chieftain*.—Latitude 34° 40' S., Longitude 53° 56' W. During the period of total eclipse, the moon was observed occasionally through gaps in the clouds; the outline was distinctly visible, the remainder of a reddish tinge.

PHOSPHORESCENCE.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of M.S. *Alynbank*. Captain D. GILLIES. Semarang to West Coast, South America. Observers, Mr. J. MURRAY, 2nd Officer, and Mr. L. ARMITAGE, 3rd Officer.

21st to 22nd June, 1938. Large patches of phosphorescence were observed in large quantities, in most regular rectangular shapes, the approximate size, as viewed from the bridge was about 18 inches long by 4 inches wide. The light given off was very bright, and greenish blue in colour.

It was observed on the previous night (21st) but was particularly striking during the duration of a gale which lasted between 0300 and 1230 G.M.T. on the 22nd June.

RAIN SQUALL.

Gulf of Aden.

THE following is an extract from the Meteorological Record of M.S. *Agamemnon*. Captain J. G. REYNARD. Yokohama to London. Observer, Mr. J. R. L. ATKINSON, 3rd Officer.

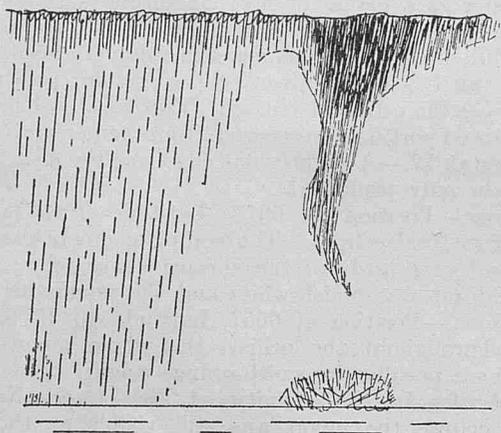
10th May, 1938. 0700 G.M.T. Position of ship, Latitude 12° 29' N., Longitude 44° 12' E. Wind N.N.E., force 3. Overcast, lower cloud, Cu. and St. 4/10ths, Acu., Ast. 6/10ths. Heavy roll cumulus formed to south and in a few minutes moved rapidly northward, the wind died away and then blew from south at force 5 with violent rain. Barometer remained steady. Air temperature rose 3°F. to 89°F. At 0830 breaks appeared in the clouds and at 0840, in Latitude 12° 29' N., Longitude 43° 52' E., the vessel steamed into clear weather, the wind backed to east, force 3, barometer fell 2 mb. to 1008 mb. and sky cleared rapidly. This is a most unusual occurrence in the Gulf of Aden.

WATERSPOUTS.**South China Sea.**

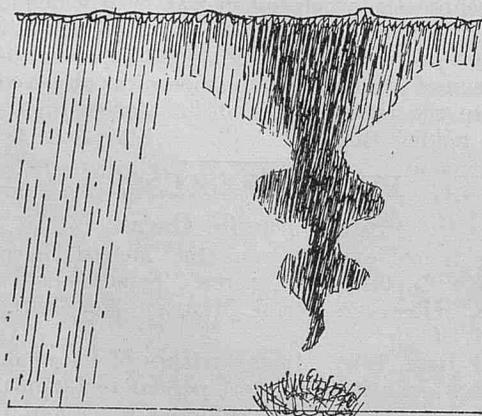
THE following is an extract from the Meteorological Record of M.S. *Radnorshire*. Captain T. G. NIVISON. Singapore to Hong Kong. Observer, Sub-Lieutenant A. F. FRY, R.N.R., 4th Officer.

21st May, 1938. At 11.50 A.T.S. an intensely heavy rain squall was observed about 5 miles on the port bow. From its northern extremity a waterspout commenced to form at the base of the cloud, and, beneath it, a "boiling" effect was clearly visible on the sea surface.

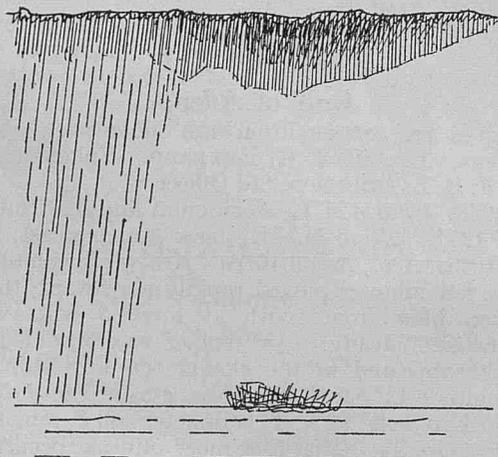
At noon, when the spout was almost complete, two large bulges appeared from the base of the cloud and commenced sliding down the upper portion of the waterspout as shown in sketch. As each of these bulges reached the end of the spout, it disintegrated and



11.50 A.T.S.



Noon.



12.05 A.T.S.

fell as a miniature rain squall. The agitation of the sea surface continued for some minutes after the upper portion of the spout had vanished, and subsequently nothing remained but a large and intensely black curtain of rain.

Weather: Light S.S.E. breeze and slight sea. Very slight N.E.'ly swell. Cloud: Cu. and Cumb. 3/10ths., Cist. 2/10ths. Course 005°. Speed 14 knots.

Position of ship, Latitude 16° 15' N., Longitude 113° 19' E.

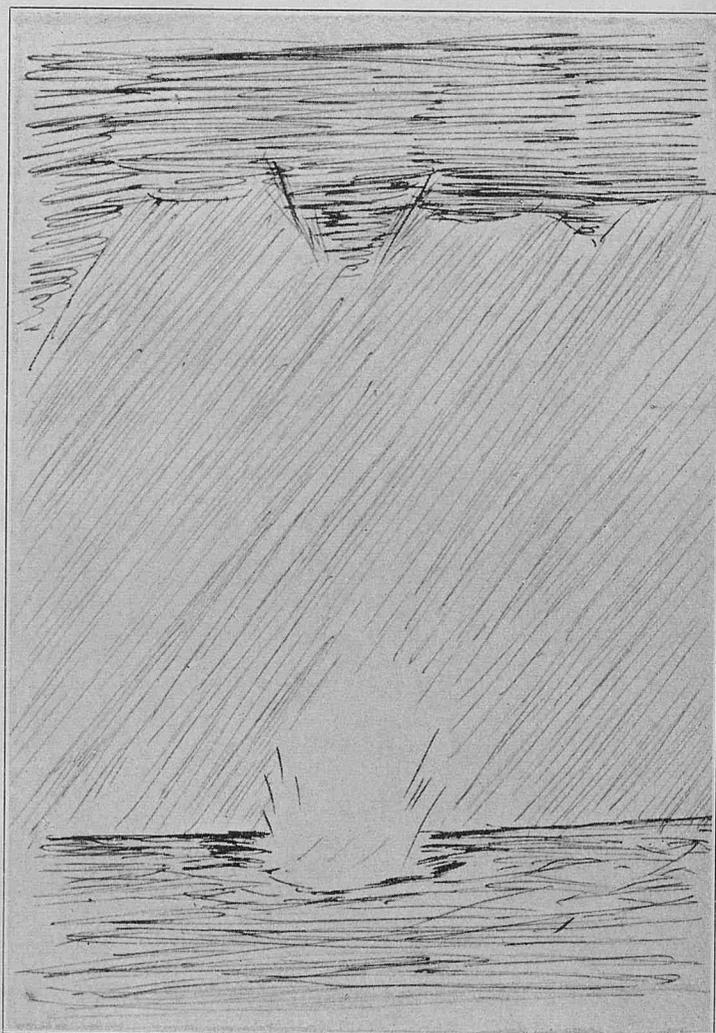
North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Clan Macphee*. Captain H. C. SIMPSON. Glasgow to Philadelphia. Observer, Mr. T. GILLIES, 3rd Officer.

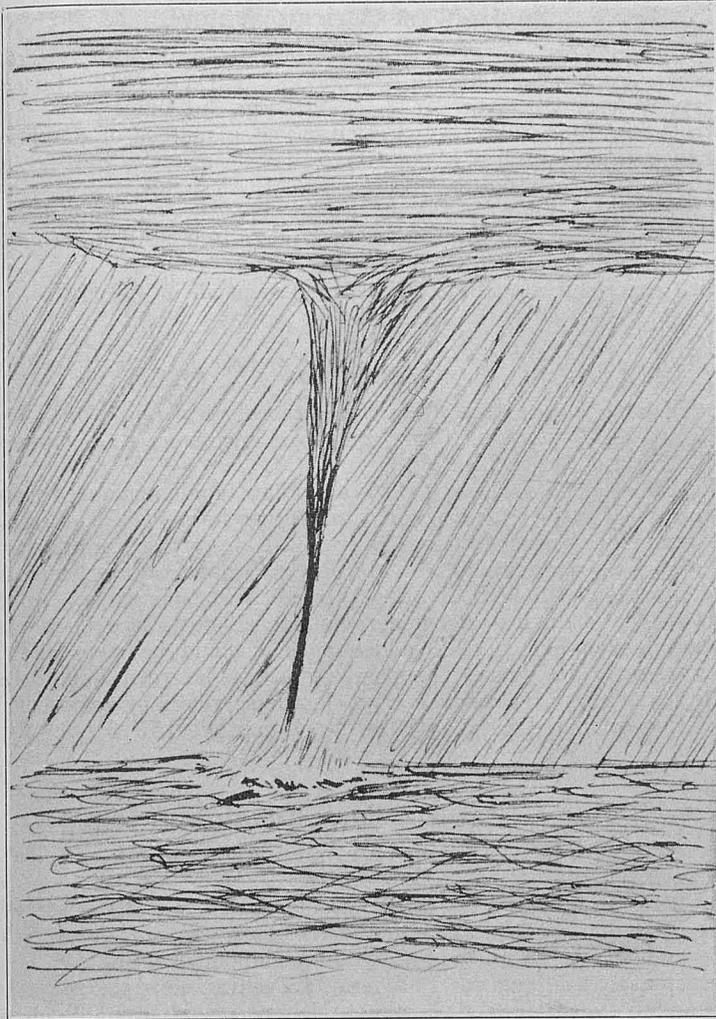
25th April, 1938. During the forenoon watch, a dark cumulonimbus cloud was seen ahead and approaching the ship. At 8.45 A.T.S. a very heavy torrential shower of rain was experienced, the wind increasing to force 6. This lasted about four minutes, the rain then ceased and the wind dropped back to force 4. At 8.51 A.T.S. a patch of water was observed to be greatly agitated, bearing N.N.W., distant $\frac{1}{2}$ mile. This patch was elliptical in shape but later became more circular with an approximate diameter of 200 feet. The sea enclosed by this circle was observed to be convex with broken water around the edges, and a fine mist ascending into the air in a spiral motion from left to right. The phenomenon was moving in a northerly direction, the diameter of the patch decreasing. At 9.03 A.T.S. a distinct spiral was observed between the top layer of cloud and the sea and at 9.07 A.T.S. disappeared from view in a dark blue mass of cumulonimbus cloud.

Wind E.S.E., force 4; sea moderate; barometer 30.03 in. (corrected), sky 8/10ths clouded, Stcu., Cu. and Cumb.

Position of ship, Latitude 39° 36' N., Longitude 61° 23' W.



25th April, 1938, at 9.00 A.T.S.



25th April, 1938, at 9.05 A.T.S.

GREEN RAYS AFTER SUNSET.

South Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Loriga*. Captain A. C. TAYLOR. Magallanes to London. Observer, Mr. A. ECCLESTONE, 3rd Officer.

3rd April, 1938. About 2123 G.M.T. (6.25 p.m. A.T.S.) Sunset, 5.46 p.m. (A.T.S.). Observed two distinct dark green rays rising from the horizon, at a spot where the sun had set, to an altitude of 3° above the horizon. Sky almost dark except for dull orange glow in the west. Rays became more intense and more prominent until 6.29 p.m., when they began to fade, disappearing altogether at 6.32 p.m. (A.T.S.), as the light faded from the sky. At time of observation sky was cloudless except for a low bank of stratocumulus rising to about 3½° above the horizon in the north-west.

Position of ship, Latitude 28° 06' S., Longitude 42° 53' W.

GREEN FLASH AT SETTING OF VENUS.

North Pacific Ocean.

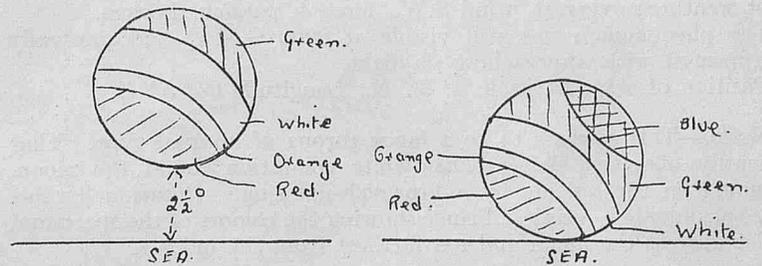
THE following remarks have been received from S.S. *Anglo Peruvian*. Captain M. FORD. Observing Officers, Mr. J. BRENNER SMITH, 2nd Officer, and Mr. W. E. ELLIS, 3rd Officer.

On 23rd May, 1938, at 9.00 p.m. A.T.S., a few minutes before the setting of Venus, the planet was observed to turn many shades of red, and at the moment of setting turned brilliant green and disappeared. The night was dark and cloudy and it was impossible to say whether the planet set below horizon or a low bank of clouds.

Position of ship, Latitude 10° 14' N., Longitude 87° 40' W.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Essex*. Captain F. N. WYATT. Liverpool to Curacao. Observer, Mr. R. J. OLSEN, 3rd Officer.



78/10

On 25th May, 1938, at 22.43 A.T.S., the planet Venus bearing 302° when setting, was observed for several minutes to rapidly change colour, from brilliant red to orange, white, bluish white, then red again until a few seconds before finally disappearing, when it gave a distinct green flash. Air temperature 65° F. Sea 64° F. Cloud Stcu. 5/10ths. This same phenomenon was observed for two nights following.

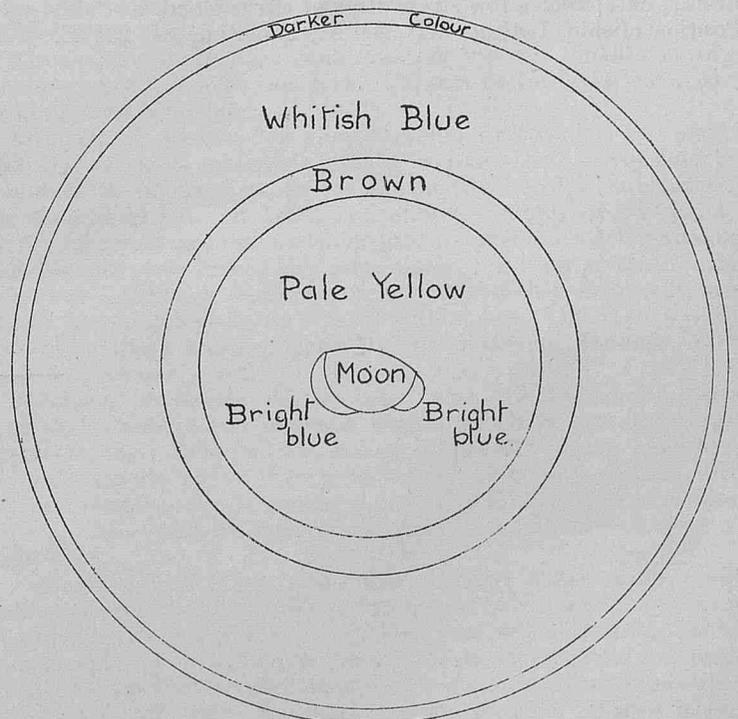
Position of ship, Latitude 38° 45' N., Longitude 33° 07' W., course 240°.

LUNAR CORONA.

Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *Harmonides*. Captain H. EVANS. Durban to Cochin. Observer, Mr. J. K. GORRIE.

Cirrostratus.



Fractocumulus.

18th June, 1938, 2000 G.M.T. (approximately), the moon was observed at an altitude of 30½°, on each side of which appeared a patch of bright blue colour as shown in sketch; this was set in pale

yellow, surrounded by a distinct brownish ring outside which was a bluish-white space surrounded by a circle of an indistinguishable darker colour, radius 3° .

Weather at time cumulus and fractocumulus 4/10ths, cirrostratus 3/10ths; wind S.W., force 4; air temperature 82° F.; sea 82° F. Past weather; overcast, wind S.W., force 4, passing showers.

The phenomenon was still visible at 0000 G.M.T. and gradually disappeared with approaching daylight.

Position of ship, Latitude $4^\circ 36' N.$, Longitude $66^\circ 53' E.$

NOTE.—This appears to be a lunar corona of unusual type. That generally observed shows bluish-white coloration round the moon, bounded on the outside by a brownish-red ring. Occasionally this ring has outside it a series of rings showing the colours of the spectrum, violet nearest the moon and red farthest from the moon.

METEORS.

Mediterranean Sea.

THE following is an extract from the Meteorological Record of S.S. *British Hussar*. Captain F. O. ARMSTRONG. Marseilles to Haifa. Observer, Mr. G. R. MACKILLICAN, 2nd Officer.

22nd April, 1938, 00.34 L.M.T. (2234 G.M.T. 21st). Sighted a meteor of unusual size and brilliance. The duration of visibility was so short that it was impossible to take accurate details. The meteor first appeared just north of μ Leonis, approximately altitude 32° , bearing 096° , a blinding flash lighting the whole sky. The body of the meteor looked to be as large as the moon, the trail rather short in comparison. The main body disappeared in the vicinity of ι Ursæ Majoris, bearing 120° , approximate altitude 25° , the trail still being visible north of μ Leonis. The whole phenomenon lasted less than half a minute, the main feature being the size of the body, and the bluish-white brilliance of the light. Fine weather conditions prevailed; clear sky, except for a few stray wisps of cirrus cloud.

Position of ship, Latitude $32^\circ 54\frac{1}{2}' N.$, Longitude $34^\circ 23\frac{1}{2}' E.$

South-West African Waters.

THE following is an extract from the Meteorological Record of S.S. *Clan Mactavish*. Captain R. P. GALER, R.D., R.N.R. Liverpool to Cape Town. Observer, Mr. J. A. McTOOK, 3rd Officer.

4th April, 1938, 2037 G.M.T. Observed a meteor of exceptional brilliance which appeared about 10° to the east of α Centauri (altitude approximately 25°) and disappeared beneath that star.

It was visible for a period of two to three seconds and shed red sparks. In size it was equal to a first magnitude star, but the light it cast was fully equal to that of the full moon.

Position of ship, Latitude $15^\circ 40' S.$, Longitude $2^\circ 50' E.$

China Sea.

THE following is an extract from the Meteorological Log of S.S. *Ixion*. Captain R. G. STURROCK. Yokohama to Vancouver, B.C. Observer, Mr. E. JAKUES, 3rd Officer.

At 1120 G.M.T., 1st April, 1938, a brilliant golden-coloured meteor was observed visible for 9 seconds travelling in a W.S.W. direction.

It commenced near Arcturus and moved almost horizontally at an altitude of approximately 25° . It did not move rapidly, but gave the impression of a body floating through the atmosphere. At first it appeared as a single golden sphere but after about 4 seconds numbers of what looked like smaller golden spheres could be seen following in its wake. The whole disappeared midway between Regulus and Sirius leaving no after-glow. Sky cloudless, visibility excellent.

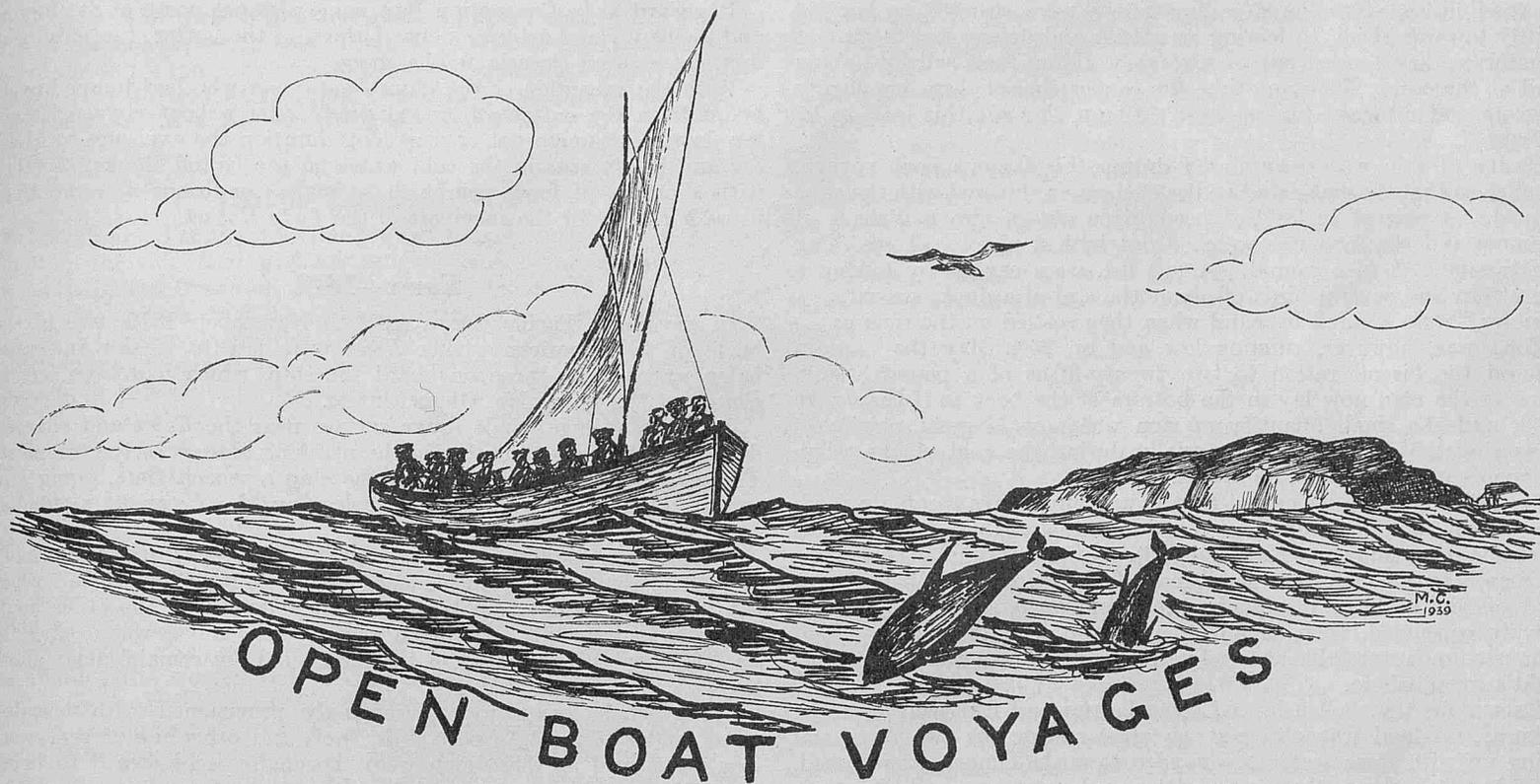
Position of ship, Latitude $41^\circ 08' N.$, Longitude $151^\circ 31' E.$

North Atlantic Ocean.

THE following remarks have been received from S.S. *Cymbeline*. Captain J. CHADWICK.

On 24th June, 1938, at 2239 G.M.T. (21.03 A.T.S.) observed a meteor, peculiar for its large size and its phosphorescent green colour. It became visible in the constellation Ophiuchus, at an altitude of approximately 27° , bearing 130° , and, travelling slowly, disappeared bearing 155° , altitude 5° . Most notable was its reluctant flight, and the fluid-like dribbling or spilling disintegration en route, into large luminous masses, rather than the usual great number of minute particles.

Position of ship, Latitude $44^\circ 30' N.$, Longitude $24^\circ 25' W.$



PREPARED BY COMMANDER M. CRESSWELL, R.N.R.

The following brief accounts refer only to voyages of an involuntary nature made in ordinary ships' boats, as distinct from the carefully planned exploits in small craft such as the *Tilikum* and *Firecrest*. There have possibly occurred numerous voyages made by ships' boats of which the writer has no knowledge and these accounts must not be considered as a complete list of such exploits. It will also be noted that no mention is here made of the considerable use of boats during the Great War.

Across hundreds and in some cases thousands of miles of ocean, under all conditions of weather, privations and difficulties, open boat voyages stand out as some of the finest examples on record of courage, skill, perseverance and seamanship.

Heemskerk and Barents—1597.

In the year 1596 a Dutch expedition under the command of JACOB VAN HEEMSKERK and WILLIAM BARENTS met disaster when their ship was wrecked on the north-east coast of the island of Nova Zembla. After surviving the Arctic winter it was decided to attempt in boats the voyage of more than a thousand miles to the then known mainland, which lay in a south-westerly direction from them.

Two small open boats known as "herring scutes" were accordingly made ready, then on 13th June, 1597, a start from Barents Bay was made.

Using sails and sometimes rowing we are told that "the ice came so fast upon us that it made our haire stare upright upon our heads, it was so fearful to behold."

The northern extremity of Nova Zembla was safely rounded, and Barents who was sick asked one of his companions "Gerrit, are we about Ice Point? If we be then I pray you lift me up for I must view it once again." He was lifted up and saw land for the last time, as a few days later this great explorer died.

The remainder of their boat voyage across what is now known as the Barents Sea was successfully accomplished despite great hardships, and a safe landing made on the west coast of Norway.

Bounty—1789.

The mutiny which occurred on board the armed transport H.M.S. *Bounty*, in the then unexplored Pacific Ocean, culminated

in the Captain (Lieutenant WILLIAM BLIGH) and eighteen men being turned adrift in a twenty-three foot boat, termed a launch, within sight of Tafoa, one of the Friendly Islands, on 24th April, 1789.

The mutineers, no doubt thinking that it was impossible for such a boat, overcrowded as it was, to reach civilization had allowed the castaways to take certain useful things such as canvas, cordage, fishing lines and cutlasses, but no fire arms. The carpenter was permitted his tool chest. The provisions consisted of one hundred and fifty pounds of biscuits, a twenty-eight gallon cask of water, a small quantity of rum and wine and some salt pork. Captain BLIGH had a compass, his quadrant and some books.

The painter was cast off from the ship which made sail and was soon out of sight, meanwhile BLIGH as leader had to consider what was best to be done under the apparently hopeless circumstances. He decided to land on Tafoa and obtain a supply of breadfruit, so on the following day the search for food commenced. A few cocoanuts and bananas were found, also some water, but soon parties of natives appeared. Although seemingly friendly at first they eventually turned hostile and attacked BLIGH'S party with stones. One man was killed before the boat escaped aided by the gathering darkness, though chased by canoes.

Wounded by stones, deeply laden with the burden of eighteen men and stores, adrift amongst islands which it was dangerous to approach, their situation was indeed desperate. BLIGH now decided to make for the Dutch Colony of Timor, 3,600 miles distant, and to ration the stores to one ounce of biscuit and a quarter of a pint of water a day, which he estimated should enable them to carry on for eight weeks.

Running before a heavy sea and shipping water made constant baling necessary. The launch sat so dangerously low in the water that BLIGH reluctantly jettisoned everything possible such as extra clothing, canvas and rope, to lighten the boat. The carpenter raised the quarters by nailing on boards from the stern sheets, and a weather-cloth was spread forward from the mast to the shrouds. These measures sheltered the men somewhat but they were so cramped in the small boat that conditions must have been wretched in the extreme.

Good progress was, however, being made with daily runs of from 90 to 130 miles. On 6th May some islands were sighted but given a wide berth, BLIGH deeming it too risky to approach. On the 7th more land was seen and the boat was cautiously sailed in to examine

its possibilities. Two large sailing-canoes were seen to be coming swiftly towards them, so fearing an attack and defenceless to protect themselves they headed out to sea again, aiding their sail by pulling hard at the oars. For some time the canoes chased them but finally gave up and returned to the shore. BLIGH thought this land to be "Feejee."

Plenty of rain was encountered during this famous boat voyage, so much so that the emaciated bodies of the men shivered with the ague of cold. A pair of scales had been made out of two half-shells of coconuts and the food was weighed out with a pistol ball, weighing one twenty-fifth of a pound. A few fish were caught by towing a line astern and several birds of about the size of a duck, known as a "booby," were secured by hand when they settled on the rigging.

Food was, however, running low and on 25th May the Captain reduced the biscuit ration to two twenty-fifths of a pound a day. Some of the men now lay in the bottom of the boat as if they were dead, and the small quantity of rum was now of great service in preserving the spark of life, especially during the cold nights, when the men's vitality was at its lowest.

On 29th May BLIGH decided that it was imperative to obtain food, so a landing was made upon an island near the northernmost point of Australia (then known as New Holland). A fire was quickly started on the beach by means of the small magnifying glass with which BLIGH read off the scale of his quadrant. Some oysters were found and quickly consumed, then as no natives were seen the cramped and exhausted men were able at last to stretch their limbs and have a long night's sleep ashore.

Except for the shell fish, and some berries and fruit which caused sickness, no food was obtained, so after resting for two days and filling up with fresh water the voyage towards Timor was resumed. None too soon, for as they were getting under way a crowd of natives waving spears and clubs appeared on the shore, so the boat was hurriedly steered for the open sea.

During the next few days landings were made on other islands and a few oysters or a little fruit gathered, but never enough to satisfy their craving for food. Finally, on 12th June, BLIGH writes "With an excess of joy we discovered Timor." They landed two days later and were received with great kindness by the Dutch Governor, who helped them to return to England in the first vessel available.

This terminated this epic boat voyage of which it is safe to say everyone must have heard, largely owing to the popularity of a recent film entitled "Mutiny on the Bounty." The boat covered 3,618 miles in 52 days, which, considering the overcrowding, the hostility of the natives in the islands and the obvious difficulties of navigation, constituted a truly remarkable achievement.

Lady Hobart—1803.

During the night of 28th June, 1803, the brig *Lady Hobart*, bound from Halifax, N.S., for Liverpool, struck an iceberg on the Grand Banks. Within fifteen minutes her main deck was awash and the only boats, a cutter and a jolly-boat were quickly launched into the heavy sea then running.

The situation was one of great danger as in addition to dense fog, darkness and the presence of ice, continuous baling was necessary to keep the boats afloat. The cutter, the larger of the two boats, which was 20 feet long, had in it eighteen men. The jolly-boat, 14 feet long, carried eleven men, and both boats were so heavily laden that they were down in the water to within a few inches of their gunwales.

When daylight came the small supply of provisions and water was divided in proportion between the two boats. In all this only consisted of 45 pounds of biscuit, five gallons of water and some rum, which meant less than two pounds of food for each man, and the nearest land, St. John's, Newfoundland, at least 350 miles away.

Captain FELLOWES in the cutter took the jolly-boat in tow, but against head winds and rough seas slow progress was made. On 1st July the smaller craft had to be cast adrift during a heavy gale and it quickly disappeared from the sight of those in the cutter, who gave up all hope of ever seeing it again, as it was considered too small to be safe in such big seas.

Soon those in the Captain's boat began to feel the hardships of constant exposure and shortage of food and water. Several of the men became exhausted and wandered in their minds, then on 3rd July one man in delirium jumped overboard and was drowned. Two days later, during the morning of 5th July, land was sighted.

It proved to be Conception Bay, some distance north of St. John's, and to the joy and astonishment of those in the cutter, the jolly-boat was also sighted close in to the shore.

With the exception of the unfortunate man who had jumped overboard from the cutter all landed safely after a boat voyage lasting ten days. Although not of very long duration the exposure to gales, fog and heavy seas in the cold water on the Grand Banks, together with shortage of food, combined to make conditions of more than usual hardship for the survivors of the *Lady Hobart*.

Essex—1819.

In the South Pacific Ocean on 20th November, 1819, two of the boats of the American whaler *Essex* were fast to whales and were being watched by those on board the ship, which had been left in charge of the mate, Mr. OWEN CHASE.

Suddenly a huge whale broke surface near the *Essex* and charged directly at the ship, bursting in the planking abreast of the foremast. The maddened creature attacked the ship a second time, doing still greater damage, then disappeared leaving the *Essex* in a sinking condition.

A signal was made to recall the boats and Captain POLLARD noticing something was wrong with his ship, cut adrift from the whale he had captured and returned on board, closely followed by the other boat. The ship had by this time taken a heavy list, and it was decided to abandon her as it was evident that she could not remain afloat much longer.

Three whale boats were accordingly provisioned with biscuits, water and salt meat. Spare sails, tools and other useful gear were also taken and as these men were thoroughly accustomed to being at sea in small boats their lot would seem to have been somewhat easier than that of the general conditions common to boat voyages. Notwithstanding these advantages, subsequent events show that the sufferings of these unfortunate men turned out to be much worse than might have been expected.

The crew of the *Essex* consisted of twenty in all, two of the boats carried seven men each and the other only six, so that the overcrowding usual under similar circumstances was absent.

Although the nearest land was the Marquesas group of islands it was considered unsafe to land there as the natives were known to be hostile. It was decided to make for the coast of South America, distant about two thousand miles; a mistaken decision, as unknown to them the Equatorial Current would be setting against them, whilst at that season of the year winds were likely to be light and variable.

The three boats kept in company, the weather was good but progress to the eastward was slow. Except for a few flying fish no other additional food was obtainable and although dolphins gambolled in the seas close to the boats, they were unable to catch any, as curiously enough no harpoons had been brought in the boats.

As the days passed their supply of food and water became shorter and shorter and it was only the luck of an occasional heavy rain squall which saved their lives by enabling everyone to drink his fill and to replenish the water breakers.

It would seem that they must have been hopelessly lost, as after sailing for thirty days land was sighted on 20th December. This proved to be Ducie Island, barren, treeless and uninhabited. They landed on this desolate spot and were able to catch some birds, fish and crabs. Even the scanty grass on the island was eaten by the starving men, who were quite unable to satisfy their hunger.

The boats had been set far to the southward of their course and were actually still as great a distance from the mainland as when they first left the ship over a month previously. However, after spending a cheerless Christmas Day on the island and being somewhat rested they sailed again on 27th December. Three of the men refused to leave the island, preferring the known hazards of life there to those of another long period in the boats.

After fourteen more days' sailing the mate's boat became separated from the other two and a few days later the second mate's boat also disappeared and was never heard of again. In Captain POLLARD's boat all but two men had died when by good fortune they were picked up by the whaler *Dauphin* on 11th February, 1820.

Equally fortunate were those in Mr. CHASE's boat, as on 18th February they were rescued by the brig *Indian*, one man only having died. The three men left on Ducie Island were also subsequently taken off by a passing ship, just in time to save their lives.

The voyages of these boats were remarkable for their great length, those of the two surviving boats being of 77 and 84 days respectively. Half of the ship's company were lost and the survival of the remainder was only due to that extraordinary luck or providence which sometimes comes to the aid of shipwrecked sailors.

Earl of Eldon—1834.

Bound from Bombay for London with passengers and a cargo of cotton, the ship *Earl of Eldon* caught fire and was abandoned in the South Indian Ocean on 27th September, 1834.

Forty-five people, including three women and a baby were distributed in the three boats, the largest of which, known as the longboat carried twenty-five and the other two boats ten people each. A good supply of fresh water, biscuits, preserved meat, jam and brandy were taken, together with additional equipment, navigating instruments, books, spare sails and other useful articles.

The boats stood by the ship for some hours until she blew up and foundered; then under the direction of Captain THEAKER they sailed in company for Rodriguez Island, about 450 miles distant.

Four days later one of the boats became so unseaworthy that the ten men of her crew had to transfer to the other boats, which were then heavily overladen.

Bad weather and high seas were encountered, so that considerable discomfort due to exposure was experienced, although some protection was afforded the women and child by a sail-cloth tent rigged in the stern of the longboat, but even so their sufferings were pitiable.

There was no real shortage of provisions or water during this boat voyage and the daily ration for all hands was under the circumstances a generous one, for in addition to three biscuits, jam or meat, a pint and a half of water was included together with tobacco in the form of cigars, a luxury indeed for shipwrecked mariners.

The two boats under sail made steady progress towards their objective and the navigation was successfully carried out as on the thirteenth evening land was sighted directly ahead, which proved to be Rodriguez Island. On the next day, 10th October, all landed safely after a boat voyage of a somewhat trying nature owing to the presence of the three women and the four months' old infant.

Canton—1854.

During a storm on the night of 5th March, 1854, when cruising near the Equator, in the South Pacific Ocean, the American whaling ship *Canton* struck on what was in those days an uncharted island.

Soon after daybreak the ship commenced to go to pieces, so the first mate, Mr. W. CARROL swam through the surf with a line, by means of which all the crew of 32 men reached the beach.

Four whale boats, provisions, fresh water and various useful articles were later brought on shore, and the men remained on what was found to be a small uninhabited island until 31st March, when having given up all hope of rescue by a passing ship, Captain ANDREW WING decided to proceed in all four boats and endeavour to make the Kingsmill Group of islands, then much frequented by whaling vessels working the Equatorial waters of the Pacific Ocean.

The time on the island was spent in making careful preparation for the coming voyage, so this was no case of a hurried departure from a sinking ship. The whale boats used were the best of their kind and the crews were of necessity thoroughly used to handling them under all sorts of conditions. They measured 30 feet in length with a beam of six feet and each carried a spritsail and pulled five oars. As the crews consisted of eight men there was no overcrowding, as compared for instance with the *Bounty's* boat, 23 feet long and packed with 18 men.

Little is known of the actual voyage of the *Canton's* boats, except that the Kingsmill Islands were missed so Captain WING continued on to the Ladrones, all four boats safely reaching the island of Tinian on 15th May. The usual hardships of exposure, thirst and hunger had been experienced, but luck in encountering rain, good leadership and the rigid discipline of the old Yankee whalers, had resulted in all hands being reasonably fit and well after 45 days in open boats.

Tinian Island was at that period Spanish territory and the representative of that Government refused to believe the story of the *Canton's* castaways, of whom the inhabitants were no doubt considerably afraid. After over six weeks' exposure and starvation in

open boats in tropical seas, with long hair and beards, the 32 men must have looked truly frightening.

They were, however, supplied with fresh water and cocoanuts before proceeding towards Guam in the Ladrones, at which island they arrived on 19th May, all well after a boat voyage of 2,900 miles lasting 49 days. From Guam they were able to return home to America, as ships frequently called there.

It is of interest to note that the island upon which the whaler struck was later officially named "Canton Island." It is now under the United States of America's flag, and some readers of these notes may possibly have visited Canton or Enderbury Island nearby during the 'eighties, when sailing ships loaded guano cargoes there for a London company.

Arracan—1874.

The barque *Arracan* was bound from the Tyne to Bombay with coal and on 14th February, 1874, when nearing the Equator in the Indian Ocean it was found that the cargo was on fire. Whilst fighting the flames the boats were made ready and lowered into the water, the sea at the time being smooth.

Following an explosion Captain NATHANIEL LESLIE ordered all hands into the boats, in which they pulled clear and lay off watching the fire spread from one part of the ship to another. The boats continued to stand by in the hope of being picked up by some other ship sighting the smoke and flames, but on the 18th it was decided to set sail and make for Cochin, distant about 700 miles to the northward. A call could be made at the Maldiv Islands on their route to replenish food and water, and fine weather and a good sailing breeze might be expected as it was the season of the north-east monsoon.

The crew of fifteen all told were divided equally between the three boats, and Captain LESLIE took charge of the long boat, Mr. ALFRED FERGUSON, first mate, the gig and Mr. DAVID WEBSTER, second mate, the pinnace.

All the boats carried the same quantities of food and fresh water but only the Captain and first mate had compasses, charts and navigating instruments. For a few days the boats kept in company but as the Captain's boat was found to be slower than the other two he ordered them to carry on towards Cochin, and by the following day they were out of sight over the horizon.

Captain LESLIE was fortunate, as on the 27th February, his boat was picked up by the S.S. *City of Poona*, homeward bound from Calcutta, so their boat voyage of ten days only, finished uneventfully.

The other two boats proceeded together until at daybreak on the 24th Mr. FERGUSON saw no sign of the second mate's boat. He remained hove-to for a considerable time before resuming his voyage. On 9th March the Maldiv Islands were reached and provisions and water obtained from the friendly natives. Continuing towards Cochin, FERGUSON also fell in with a ship, as on the 15th March his boat was sighted by the S.S. *Bentop* bound for Colombo. The Captain of the *Bentop* offered to take them on board, but as Cochin was the rendezvous and only now distant about two days' sail this kind and welcome offer was declined, though needless to say fresh provisions and water were gladly accepted.

Cochin was safely reached on the morning of the 17th with all five of the crew in good health after a boat voyage of 28 days of reasonably fine weather and favourable wind. As FERGUSON had no news of his companions in the other two boats, he proceeded two weeks later with his own party to England.

Now we must go back to the second mate's boat, in which the crew consisted of three seamen and the cabin boy, named HORNER. There was indeed a perilous situation, as the boat contained neither chart nor compass, and food and water were running dangerously low. Mr. WEBSTER, himself, was young and had had comparatively little sea experience, but he was brave and capable.

Steering by the sun and stars as best they might it would appear that they sailed or drifted about more or less aimlessly, keeping as far as WEBSTER could estimate in the track of shipping with the hope of being rescued.

Meantime water and provisions began to run out and the heat caused the men to become frenzied and out of hand. Only WEBSTER's firmness and the help of HORNER the cabin boy, who proved his staunch ally, saved the situation time and again.

By 10th March all food and water were finished and they were face to face with death. Few men would have kept as calm as young

WEBSTER, who had to frequently threaten to shoot the seamen, when in their frenzy, after drinking sea-water, they tried all manner of mischief, such as removing the plug of the boat or attacking HORNER who with the second mate now formed the afterguard, and steered and handled the sail.

Finally, the three men rushed WEBSTER and attempted to seize his pistol, but helped by HORNER he drove them off and fired at the ringleader, not, however, hitting him. This show of determination cowed the men and they quietened down, then a bird which flew near the boat was shot and life was sustained in some fashion.

The barnacles which had grown on the bottom of the boat were also scraped off and devoured, then another bird was secured and thus matters went on day after day, during which time Mr. WEBSTER and HORNER had to manage the boat between them as no help could be obtained from the exhausted and raving men. WEBSTER must have been a born leader, as when the men were calm between the bouts of frenzy he cheered them with words of encouragement and even with prayers.

But at last hope returned as on the 20th March, thirty-one days after leaving the *Arracan* this boat was found by the S.S. *City of Manchester*. She was still six hundred miles distant from India and the providential rescue occurred only just in time.

The ship's doctor thus described the appearance of these men. "They were in a very exhausted condition, could not stand on their feet, eyes starting from their sockets and perfect skeletons, their bodies covered with sores, their noses frayed with the strong sun, and altogether the most wretched and piteous sight I have ever had the misfortune to behold. Their constant cry when lifted on board was 'water, water.'"

Captain HARDIE of the *City of Manchester* was so impressed with young WEBSTER's outstanding behaviour during the terrible ordeal he had been through that he appointed him as one of his officers for the passage home.

In due course when this extraordinary story became known Her Majesty Queen Victoria awarded the Albert Medal to DAVID WEBSTER, who, by his exceptional conduct under the most trying and appalling conditions, had been the means of saving the lives of all in his boat.

Afton—1887.

Bound from Newcastle, N.S.W., for San Diego, California, the barque *Afton* struck a coral reef near Lisiansky Island on 13th April, 1887. Every effort was made to save the ship by discharging the cargo of coal but the heavy ocean swell only worked her more and more on to the reef.

Considering rescue by a passing vessel to be unlikely Captain GILMOUR decided to abandon the ship and make for Honolulu, distant about 800 miles to the eastward. The two lifeboats were accordingly provisioned and made ready, the carpenter nailing battens right around the boats, about 18 inches high and then tacking canvas over to form a bulwark.

Each boat contained 400 pounds of biscuits, 200 pounds of tinned meat, a ten gallon breaker of water and other oddments of stores such as cocoa, tinned milk and marmalade. Spare canvas, sewing gear, lifebuoys and various useful articles were included together with full navigating equipment of sextants, chronometer, books and charts.

Both were good boats, measuring 28 feet overall by six feet eight

inches beam and there were nine men in the Captain's boat and ten men in that of the first mate, Mr. ALEXANDER KING.

The ship was abandoned on 16th April, sails were set and keeping together the boats proceeded towards Honolulu. After sailing some 120 miles in an East-South-East direction it was found by observation that they were at least twenty miles to leeward of their objective. This was hopeless as the lifeboats could make no headway beating against the wind, and the steady north-east trade showed no signs of easing.

As there were no other islands on their present course line and to get near the Equator might bring them the fickle winds of the doldrums, it was decided after consultation to run before the wind and steer for Guam, one of the islands of the Ladrone Group. This was about 3,000 miles from their actual position and although fine weather could be expected and provisions were sufficient, the water supply gave cause for anxiety, but Captain GILMOUR heartened them by saying that rain squalls could be relied upon at that season of the year.

So the wind was brought aft, spritsails set wing and wing with boat-hooks in the clews, and the jib for a saveall up and down the mast. The boats bowled along at a fine speed, the first day's run being 170 miles.

In preparation for catching rain-water, canvas awnings were made which when rigged covered the boats from the mast to the stern, and a canvas pipe in the centre led to the water breaker. The fresh water had been rationed to half a pint per man each day, but suffering from thirst was somewhat relieved by the men dipping their singlets in the sea and putting them on wet.

Contrary to expectations no rain fell and sixteen days after leaving the ship the water supply was practically finished and death from thirst became a possibility. Still everyone hoped on, trying to keep as cheerful as could be under the circumstances.

But luck was with these people as that same evening, 1st May, a violent thunderstorm was encountered. Sails were stowed and the boats lay stopped whilst a deluge of rain quickly filled the water breakers, empty meat tins and even sea-boots. Everyone was able to drink to content and even to wash before the passing of the rain. Running before the wind again their spirits rose as the distance to Guam shortened.

On the twenty-first day of the voyage Mr. KING, who slept in his greatcoat stood up at daybreak to take it off, when the boat gave a heavy roll and he fell overboard with his arms entangled in the garment. He could not swim and although a lifebuoy was thrown him, the boat brought up in the wind, sails dropped and canvas bulwarks knocked down in order to ship rowlocks, and the boat pulled up to windward, the first mate was unfortunately not found, although the lifebuoy was recovered.

At noon on the twenty-eighth day out from the ship the island of Guam came in sight and when darkness fell the boats hove-to about five miles off shore to await daylight. During the following morning they arrived off Umata Bay, stowed sails and pulled in to the shore to the great astonishment of the inhabitants. These proved to be very friendly and helpful and directed Captain GILMOUR to sail along the coast to Agana, the principal port in the island, from whence after a period for recovery of strength the party returned to England.

This boat voyage stands out as a remarkable achievement and is one of the longest ever made without landing en route. Except for the loss of the first mate by accident all hands landed safely and in good condition on 14th May, after covering 3,000 miles of lonely ocean in twenty-nine days.

(To be concluded in the July number.)

SUMMARY OF ICE CONDITIONS, WESTERN NORTH ATLANTIC, 1938.

BY COMMANDER J. HENNESSY, R.D., R.N.R.

THE following monthly summary of ice conditions in the Western North Atlantic during the 1938 season is compiled from ice reports returned from those ships of the Voluntary Observing Fleet traversing the Trans-North Atlantic routes, from bulletins issued by the International Ice Patrol Service and from other sources.

January.—The first ice report for the season referred to a berg sighted on the 20th off St. John's Harbour. Between this date and the end of the month four further reports were received, all reporting bergs drifting down the east coast of the Avalon Peninsula between Cape Spear and Cape Race.

February.—Up to the 14th of the month reports of ice were confined to bergs which were chiefly observed off the Avalon Peninsula between Cape Race and Cape Ballard. On the 8th a large berg near Cape Race was reported to be breaking up with large pieces of ice drifting south. On the 10th a large berg was observed in Latitude $47^{\circ} 43' N.$, Longitude $50^{\circ} 30' W.$ With the likelihood of ice drifting south across the steamer tracks, the United States Coast Guard Service detailed the cutters *Tahoe* and *Pontchartrain* to alternately carry out the International Ice Observation and Patrol Service during the 1938 season. The *Tahoe* sailed from Boston on the 12th for the Grand Banks to inaugurate the Patrol. On the 21st a berg was observed in Latitude $44^{\circ} 30' N.$, Longitude $47^{\circ} 00' W.$ This is both the southernmost and easternmost position of ice reported during the month.

Field ice of an extensive, but light and navigable, nature was reported off the east coast of the Avalon Peninsula between Bull Head and Cape Race, and to the north-eastward of the Grand Banks between the 48th and 50th meridians from the 14th to 16th of the month. Conditions off the Avalon Peninsula, however, became gradually worse and from the 20th onwards the whole eastern coast from Cape Race northward became blocked by close-packed ice held tight against the shore by a continuance of easterly winds. From Cape Spear the ice extended to the 50th meridian and spread from Cape Race for 60 miles in a south-easterly direction. The ice formed an impenetrable barrier filling St. John's Harbour, bringing shipping to a standstill both within and without the port. On the 27th when stopped outside the ice pack waiting to make St. John's, a vessel, frequently checking her position by terrestrial bearings was set to the northward, showing a reversal of the expected southerly drift.

From the 16th onwards to the end of the month heavy rafted ice moving out of the St. Lawrence drifted down the Cape Breton Coast and spread southwards over the Misaine and Banquereau Banks, making navigation north of Sable Island difficult.

March.—Off the Avalon Peninsula the wind, which had been continuously blowing from some easterly direction since 20th February, veered to the south-westward on the 28th. The change in wind direction caused the ice to move away from the coast, and on 1st March, shipping, which had been held up by the ice blockade, was able to make St. John's Harbour.

Throughout the month large fields of ice, some of a heavy impregnable nature, were encountered by ships on or in the vicinity of the Grand Banks when westward of the 46th meridian and northward of the 44th parallel. Heavy rafted pan ice continued to drift out of the Gulf of St. Lawrence and moving southward spread over the Misaine and Banquereau Banks, north of Sable Island, between the 58th meridian and the coast of Nova Scotia.

Bergs were reported during the month north of the 45th parallel between the 46th and 54th meridians. South of Latitude 45° reports of bergs were confined to the eastern edge of the Grand Banks.

The easternmost ice reported during the month were two growlers sighted in Latitude $46^{\circ} 07' N.$, Longitude $46^{\circ} 18' W.$ on the 18th. The southernmost ice was a berg reported near the tail of the Banks on the 27th in Latitude $42^{\circ} 50' N.$, Longitude $50^{\circ} 01' W.$ Owing to ice having been reported in the vicinity of Track C, Track B was brought into force on 26th March instead of on 11th April, which is normally the case.

April.—During the first half of the month large fields of heavy ice were reported on the western side of the Grand Banks north of the 45th parallel. The fields were especially heavy in the vicinity of, and to the southward of, Cape Race.

Bergs were reported most frequently along the eastern slopes of the Banks but at one time or another during the month reports of bergs practically covered the whole region of the Grand Banks.

The southernmost ice reported during the month was a growler sighted in Latitude $41^{\circ} 50' N.$, Longitude $51^{\circ} 12' W.$, on the 29th and the easternmost drift reported was a growler observed on the 4th in Latitude $44^{\circ} 40' N.$, Longitude $41^{\circ} 20' W.$

The Canadian Ice Patrol vessel took up station in Cabot Strait early in the month to advise and assist vessels bound up the Gulf of St. Lawrence. The *Duchess of Bedford* arrived at Montreal on the 18th, being the first ship to open the St. Lawrence river to ocean navigation after the break-up of the ice. Captain A. R. MEIKLE, her commander, was presented with the usual gold mounted walking stick, the gift of the Montreal Harbour Board.

On 22nd April the Canadian Signal Service reported light open ice within the Gulf, extending from Magdalen Island to Cabot Strait, elsewhere no ice.

May.—No field ice was reported on or in the vicinity of the Grand Banks during the month. This month brought as usual the widest distribution of bergs for the season. Increasing numbers of bergs were reported drifting down the east coast of the Avalon Peninsula, around Cape Race and through the gully westward to the 55th meridian. Practically the entire area of the Grand Banks was infested with bergs and growlers as far south as the 43rd parallel.

The southernmost ice observed during the month was a berg reported on the 7th in Latitude $43^{\circ} 05' N.$, Longitude $51^{\circ} 12' W.$ The easternmost ice reported was a berg observed on the 21st in Latitude $46^{\circ} 38' N.$, Longitude $45^{\circ} 17' W.$

Throughout the month heavy close packed ice and bergs were observed within the Strait of Belle Isle as far west as Point Amour.

Owing to northerly winds the ports on the north coast of Iceland were closed by ice in May for the first time in twenty years.

June.—There was a large decrease in the number of reports of ice over the previous month. The majority of the reports received related to ice observed over that area of the Grand Banks north of the 46th parallel but there was a steady southerly drift of bergs down the eastern slope of the Banks to below the 41st parallel. This southerly drift of bergs made it desirable for ships to change from Track B to Track A on the 15th. Track A is used only when necessity compels and on this occasion was in operation for westbound ships until 30th June when ice conditions permitted a return to Track B.

The southernmost ice reported during the month was a berg in Latitude $40^{\circ} 47' N.$, Longitude $49^{\circ} 28' W.$, on the 18th and the easternmost ice was a berg reported on the 29th in Latitude $48^{\circ} 45' N.$, Longitude $43^{\circ} 58' W.$

With the opening up of the Belle Isle route early in the month, numerous bergs were reported, both within the strait and eastward on and in the vicinity of the tracks to the 50th meridian.

Off the west coast of Greenland between Cape Farewell and Fiskernasset the ice extended 60 miles off shore with no open coastal water. Fifty bergs were observed between the two points.

Various reports were received of ice near the North Cape. On the 17th the ice field was only 15 miles away from North Cape and three days later a northerly gale drove it down to the Cape.

July.—On and in the vicinity of the Grand Banks little ice was reported during the month especially in that region south of the 46th parallel. On the 6th Track B was again brought into operation for eastbound vessels. On the 22nd there being no ice observed or reported that was likely to become a menace to ships using the United States tracks the International Ice Patrol Service was discontinued for the season. On the same day the United States Coast Guard vessel *General Greene* sailed from St. John's for a northern oceanographic

and ice observation cruise in the area between Labrador and the south-west coast of Greenland.

Throughout the month ships using the Belle Isle routes reported numerous bergs both within the strait and on and in the vicinity of the tracks eastward to the 51st meridian.

During the month heavy "storis" or Arctic Pack Ice was reported off the Greenland coast from Cape Lowenorn on the east side southward to Cape Farewell and northwards on the west side to Ivigtut. Several bergs were observed to the south of Cape Farewell.

August.—The only report of ice on or in the vicinity of the Grand Banks was that of a berg sighted on the 24th in Latitude 48° N., Longitude 47° 56' W. A few bergs were reported during the month in the entrance to Belle Isle Strait and eastward on or near the tracks to the 50th meridian.

September.—Two bergs were observed during the first week of the month off the north-eastern slope of the Grand Banks, and a few bergs were observed on the Belle Isle tracks between the 50th and 55th meridians.

On the 13th two large bergs and one growler were observed in Latitude 56° 39' N., Longitude 41° 18' W., an exceptional position in which to sight ice.

On the 24th the ice edge extended 40 miles off Cape Farewell. Julianehaab Bay was then free of ice.

October.—Two bergs were observed on the Belle Isle route during the month, otherwise no ice was reported on the western side of the ocean.

Off Cape Farewell the ice edge consisting of open ice with bergs inside extended 75 miles seaward. Between the 3rd and the 18th of the month eight ships on the far northern route observed bergs and growlers as far south as Latitude 55° 54' N., between Longitudes 35° 30' W. and 42° 13' W. These bergs were all south of the previous extreme southern limit of ice, south of Cape Farewell.

November.—A few bergs were observed during the month on or near the Belle Isle route west of the 50th meridian.

On the 25th off the south-west coast of Greenland, heavy ice floes over 10 feet thick were reported.

December.—No ice was observed in the western North Atlantic throughout the month. The River St. Lawrence was closed to navigation for the season on 6th December.

CHART A shows the monthly limits within which reports of ice have been received by the Meteorological Office during the year 1938 also the monthly limits reached by ice over the period 1901-38.

Particulars of ice observed in exceptional positions in the North Atlantic of which the Meteorological Office have records are given in the following table and their plotted positions are shown on CHART B.

Exceptional Positions of Ice.

No.	Date.	Source of Report.	Position of ice.		Remarks.
			Latitude N.	Longitude W.	
1	14.1.1836	H.M.S. <i>Cove</i> ...	60° 55'	5° 50'	Two bergs.
2	9.1.1913	S.S. <i>Oriflamme</i> ...	48° 37'	34° 42'	Berg 40 ft. high, 400 ft. long.
3	27.1.1916	S.S. <i>Rio Verde</i> ...	33° 34'	70° 32'	Hummock 2 ft. high, 30 ft. in circumference.
4	3.2.1922	S.S. <i>Weehawken</i> ...	41° 42'	58° 59'	Ice (sustained bow damage).
5	24.3.1913	S.S. <i>Floride</i> ...	46° 21'	34° 05'	Berg 60 ft. high, 200 ft. long.
6	20.3.1915	S.S. <i>Wanaby</i> ...	36° 55'	48° 32'	Piece; supposed portion of a berg, 5 ft. high, 60 ft. long.
7	21.3.1920	U.S. Hyd., Bulletin	38° 02'	40° 38'	3 ft. high, 30 ft. long.
8	21.3.1921	S.S. <i>Hollandia</i> ...	37° 50'	47° 23'	Berg.
9	6.4.1909	S.S. <i>Trafalgar</i> ...	35° 54'	31° 47'	Two pieces 18 ins. in diameter.
10	11.4.1914	S.S. <i>Erodiade</i> ...	32° 55'	62° 11'	Apparently river ice about the size of a lifeboat.
11	24.4.1916	S.S. <i>Communipaw</i>	49° 05'	36° 48'	4 ft. high, 50 ft. wide, and 100 ft. long.

No.	Date.	Source of Report.	Position of ice.		Remarks.
			Latitude N.	Longitude W.	
12	4.4.1921	S.S. <i>Hollandia</i> ...	43° 35'	35° 57'	Large berg.
13	16.4.1926	Trawler <i>Orizaba</i> ...	61° 03'	10° 30'	Floating ice about 40 ft. long, and 3 ft. high.
14	7.4.1930	S.S. <i>La Crescenta</i>	42° 24'	34° 22'	Small berg about 20 ft. in diameter.
15	27.4.1935	S.S. <i>Cochrane</i> ...	28° 44'	48° 42'	Small berg.
16	20.5.1907	S.S. <i>Lord Landsdowne</i> .	31° 00'	38° 00'	Two small pieces 6 ft. by 6 ft. and 12 ft. by 4 ft. out of water.
17	6.5.1908	S.S. <i>Oceano</i> ...	150-200 miles North of Bermuda.		Pieces.
18	27.5.1909	S.S. <i>Reventazon</i> ...	32° 28'	44° 10'	60 ft. long, 10 ft. high.
19	15.5.1911	S.S. <i>Camillo</i> ...	10 miles East of Nanucket Shoal Lt.-V.		Small berg.
20	11.5.1914	S.S. <i>Indradeo</i> ...	42° 18'	62° 43'	Large slabs of field ice and growlers 100-150 ft. long, 5 ft. out of water.
21	17.5.1915	S.S. <i>Pola</i> ...	38° 16'	61° 50'	Some field ice.
22	15.5.1920	U.S. Hyd., Bulletin	45° 11'	36° 42'	Berg.
23	27.5.1930	S.S. <i>Valperga</i> ...	40° 37'	37° 50'	Iceberg about 16 ft. high with growlers.
24	15.5.1935	M.V. <i>Lochmonar</i> ...	33° 43½'	48° 47'	Growler, 90 ft. by 25 ft. by 3 ft.
25	25.6.1886	Brig. <i>Blanch</i> ...	48° 40'	15° 22'	Large berg.
26	5.6.1907	S.S. <i>Kingswell</i> ...	32° 37'	64° 25'	Several bergs.
27	-6.1907	Bque. <i>Silverstream</i>	80 miles West of Fastnet.		Berg.
28	11.6.1912	S.S. <i>Valetta</i> ...	37° 30'	74° 24'	Three pieces of ice.
29	7.6.1913	S.S. <i>Holtby</i> ...	39° 35'	64° 50'	Berg 10 ft. high.
30	27.6.1915	S.S. <i>Stella</i> ...	36° 28'	57° 45'	Small piece.
31	30.6.1921	U.S. Navy Dept.	33° 20'	49° 16'	Berg 10 ft. high.
32	16.6.1924	S.S. <i>West Irmo</i> ...	38° 03'	63° 20'	Growler.
33	25.6.1926	S.S. <i>Baxtergate</i> ...	30° 20'	62° 32'	Large piece about 30 ft. long and 15 ft. wide, showing about 3 ft. above water.
34	2.6.1934	M.V. <i>Beaulieu</i> ...	30° 50'	45° 06'	Small berg, 20 ft. by 8 ft. by 3 ft. above water.
35	-7.1890	S.S. <i>Slavonia</i> ...	48° 53'	24° 11'	Last remnants of berg.
36	-7.1902	Two reports by fishermen.	56° 30' (appx.).	6° 30'	40-50 ft. long, 15 ft. wide, 2 ft. 6 ins. out of water.
37	31.7.1909	S.S. <i>Shimosa</i> ...	36° 59'	30° 01'	25 ft. long, 3 to 8 ft. wide.
38	10.7.1913	S.S. <i>Lothian</i> ...	37° 27'	36° 48'	Piece, 6 ft. high, 50 ft. in circumference.
39	18.7.1916	U.S. Hyd., Bulletin	32° 09'	54° 26'	Piece of berg, 3 or 4 ft. out of water.
40	23.7.1916	S.S. <i>San Giorgio</i> ...	42° 09'	63° 24'	Berg 60 ft. long.
41	23.7.1918	U.S. Hyd., Bulletin	44° 25'	35° 01'	Large berg.
42	18.7.1921	" "	44° 30'	39° 26'	Small berg about 15 ft. square.
43	21.7.1921	" "	39° 09'	40° 39'	Berg.
44	31.7.1921	" "	37° 37'	27° 29'	Berg.
45	10.7.1926	S.S. <i>Chelatros</i> ...	42° 42'	36° 45'	Two pieces of ice.
46	16.7.1933	S.S. <i>Rein</i> ...	52° 32'	22° 00'	Small piece of ice about 25 ft. long, 12 ft. wide.
47	12.8.1903	S.S. <i>Saxon Prince</i>	37° 52'	71° 30'	Piece, 3 ft. high, 40 ft. long.
48	7.8.1908	S.S. <i>Caronia</i> ...	50° 31'	18° 55'	Two pieces, 10 ft. square and 15 ft. square.
49	2.8.1909	S.S. <i>Shimosa</i> ...	37° 16'	42° 06'	Piece, 18 ft. by 5 ft., 2 ft. out of water.
50	14.8.1912	S.S. <i>Ulstermore</i> ...	43° 55'	39° 16'	Piece.
51	27.8.1912	S.S. <i>Lux</i> ...	42° 30'	15° 26'	50 ft. square, 4 ft. out of water.
52	10.8.1915	S.S. <i>St. Louis</i> ...	41° 02'	48° 00'	Berg.
53	16.8.1915	S.S. <i>St. Leonards</i>	41° 09'	56° 43'	Berg.
54	21.8.1915	S.S. <i>Strathgarry</i> ...	40° 46'	68° 20'	Growler.
55	-8.1915	" "	39° 00'	46° 20'	Piece, 20 ft. long, 4 ft. high.
56	29.8.1920	U.S. Hyd., Bulletin	40° 30'	47° 52'	Berg.
57	2.9.1883	Bque. <i>Olivette</i> ...	35° 40'	30° 00'	Lump of ice.
58	-9.1895	S.S. <i>Gulf of Taranto</i>	36° 35'	71° 36'	Two bergs 30 ft. high, 300-400 ft. long, and much field ice over two miles area.
59	19.9.1906	S.S. <i>Lord Landsdowne</i> .	54° 20'	22° 00'	Small berg 20 ft. by 6 ft.

No.	Date.	Source of Report.	Position of ice.		Remarks.
			Latitude N.	Longitude W.	
60	10.9.1908	S.S. <i>Deutschland</i> ...	45° 28'	27° 18'	Two small bergs and one large.
61	6.9.1920	U.S. Hyd., Bulletin	47° 10'	38° 04'	Bergs.
62	2.9.1922	S.S. <i>Hallgjerd</i> ...	50° 00'	40° 05'	Berg.
63	15.9.1922	S.S. <i>Empress of Britain</i> .	52° 52'	40° 12'	Large berg.
64	3.9.1923	S.S. <i>Djambi</i> ...	40° 10'	31° 36'	Piece of ice about 30 ft. long, 1½ ft. out of water.
65	13.9.1938	S.S. <i>Braheholm</i> ...	56° 39'	41° 18'	Two large bergs and one growler.
66	15.10.1883	S.S. <i>Elenora</i> ...	37° 00'	18° 00'	Piece of ice.
67	8.10.1912	S.S. <i>Putney Bridge</i>	35° 15'	44° 50'	Small berg 35 ft. long, 6 ft. high.
68	27.10.1916	S.S. <i>Montreal</i> ...	51° 17'	41° 17'	Small berg.
69	2.10.1918	U.S. Hyd., Bulletin	50° 10'	40° 50'	Large berg.
70	19.10.1920	" "	45° 22'	40° 09'	Berg.
71	19.10.1920	" "	45° 24'	40° 07'	Berg.
72	17.10.1921	S.S. <i>Mount Vernon</i>	48° 23'	42° 19'	Berg about 70 ft. high, 400 ft. long.
73	6.10.1922	S.S. <i>Christian Krogh</i> .	50° 43'	40° 42'	Berg 60 ft. high.
74	7.10.1923	S.S. <i>Eastern Dawn</i>	40° 46'	65° 54'	Large growler about 100 ft. square.
75	23.10.1927	Trawler, <i>Grecian Empire</i> .	30 miles E.S.E. of the Outer Skerries, Shetland Islands.		Piece of ice 100 ft. long, 6 ft. above water.
76	3.10.1934	S.S. <i>Rhexenor</i> ...	36° 53'	29° 13'	Growler, approx. 20 ft. by 4 ft.
77	4.10.1934	S.S. <i>Imperial Valley</i> .	36° 16'	29° 26'	Growler, approx. 15 ft. by 3 ft.
78	3.10.1938	S.S. <i>Baden</i> ...	57° 12'	40° 20'	Large berg.
79	8.10.1938	S.S. <i>Mulheim Ruhr</i>	56° 50'	37° 45'	Berg.
80	10.10.1938	S.S. <i>West Wales</i> {	56° 33'	35° 32'	Berg.
			56° 36'	35° 30'	Berg.
			56° 53'	41° 33'	Large berg.
81	11.10.1938	M.S. <i>Aakra</i> {	56° 39'	41° 59'	Large and small berg.
			56° 32'	42° 13'	Several large and small bergs.
82	18.10.1938	S.S. <i>Pajala</i> {	56° 15'	40° 25'	Several bergs.
			55° 54'	40° 58'	Berg.
83	18.10.1938	S.S. <i>Bassano</i> ... {	56° 20'	41° 08'	Large berg.
			56° 13'	41° 10'	Berg and two growlers.
			56° 25'	40° 28'	Large berg and two growlers.
84	18.10.1938	S.S. <i>Consuelo</i> {	56° 08'	41° 08'	Berg.
85	18.10.1938	S.S. <i>Cairvalona</i> ...	56° 19'	40° 28'	Three bergs.
86	7.11.1922	Cape Race, W/T Station.	47° 38'	40° 04'	Berg and growlers.
87	8.11.1936	S.S. <i>Defyros</i> ...	32° 44'	49° 58'	Piece of ice about 60 ft. long, 5 ft. above water.
88	-12.1903	S.S. <i>Lord Antrim</i>	42° 00'	55° 00'	Ice.
89	22.12.1915	S.S. <i>Carolyn</i> ...	42° 53'	57° 39'	Large berg.
90	16.12.1920	S.S. <i>Oriana</i> ...	43° 53'	44° 39'	Berg.
91	16.12.1927	S.S. <i>Ascania</i> ...	47° 52'	40° 50'	Four large bergs.

North Atlantic Tracks.

The suggestion that all ships engaged in the Trans-North Atlantic trade should follow separate routes when eastbound to those used when westbound, was first made by Commander F. M. MAURY, U.S.N., in 1855, but it was not until 1875 that his suggestion was adopted. The Cunard Company then laid down specified routes which all their ships were ordered to follow.

On the recommendation of the United States Hydrographic Office these routes were amended in 1891, and seven years later the Trans-North Atlantic Conference was formed consisting of the principal International Shipping Companies engaged in the Trans-North Atlantic trade. The conference, working in conjunction with the United States Coast Guard, revise the tracks from time to time in accordance with Article 39 of the International Convention for the Safety of Life at Sea, 1929.

The tracks are shown on Admiralty Route Chart which is published in two sections.

Chart No. 2058 b showing lane routes south of Ireland and English Channel.

Chart No. 2058 c showing lane routes north of Ireland.

The section of the routes running through the ice region in operation for the month is shown on the ice chart published with each quarterly number and monthly supplement of THE MARINE OBSERVER.

The particulars of the routes which were last revised in March, 1931, are as follows:—

United States.

Track "A" (Extra Southern).

Westbound.

Will only be brought into operation when necessity arises.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 47° 00' West in Latitude 40° 30' North** thence by either rhumb line or Great Circle to Boston Light Vessel or to a position South of Nantucket Light Vessel.

Eastbound.

Will only be brought into operation when necessity arises.

From the position of 70° 00' West and 40° 10' North, or from Boston, steer by rhumb line **to cross the meridian of 47° 00' West in Latitude 39° 30' North**, and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

Track "B" (Southern).

Westbound.

From 11th April to 30th June (both days inclusive). Except when ice conditions necessitate the use of "A" Track.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 47° 00' West in Latitude 41° 30' North**, thence by either rhumb line or Great Circle to Boston Light Vessel, or to a position South of Nantucket Light Vessel.

Eastbound.

From 11th April to 30th June (both days inclusive). Except when ice conditions necessitate the use of "A" Track.

From the position of 70° 00' West in 40° 10' North, or from Boston, steer by rhumb line, **to cross the meridian of 47° 00' West in Latitude 40° 30' North**, and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

Track "C" (Northern).

Westbound.

From 1st July to 10th April (both days inclusive). Except when ice conditions necessitate the use of "B" track.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 50° 00' West in Latitude 43° 00' North**, thence by either rhumb line or Great Circle to Boston Light Vessel, or to a position South of Nantucket Light Vessel.

Eastbound.

From 1st July to 10th April (both days inclusive). Except when ice conditions necessitate the use of "B" Track.

From the position of 70° 00' West in 40° 10' North, or from Boston, steer by rhumb line, **to cross the meridian of 50° 00' West in Latitude 42° 00' North**, and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

General Instructions.

Vessels bound to or from United States ports **calling at Halifax** have the option of following either the Canadian or United States Seasonal Tracks to or from that port, passing 40 miles South of Sable Island Westbound and 60 miles South of Sable Island Eastbound when proceeding on U.S. Tracks and Canadian Track "D." When proceeding on Canadian Tracks "E" or "F" via Halifax, ships pass North of Sable Island both Westbound and Eastbound.

(NOTE.—General Instructions Canadian Tracks for vessels bound to or from the North of Ireland.)

Vessels bound direct to Portland (Maine) may follow the Canadian Seasonal Tracks.

When courses are changed at the intersections of meridians any time before or after noon Commanders must note in their logs both

distances to and from the meridians that the ship has sailed from noon to noon, and not the distance from the position at noon the day before to the position at noon the day after the meridian is crossed.

The date on which Tracks change is to apply to the meridian of the Fastnet for Westbound steamers and the meridian of 70° 00' West for Eastbound vessels.

Communications on General Track matters between the British Lines will pass through the Cunard-White Star Line. The Holland America Line will communicate with the Continental Lines, excepting that, during the Ice Season, the Cunard-White Star Line will communicate direct with all Lines.

With regard to proposals for any changes in Tracks, owing to prevalence of ice, the Cunard-White Star Line in Liverpool will decide dates on which changes are to become operative, advising Lines by telegraph. Lines undertake to give immediate instructions to their steamers in accordance with such advices.

Canada.

Track "D."

From 15th February to 10th April (both days inclusive).

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock on Great Circle course **to cross the meridian of 50° West in Latitude 43° North**, thence to Halifax or other Port, passing not less than 40 miles south of Sable Island.

Eastbound.

Steer from Halifax or other port to pass 60 miles south of Sable Island **to cross the meridian of 50° West in Latitude 42° North**, thence on the Great Circle course to Fastnet, Inishtrahull, or Bishop Rock.

Track "E."

From 11th April to 15th May or until the Cape Race Route clear of ice, and 1st December to 14th February.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock on the Great Circle course **to the meridian of 50° West in 45° 55' North**, thence to Halifax or the Gulf of St. Lawrence.

(NOTE :—The Donaldson Line reserve the right to cross Longitude 45° West in Latitude 45° North on this track.)

Eastbound.

Steer from Halifax or the Gulf of St. Lawrence **to cross the meridian of 50° West in Latitude 45° 25' North** thence on the Great Circle course to the Fastnet, Inishtrahull or Bishop Rock.

Track "F."

From 16th May to the opening of Belle Isle Route and to 30th November when not using the Belle Isle route.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock, on a course 10 miles North of the Great Circle track until approaching Cape Race, then steer a course to pass 10 miles South of Cape Race, thence to Halifax or the Gulf of St. Lawrence.

Eastbound.

Steer from Halifax or the Gulf of St. Lawrence to a position 25 miles South of Cape Race thence on a course 10 miles south of the Great Circle track until approaching Fastnet, Inishtrahull, or Bishop Rock.

Track "G."

Belle Isle route.—From the opening of the Straits of Belle Isle to 14th November.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock, on a course 10 miles north of the Great Circle track until approaching Belle Isle.

Eastbound.

Steer from Belle Isle on a course 10 miles South of the Great Circle track until approaching Fastnet, Inishtrahull, or Bishop Rock.

General Instructions.

Vessels bound to or from U.S. ports **from or to the north of Ireland** have the option of following either the U.S. or the Canadian Seasonal Tracks D, E and F, remaining on track F during the operative dates of Track G.

On tracks "E" and "F" vessels passing 40 miles south of Sable Island Westbound thence to position south of Nantucket and Eastbound from position 40° 10' North in 70° 00' West to position 60 miles south of Sable Island.

On track "D" Westbound proceeding by rhumb line from position 43° 00' North in 50° 00' West to position south of Nantucket and Eastbound from position 40° 10' North in 70° 00' West to position 42° 00' North in 50° 00' West.

Commanders on encountering ice have permission to deviate from these tracks and after the end of October to leave the Belle Isle for the more southerly route at their discretion according to weather conditions. Should vessels on Track "C" bound to or from United States be deviated to Track "B" on account of ice, Canadian vessels will remain on Track "D" for the period prescribed but will have the above option of deviating as necessary in the vicinity of ice areas.

The Lines have the option of continuing the use of the Belle Isle route after 14th November should they wish to do so.

CURRENTS OF THE MEDITERRANEAN SEA AND THE SOUTH-EASTERN PORTION OF THE NORTH ATLANTIC OCEAN (NOVEMBER TO APRIL).

PREPARED IN THE MARINE DIVISION BY E. W. BARLOW, B.Sc.

Introduction.—The re-charting of the currents of the south-eastern part of the North Atlantic Ocean, and the charting for the first time of the currents of the Mediterranean, are based upon observations made in the period 1910 to 1938. Excluding the years 1915 to 1919, during which very few observations of current were received, this period is more than double that originally used for the charting of the North Atlantic Ocean.

The results of the main part of the investigation which is being made of the larger body of material thus available will be given in the October number of *THE MARINE OBSERVER*, when the charting is complete. In particular the seasonal variations of the currents will be fully dealt with, also the variations from month to month in regions where the number of observations makes this possible. In the present article a general account of the currents of the winter half-year is given.

The Circulation in the South-eastern Part of the North Atlantic Ocean.—The Canary Current flows in southerly to south-westerly directions down the west coast of Africa. This passes into the North Equatorial Current which flows in westerly directions across the ocean in tropical latitudes. These currents are primarily caused by the trade winds. The northern portion of the South Equatorial Current flows north of the equator during the year and so comes within the limits of this year's work, though it is primarily caused by the trade winds of the South Atlantic Ocean. Between the two westward-flowing equatorial currents, the easterly Counter-Equatorial Current flows during part of the year. Near the African coast and along the Guinea coast it is found throughout the year and is known as the Guinea Current.

The northern and southern limits of all these currents to some extent vary seasonally with the wind limits, this variation being fundamentally due to the periodical changes in the declination of the sun during the year. The mean positions of the trade wind belts and of the currents are not related to the geographical equator but to the "heat equator." This, which is the region of greatest average air temperature, lies somewhat to the north of the geographical equator. The northerly displacement of the heat equator, which is true of all oceans, is attributed to the existence of the large ice-covered land mass of Antarctica. This causes the sea temperatures in high southern latitudes to be lower than that of similar northern latitudes. Hence there is a greater difference of sea temperature between equatorial and high latitudes in the southern hemisphere. This in turn accounts for the observed fact that the S.E. trade winds are in general stronger than the N.E. trade winds and blow across or up to the equator, thus lowering the air temperature there. Since the South Equatorial Current is produced by the S.E. trade wind, part of it also flows a little north of the equator.

The currents of the Mediterranean Sea form a system apart from the circulation of the North Atlantic. The only link between the two is the almost constant surface inflow of Atlantic water through the Strait of Gibraltar, and a small outflow of Mediterranean water below the surface current. The Black Sea similarly contains a circulation apart from that of the Mediterranean.

The Canary Current.—This flows from at least as far north as the latitude of Cape St. Vincent in both quarters, weak at first but acquiring strength with decreasing latitude. In February to April it attains a mean rate of 6 to 8 miles per day between Latitudes 18° and 24° N. (region of Cape Blanco), but in the winter quarter its mean strength is generally less, nowhere exceeding about 4½ miles per day. The greatest drift recorded in the period 1910 to 1938 was at the rate of 60 miles per day, setting 217°, recorded by S.S. *Avila Star* in Latitude 20° 58' N., Longitude 19° 43' W. on 27th February, 1936. The frequency of drifts exceeding 1 knot is nevertheless small. Sets in all directions may be observed within the region of the current, as is clearly shown by the roses.

The North Equatorial Current.—The Canary Current passes directly into the North Equatorial Current, which sets to the westward across the ocean southward of about Latitude 20° N., though no exact limits can be laid down at this stage of the investigation. Near the coast the Canary Current may thus be said to pass into the North Equatorial Current in the neighbourhood of Cape Blanco, but it must not be forgotten that the two are really one and the same current in origin. The North Equatorial Current gathers strength with increase of west longitude, and north of Latitude 8° N. flows with mean drifts of 8 to 12 miles per day in both quarters.

The Guinea Current.—This can be traced in both quarters flowing from about Longitude 26° W. Its greatest strength is eastward of Cape Palmas to Longitude 2° E., where the mean easterly drifts vary from 13 to 15 miles per day in November to January and from 13 to 21 miles per day in February to April. The greatest drifts observed in this region are from 2 to 3 knots. Reverse sets may be experienced even here, sometimes exceeding 1 knot, and on 1st April, 1930, M.S. *Accra* recorded a drift at the rate of 58 miles per day, setting 259°, in Latitude 6° 19' N., Longitude 2° 55' E.

The South Equatorial Current.—During the months of February to April there is no distinction, west of Longitude 26° W., between the North and South Equatorial Currents. They merge together and form one great current flowing westwards, with mean drifts up to 21 miles per day. During the months of July to November the Guinea Current is stated to flow eastwards, as the Counter Equatorial Current, from the region of Longitude 53° W. This will be fully investigated when the charts for the whole year are complete. All that can be said at present is that in the quarter, November to January, the mean sets in Latitude 4° N. to 8° N., Longitude 34° W. to 46° W. are north-easterly and easterly, with mean drifts of from 7 to 19 miles per day, so that the North and South Equatorial Currents do not meet in these longitudes. The greatest westerly drifts experienced in equatorial waters during the period 1910 to 1938 were from 2½ to 3 knots.

Currents of the Mediterranean.—The bulk of the observations of current, as would be expected, were made on the main shipping track, Gibraltar to Port Said. These indicate very clearly the inflow of water through the Strait of Gibraltar throughout November to April, with a mean rate of 7 to 8 miles per day. Between Longitudes 2° W. and 2° E. the rate of flow decreases, probably owing to the widening of the sea. Between Longitudes 2° E. and 6° E., where the current passes close to the Algerian coast, there is a definite increase of strength in both quarters. From the passage between Cape Bon and Sicily the current flows generally in south-easterly directions and is weaker until near Port Said, when it again strengthens to a mean rate of about 7 miles per day.

While the mean flow of current is as stated, the current roses on the charts plainly show that sets in any direction, including westerly ones, may be experienced anywhere on the main shipping tracks. Furthermore, east of Cape Bon, the total frequency of all other sets equals or exceeds that of the sets in the direction of the current, E. to S.S.E. inclusive.

The strongest drifts experienced in the Mediterranean during the period 1910 to 1938 are all round about 2 knots, the greatest being at the rate of 55 miles per day, observed by S.S. *Cathay* on 20th January, 1935. With the exception of the drift of 2 knots, shown in the table for April, all these drifts were observed in the region between the Strait of Gibraltar and Longitude 6° E. on the main shipping track.

The inflow of water from the Atlantic to the Mediterranean may be seen on the charts for both quarters. The frequency rose for the region between Longitude 10° W. and the Strait of Gibraltar shows predominating easterly and south-easterly sets, especially in February to April.

Currents of the Black Sea.—Few observations are available for this region, especially in November to January. They indicate a counterclockwise circulation round the Sea.

SOUTHERN ICE REPORTS.

During the year 1938.

April.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.	
		Latitude.	Longitude.				
1938	6	53° 58' S.	27° 16' W.	Berg	Small irregular	R.R.S. <i>Discovery II</i> .	
		53° 50' S.	26° 22' W.	Berg	Small irregular	do.	
		53° 48' S.	26° 11' W.	Berg	Medium-size irregular, old and weathered	do.	
	7	53° 36' S.	24° 43' W.	2 growlers ... ..	... ..	do.
		53° 08' S.	22° 30' W.	3 growlers ... ..	... ..	do.
	14	56° 58' S.	1° 15' E.	Berg	Medium size tabular	do.	
		57° 16' S.	1° 14' E.	Berg	Large irregular	do.	
	15	From 57° 40' S.	1° 09' E.	} 2 bergs, 3 growlers, numerous bergy bits	do.
		To 57° 52' S.	1° 08' E.				
		58° 14' S.	1° 05' E.		Berg	Large tabular, old and weathered	do.
		From 58° 16' S.	1° 05' E.		} Numerous small bergs and growlers	Several bergs stained with morainic deposit	do.
		To 58° 41' S.	1° 02' E.				
	16	From 58° 41' S.	1° 02' E.	} 2 bergs, numerous growlers	Small and irregular	do.	
		To 58° 59' S.	1° 00' E.				
		From 58° 59' S.	1° 00' E.	} 5 bergs	All medium size and irregular	do.	
		To 59° 15' S.	0° 58' E.				
		From 59° 15' S.	0° 58' E.	} 18 bergs, numerous growlers and bergy bits... ..	Bergs mostly old and weathered tabulars	do.	
		To 59° 44' S.	0° 54' E.				
		From 59° 44' S.	0° 54' E.		} 3 bergs, several growlers	1 large tabular, 2 small and irregular	do.
		To 60° 11' S.	0° 50' E.				
		17	From 60° 11' S.	0° 50' E.	} 6 bergs	2 large tabular, remainder small weathered and irregular	do.
			To 60° 49' S.	0° 46' E.			
	61° 00' S.		0° 44' E.	Berg		Large irregular	do.
	18	62° 00' S.	0° 40' E.	Berg	Medium size, irregular, weathered and seaworn	do.	
		64° 30' S.	0° 21' 5" E.	Berg	Small weathered tabular	do.	
	22	From 65° 03' S.	0° 15' E.	} Pancake ice	Navigating Eastward through streams of old pancake ice, pans averaging 6 to 8 feet in diameter and 1 foot thick. Pancake ice visible all round Southern horizon.	do.	
		To 65° 05' S.	1° 02' E.				
	23	From 65° 05' S.	20° 28' E.	} Pancake ice	Encountered light pancake ice extending all round Southern horizon. Strong "blink" of heavy ice visible close Southward.	do.	
		To 66° 10' S.	20° 20' E.				
	24	From 65° 55' S.	20° 17' E.	} Sludge ice	Passed through several patches of newly-formed sludge ice	do.	
		To 62° 03' S.	19° 49' E.				
	25	61° 53' S.	19° 48' E.	} 2 growlers	Awash	do.	
61° 53' S.		19° 48' E.	} 1 growler		do.
From 61° 05' S.		19° 42' E.		} 5 bergs, several growlers	2 medium size irregular, remainder small	do.	
To 60° 31' S.		19° 40' E.					
From 60° 31' S.		19° 40' E.	} 7 bergs, numerous growlers	2 large tabular, remainder irregular all weathered and seaworn.	do.		
To 59° 57' S.		19° 42' E.					
From 59° 57' S.		19° 42' E.		} 12 bergs, numerous growlers and bergy bits... ..		5 medium size tabular, remainder small and irregular, all old and breaking up. 1 morianic growler.	do.
To 59° 19' S.		19° 36' E.					
26		From 59° 19' S.	19° 36' E.	} 2 bergs	1 large tabular. 1 large irregular	do.	
		To 59° 05' S.	19° 34' E.				
	58° 37' S.	19° 33' E.	Berg, several growlers and bergy bits ... ..	... ..	do.	
	58° 00' S.	19° 33' E.	1 berg, 1 growler	Berg small and irregular, growler bottle-green in colour	do.		
	From 57° 40' S.	19° 33' E.	} 3 bergs, 3 growlers	All small irregular and seaworn	do.		
To 57° 27' S.	19° 33' E.						
27	56° 35' S.	19° 33' E.	1 berg	Large and irregular	do.		
	55° 04' S.	19° 30' E.	Berg, numerous growlers	Tabular, 1480 feet long, 176 feet high; old and weathered surrounded by broken off growlers and bergy bits.	do.		
28	54° 45' S.	19° 30' E.	1 berg	Small irregular	do.		
	51° 52' S.	19° 26' E.	Berg	Small irregular	do.		
	51° 27' S.	19° 26' E.	Berg	Small and pinnaced	do.		
	51° 00' S.	19° 26' E.	Growler ... ..	... ..	do.	
29	48° 07' S.	19° 22' E.	Berg	Small low-lying	do.		

May—1938.

No reports received.

June—1938.

No reports received.

WIRELESS WEATHER SIGNALS.

1.—SHIPS' WIRELESS WEATHER SIGNALS.

Request for Information.

THE ATTENTION OF METEOROLOGICAL SERVICES IS DIRECTED TO THE INVITATION GIVEN ON PAGE 28 OF VOL XVI, NO. 133, JANUARY, 1939.

**WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
"A SELECTED SHIPS."**

A full description of the world-wide system of voluntary "Selected Ships" routine weather reports with instructions was given on pp. 28-41 of the January number of this volume of THE MARINE OBSERVER. The following list contains the latest information of stations to

which "A Selected Ships" should address their reports when within range. When not within range of any of these stations their reports should be addressed to C.Q. on 2100 metres in accordance with the above-mentioned instructions.

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
Column No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.
North Atlantic and North Sea.	Portishead.	Lat. 51° 28' 41" N. Long. 2° 47' 30" W.	GKU	149 kc/s. (2013 metres) and 121 kc/s. (2479 metres) simultaneously	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. but not within 300 miles of station. (see Chart of the World.)	Weather London.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"Selected Ships" chosen to report in given order notified by station daily at 2300, 0330, and 1030 G.M.T. Roll call thus—Weather London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m. and observations for 0000 and 1800 G.M.T. as convenient.
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08' 32" N. Long. 5° 20' 29" W.	GYW	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Eastern North Atlantic, South of Lat. 37° N. and Mediterranean Sea.	Meteor Gibraltar.	Weather only. No. 3 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule.
North Atlantic.	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTG	125 kc/s. (2400 metres).	125 kc/s. (2400 metres).	Those "A Selected Ships" not in the Roll Call for reporting to Weather London through Portishead, in the Eastern North Atlantic, east of Long. 40° W should report to this station.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"A Selected Ships" in the Eastern North Atlantic not on the roll call made through Portishead (described in these notes for Portishead) should report to Horta in accordance with schedule given in the instructions for British "A Selected Ships."
	Lagos.	Lat. 6° 26' 45" N. Long. 3° 21' 34" E.	ZDN	8840 kc/s. (33·94 metres).	143 kc/s. (2100 metres).	Between Lat. 20° N. and 10° S. and from the coast to Long. 20° W.	Meteo Lagos.	Weather only. Four universal groups and first two of No. 3 Supplementary Groups.	0600 G.M.T. observations only required.
	Louisburg.	Lat. 46° 09' 16" N. Long. 59° 56' 48" W.	VAS	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	North Atlantic West of Longitude 40° W.	Weather Toronto.	Weather only, preferably No. 3 Supplementary Groups.	All British "A Selected Ships" within area when bound to or from Newfoundland and Canadian ports or ports to the northward to report through VAS at schedule times and observations for 0000 and 0600 G.M.T. as convenient.
Chatham Mass. Amagansett (Montauk). Thomaston. Jupiter. Lake Worth.		Lat. 41° 43' N. Long. 70° 47' W.	WCC	142·9kc/s. (2098 metres).		North Atlantic West of Longitude 40° W.	Observer Washington	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	All British "A Selected Ships" within area when bound to or from United States ports or ports to the southward to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.
		Lat. 41° 00' N. Long. 72° 03' W.	WSL						
		Lat. 44° 01' N. Long. 69° 13' W.	WAG						
		Lat. 26° 56' N. Long. 80° 06' W.	WMR						
		Lat. 26° 38' N. Long. 80° 03' W.	WOE						

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM

"A SELECTED SHIPS."

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Frequency and Wavelength.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
Column No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.
South Atlantic.	Slangkop (Cape Town)	Lat. 34° 08' 46" S. Long. 18° 19' 18" E.	ZSC	—	143 kc/s. (2100 metres).	South Atlantic Westward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	Only 0600 G.M.T. observation required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
	General Pacheco (Buenos Aires)	Lat. 34° 27' 33" S. Long. 58° 37' 35" W.	LPD	—	143 kc/s. (2100 metres).	Within a range of about 1,300 miles of station.	Meteoro Baires	Weather only. No. 6 Supplementary Groups.	
Red Sea and Indian Ocean.	Port Sudan.	Lat. 19° 36' 35" N. Long. 37° 13' 28" E.	STP	—	143 kc/s.† (2100 metres).	From Suez to Ras Fartak, Ras Hafun, and western limit of Colombo area.	Prognostic Khartoum.	Weather only. Four universal groups.	All British "A Selected Ships" within area should report in accordance with Schedule. † Alternatively see particulars on p. 68 and use wavelength and times for "B Selected Ships."
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55' 40" S. Long. 30° 58' 50" E.	ZSD	—	143 kc/s. (2100 metres).	Indian Ocean S. of 20° S. and Eastward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary Groups.	Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
	Bombay.	Lat. 19° 04' 55" N. Long. 72° 49' 54" E.	VWB	—	143 kc/s. (2100 metres).	Arabian Sea N. of line C. Comorin to Ras Fartak.	Obs. Weather.	Weather only, including No. 9 Supplementary Groups.	
	Madras.	Lat. 12° 59' 17" N. Long. 80° 10' 56" E.	VWM	—	143 kc/s. (2100 metres).	Bay of Bengal N. of line C. Comorin to Achin Head.	Obs. Weather.	Weather only including No. 9 Supplementary Groups.	
	Colombo.	Lat. 6° 55' 14" N. Long. 79° 52' 46" E.	VPB	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1,500 miles.	Weather.	Weather only. No. 6 Supplementary Groups preferred.	
	Mombasa.	Lat. 4° 03' 11" S. Long. 39° 39' 49" E.	VPQ	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 20° S. when westward of the Colombo area.	Weather Nairobi.	Weather only. No. 6 Supplementary Groups.	
	Perth.	Lat. 32° 01' 51" S. Long. 115° 49' 31" E.	VIP	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Indian Ocean and Southern Ocean between Long. 90° and 135° E.; but not within 100 miles of the coast.	Weather Melbourne and Weather Perth.	Weather only. No. 9 Supplementary Groups.	
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" E.	VPS	8330 kc/s. (36 metres) or 500 kc/s. (600 metres).	143 kc/s.* (2100 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory	Weather only No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. * Alternatively see particulars on p. 69, and use wavelength and times for "B Selected Ships."
South Pacific.	Sydney.	Lat. 33° 46' 00" S. Long. 151° 03' 09" E.	VIS	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	S. Pacific Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast.	Weather Melbourne and Weather Sydney.	Weather only. No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 30, of the January number.

**WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
" B SELECTED SHIPS."**

A full description of the world-wide system of voluntary "Selected Ships" routine weather reports with instructions was given on pp. 28-41 of the January number of this volume of THE MARINE OBSERVER. This information is also contained in Pamphlet M.O. 329. "Decode for use with the International Code for Wireless Weather Messages

from ships." The list which follows contains the latest information of stations to which "B Selected Ships" should address their reports when within range. When not within range of any of these stations their reports should be addressed to C.Q. on 600 metres in accordance with the above-mentioned instructions.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Column No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Norwegian Sea.	Wick.	Lat. 58° 26' 16" N. Long. 3° 05' 53" W.	GKR	Weather London.	Weather in four universal groups.	No roll call. British "B Selected Ships" should report at routine times when North of Lat. 60°N. and eastward of Long. 7°W., and when more than 20 miles from the coasts.
North Sea.	Humber.	Lat. 53° 19' 43" N. Long. 0° 16' 34" E.	GKZ	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	No roll call. British "B Selected Ships" should report at routine times when more than 20 miles from the coasts.
North Atlantic.	Malin Head.	Lat. 55° 21' 45" N. Long. 7° 20' 30" W.	GMH	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	Station will indicate at 0805 and 1205 G.M.T. with ordinary traffic calls the names of British "B Selected Ships" and other British ships situated north of Lat. 54° N., and west of Long. 7° W., who are desired to transmit at 1230 and 1730 G.M.T., observations taken at 1200 and 1700 G.M.T. respectively. When additional reports of 2100 G.M.T. observations for transmission at 2130 G.M.T. are desired (usually during summer months) station will indicate the names of ships at 2005 G.M.T. with ordinary traffic calls. Station will indicate at 0825 and 1225 G.M.T. with ordinary traffic calls the names of British "B Selected Ships" and other British ships situated south of Lat. 54° N. and west of Long. 7° W., who are desired to transmit at 1230 and 1730 G.M.T. observations taken at 1200 and 1700 G.M.T. respectively. When additional reports of 2100 G.M.T. observations for transmission at 2130 G.M.T. are desired (usually during summer months) station will indicate the names of ships at 2025 G.M.T. with ordinary traffic calls. 0600 G.M.T. observations only required. [Reports will be acknowledged on 333 kc/s (900 metres)]
	Valentia.	Lat. 51° 55' 48" N. Long. 10° 20' 54" W.	GCK	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	
	Lagos	Lat. 6° 26' 45" N. Long. 3° 21' 34" E.	ZJW	Meteo Lagos.	Weather only, four universal groups and first two of No. 3 Supplementary Groups.	
	Point Amour	Lat. 51° 27' 28" N. Long. 56° 51' 31" W.	VCL	Weather Toronto.		
St. John's N.F.	Lat. 47° 34' 09" N. Long. 52° 41' 04" W.	VON	Weather only (No. 3 Supplementary Groups when convenient).			
Cape Race.	Lat. 46° 39' 25" N. Long. 53° 04' 15" W.	VCE				
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08' 32" N. Long. 5° 20' 29" W.	GYW	Meteor Gibraltar.	Weather in four universal groups only.	
Mediterranean.	Alexandria.	Lat. 31° 11' 53" N. Long. 29° 51' 46" E.	SUH	Meteor Heliopolis.	Weather in four universal groups, optional Supplementary Groups.	
South Atlantic.	Salinas.	Lat. 0° 37' 00" S. Long. 47° 23' 00" W.	PPL	Meteoro Rio.	Weather only, including Supplementary Groups.	
	S. Luiz.	Lat. 2° 31' 28" S. Long. 44° 16' 30" W.	PXM			

*For use during the season when Belle Isle route is open to navigation.

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
 "B SELECTED SHIPS."

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Column No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Indian Ocean (continued).	Mauritius.	Lat. 20° 23' 41" S. Long. 57° 35' 25" E.	VRS	Observatory Mauritius.	Weather only, four universal groups and first of No. 6 Supplementary Groups.	When east of Long. 90° E., but not within 100 miles of the coast.
	Geraldton.	Lat. 28° 47' 15" S. Long. 114° 36' 24" E.	VIN	Weather Melbourne and Perth.	Weather only, preferably No. 9 Supplementary Groups.	
	Esperance.	Lat. 33° 52' 40" S. Long. 121° 53' 34" E.	VIE			
Indian Ocean and China Sea.	Penaga (Penang).	Lat. 5° 32' 02" N. Long. 100° 22' 51" E.	VPX	Obs. Weather Singapore.	Weather only, preferably No. 9 Supplementary Groups.	
	Paya Lebar (Singapore).	Lat. 1° 20' 26" N. Long. 103° 53' 20" E.	VPW			
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" E.	VPS	Royal Observatory.	Weather only, preferably No. 9 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50' 37" S. Long. 174° 46' 08" E.	ZLD	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups	
	Wellington.	Lat. 41° 16' 26" S. Long. 174° 45' 55" E.	ZLW			
	Awarua.	Lat. 46° 30' 27" S. Long. 168° 22' 21" E.	ZLB			
	Chatham Island.	Lat. 43° 57' 28" S. Long. 176° 34' 25" W.	ZLC			
	Rarotonga.	Lat. 21° 11' 52" S. Long. 159° 48' 52" W.	ZKR			
	Apia.	Lat. 13° 49' 46" S. Long. 171° 45' 20" W.	ZMA			
	Suva.	Lat. 18° 08' 43" S. Long. 178° 27' 48" E.	VRP	Weather Suva.	Weather in four universal groups, optional supplementary groups.	See Section (35), p. 32 of the January number.
	Thursday I.	Lat. 10° 35' 14" S. Long. 142° 12' 37" E.	VII	Weather Melbourne and Brisbane.	Weather only, preferably No. 9 Supplementary Groups	When west of Long. 160° E., but not within 100 miles of the coast.
	Townsville.	Lat. 19° 16' 09" S. Long. 146° 49' 47" E.	VIT			
	Brisbane.	Lat. 27° 25' 34" S. Long. 153° 07' 19" E.	VIB	Weather Melbourne and Adelaide.	Weather only, preferably No. 9 Supplementary Groups.	When between Long. 90° E. and 160° E., but not within 100 miles of the coast.
Melbourne.	Lat. 37° 46' 56" S. Long. 144° 52' 09" E.	VIM				
Adelaide.	Lat. 34° 51' 14" S. Long. 138° 31' 55" E.	VIA		Weather only, preferably No. 9 Supplementary Groups.		

II.—WIRELESS WEATHER SIGNALS.

Bulletins.

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

A wireless 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 forecasts apply are included in the message.

BRITISH ISLES.

Development of Weather Bulletins to aid Navigation.

The first weather bulletin for the British coasts broadcast to aid navigation was a message giving a forecast issued by the Admiralty at the end of the Great War.

In 1921 the principle of broadcasting weather reports of observations made at coast stations was first adopted by the Meteorological Office in a message made through Poldhu W/T station in Cornwall, entitled the "Western Seaboard" Message, which gave reports from five coast observing stations in code, and a forecast for the western coasts of the British Isles. A pamphlet was published entitled "Weather Forecasting in the Eastern North Atlantic and Home Waters for Seamen" which explained simply the modern methods of weather forecasting by the use of weather charts, and how to draw isobars.

After obtaining the views of many of the masters, mates and skippers of every type of vessel navigating the eastern North Atlantic, North Sea, and waters adjacent to the British Isles, the British Weather Shipping Bulletin was adopted and brought into use on 1st January, 1924.

At the International Conference on Safety of Life at Sea in 1929, this British Weather Shipping Bulletin was cited by foreign shipmasters as giving the weather information from the shore most desirable to aid navigation.

The station reports in the British Weather Shipping Bulletin, together with routine weather reports received or intercepted direct from Selected Ships, or with the reports broadcast in the Weather Shipping Bulletin of Germany or Sweden, afford the desirable information for constructing weather charts on board ships navigating these waters.

After the British Weather Shipping Bulletin had been in use for seven years, exhaustive enquiry was made, and the views and experience of a great many masters, mates, skippers, and others, in all types of vessels was again obtained, with the result that but for the addition of a Northern Area and modification of Districts therein, the Bulletin remained practically unaltered.

From time to time, the officers in some larger merchant ships have advocated a more elaborate synoptic message; but so far as information goes the British Weather Shipping Bulletin, taken in conjunction with the W/T and R/T Gale Warnings, continues to meet the needs of the majority of shipping in Home Waters, and more particularly smaller vessels whose need of weather intelligence from the shore to promote safety of life at sea is greater.

For the purpose of weather forecasting at sea in the Eastern North Atlantic a suitable collective message for Noon G.M.T. observation is under consideration.

In September, 1935, the Admiralty adopted a Fleet Synoptic Message for the Home Station, which is compiled daily at the Meteorological Office, London, and made through the Admiralty W/T stations at Cleethorpes and Gibraltar.

Throughout these pages, in the April, July and October numbers of THE MARINE OBSERVER for each maritime country, in geographical order where established, Weather Shipping Bulletins founded on the same principles as the British Weather Shipping Bulletin will be given; and where not available, such Bulletins as are the most appropriate for shipping.

Only the International Ships' Wireless Weather Telegraphy Code is given in THE MARINE OBSERVER.

Those who desire information of the more elaborate bulletins and synoptic messages which are issued for the use of meteorologists in their specialized work, and for aiding aerial navigation and so forth, are referred to the "Admiralty List of W/T Signals" which contains the most complete information of all W/T signals.

In short "Weather Signals" in THE MARINE OBSERVER is an endeavour to provide concise information of the signals which are generally most practical for the purposes of the merchant navy.

British Isles: coast of Europe, N. and W. Africa and adjacent islands including Azores.

In this number will be found a selection of the most useful Weather Bulletins for shipping, broadcast from stations in the above areas:

This information is compiled from The Admiralty List of Wireless Signals and is corrected by Weekly Notices to Mariners up to the week ending 11th March, 1939.

"Weather Shipping" Bulletin. Wireless Telegraphy (C.W.)

W/T Station, **Rugby**. Latitude 52° 21' 59" N. Longitude 1° 11' 12" W. Call Sign **GBR**.

Wavelength 18,750 metres C.W. (16 kc/s.).

W/T Station, **Greenford**. Latitude 51° 32' 02" N. Longitude 0° 21' 20" W. (Operated London—Air Ministry). Call Sign **GFA**. 4100 m. (73.17 kc/s.); 69.77 m. (4,300 kc/s.); 34.88 m. (8,600 kc/s.). Call Sign **GFN**. 43.0 m. (6,975 kc/s.) is used if one of the other short wave transmissions fail.

Times of transmission 0910 G.M.T. and 2133 G.M.T.

The message issued at 0910 G.M.T. contains 0700 G.M.T. observations. The message issued at 2133 G.M.T. contains 1800 G.M.T. observations.

During the time of S.O.S. lookout, from 0915 to 0918 G.M.T. there will be a pause in the transmission of the signal.

These messages are preceded by the words "Weather Shipping"

and consist of seven parts. Part II is in code, the remaining parts in plain language.

Part I is a brief general statement which will generally provide information of the atmospheric pressure systems which influence the weather in the region dealt with by this Bulletin.

Part II is a weather report in code giving actual observations at ten British coast stations and two foreign stations.

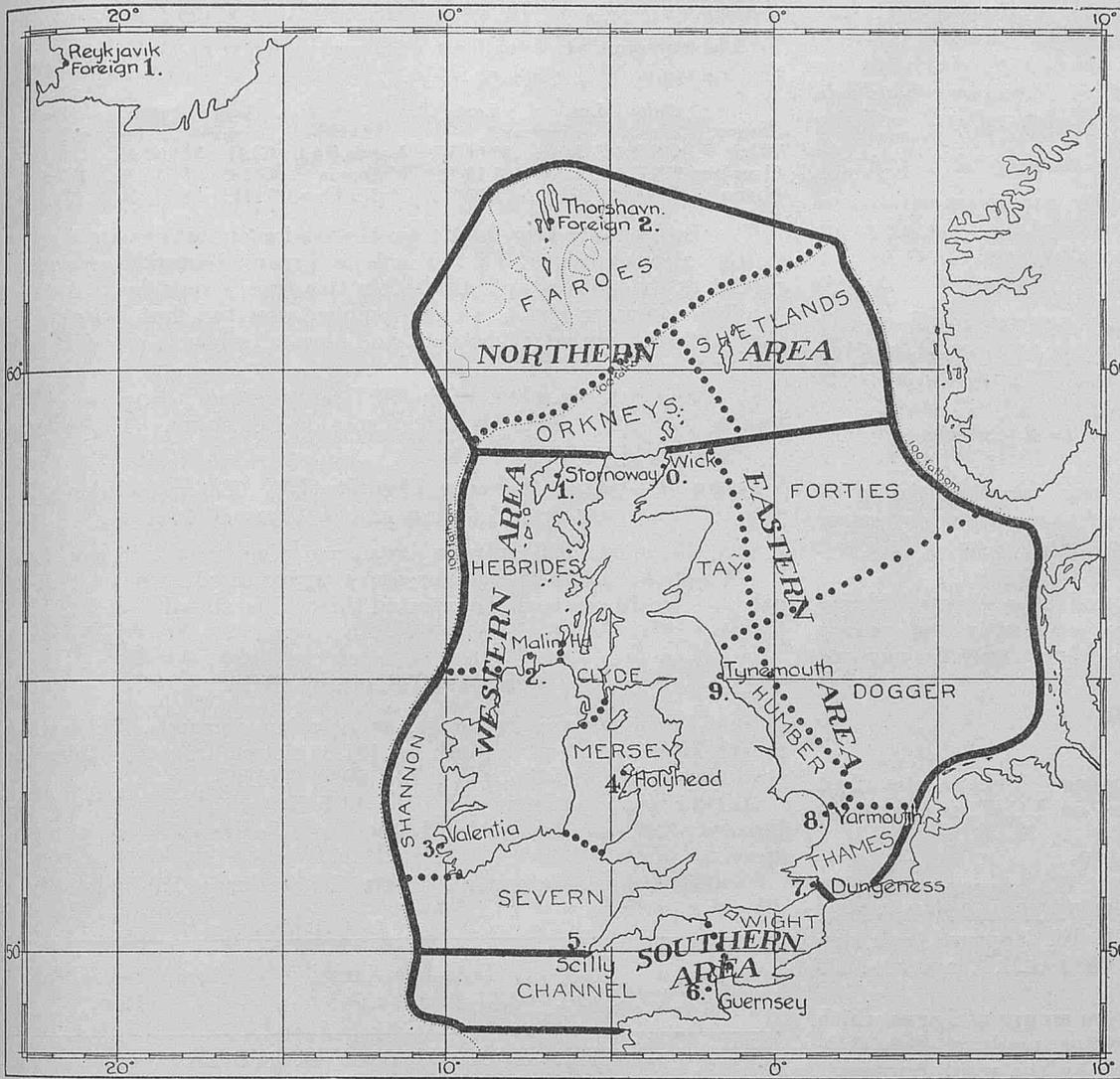
For full information for decoding see next page, also the Pamphlet, M.O. 329, "DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS (Sixth Edition)," obtainable from H.M. Stationery Office, price 6d.

Parts III, IV, V and VI are forecasts of wind and visibility for the 12 hours following the time of shore observations for the areas shown upon the Chart on p. 71.

Part VII commencing "Outlook" is a brief general statement of weather expected after the period of the forecasts.

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

Chart Showing Stations, Forecast Areas and Districts.



Explanation of Chart.

The numbers alongside 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.

For instance the district in the neighbourhood of the Long Forties is termed "Forties."

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. When similar weather is expected all over an area, these district names will not be used.

Description of Station Reports given in Part II of the Bulletin and Instructions for Decoding.

These reports only contain an identifying number of the stations from which they originate, and just those elements which are most essential for the purpose of the mariner, viz., the true direction of the wind, and its force, the barometer and how it has recently changed, the visibility to seaward, and the weather.

The observations are made at fixed times, viz., 0700 G.M.T. and 1800 G.M.T.

Instructions for Decoding.

These reports are made by means of the code tables of the International Code for wireless weather messages from ships, in five figure groups which are paired, each pair of groups giving a complete report for a station.

To decode these stations' reports the tables given in M.O. 329 are required (DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS (Sixth Edition), obtainable from H.M. Stationery Office, price 6d.).

The Key Letters of the International Ships Wireless Weather Telegraphy Code are fully described on page 40 of the January, 1939, number and in M.O. 329.

The following is a brief description of the Key Letters used for the station reports in this bulletin.

First Group of Pair :—I_NAPPV meaning :—

I_N = Station. British stations from 1 to 9 and 0, and foreign stations 1 and 2, prefixed by the word "foreign" (see Chartlet), also page 29 of M.O. 329 (Sixth Edition).

A = Barometric tendency.

PP = Barometric pressure.

V = Visibility. Caution is necessary in the use of these visibility reports owing to the conditions of view to seaward at some stations.

Second Group of Pair is arranged, in accordance with International agreement, similar to the third group of Selected Ships' reports, i.e.—D D F w w

meaning :—

DD = Wind Direction. F = Wind force. w w = Weather.

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

WESTERN AREA.

The sea and coasts eastward of the 100 fathom line from the latitude of Cape Wrath to Scilly.

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 S. Foreland to the 100 fathom line.

DISTRICTS.

CHANNEL—West of St. Albans.

WIGHT—East of St. Albans.

EASTERN AREA.

The North Sea southward of line Duncansby Head to Utsira, to the Straits of Dover.

DISTRICTS.

THAMES—Thames estuary and its approaches.

HUMBER—East coast from Haisborough to Longstone.

TAY—East coast of Scotland, including Moray Firth.

FORTIES—Eastward to 100 fathom line and N. of Longstone to Naze.

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

NORTHERN AREA.

Northward of latitude of Cape Wrath and of line Duncansby Head to Utsira, to the bank of soundings north of the Faroes in the west, and to north-east extremity of the 100 fathom line in the east. Westward of the 100 fathom line to Bill Baileys Bank.

DISTRICTS.

ORKNEYS—Orkneys and north-westward to the 100 fathom line.

SHETLANDS—Shetlands and eastward to the 100 fathom line.

FAROES—That part of the Northern Area to the northward of the 100 fathom line.

Sample Message.

(28th December, 1930.)

Call Sign :—*CQ CQ CQ GBR GBR GBR (repeated twice).**Weather Shipping.**General Statement.—Deep depression north of Faroes moving slowly northeast stop Intense depression north-west of Ireland will probably move east-north-east.***Station Reports,**

10877	20301	28856	09360	30868	20402	47935	17760	57996
18902	66117	16401	75127	20602	85106	18502	96977	16360
00898	18601	Foreign	12847	08102	22726	22660		

Forecast.*Western Area. Hebrides wind moderate to strong south easterly or variable visibility moderate to good Shannon wind south westerly veering fresh to strong visibility good Clyde Mersey Severn southerly gale visibility moderate to good.**Southern Area. Southerly gale whole gale at times visibility moderate to good.**Eastern Area. Visibility moderate to good stop Forties wind southwest strong to gale backing and moderating then increasing remainder Eastern Area wind southerly increasing to gale whole gale in places.**Northern Area. Visibility moderate to good stop Faroes Orkneys wind southwest to west strong to gale then moderating and veering northwest Shetlands wind southwest strong to gale probably backing and moderating then increasing.**Outlook strong winds or gales.***(I.C.W.)**

Certain portions of the "Weather Shipping" Bulletin described above are broadcast by coast W/T stations on I.C.W. as follows:—

For the Western Area.**Valentia.** Lat. 51° 56' N., Long. 10° 21' W. (approx.), call sign **GCK**, wavelength 600 metres I.C.W. At 0948 G.M.T. and 2048 G.M.T.**Seaforth.** Lat. 53° 28' N., Long. 3° 01' W. (approx.), call sign **GLV**, wavelength 600 metres I.C.W. 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 I.C.W. 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**, wavelength 600 metres I.C.W. 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).**

For the information of small craft unable to receive the foregoing W/T signals, appropriate messages are broadcast by word of mouth, R/T from certain stations of the British Broadcasting Corporation.

During the forenoon, Parts I, III, IV, V, VI and VII of the British Weather Shipping Bulletin.

During the evening a forecast of weather for the regions near the coasts of the British Isles.

Details as to stations, wavelength and times are given in Notices to Mariners, "Radio Times" and the daily press. Amendments referring to these messages are published as requisite in Admiralty weekly Notices to Mariners. Attention is drawn to Notice No. 369 for the week ending 18th February, 1939.

Wireless Gale Warnings.**Wireless Telegraphy (I.C.W.).**

Gale warnings are broadcast on a wave of 600 m. (500 kc/s), from the following W/T stations:—

Station.	Call Sign.	Lat. (approx.)	Long. (approx.)	Station.	Call Sign.	Lat. (approx.)	Long. (approx.)
Wick	GKR	58° 26' N.	3° 06' W.	Lands End	GLD	50° 07' N.	5° 40' W.
Humber	GKZ	53° 20' N.	0° 17' E.	Valentia	GCK	51° 56' N.	10° 21' W.
Niton	GNI	50° 35' N.	1° 17' W.	Malin Head	GMH	55° 22' N.	7° 20' W.

The warnings are broadcast from the station or stations appropriate to the area within which the gale is expected immediately upon receipt at the station, and also, when this time is outside the periods of single operator watch, at 18 minutes past the first hour within the next such period. The date and time of origin is given in each warning.

Warnings are preceded by the W/T safety signal **— — — (TTT)** repeated at short intervals three times on full power. The warning is broadcast one minute later.**Example**—"Gale Warning Thursday 1230 G.M.T. Easterly Gale south of line Spurn head to Galway and in Dogger district."

Gale Warnings will only be broadcast when winds of gale force (force 8 of the Beaufort Scale) or above are expected; when a "whole gale" (force 10 or above) is expected this will be stated.

Wireless Telephony (R/T).

Gale Warnings are broadcast, as occasion demands, by word of mouth (R/T) on a wavelength of 181.8 metres from the following stations, at 0330, 0930, 1530, and 2030 G.M.T.

All warnings are prefixed by the R/T Signal "Sécurité" and are broadcast first at conversational speed and then repeated at dictation speed.

Warnings are broadcast only from the station or stations nearest danger reported.

Station.	Call Sign.	Lat. (approx.)	Long. (approx.)	Area covered by Station.
Wick ...	GKR	58° 26' N.	3° 06' W.	Within a radius of 250 miles (from Vaternish Point, Skye, through north to Scarborough).
Humber ...	GKZ	53° 20' N.	0° 17' E.	Within a radius of 125 miles (from Blyth through east to North Foreland).
North Foreland	GNF	51° 22' N.	1° 25' E.	Within a radius of 125 miles (from Mablethorpe through south to the Needles).
Niton ...	GNI	50° 35' N.	1° 17' W.	Within a radius of 125 miles (from Harwich through south to the Eddystone).
Lands End	GLD	50° 07' N.	5° 40' W.	Within a radius of 125 miles (from Portland Bill through south and west to Fishguard).
Port Patrick	GPK	54° 51' N.	5° 07' W.	Within a radius of 200 miles (from Loch Ewe through west to Swansea).
Malin Head	GMH	55° 22' N.	7° 20' W.	Within a radius of 125 miles (from Neist Point, Skye, through west to Achill Head).
Valentia ...	GCK	51° 56' N.	10° 21' W.	Within a radius of 125 miles (from Achill Head through south to Waterford).

For the information of small craft unable to receive the foregoing Gale Warnings, these messages are broadcast by word of mouth, R/T, from certain of the British Broadcasting Corporation's stations immediately after the Time Signals or with the routine weather messages.

III.—Wireless Time Signals.

Wireless Telegraphy (C.W.).

Rugby W/T Station, Lat. $52^{\circ} 21' 59''$ N., Long. $1^{\circ} 11' 12''$ W. call sign **GBR**, broadcasts Time Signals on a wavelength of 18,750 metres (C.W.) at 1000 and 1800 G.M.T. :—

System Used.—Modified rhythmic type as recommended by the International Time Commission of 1925, consisting of a series of 306 signals emitted in 300 seconds of Mean Time, the concluding signal being the exact hour.

In each series, Signals Nos. 1, 62, 123, 184, 245 and 306 are single dashes (—) of 0.4 sec. duration and commence at the exact minute. Each dash is followed by 60 dots (·) of 0.1 sec. duration.

The commencement of successive signals, whether dot or dash, are equally spaced at intervals of 60/61 parts of one second of Mean Time, i.e. :—

G.M.T.			Signal.	
h.	m.	s.		
9 or 17	55	00	1st signal a dash (—) followed by 60 dots (···· etc.).	
„	56	00	62nd do.	do.
„	57	00	123rd do.	do.
„	58	00	184th do.	do.
„	59	00	245th do.	do.
10 or 18	00	00	306th signal, a dash (—).	

This type of time signal will enable chronometer comparisons of extreme accuracy to be obtained, the method employed being to count the number of intervals from the first dash (—) until coincidence occurs between one of the rhythmic signals and the beat of the chronometer. (There being two such coincidences, $29\frac{1}{2}$ or $30\frac{1}{2}$ seconds apart, every minute.)

It is not necessary actually to count the signals.

Write down :—

(1) The chronometer time of the tick (whole or half second) immediately preceding the *first* dash.

(2) The chronometer times of coincidences (seconds only need be written down).

The difference between these (the "Elapse Time") increased by 0.5 sec. when it is not a whole number, gives the Rhythmic "Interval Number" from which the corresponding correction can be obtained.

NOTE.—An article entitled "Greenwich Time" describing how these signals are made, of great interest to navigators, will be found on pp. 159-167, Vol. V, No. 56.

Special Service by Payment.

Additional Wireless Telegraphic and Land Line Services which are performed for shipping, with charges.

The following list indicates the information which may be obtained on request, at any time, night or day.

Weather Forecasts.

Special weather forecasts can be made at the Meteorological Office for a period of 24 hours for areas within the region contained between the parallels of 70° N. and 35° N. and between the meridians of 12° W. and the coast of the Continent of Europe.

Procedure for Ships at Sea.—Request weather forecast through the nearest coast W/T station in Great Britain or Ireland, specifying required date and area, and giving ship's name.

Charge.—7s. 6d.

Procedure for Shipowners and Masters of Ships in port about to sail.—Telephone to Meteorological Office (Telephone No. Holborn 3434, Extension 174) or send **reply paid** telegram to Weather, Phone, London (allowing 10 to 20 words as necessary for reply), requesting weather forecast and specifying date and area for which required, and address to which to be sent.

Charges—None, if the information is required immediately and the reply paid telegram covers the telegraphic charges.

If the information is required for a specified day in advance, or for a number of days, a registration fee of 6d. per week (minimum fee 6d.) in addition to cost of telegrams. In this case application for the forecasts may be made by letter.

Procedure for Salvage Officers and others requiring warning of gales or winds from specified directions, or particular kinds of weather.—Write to the Meteorological Office, London, stating the position or locality and the warnings required, with the period.

Charge.—2s. 6d. for each message, plus telegraphic charges.

NOTE.—For Home waters the Areas and Districts used in the British "Weather Shipping" Bulletin may be used with advantage to indicate the localities for which forecasts are required.

Weather Reports.

Information of the actual local weather conditions prevailing at any of the following stations may be obtained :—

Aberdeen.	Hoylake.	Prawle Point.
*Bangor, Co. Down.	Kildonan.	Southend.
Barry Island.	Lizard.	Spurn Head.
Beachy Head.	Mersey river and approaches.	†St. Ann's Head.
*Broughness.		St. Catherine's Point.
Cape Wrath.	*Mumbles.	*Stornoway.
†Dover Pier.	Needles.	*Torr Head.
Dunnet Head.	*Rame Head.	†Tynemouth.
*Gravesend Reach.	†Port Patrick.	†Wick.
*Holyhead.		

* These stations cannot give information about barometric pressure.

† Reports from these stations include information as to the state of the sea.

Procedure for Ships at Sea.—Request through nearest W/T coast station in Great Britain or Ireland, specifying the name of the station for which observed weather conditions are required.

Charge.—7s. 6d.

Fleet Synoptic Message.

Wireless Telegraphy (C.W.).

W/T Station Cleethorpes, Latitude $53^{\circ} 31' 44''$ N., Longitude $0^{\circ} 03' 18''$ W., Call sign **GYB**.

Wavelength 6,397 metres C.W. (46.9 kc/s.).

Times of transmission 0500 and 1645 G.M.T.

The message issued at 0500 G.M.T. contains 0100 G.M.T. observations from about 20 stations on the west coast of Europe north of Latitude 40° N., and observations of 0000 G.M.T. from Greenland; also 0000 G.M.T. observations from ships over the area Latitude 40° N. to 60° N., Longitude 8° E. to 45° W.

The message issued at 1645 G.M.T. contains 1300 G.M.T. observations from about 30 stations on the west coast of Europe north of Latitude 40° N., including Thorshavn and Iceland; and observations of 1200 G.M.T. from Greenland; also 1200 G.M.T. observations from ships over the area Latitude 40° to 60° N., Longitude 8° E. to 45° W.

The message consists of four parts :—

Part I is a statement giving the values of maxima and minima of pressure and their positions together with two groups of figures, giving the direction to which they are moving, in the form PPPKK LLLly.

PPP = Value of maximum or minimum pressure in whole millibars.

KK = Direction (in points) towards which the system indicated by PPP is moving.

LL = Latitude in whole degrees of the centre of the system indicated.

ll = West Longitude in whole degrees of the centre of the system indicated (50 added if longitude is East).

y = Units figure of the sum of the digits LLLl.

Part II is a brief statement in plain language and/or code amplifying Part I as necessary and giving the position and anticipated movement of any marked "front," "trough" or "wedge." When the position of "fronts" are known they are given in the following form :—

"Warm" (or "Cold" or "Occluded") "front" LLLly, LLlly, &c., &c., which indicate positions on the "front." Example :— "Occluded front 60051 55101 50207 44356." This indicates that an "occluded front" passes through the four positions Latitude 60° N., Longitude 5° W.; Latitude 55° N., Longitude 10° W.; Latitude 50° N., Longitude 20° W.; Latitude 44° N., Longitude 35° W.

Part III.—Weather report giving actual observations at a selection of the following stations in the international code form IIIAW, DDFWW, PPVTT.

No.	Station.	Position.	
		Latitude.	Longitude.
001	Jan Mayen	70° 59' N.	8° 18' W.
011	Rost	67° 30' N.	12° 04' E.
028	Utsira	59° 18' N.	4° 53' E.
101	Valentia	51° 56' N.	10° 15' W.
104	Blacksod Point	54° 06' N.	10° 04' W.
105	Malin Head	55° 23' N.	7° 24' W.
110	Lerwick	60° 09' N.	1° 08' W.
111	Stornoway	58° 12' N.	6° 24' W.
112	Wick	58° 27' N.	3° 06' W.
124	Tynemouth	55° 01' N.	1° 25' W.
126	Holyhead	53° 19' N.	4° 37' W.
137	Yarmouth	52° 35' N.	1° 43' E.
158	Seilly... ..	49° 56' N.	6° 18' W.
166	Lympne	51° 05' N.	1° 01' E.
168	Guernsey	49° 26' N.	2° 33' W.
178	Vestmanwaeyjar	63° 24' N.	20° 17' W.
184	Blaavandshuk	55° 33' N.	8° 05' E.
191	Thorshavn	62° 03' N.	6° 45' W.
196	Julianehaab	60° 43' N.	46° 03' W.
201	Rochefort	45° 55' N.	0° 59' W.
202	Biarritz	43° 29' N.	1° 34' W.
211	Brest	48° 20' N.	4° 46' W.
215	Le Bourget	48° 57' N.	2° 26' E.
291	Helder	52° 58' N.	4° 45' E.
353	Madrid	40° 25' N.	3° 57' W.
362	La Coruna	43° 23' N.	8° 22' W.
381	Oporto	41° 08' N.	8° 40' W.
403	Hamburg	53° 38' N.	10° 00' E.

Part IV.—Weather observations from ships distributed as evenly as possible over the area given above. They are made in the international code form of the four universal groups, *i.e.* YQLLL, III GG, DDFWW, PPVTT.

GIBRALTAR.

W/T Station Gibraltar, Latitude 36° 08' 32" N., Longitude 5° 20' 29" W. Call sign **GYU.**

Wavelength 6,397 metres (46.9 kc/s.) C.W.

Times of transmission, 1030, 1600 and 2130 G.M.T.

The message issued at 1030 G.M.T. gives Parts I, II, III, IV and V and contains observations of 0700 G.M.T. from a selection of land stations and 0600 G.M.T. observations from ships in the area, Mediterranean west of Latitude 5° E., and eastern North Atlantic, south of 45° N.

The message issued at 1600 G.M.T. gives Parts IV and V only and contains observations of 1300 G.M.T. from land stations and 1200 G.M.T. observations from ships in the area given above.

The message issued at 2130 G.M.T. gives Parts I, II and III only and is based on observations of 1800 G.M.T.

Part I.—Forecast in plain language for definite areas, including wind, weather, cloud amount and height, visibility and state of the sea in that order.

Parts II and III are similar to Parts I and II respectively of the Cleethorpes message previously explained.

Part IV.—Station observations in the international code form IIIAW, DDFww, PPVTT, 3C_LC_MC_HN from a selection of the following stations.

Part V.—Ship observations in the international code form of the four universal groups followed by number 3, 6 or 9 supplementary groups.

No.	Station.	Position.	
		Latitude.	Longitude.
202	Biarritz	43° 39' N.	1° 34' W.
203	Bordeaux	44° 30' N.	0° 42' W.
216	Perpignan	42° 44' N.	2° 52' E.
221	Toulouse	43° 32' N.	1° 23' E.
225	Pau	43° 22' N.	0° 24' W.
231	Marseilles	43° 26' N.	5° 13' E.
233	Montélimar... ..	44° 35' N.	4° 43' E.
340	Gibraltar	36° 06' N.	5° 21' W.
350	S. Sebastian	43° 19' N.	2° 00' W.
351	Gijon... ..	43° 33' N.	5° 39' W.
352	Vigo	42° 14' N.	8° 43' W.
353	Madrid	40° 25' N.	3° 57' W.
354	Seville	37° 22' N.	6° 01' W.
355	Almeria	36° 51' N.	2° 28' W.
357	Mahon	39° 53' N.	4° 16' E.
358	Barcelona	41° 23' N.	2° 10' E.
359	Valencia	39° 28' N.	0° 22' W.
360	Zaragossa	41° 39' N.	0° 53' W.
361	Santander	43° 29' N.	3° 47' W.
362	La Coruna	43° 23' N.	8° 22' W.
363	Burgos	42° 20' N.	3° 42' W.
365	Badajoz	38° 54' N.	6° 58' W.
366	Cordoba	37° 53' N.	4° 47' W.
367	Malaga	36° 43' N.	4° 24' W.
368	Los Alcazares	37° 44' N.	0° 51' W.
369	San Fernando	36° 28' N.	6° 12' W.
373	Granada	37° 09' N.	3° 35' W.
381	Oporto	41° 08' N.	8° 40' W.
382	Coimbra	40° 12' N.	8° 25' W.
383	Berlenga	39° 25' N.	9° 30' W.
384	Lisbon	38° 44' N.	9° 11' W.
385	St. Vincent	37° 01' N.	9° 00' W.
386	Faro	37° 01' N.	7° 56' W.
395	Madeira	32° 38' N.	16° 54' W.
396	P. Delgada	37° 44' N.	25° 40' W.

No.	Station.	Position.	
		Latitude.	Longitude.
397	Angra	38° 39' N.	27° 14' W.
398	Horta	38° 32' N.	28° 38' W.
399	Flores	39° 27' N.	31° 08' W.
001	Tangier	35° 47' N.	5° 51' W.
003	Rabat	34° 00' N.	6° 50' W.
004	Casablanca	33° 35' N.	7° 39' W.
007	Agadir	30° 27' N.	9° 33' W.
009	Meknès	33° 55' N.	5° 35' W.
010	Fes	34° 05' N.	5° 03' W.
011	Taza	34° 14' N.	4° 02' W.
012	Oudja	34° 41' N.	1° 56' W.
013	Marrakech	31° 39' N.	8° 01' W.
019	Tindouf	27° 41' N.	8° 09' W.
025	Safi	32° 18' N.	9° 15' W.
031	Oran	35° 38' N.	0° 37' W.
032	Algiers	36° 46' N.	3° 03' E.
037	In-Salah	27° 12' N.	2° 28' E.
038	Colomb Béchar	31° 40' N.	2° 10' W.
039	Beni	30° 08' N.	2° 11' W.
041	Laghouat	33° 48' N.	2° 51' E.
043	El-Goléa	30° 35' N.	2° 53' E.
046	Adrar	27° 52' N.	0° 17' W.
047	Cap Carbon	36° 45' N.	5° 00' E.
055	Reggane	26° 43' N.	0° 09' E.
056	Cap Ténès	36° 33' N.	1° 20' E.
064	Tabelbala	29° 27' N.	3° 10' W.
067	Arak	25° 21' N.	3° 44' E.
075	Chegga	25° 27' N.	5° 50' W.

HOLLAND.

II.—Weather Shipping Bulletin.

Wireless Telephony (R/T).

Off Dutch Coast.

Scheveningen R/T Station, approximate Latitude 52° 06' N., Longitude 4° 16' E.

Call sign—**PCF**.

Wavelength—1205 m. R/T.

Times of transmission :—

Weekdays 0930 and 2030 G.M.T.
 Sundays and Holidays { Winter 0930 and 1940 G.M.T.
 { Summer 0830 and 1925 G.M.T.

The message issued in the morning is based on 0700 G.M.T. observations.

The message issued in the evening is based on 1800 G.M.T. observations.

The messages are preceded by the words "Weerbericht voor de scheepvaart" and consist of four parts.

Part I, en clair (Dutch).

Brief description of change of pressure, visibility, wind, and weather.

Part II.

Weather report in code giving actual observations at the stations hereunder :—

List of Observation Stations.

Index Number.	Station.	Position (approx.)	
		Latitude N.	Longitude E.
1	Den Helder	52° 58'	4° 45'
2	Vlissingen	51° 26'	3° 34'
3	Terschellingerbank Lt. V.	53° 27'	4° 47'
4	Maas Lt. V.	52° 02'	3° 53'
5	Noord-Hinder Lt. V.	51° 38'	2° 34'

The key and code used is exactly the same as that used for the British "Weather Shipping" Bulletin, see page 71.

Part III, en clair (Dutch).

Forecast of visibility, wind, and weather, for 12 hours for the Dutch coast areas extending to about 30 miles off the coast :—

North (N. of Kamperduin), Middle (Kamperduin to Hook of Holland), South (S. of Hook of Holland).

Part IV, en clair (Dutch).

Gale warnings for the Dutch coast divided when necessary into the areas given in Part III above.

Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.).

North Sea.

Scheveningen W/T Station, Latitude 52° 06' N., Longitude 4° 16' E. (approx.), call sign **PCH**, makes gale warnings on receipt and following the end of the next compulsory 3 minutes' silence period, both in Dutch and English, and also at 1230 and 2030 G.M.T. Wavelength used is 600 metres (I.C.W.).

The warning commences with the letters "KNMI," and is transmitted first slowly, and then repeated quickly.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (I.C.W.).

Scheveningen W/T Station, call sign **PCH**, broadcasts, when necessary, information of ice conditions in certain Dutch harbours and approaches, daily as follows :—

At 1230 and 2030 G.M.T. after the storm warning (if issued). Wavelength 600 metres (I.C.W.).

The ice report is broadcast in a local code and will contain the ice conditions for the following harbours and in the following sequence :—

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

The report commences with the words "Ijsbericht, Ice report."

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

GERMANY.

**II.—Weather Shipping Bulletin.
Wireless Telegraphy (I.C.W.).
North Sea.**

Norddeich W/T station, approximate Latitude 53° 36' N., Longitude 7° 09' E.

Call sign—**DAN**.

Wavelength—677 m. I.C.W.

Times of transmission—1020 and 2130 G.M.T.

The message issued at 1020 is based on 0700 G.M.T. observations. The message issued at 2130 is based on 1800 G.M.T. observations.

The messages are preceded by the words "Seewetter Nordsee" and consist of two parts.

Part I is a weather report in code giving actual observations at the stations hereunder.

Station No.	German Station.	Position.	Station No.	Foreign Station.	Position.
0	Borkum Riff Lt.-V.	53° 46' N., 6° 04' E.	0	Helder ...	52° 58' N., 4° 45' E.
1	Heligoland ...	54° 11' N., 7° 54' E.	1	Hanstholm ...	57° 05' N., 8° 35' E.
2	Elbe Lt.-V. No. 1 ...	54° 01' N., 8° 13' E.	2	Krakenes ...	62° 02' N., 4° 59' E.
3	Amrum Bank Lt.-V.	54° 33' N., 7° 53' E.	3	Aberdeen ...	57° 10' N., 2° 06' W.

The foreign stations' observations are preceded by the word "Ausland" (Foreign). The key and code used is exactly the same as that used for the British "Weather Shipping" Bulletin, see page 71.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German, covering the whole sea area off East and North Frisian coasts including Ostfriesland (between Borkum Riff Lt.-V., Elbe entrance and Heligoland) and Nordfriesland (Elbe entrance northward to Ellenbogen, Sylt).

Western, Middle, and Eastern Baltic.

Rügen W/T Station, approximate Latitude 54° 35' N., Longitude 13° 37' E.

Call sign—**DAS**.

Wavelength—636 m. I.C.W.

Times of transmission—1030 and 2150 G.M.T.

The message issued at 1030 G.M.T. is based on 0700 G.M.T. observations. The message issued at 2150 G.M.T. is based on 1800 G.M.T. observations.

The messages are preceded by the words "Seewetter Rügen" and consist of two parts.

Part I is a weather report in code giving actual observations at the stations hereunder.

Station No.	German Station.	Position.	Station No.	Foreign Station.	Position.
4	Bulk ...	54° 27' N., 10° 12' E.	4	Skagen ...	57° 44' N., 10° 38' E.
5	Fehmarnbelt Lt.-V.	54° 36' N., 11° 09' E.	5	Copenhagen ...	55° 42' N., 12° 37' E.
6	Aldergrund Lt.-V.	54° 50' N., 14° 22' E.	6	Visby ...	57° 39' N., 18° 18' E.
7	Arkona ...	54° 41' N., 13° 26' E.	7	Memel ...	55° 42' N., 21° 10' E.
8	Leba ...	54° 46' N., 17° 33' E.			
9	Brusterort ...	54° 58' N., 19° 59' E.			

The foreign stations' observations are preceded by the word "Ausland" (Foreign).

Key and code as above.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German.

Wireless Gale Warnings.

Gale warnings are broadcast in German, preceded by the word "Funkturm," giving the nature of the atmospheric distribution with

direction and force of wind for the regions specified by the stations indicated below.

W/T Station	Call Sign.	Position.		Wavelength.	Time of Transmission.	Region.
		Latitude N.	Longitude E.			
Norddeich	DAN	53° 36'	7° 09'	600 m. I.C.W. 677 m. I.C.W.	On receipt, repeated immediately after next silent period At any two of the following times:— 0520, 1020* 1630, 2130*	North Sea.
Rügen	DAS	54° 35'	13° 37'	600 m. I.C.W. 636 m. I.C.W.	On receipt, repeated immediately after next silent interval At any two of the following times:— 0530, 1030* 1650 2150*	Baltic Sea.

* After Weather Bulletin.

**IV.—Wireless Ice Warnings.
C.W. and I.C.W.**

Norddeich W/T Station, call sign **DAN**, broadcasts, when necessary, except Sundays, information of ice conditions along the German coasts in the North Sea and Baltic in a local code.

The message is transmitted at 0950 G.M.T. on a wavelength of 2400 m. C.W.

Rügen W/T Station, call sign **DAS**, broadcasts ice warnings similar to above at 1030 G.M.T. on a wavelength of 636 m. I.C.W.

SWEDEN.

**II.—Weather Shipping Bulletin.
Wireless Telegraphy (C.W.).
North Sea and Baltic.**

Karlsborg W/T Station, approximate Latitude 58° 29' N., Longitude 14° 29' E.

Call sign—**SAV**.

Wavelength—6000 m. C.W.

Times of transmission—1050 and 2130 G.M.T.

The message issued at 1050 is based on 0700 G.M.T. observations.

The message issued at 2130 is based on 1800 G.M.T. observations.

The messages are preceded by the words "Weather Report" and consist of four parts.

Part I is a weather report in code giving actual observations at the stations hereunder:—

List of Observation Stations.

Index Number.	Station.	Position (approx.)	
		Latitude N.	Longitude E.
1	Bjuröklubb ...	64° 28'	21° 34'
2	Holmögadd ...	63° 35'	20° 45'
3	Gran ...	62° 01'	17° 38'
4	Finngrundet ...	61° 04'	18° 41'
5	Sandhamn ...	59° 17'	18° 55'
6	Visby ...	57° 39'	18° 18'

List of Observation Stations (continued).

Index Number.	Station.	Position (approx.)	
		Latitude N.	Longitude E.
7	Grimskar	56° 39'	16° 22'
8	Skånör	55° 24'	12° 49'
9	Kullen	56° 18'	12° 27'
0	Vinga	57° 38'	11° 36'
1	Hammeren	55° 17'	14° 46'
2	Hanstholm	57° 07'	8° 36'
3	Utsira	59° 18'	4° 53'
4	Kråkenes	62° 02'	4° 59'

The key and code used is exactly the same as that used for the British "Weather Shipping" Bulletin, see page 71.

Part II, en clair (English).

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

Part III, en clair (English).

Weather forecasts for 12 hours for the following areas:—

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

Part IV, en clair (English).

Gale warnings for areas 2, 3, 4 and 5 (above), particulars as follows.

Wireless Gale Warnings.

Baltic.

Karlsborg W/T station broadcasts warnings, *en clair*, English, of gales for the areas 2, 3, 4 and 5 given in Part III of the Swedish Weather Shipping Bulletin.

The warnings commence with the words "Gale Warnings" and are valid for the ensuing 24 hours. They form Part IV of the weather bulletins broadcast by **Karlsborg W/T** at 1050 and 2130 G.M.T., previously explained.

IV.—Wireless Ice Warnings.

Swedish Ice Breaker.

Wireless Telegraphy (C.W. and I.C.W.) and Telephony (R/T).

The Swedish Government ice breakers broadcast information in **English** on a wavelength of 600 metres, giving their position, proposed area for ice breaking, and rendering assistance during the ensuing 12 hours. Important local information for mariners will also be broadcast.

The messages are broadcast daily, during the time the vessels are employed on ice-breaking service.

The message will be repeated by wireless telephony on a wavelength of 600 metres R/T, in Swedish and English, immediately after the transmission on I.C.W. The repetition will be preceded by the words "Fran svenska statens isbrytarfartyg" (from the Swedish State ice-breaking vessel).

Ice breaker "Ymer," call sign **SBPN**, at 0800 and 1045 G.M.T. on weekdays and 1210 G.M.T. on Sundays and holidays.

Ice breaker "Atle," call sign **SBLN**, at 0815 and 1100 G.M.T. on weekdays and 1225 G.M.T. on Sundays and holidays.

NORWAY.

II.—Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.) and Telephony (R/T).

The following stations broadcast gale warnings for the coast of Norway.

Station.	Call Sign.	Position.		Wavelength.	Times of transmission G.M.T.	Region.
		Latitude N.	Longitude E.			
Flekkeroy	LGY	58°04'	8°00'	600m. C.W.	On receipt and at 1025, 1620, 2120	Coast in vicinity of Kristiansand.
Utsira ...	LGK	59°18'	4°55'	600m. I.C.W.* 600m. R/T	Following the first silent period after receipt and at 1000, 1600 2100	Lindesnes to Hellisö Lt. Ho.
Ålesund ...	LGA	62°28'	6°10'	600m. I.C.W.	1205	Fjordane, Møre, Trøndelag, Viking Bank, Shetlands, Faero Is, Tampen, Storegga, FrøyaBank and Halten Bank.
Röst ... (1st Dec. to 30th Apr.)	LGR	67°30'	12°05'	600m. R/T	1200 Weekdays	Lofoten, Helgeland, Salten.

* In English.

DENMARK.

IV.—Wireless Ice Warnings.

Wireless Telegraphy.

Danish Waterways.

Skamlebæk W/T station, approximate position Latitude 55° 50' N., Longitude 11° 25' E., call sign **OXE**, broadcasts information concerning ice conditions in Danish waterways, on a wavelength of 742.6 metres.

Times of transmission, 1115, 1630 and 2200 G.M.T. The 1115 G.M.T. message is preceded by information in a local code.

LATVIA.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (R/T).

The broadcasting station at Riga, Latitude 56° 57' N., Longitude 24° 02' E., call sign **YLZ**, broadcasts in winter on a wavelength of 238.5 metres R/T, ice reports at 1030 and 2000 G.M.T. The reports contain information concerning ice and navigation conditions for the Latvian coast. They are broadcast in the Latvian, **English** and German languages.

ESTONIA.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (C.W.).

Tallinn W/T Station, approximate Latitude 58° 56' N., Longitude 23° 32' E., call sign **ESA**, broadcasts, on the first appearance of ice, information of ice conditions in Estonian waters in a local code.

The message is transmitted at 0940 G.M.T. on a wavelength of 3508m. C.W.

FINLAND.

II.—Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.) and Telephony (R/T).

The following stations broadcast gale warnings when necessary *en clair*, in **English**, at the times and wavelengths given below, the message commencing with the International Safety Signal "TTT Gale Warning."

Station.	Call Sign.	Position.		Wavelength.	Times of Transmission G.M.T.
		Latitude N.	Longitude E.		
Viipuri (Viborg)	OHP	60° 43'	28° 45'	600m. I.C.W.	1230 and 2030
Hanko (Hangö)	OHN	59° 50'	22° 56'	142·2m. R/T	1205 and 1750
Vaasa	OHX	63° 07'	21° 37'	90m. R/T	1220 and 1755

Example of message—"TTT Gale Warning. Southwest gale expected up to about next morning between Aland and Helsinki."

IV.—Wireless Ice Warnings.

Wireless Telegraphy (C.W.).

Helsinki-Santahamina W/T Station, approximate Latitude 60° 09' N., Longitude 25° 02' E., call sign **OHA**, broadcasts, when necessary, information of ice conditions for the coasts of Finland in a local code.

The messages are transmitted at 1030 and 1410 G.M.T. on a wavelength of 3750m. C.W.

FRANCE.

II.—Wireless Gale Warnings.

Wireless Telegraphy.

The following W/T stations broadcast gale warnings concerning the areas "Manche," "Bretagne," "Océan," and "Gascogne" :—

Cherbourg-Rouges Terres	Approximate Latitude 49° 37' N., Longitude 1° 36' W., call sign FUC .
Brest-Mengam ...	Approximate Latitude 48° 21' N., Longitude 4° 35' W., call sign FUE .
Lorient-Pen-Mané	Approximate Latitude 47° 44' N., Longitude 3° 21' W., call sign FUN .
Rochefort-Soubise	Approximate Latitude 45° 56' N., Longitude 0° 59' W., call sign FUR .

The following W/T stations broadcast storm warnings concerning the areas "Roussillon," "Provence," "Rhône," and "Corse" :—

Toulon-Mourillon	Approximate Latitude 43° 07' N., Longitude 5° 55' E., call sign FUT .
Ajaccio-Aspretto	Approximate Latitude 41° 56' N., Longitude 8° 46' E., call sign FUI .

The W/T stations transmit the warning on the 600 metre wavelength as soon as it is received. The International Safety Signal — — — (TTT) is first sent out, followed by D.E. and station call sign. This transmission commences towards the end of one of the international three-minute silent periods and the nature of the warning is sent immediately after the end of the silent period. The message is repeated after several minutes.

When the time of sending falls outside a single operator watch on board ship the message is repeated at the commencement of the succeeding watch.

The limits of the areas mentioned above are as follows :—

"Manche"	... Belgian frontier to and including Carteret.
"Bretagne"	... From and including Cherbourg to estuary of Loire.
"Océan"	... From and including Lorient to the Gironde.
"Gascogne"	... From and including Ile de Ré to Spanish frontier.
"Roussillon"	... From Spanish frontier to and including Cette.
"Rhône"	... From and including Cette to Camarat.
"Provence"	... From and including Camarat to Italian frontier.
"Corse"	... All the coasts of Corsica.

Form of Message.

The warnings are sent *en clair* in French, and are valid for 24 hours from the time indicated in the message.

They commence with the name of the day of the week, the time from which the validity of the warning is reckoned, the name of area threatened followed by the word "Tempête" and the probable direction from which the gale may be expected.

Example.

"Jeudi 15 heures Manche tempête, Nord-Ouest (N.W.)."

Explanation.

From Tuesday until 1500 to-morrow a gale (Force 7 or over Beaufort) and from a direction between North and West will threaten all parts of the coast between the Belgian frontier and Carteret.

PORTUGAL.

II.—Wireless Weather Bulletins.

Wireless Telegraphy (I.C.W.) and Telephony (R/T).
Containing meteorological conditions at Madeira and Azores.

Monsanto W/T Station, approximate Latitude 38° 44' N., Longitude 9° 11' W., call sign **CTV**, broadcasts a meteorological report *en clair*, in Portuguese and English, at 1130 and 2300 G.M.T. on a wavelength of 760 metres (I.C.W.) and at 1155 and 2325 G.M.T. on a wavelength of 760 metres (R/T), giving :—

A brief statement of weather conditions followed by observations of barometric pressure in millibars wind and swell, also a forecast for the next 24 hours of wind and swell for the coast of Portugal. The coast is divided as follows :—

Zona Norte...	From River Minho to Cape Mondego.
Zona Centro	From Cape Mondego to Cape St. Vincent.
Zona Sul ...	Cape of Algarve (southern coast).

The messages are based upon observations of 0700 or 1800 G.M.T.

MOROCCO.

II.—Wireless Gale Warnings.

Wireless Telegraphy (Spark).

Casablanca—Médiounah W/T Station, approximate Latitude 33° 27' N., Longitude 7° 31' W., call sign **CNM**, broadcasts gale warnings at 1530 G.M.T. on 600 m. spark. They are broadcast *en clair* in French and repeated at the commencement of the following watch for single operators. The area affected is given in the message.

The message is preceded by the International Safety Signal (TTT) — — —

AZORES.

II.—Wireless Weather Bulletin.

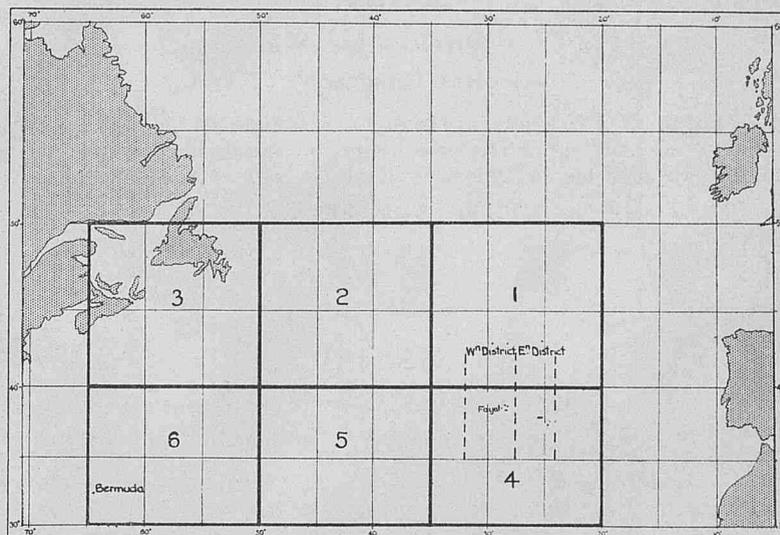
Wireless Telegraphy (C.W. and I.C.W.).

Horta W/T Station, Latitude 38° 32' N., Longitude 28° 38' W. (approx.), call signs :—

CTH, Wavelength 770 m. I.C.W. Time of transmission 2000.

CTG, Wavelength 2400 m. C.W. Times of transmission 1745 and 2030 G.M.T.

A general statement of weather and a 24 hours' forecast for the Zones 1 to 6 and the Azores, based on 1300 G.M.T. observations and weather conditions at Bermuda and Fayal, are sent *en clair* in English. The zones referred to are indicated in the chart below.



PERSONNEL.

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

RETIREMENTS.

Captain Arthur Rothwell, Commander of the S.S. *Beaverdale*, has retired after 46 years at sea.

After serving his apprenticeship in sail and obtaining experience in steam Captain ROTHWELL joined the Canadian Pacific Company in 1905. Rising through the different grades he obtained command in 1924, and has had charge of several units of the company's fleet, including the *Balfour*, *Bothwell*, *Brecon*, *Metagama*, *Montcalm*, *Duchess of Richmond*, *Duchess of York*, *Duchess of Atholl*, *Empress of Australia* and *Beaverdale*.

When in command of the *Montcalm* in 1932 Captain ROTHWELL performed admirable services on the occasion of the rescue in heavy weather of the crew of the salvage tug *Reindeer I* which was abandoned in the North Atlantic in March of that year. He has been a regular and valued member of the Corps of Voluntary Marine Observers since 1926.

J. H.

Captain M. J. Sarson has recently retired from the service of the Orient Line.

He went to sea in 1894 as apprentice in the full rigged ship *Earl of*

Zetland of Glasgow, and completed his time in that ship and in the *Earl of Hopetoun*. The former vessel was stranded off Dungeness on his first night at sea and the latter ship was wrecked in the China Sea and became a total loss on the last voyage of his apprenticeship.

After serving as second mate in the sailing ships *Earl of Dunmore*, *Wasdale*, and *Hampton* he obtained his master's certificate in 1903. He then served with the Pacific Steam Navigation Company and the Royal Mail Steam Packet Company until 1909 when he transferred to the Orient Line.

During the Great European War he served first as chief officer and then as Captain in S.S. *Orontes* engaged in trooping; bringing Australian troops, and towards the end of the war American troops, to Europe.

After the war, in 1919, Captain SARSON reverted to the rank of chief officer on account of the reduction in the Orient Line service.

In 1927 he was again appointed to command in R.M.S. *Osterley* and subsequently commanded in turn *Orsova*, *Orvieto*, *Ormonde*, *Orford*, and *Orama*, most of which ships appeared in the list of voluntary observing ships in this journal.

C. H. W.

OBITUARY.

The death of **Captain W.S. Colbourne, O.B.E., R.D., R.N.R.**, in hospital at Cape Town, is noted with regret.

WALTER SYDNEY COLBOURNE was born in 1879. He first went to sea as a midshipman in Devitt and Moore's full rigged ship *Hesperus*. On obtaining his 2nd mates certificate he left sail, and was for about four years in Elder Dempster's steamers, joining the company as 4th officer and rising to 2nd officer. In 1903, having passed for master (square rig), he joined the service of the Union Castle Mail Steamship

Company as 4th officer. He was then a sub-lieut., R.N.R. Promoted through the various grades he was given temporary command in 1927, and was confirmed in command in 1929 of R.M.S. *Armada Castle*.

After commanding several of the company's ships, including the *Crawford Castle*, *Sandown Castle*, *Garth Castle*, *Dunluce Castle*, and *Dunbar Castle*, he was appointed to the *Balmoral Castle* in January, 1938.

Captain COLBOURNE received the O.B.E. for his services as Navigating Lieutenant in armed cruisers during the Great War.

C. H. W.

ERRATA.

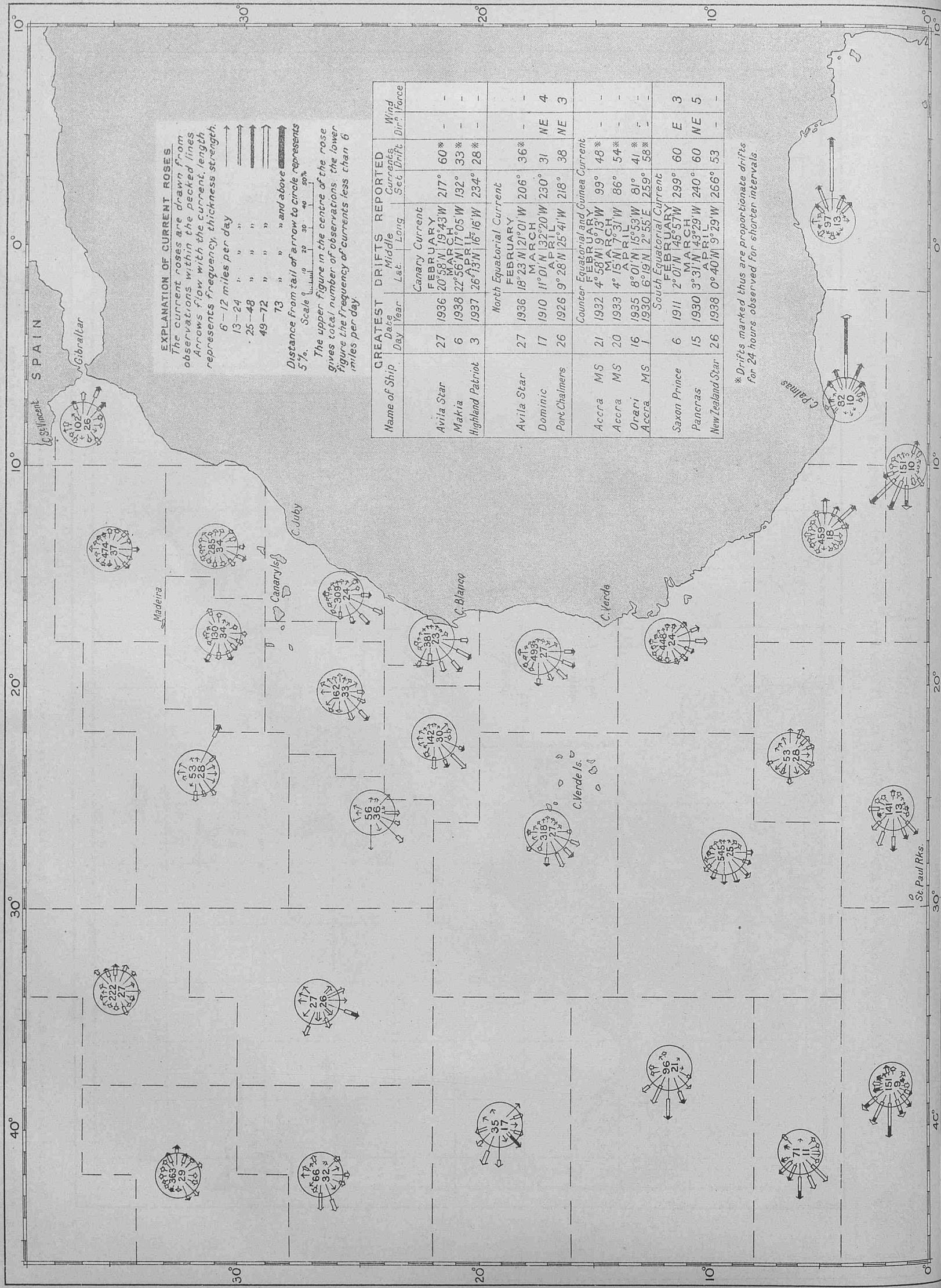
January 1939 Number, page 19.

Under heading **TABLE 2.**

Replace sentence "The exceptional values" &c., &c. to "concerned being stated" by "The exceptional values relate to the days when the routine observations showed the tidal streams to have been most affected, the dates and central times being stated."



CURRENTS IN THE NORTH ATLANTIC, SOUTHEASTERN PORTION
 Observations of ships regularly for the British Meteorological Office, 1910-1938.
 FEBRUARY MARCH and APRIL.

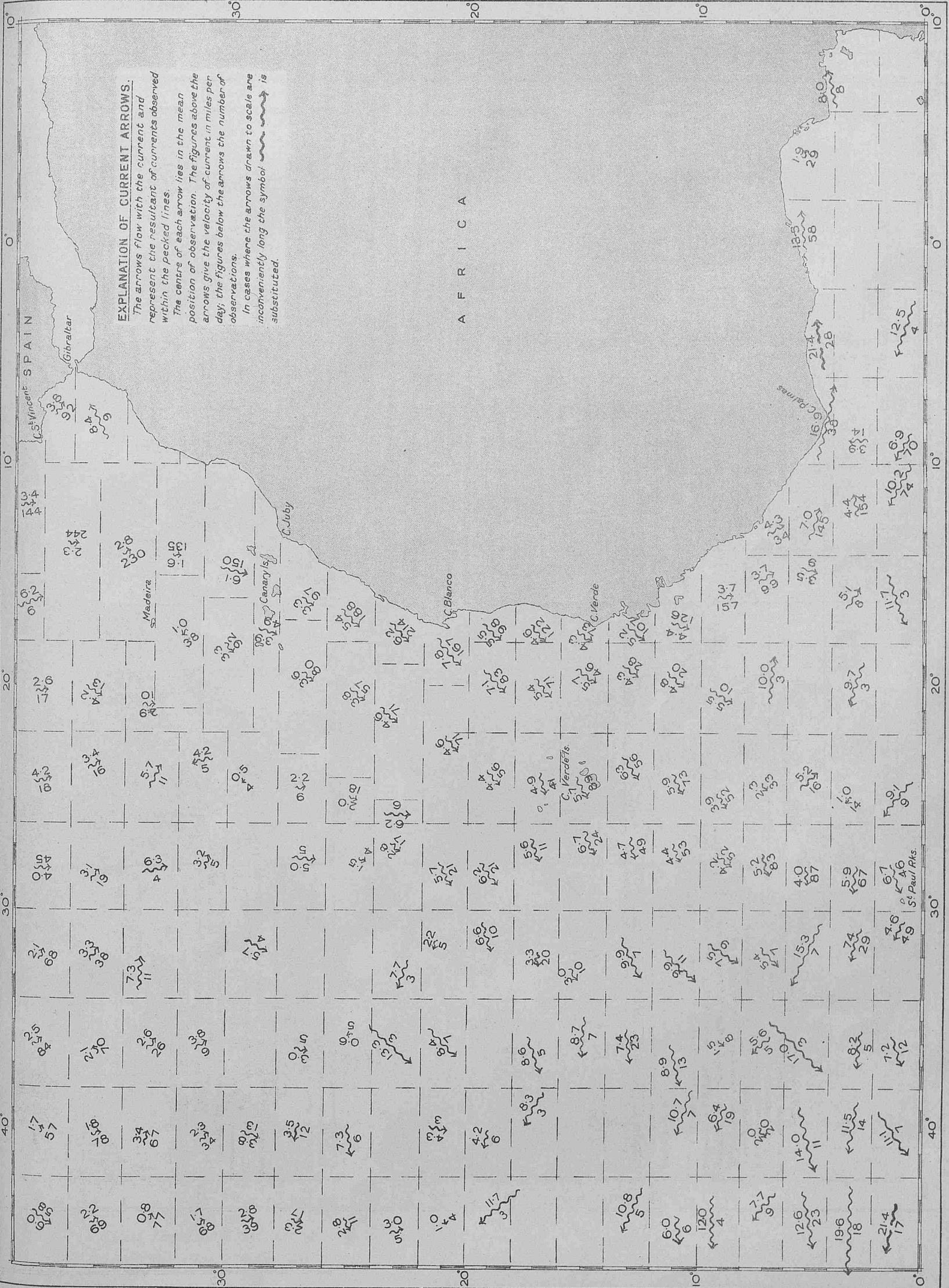


EXPLANATION OF CURRENT ROSES
 The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength. 6-12 miles per day
 13-24 " " " " " "
 25-48 " " " " " "
 49-72 " " " " " "
 73 " " " " and above
 Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%
 The upper figure in the centre of the rose gives total number of observations, the lower figure the frequency of currents less than 6 miles per day.

Name of Ship	Date	Middle		Current	Wind Dir.	Wind Force	
		Lat.	Long.				
Avila Star	27	Canary Current		217°	60*	-	
		FEBRUARY					
		20° 58' N 19° 43' W					
Makia	6	Canary Current		132°	33*	-	
		MARCH					
		22° 56' N 17° 05' W					
Highland Patriot	3	Canary Current		234°	28*	-	
		APRIL					
		26° 13' N 16° 16' W					
Avila Star	27	North Equatorial Current		206°	36*	-	
		FEBRUARY					
		18° 23' N 21° 01' W					
		MARCH					
Dominic	17	North Equatorial Current		230°	31	NE 4	
		MARCH					
		11° 01' N 32° 20' W					
Port Chalmers	26	North Equatorial Current		218°	38	NE 3	
		APRIL					
		9° 28' N 25° 41' W					
Accra MS	21	Counter Equatorial and Guinea Current		99°	48*	-	
		FEBRUARY					
		4° 58' N 9° 13' W					
		MARCH					
Accra MS	20	Counter Equatorial and Guinea Current		86°	54*	-	
		MARCH					
		4° 15' N 7° 31' W					
Orari Accra	16	Counter Equatorial and Guinea Current		81°	41*	-	
		APRIL					
		6° 19' N 2° 55' E					
Saxon Prince	6	South Equatorial Current		299°	60	E 3	
		FEBRUARY					
		2° 01' N 45° 57' W					
Panaras	15	South Equatorial Current		240°	60	NE 5	
		MARCH					
		3° 31' N 43° 29' W					
New Zealand Star	26	South Equatorial Current		266°	53	-	
		APRIL					
		0° 40' N 9° 29' W					

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.

CURRENTS IN THE NORTH ATLANTIC, SOUTHEASTERN PORTION
 Observations of ships regularly observing for the British Meteorological Office, 1910-1938.



A F R I C A

SPAIN
 St. Vincent
 Gibraltar

Madeira

Canery Is.

C. Juby

C. Branco

C. Verde

C. Verde Is.

St. Paul's

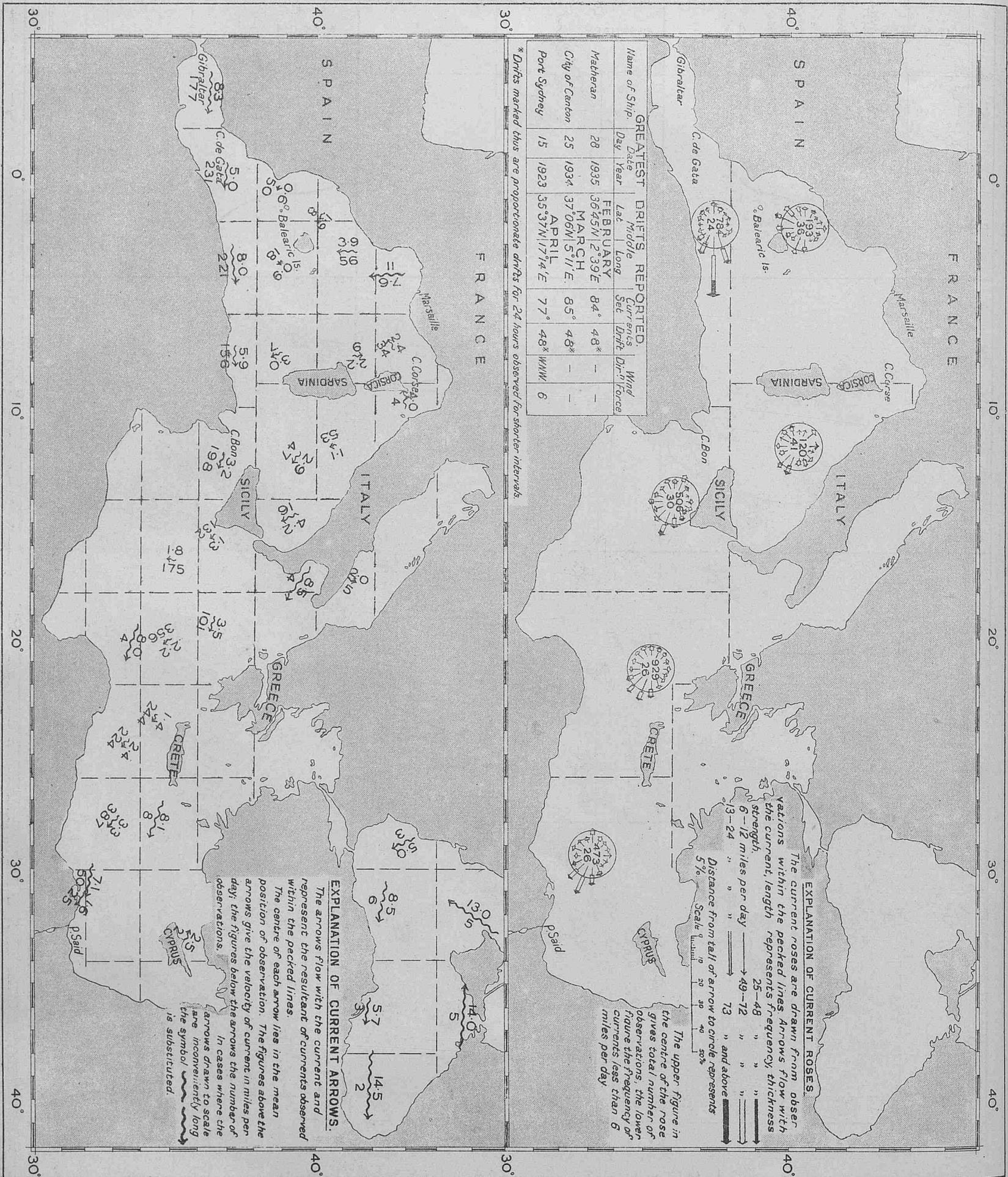
St. Paul's

St. Paul's

Grid of current data points with arrows and numbers. Example: At 40°N, 30°W, velocity 1.7, observations 57. At 30°N, 20°W, velocity 3.3, observations 38. At 20°N, 10°W, velocity 10.0, observations 4. At 10°N, 0°W, velocity 12.6, observations 23. At 0°N, 30°W, velocity 21.4, observations 17.

Name of Ship.	GREATEST DRIFTS REPORTED.		Curr. sets	Wind Dir. & Force
	Day	Date		
Matheran	28	1935	36°45'N 12°39'E	84° 48*
City of Canton	25	1934	37°06'N 5°11'E.	85° 48*
Port Sydney	15	1923	35°37'N 17°14'E	77° 48* WNW 6

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.



EXPLANATION OF CURRENT ROSES

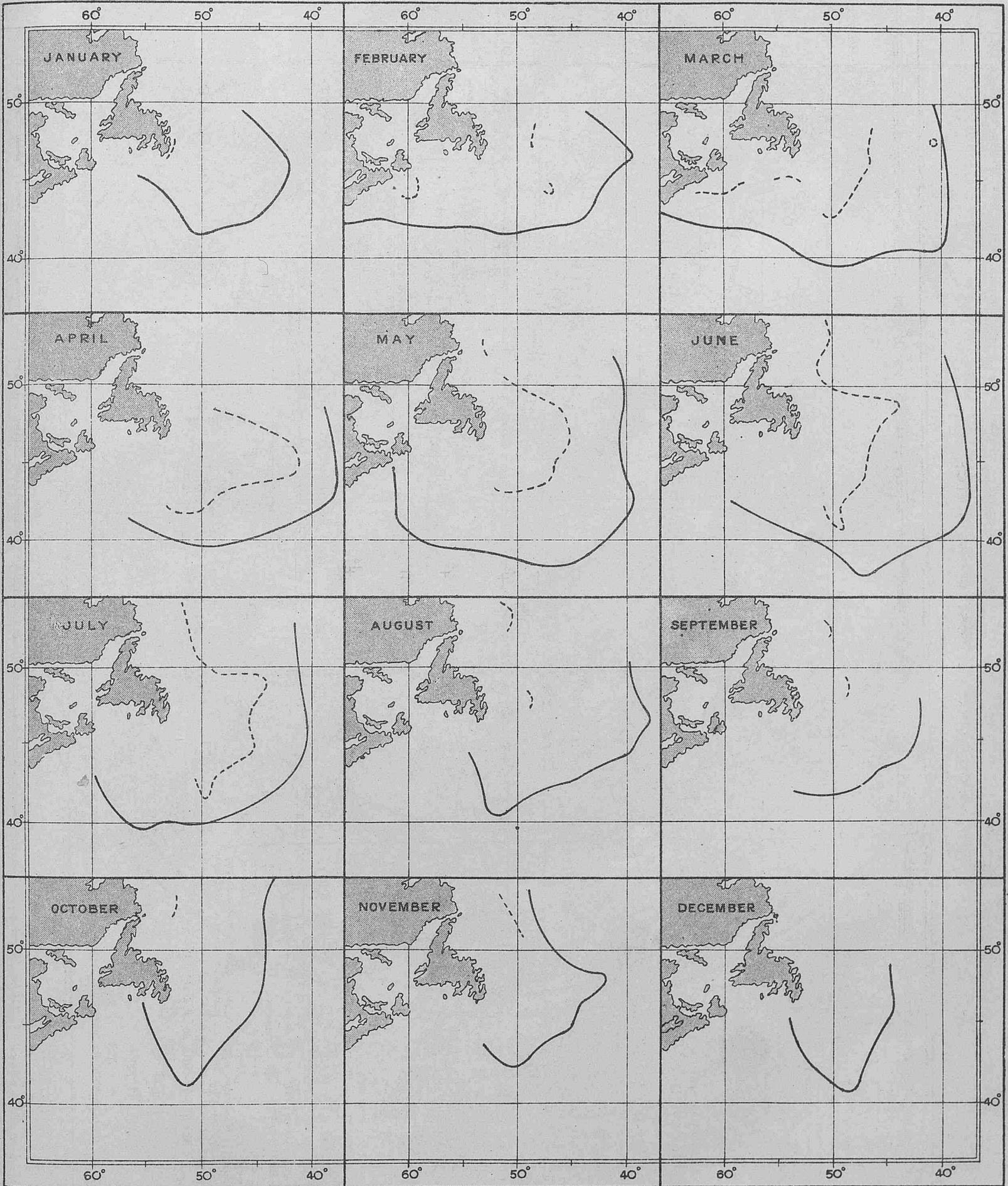
The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength.
 6-12 miles per day " " " " " "
 13-24 " " " " " "
 25-48 " " " " " "
 49-72 " " " " " "
 73 " and above " " " " " "

Distance from tail of arrow to circle represents 5% Scale 0 10 20 30 40 50 Miles

The upper figure in the centre of the rose gives total number of observations, the lower figure the frequency of currents less than 6 miles per day.

EXPLANATION OF CURRENT ARROWS.

The arrows flow with the current and represent the resultant of currents observed within the pecked lines.
 The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity in miles per day; the figures below the number of observations.
 In cases where the arrows drawn to scale are inconveniently long the symbol \sim long is substituted.



FEBRUARY MARCH and APRIL. Observations of ships regularly observing for the British Meteorological Office, 1910-1938.

CHART A

LIMITS OF ICE, WESTERN NORTH ATLANTIC.

Limit from 1901 to 1938 shown thus —————

Limit for 1938 shown thus - - - - -

EXCEPTIONAL POSITIONS OF ICE.

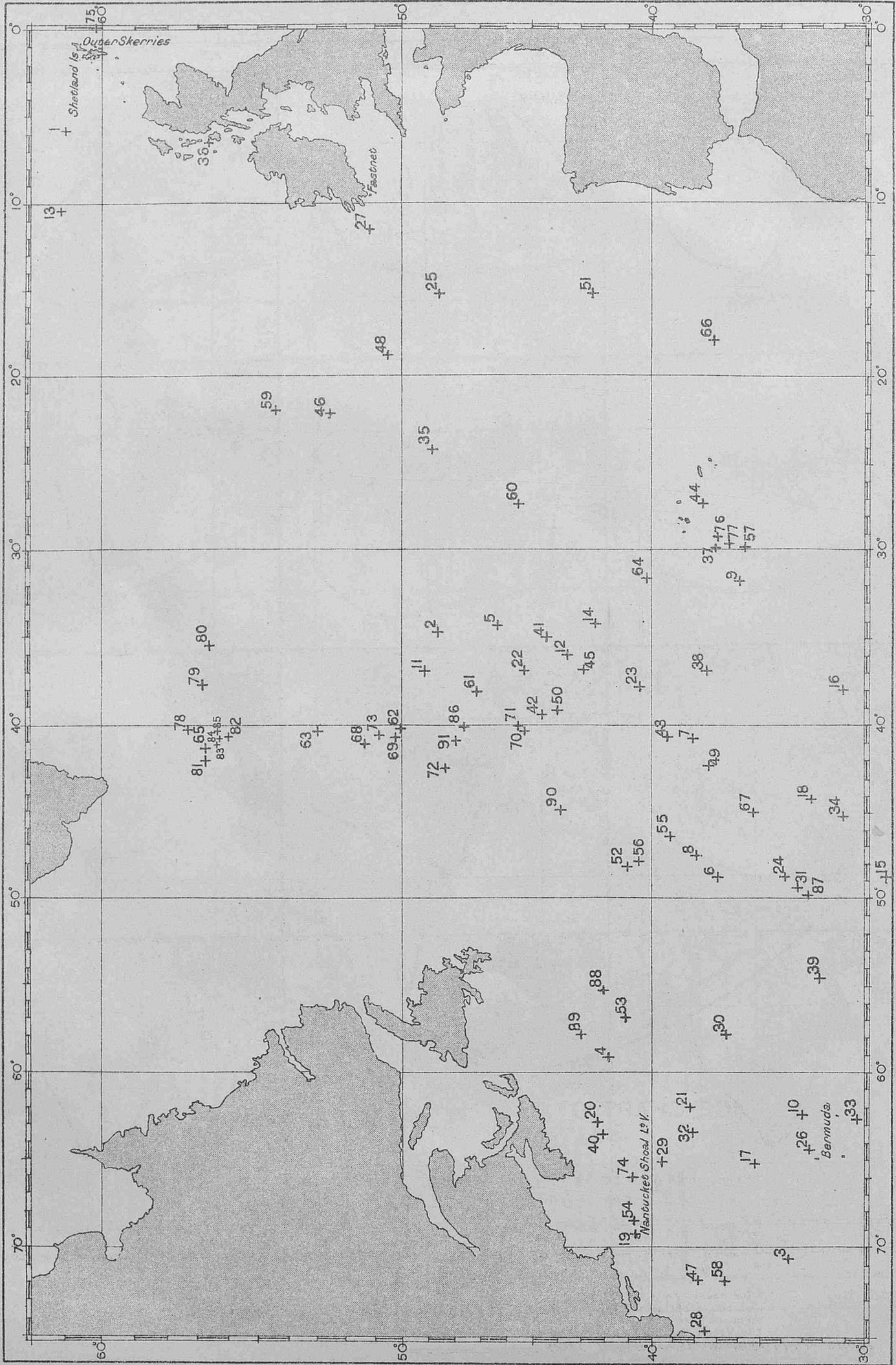
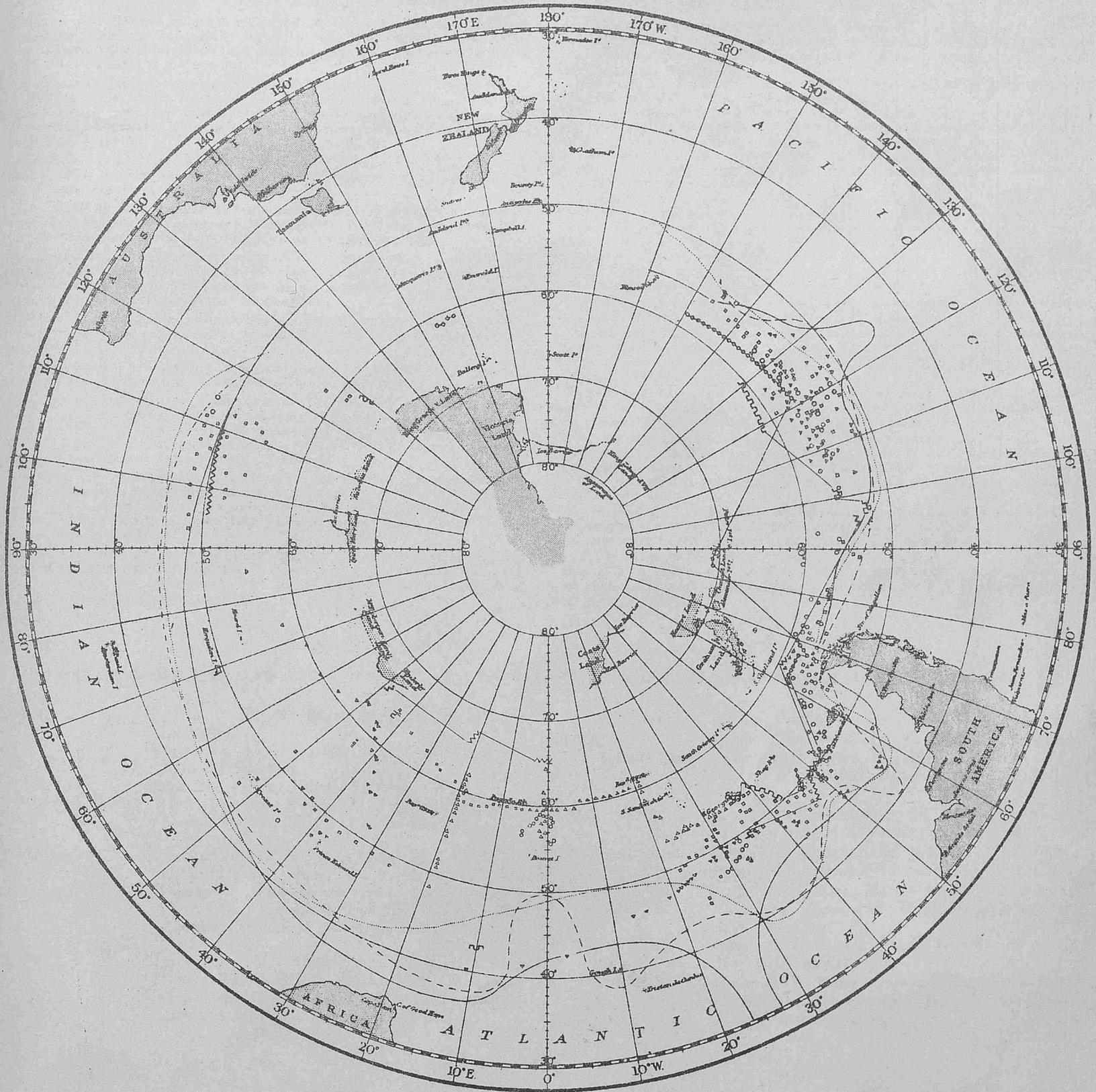


Chart B.



ICE CHART OF THE SOUTHERN HEMISPHERE, APRIL MAY and JUNE.

EXPLANATION.

The symbols used to distinguish the ice of each of the three months are as follows:—

	Bergs, 1902-1938	Position of northernmost pack ice actually observed 1885-1938.	Extreme limit of all ice, 1772-1938.
April	△	~~~~~	=====
May	□	~~~~~	-----
June	○	-o-o-o-	-----

Note — The symbols for pack ice are joined by hair line where desirable

The coast line of the Antarctic continent as shown on this chart is not completely corrected to accord with the latest survey information. It is intended in a later volume of The Marine Observer after the Admiralty ice chart of the Southern Hemisphere No 1241 has been revised, to again publish this chart in The Marine Observer with coast lines as complete as possible and to bring the ice information up to date annually

MARINE METEOROLOGY

OPERATIONS OF THE U.S. NAVY

The operations of the U.S. Navy in the field of marine meteorology have been a continuous process since the beginning of the century. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations.

The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations.

The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations.

The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations.

The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations. The U.S. Navy has always been interested in the weather, and in the early days of the century, the weather was a major factor in the success or failure of naval operations.

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

Captains and Officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officer or Agent, a list of whom, with addresses, is given below.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for certain "Selected Ships" to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Arrangements are also made for a limited number of ships to keep meteorological logs in certain trades for the purpose of completing the meteorological survey of the oceans.

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

At present the observing fleet is limited to a number not exceeding 360 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

The observing fleet list indicating which are "Selected Ships," with the names of commanders, officers, and other particulars, is published in THE MARINE OBSERVER and kept up to date monthly.

The Organization of Voluntary Meteorological Observation at sea is described in Chapter VII of THE MARINE OBSERVER'S HANDBOOK, sixth edition.

THE QUARTERLY MARINE OBSERVER or MONTHLY SUPPLEMENT is sent regularly to the captain of every observing ship, for the information and guidance of his observing officers, and the wireless operators. The Captains of observing ships are also supplied on request with charts, and atlases, according to trade, if available, as meteorological equipment.

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

The commanders of observing ships keeping the meteorological log are requested to return it (accompanied by Form 138 in the case of "Selected Ships") through the appropriate Port Meteorological Officer or Agent at intervals of not more than five months.

Commanders of observing ships keeping Forms 911 are requested to return them (accompanied by Form 138 in the case of "Selected Ships") by post direct to the Meteorological Office, London, at the end of each voyage, or at intervals of not more than two months.

These forms have the address and "On His Majesty's Service" printed upon them, and should be folded for posting accordingly.

The Port Meteorological Officers and Merchant Navy Agents inspect instruments in Meteorological log ships half-yearly, and in other observing ships quarterly, when possible; and they will replace as necessary any gear lent by the Meteorological Office. These officers will also check the accuracy of barometers, etc., in observing ships, but marine observers should themselves frequently check by comparison.

The work of the British observing fleet, that of the observing fleets of other nations party to the Convention for Safety of Life at Sea, together with Weather Shipping Bulletins and Gale and Hurricane Warnings conforming to the International Convention for Safety of Life at Sea, provide the necessary information for shipping. Thus a world wide service for all shipping, at the minimum cost to national funds, is provided. Shipowners are asked to facilitate this voluntary work which is done by the commanders and officers of their ships.

Shipowners will greatly assist by facilitating the forwarding of postal matter from the Air Ministry addressed to the Captains of ships.

The masters of all British ships fitted with wireless telegraphy are asked to assist in this service in aid of navigation by making routine wireless weather reports in accordance with the Selected Ship scheme where and when there are not Selected Ships carrying out the service.

With a view to stimulating this supplementary service of making weather reports in the Selected Ship service when and where there are not Selected Ships, a supplementary list of British Weather Reporting Ships is being made.

Only British ships suitably fitted with wireless telegraphy, and who have been visited by the Merchant Navy Agents to the Meteorological Office, and whose masters have then undertaken to perform this service, are included in this list, which is not published, but which is sent for information to stations working a roll call.

The masters of all British ships are advised to procure the pamphlet M.O.329, DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS, published and sold by H.M. Stationery Office, through any bookseller, price 6d.

M.O. 379, a HANDBOOK OF WEATHER, CURRENTS, AND ICE FOR SEAMEN, gives guidance in weather forecasting, also published by H.M. Stationery Office, price 4s. 0d.

NAUTICAL OFFICERS AND AGENTS OF THE MARINE DIVISION OF THE METEOROLOGICAL OFFICE, AIR MINISTRY.

LONDON ...	...	Captain C. E. N. FRANKCOM, Marine Superintendent. Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant. Room 205, Victory House, Kingsway, W.C.2. (Telephone No. : Holborn 3434 Extension 421.) Nearest station, Temple, District Railway.
THAMES...	...	Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (Telephone No. : Albert Dock 2659. Telegraphic Address : Barometric Aldock, London.)
MERSEY ...	...	Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (Telephone No. : Bank 8959. Telegraphic Address : Meteorite, Liverpool.)

		Agents.
BRISTOL CHANNEL.		Captain EDWARD HALL, 21, Dowlais Buildings, West Bute Street, Cardiff. (Telephone No. : Cardiff 1268. Telegraphic Address : Topmast, Cardiff.)
CLYDE ...	...	Captain W. HENDERSON, 80, Buchanan Street, Glasgow, C.I. (Telephone No. : Central 3775.)
FORTH ...	...	Captain G. MORE, Chief Dock Master's Office, Leith. (Telephone No. : Leith 35481.)
HUMBER ...	...	W. H. CARR, Esq., Master Mariner, Ferensway Chambers, Ferensway, Hull. (Telephone No. : Hull 16063.)
SOUTHAMPTON		Captain Sir BENJAMIN CHAVE, K.B.E. Room 35, Royal Mail House.
TYNE ...	...	Captain F. B. WEST, Customs House Chambers, Quayside, Newcastle upon Tyne, 1. (Telephone No. : Newcastle 23203.)

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description	Date.	Position.		Description.
	Latitude.	Longitude.			Latitude.	Longitude.	
ENGLISH CHANNEL							
6.3.39	50°15'N.	4°06'W.	Drifting red buoy, dangerous.	MEDITERRANEAN—continued.			
6.3.39	49°31'N.	3°12'W.	Red conical buoy adrift, dangerous.	14.3.39	42°42'N.	6°22'E.	Wreckage, dangerous.
10.3.39	48°50'N.	4°32'W.	Mast, white top, approx. 40 ft. long with rigging attached, dangerous.	NORTH ATLANTIC			
13.3.39	50°21'N.	0°31'W.	Drifting red coloured buoy.	1.3.39	48°00'N.	6°05'W.	Wooden mast with white cross-tree, dangerous.
17.3.39	49°13'N.	4°02'W.	Drifting black conical buoy, dangerous.	4.3.39	37°21'N.	74°42'W.	Red nun buoy marked 2.
NORTH SEA							
7.3.39	51°40'N.	2°20'E.	Empty small gig. 0—116 (Marie Suzanne) painted on bows.	9.3.39	48°45'N.	6°14'W.	Floating buoy carrying flag with yellow, red, yellow vertical stripes, buoy painted black and red vertical stripes, considered dangerous.
9.3.39	6 miles 180° from Kentish Knock L.V.		Waterlogged rowing boat, painted red.	12.3.39	45°02'N.	6°28'W.	12 ft. dinghy with varnished bottom and white top-sides, floating bottom up.
12.3.39	Between North Race Buoy and Inner Dowsing L.V.		Several tree trunks, 10 to 20 ft. long. May be dangerous to small craft.	GULF OF MEXICO.			
MEDITERRANEAN							
3.3.39	37°07'N.	11°29'E.	Raft, approx. 40 ft. long, with lattice work super-structure marked AC 7, dangerous.	3.3.39	28°51'N.	93°31'W.	Forked tree trunk about 25 ft. long, 2½ ft. diameter, with roots attached.
				4.3.39	28°37'N.	91°05'W.	Tree trunk, about 50 ft. long, 1 ft. diameter.
				5.3.39	28°59'N.	89°05'W.	Log about 4 ft. diameter, projecting vertically out of water.

CHART OF THE WESTERN NORTH ATLANTIC.

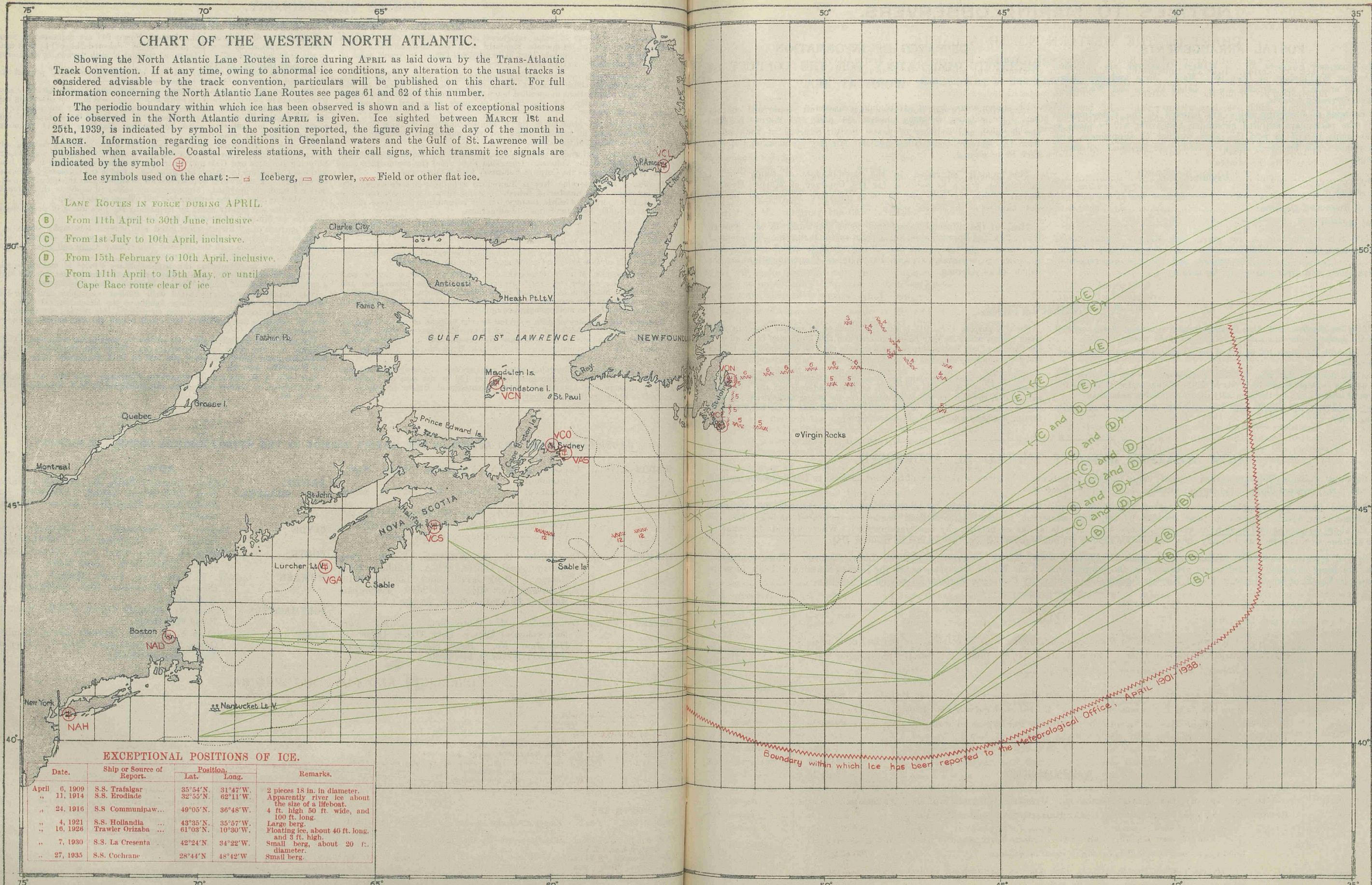
Showing the North Atlantic Lane Routes in force during APRIL as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 61 and 62 of this number.

The periodic boundary within which ice has been observed is shown and a list of exceptional positions of ice observed in the North Atlantic during APRIL is given. Ice sighted between MARCH 1st and 25th, 1939, is indicated by symbol in the position reported, the figure giving the day of the month in MARCH. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol ⊕

Ice symbols used on the chart: — Iceberg, = growler, wwww Field or other flat ice.

LANE ROUTES IN FORCE DURING APRIL

- (B) From 11th April to 30th June, inclusive.
- (C) From 1st July to 10th April, inclusive.
- (D) From 15th February to 10th April, inclusive.
- (E) From 11th April to 15th May, or until Cape Race route clear of ice.



EXCEPTIONAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
April 6, 1909	S.S. Trafalgar	35°54'N.	31°47'W.	2 pieces 18 in. in diameter.
" 11, 1914	S.S. Erodiade	32°55'N.	62°11'W.	Apparently river ice about the size of a lifeboat.
" 24, 1916	S.S. Communipaw...	49°05'N.	36°48'W.	4 ft. high 50 ft. wide, and 100 ft. long.
" 4, 1921	S.S. Hollandia	43°35'N.	35°57'W.	Large berg.
" 16, 1926	Trawler Orizaba	61°03'N.	10°30'W.	Floating ice, about 40 ft. long, and 8 ft. high.
" 7, 1930	S.S. La Creseuta	42°24'N.	34°22'W.	Small berg, about 20 ft. diameter.
" 27, 1935	S.S. Cochrane	28°44'N.	48°42'W.	Small berg.

Boundary within which ice has been reported to the Meteorological Office, APRIL 1901-1938.

NOTICES TO MARINE OBSERVERS.

POSTAL ARRANGEMENTS.

The quarterly numbers of the *MARINE OBSERVER* are published on the last Wednesdays of December, March, June and September, while the monthly supplements are published on the last Wednesday of the intervening months.

If captains of observing ships will forward to the Meteorological Office the particulars required hereunder, endeavour will be made as far as mails permit to post the latest number or supplement with appropriate forms for observational work 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* or Supplement will be addressed to the Commanding Officer, s.s....., c/o the owners, and captains are requested to make their own arrangements for forwarding.

DESPATCH OF INFORMATION

REQUIRED IMMEDIATELY FOR THE CONDUCT OF THE WORK AT SEA.

Shipowners, Marine Superintendents and all concerned in the despatch of mails to Ships abroad are asked to kindly facilitate the despatch and delivery of postal matter received at their offices from the Meteorological Office and Air Ministry Publication Depot to their Ships abroad.

This matter addressed to the Commanders of Ships contains information which is required for the Conduct of Marine Meteorological Work at Sea and is most effective if received by the Commanders at the earliest possible date.

Much of the information referred to is published in the *MARINE OBSERVER* and Supplements, and is of a seasonal nature. This journal also contains advice to Regular Observing Ships which enables them to perform voluntary service by Wireless Communication for the benefit of all shipping.

ICE OBSERVATION.

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

See Appendix III, pages 106 to 108 of the *MARINE OBSERVER'S HANDBOOK*, Sixth Edition.

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

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

For this purpose Form 912 is supplied direct to all regular observing ships using regions where ice may be encountered and this Form may be supplied to the Captain of any British ship on application to the Port Meteorological Officers and Merchant Navy Agents.

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

HOW WEATHER REPORTS SHOULD BE ADDRESSED.

Captains of British Ships are asked to please cause particular attention to be given to the Lists of Stations detailed to Receive Reports from "A" and "B" Selected Ships in the current number of the *Marine Observer*.

Selected Ships and Supplementary Weather Reporting Ships, when within range of these stations, are particularly requested to transmit their weather reports to these stations by call sign, addressed to the Meteorological centre as indicated in the List, so that the shore services as well as ships at sea may receive these reports, as far as possible, by one transmission. When beyond the range of these stations, or if it is indicated at any time that routine reports are not required ashore, they should be made to C.Q.

Special attention is invited to Section (35), page 32, January, 1939, *Marine Observer*, Additional Local Reports. These Additional Times are being extended as and where necessary in the Supplements of the *Marine Observer*, as are the Lists of Stations. These Lists are repeated in Vol. II of the Admiralty List of Wireless Signals and in Admiralty Notices to Mariners for general information.

NOTICE.

Special attention is directed to the amendments of the notes in column 7 of the List of Wireless Stations Detailed to Receive Routine Coded Weather Reports from "B" Selected Ships under Malin Head and Valentia W/T Stations on page 67 of this number.

On and after April 1st, in order to supplement observations received from British "A" Selected ships based on 1800 G.M.T. observations, British "B" Selected and other British ships will be requested by roll call from Malin Head or Valentia W/T station to transmit an additional weather report based on 1700 G.M.T. observations at 1730 G.M.T. to Weather London.

AMENDMENT.

TO THE JANUARY, 1939 *MARINE OBSERVER* "WIRELESS WEATHER SIGNALS" ADDITIONAL LOCAL REPORTS SECTION (35), PAGE 32 UNDER GREAT BRITAIN, delete and substitute:—

"For one operator ships only in the Eastern North Atlantic when reporting to Weather London and on the roll calls for Malin Head or Valentia 1700 G.M.T.

During summer North Atlantic, 15th April to 15th October inclusive and occasionally at other times of the year when specially desired 2100 G.M.T.

FLEET LIST. VOLUNTARY OBSERVING SHIPS.

The following is a complete list of British observing ships regularly co-operating with the Marine Division of the Meteorological Office.

The names of the Captains, Observing Officers, and, in the case of Selected ships, Wireless Operators, are given as ascertained from the last written return received. Meteorological Logs, Records, and W/T Weather Registers received up to the date specified at the head of the seventh column are referred to by Form number, with commencing and ending dates of period covered by the returns; the date of receipt of the last return received is given in the eighth column.

All returns received from observing ships will be acknowledged, direct to the ship by the Marine Superintendent. The Port Meteorological Officers and Merchant Navy Agents at the ports will make personal calls on the Captains and Observing Officers as opportunity offers, or on notification from the ship at any time when their services are desired.

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

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

Ships not making the appropriate written returns within a reasonable period will be removed from the list, steps taken to recover any instruments lent, and the free issue of THE MARINE OBSERVER discontinued.

The number of voluntary observing ships is limited to a maximum total of 360.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping

(Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 276.

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

Explanation of Abbreviations.

The number appearing before the name of an observing ship in this list is her number for the time being as a British Selected Ship.

†† indicates fitted with wireless telegraphic apparatus for long range, long wave, continuous wave transmission and reception.

*† indicates fitted with wireless telegraphic apparatus for transmission and reception; fitted for reception only of long range, long wave, continuous wave.

M.S. = Motor Ship.

(t-e) = Turbo-electric.

S.T. = Steam Trawler.

(tank) = Tanker.

Ships having no such letters after their names are steamships.

Abbreviations in Equipment Column.

M.L. = Equipped with a complete set of tested instruments lent by the Meteorological Office for keeping the meteorological log.

M. = Ships' own mercurial barometer, found to be sufficiently accurate and reliable for the purpose of observation for making wireless weather reports.

S. = Partly or wholly equipped with tested instruments lent by the Meteorological Office for the purpose of carrying out the duties of a Selected Ship, when detailed to do so.

M.-S. = Ship having her own mercurial barometer, but partly equipped with other tested Meteorological Office instruments.

A. = Ships' own aneroid.

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed up to 8.3.39	Date Last Return Received.
275 †† <i>Abosso</i> , M.S.	J. C. Shooter ...	R. Inglis, H. H. Robinson ...	G. Arrowsmith	M.-S.	Elder Dempster Lines, Ltd.	Fms. 911 & 138 3.11.38 to 27.1.39	31.1.39
122 †† <i>Accra</i> , M.S.	P. Sola, D.S.O., Lieut. Commr., R.N.R.	H. C. Allen, B. W. Chapman, H. Scurr.	R. J. Dowling ...	"	" "	" " 18.11.38 to 11.2.39	15.2.39
123 †† <i>Adda</i> , M.S.	C. C. Cave ...	H. Pattison, W. Jowise ...	A. J. H. Edwards	"	" "	" " 23.11.38 to 19.2.39	25.2.39
090 *† <i>Aeneas</i> ...	R. H. Masters ...	J. H. Kirk, J. W. Patterson ...	A. J. Dant ...	S.	A. Holt & Co. ...	" " 30.10.38 to 16.2.39	23.2.39
166 *† <i>Agamemnon</i> , M.S.	J. O'Connor ...	J. H. Finch, J. R. Cheetham, W. C. McGuigan.	A. C. Nevin ...	"	" " ...	" " 14.11.38 to 28.2.39	4.3.39
065 †† <i>Akaroa</i> ...	W. G. Summers ...	H. H. Falkner, A. G. Mackenzie, J. G. Fairgrieve.	R. T. Soames ...	"	Shaw, Savill & Albion Co., Ltd.	" " 30.10.38 to 1.2.39	4.2.39
245 †† <i>Alaunia</i> ...	J. Foyster ...	H. V. Clarke, R. O. Price, J. Kenworthy.	M. Boome ...	"	Cunard White Star Ltd.	" " 21.11.38 to 9.1.39	11.1.39
*† <i>Albion Star</i> ...	H. Palmer ...	...	...	M.	Blue Star Line, Ltd.	...	...
129 †† <i>Alicantara</i> ...	T. J. C. Buret, D.S.C.	M. M. P. Coombs, T. B. Bolland, G. W. Medlycott, T. W. Stevens.	W. Smith ...	M.-S.	Royal Mail Lines, Ltd.	Fms. 911 & 138 14.11.38 to 26.2.39	28.2.39
175 †† <i>Almanzora</i> ...	H. Womersley ...	G. M. Fletcher, G. Grant, R. Shinn.	J. Caldwell ...	S.	" " "	" " 11.12.38 to 20.1.39	26.1.39
086 †† <i>Almeda Star</i> ...	H. C. Howard ...	J. L. Anson, W. A. C. Hunt, C. C. Parsons.	P. Norwood ...	M.-S.	Blue Star Line, Ltd.	" " 9.10.38 to 7.2.39	10.2.39
022 *† <i>Alynbank</i> , M.S.	D. Gillies ...	L. Armitage, J. Murray, J. Henderson.	W. G. Houghton	S.	A. Weir & Co. ...	" " 16.10.38 to 10.12.38	19.12.38
160 *† <i>Amarapoora</i> ...	S. Sinclair-Duncan ...	T. R. Simpson, R. Treasurer, P. F. Carnochan.	A. M. Douglas...	"	P. Henderson & Co.	" " 16.10.38 to 26.12.38	30.12.38
*† <i>Amsterdam</i> ...	A. P. Sutton ...	F. B. Allen, E. J. Gould ...	D. T. Wright ...	"	L. & N. E. Rly....	" " 24.10.38 to 22.2.39	6.3.39
006 †† <i>Andalucia Star</i> ...	R. Vernon ...	J. A. Elliott, J. R. Elliott, P. L. Cumbers.	R. Gregory ...	M.-S.	Blue Star Line, Ltd.	" " 28.11.38 to 16.1.39	19.1.39
113 *† <i>Andania</i> ...	H. R. Oulsnam, R.D., Commr., R.N.R.	D. J. Brinn, J. H. Walker, K. M. Nicholson.	R. Greenall ...	S.	Cunard White Star, Ltd.	{ " " 24.12.38 to 13.2.39 Fm. 912 24.12.38 to 10.1.39	16.2.39 18.1.39
040 *† <i>Anselm</i> ...	E. C. P. Harris ...	L. A. Sayers, F. Good, E. Jones.	J. O'Sullivan ...	"	Booth S.S. Co., Ltd.	Fms. 911 & 138 5.11.38 to 27.12.38	3.1.39
259 *† <i>Antonia</i> ...	R. Sharp, R.D., Commr., R.N.R.	F. Parker, A. Thompson, G. T. Kavanagh.	A. F. L. Crosby...	"	Cunard White Star Ltd.	{ " " 1.1.39 to 5.3.39 Fm. 912 1.1.39 to 29.1.39	8.3.39 1.2.39

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteoro-logical Instrument Equip-ment.	Owners.	Logs, Registers, or Records Contributed up to 8.3.39.	Date Last Return Received.
120 †† <i>Apapa</i> , M.S.	E. Vaughan Davies	L. Collings, E. G. Beesley	J. Rea	M.-S.	Elder Dempster Lines, Ltd.	Fms. 911 & 138 9.12.38 to 13.1.39	17.1.39
017 †† <i>Aquitania</i>	G. Gibbons, R.D., Capt., R.N.R.	J. Tone, E. Gleave, L. Rand...	S. W. Brown	S.	Cunard White Star, Ltd.	" " 5.12.38 to 23.2.39	25.2.39
201 †† <i>Arandora Star</i>	E. W. Moulton	F. S. Hambridge, P. Töynbee	S. T. Williams	"	Blue Star Line, Ltd.	" " 22.12.38 to 12.1.39	14.1.39
248 *† <i>Arawa</i>	T. V. Roberts, R.D., Capt., R.N.R.	W. G. Burt, E. Snaith, J. Arthur.	R. E. Hammond	M.-S.	Shaw, Savill & Albion Co., Ltd.	" " 3.10.38 to 6.1.39	14.1.39
114 *† <i>Ariguani</i>	R. A. Thorburn, R.D., Commr., R.N.R.	J. Cameron, J. Hughes, C. R. Hodder.	B. M. Evans	S.	Elders & Fyffes, Ltd.	" " 13.11.38 to 18.2.39	21.2.39
092 †† <i>Arundel Castle</i>	C. E. Ayles, R.D., Commr., R.N.R.	E. S. Flint	W. A. Brown	"	Union-Castle Mail S.S. Co., Ltd.	" " 27.11.38 to 11.1.39	16.1.39
233 †† <i>Ascania</i>	G. E. Barton, R.D., Lt. Commr., R.N.R.	H. L. De Legh, F. G. Watts, H. L. Pryse.	J. W. Haynes	"	Cunard White Star, Ltd.	" " 5.12.38 to 24.1.39	26.1.39
013 †† <i>Asturias</i>	F. R. Miles, R.D., Capt., R.N.R.	J. O. Springall, R. Finch, C. Webster.	T. Bradfield	"	Royal Mail Lines, Ltd.	" " 2.11.38 to 3.2.39	7.2.39
028 †† <i>Athlone Castle</i> , M.S.	E. S. Vincent, R.D., Commr., R.N.R.	M. A. Bulley	J. Hodgson	"	Union-Castle Mail S.S. Co., Ltd.	" " 23.10.38 to 2.2.39	10.2.39
197 †† <i>Atlantis</i>	A. Cocks, D.S.C., R.D., Capt., R.N.R.	W. S. Thomas, E. A. C. Littlewood, T. B. Gray.	W. H. Chick	M.-S.	Royal Mail Lines, Ltd.	" " 24.12.38 to 12.1.39	16.1.39
208 *† <i>Aurania</i>	R. J. Finlow, R.D., Capt., R.N.R.	B. L. Butcher, H. Morgan, J. Armstrong.	M. Boome	S.	Cunard White Star, Ltd.	" " 27.11.38 to 28.1.39	17.2.39
103 *† <i>Ausonia</i>	C. H. Bate, R.D., Capt., R.N.R.	H. A. Stonehouse, A. H. Young, J. A. Drake.	S. A. Arnold	"	"	Fms. 912 27.11.38 to 17.12.38	19.12.38
046 *† <i>Australia Star</i> , M.S.	J. Fisher	J. Davis, C. Munday, G. G. Case.	W. Rollason	M.-S.	Blue Star Line, Ltd.	Fms. 911 & 138 14.11.38 to 26.2.39	2.3.39
133 †† <i>Avelona Star</i>	G. E. Hopper	P. Clark, A. E. Willis, Taylor.	A. C. Shippam	"	"	" " 19.10.38 to 24.1.39	28.1.39
045 †† <i>Avila Star</i>	R. J. Thomas	L. Mclare, S. Dickens	H. Varley	"	"	" " 19.10.38 to 2.12.38	14.12.38
110 *† <i>Balmoralwood</i>	O. Stoker - Johnson, D.S.C.	K. D. Castling, R. L. Lidgate, R. Coates.	W. B. Charlton	S.	Constantine Steamships, Ltd.	" " 14.10.38 to 29.11.38	6.12.38
*† <i>Baronesa</i>	G. Brien	"	"	M.	Furness Lines	"	"
209 *† <i>Bassano</i>	A. H. Best	H. K. Tadman, J. E. Stott, S. G. Poskitt.	C. G. O'Keeffe	S.	Ellerman's Wilson Line, Ltd.	Fms. 911 & 138 18.11.38 to 7.2.39	11.2.39
180 *† <i>Beaverbrae</i>	E. J. Jones	C. S. Morris, D. Ewing, R. Walgate.	T. A. Evans	M.-S.	Canadian Pacific Steamships, Ltd.	" " 21.11.38 to 18.2.39	23.2.39
130 *† <i>Beaverburn</i>	W. Stanfield	S. P. Berna, L. Thornton, D. H. Coughlin.	S. J. Taylor	"	"	Fms. 912 29.1.39 to 18.2.39	23.2.39
138 *† <i>Beaverdale</i>	A. Rothwell	B. R. Russell, J. Shearer, E. H. Smith.	J. Ormiston	"	"	Fms. 911 & 138 11.12.38 to 4.2.39	11.2.39
232 *† <i>Beaverford</i>	H. Pettigrew	B. Charles, E. J. Oatridge, P. Locke.	A. Fitzsimons	"	"	" " 13.11.38 to 1.2.39	16.2.39
*† <i>Benarly</i>	J. Watt	A. Ramsay, F. Tait, N. Crowe	W. D. Brodie	M.	W. Thomson & Co.	Fm. 911 30.10.38 to 6.1.39	12.1.39
*† <i>Benledi</i>	J. H. Patterson	G. Naysmith, J. Brighty, R. Pew.	D. Glen	"	"	" " 22.11.38 to 29.1.39	21.2.39
*† <i>Benmohr</i>	J. C. Sinclair	J. Brown, A. Griffiths, G. W. Patterson.	A. G. Bulmer	M.L.	"	Fm. 915 14.8.38 to 22.12.38	3.1.39
111 *† <i>Benwyvis</i>	H. J. Small	W. M. Marshall, W. P. Gollan, N. Fraser.	D. H. Walker	M.	"	Fms. 911 & 138 1.1.39 to 30.1.39	6.3.39
145 *† <i>Berwickshire</i>	W. R. Roberts	H. W. Chadd, G. Stronach, C. Harrison.	W. G. Peddie	S.	Turnbull, Martin & Co., Ltd.	" " 15.11.38 to 14.2.39	2.3.39
007 *† <i>Bradfyne</i>	R. G. Banner	D. Marks, P. Evans, S. Hewitt	J. N. Collins	"	Sir Wm. Reardon Smith & Partners, Ltd.	" " 17.9.38 to 6.12.38	15.12.38
*† <i>Brighton</i>	B. Shaw	H. Smith	A. H. Jones	"	Southern Rly.	" " 21.11.38 to 11.2.39	14.2.39
*† <i>Brisbane Star</i> , M.S.	F. N. Riley	M. B. N. Tallack, C. Horton, G. Goodman.	"	M.-S.	Blue Star Line	" " 5.7.38 to 14.10.38	18.10.38
189 †† <i>Britannic</i> , M.S.	A. T. Brown, R.D., Capt., R.N.R.	L. G. Toone, J. T. Jones, W. G. Fitzgerald.	F. Clarke	S.	Cunard White Star, Ltd.	" " 14.11.38 to 13.1.39	23.1.39
106 *† <i>British Colonel</i> (tank)	E. Miller	W. Dick, W. Forsyth, A. G. Max.	J. W. Ryder	M.	British Tanker Co., Ltd.	" " 17.10.38 to 22.1.39	31.1.39
038 *† <i>British Corporal</i> (tank)	J. Cunningham	S. Wilkinson, H. G. Wood	F. J. Park	"	"	" " 10.11.38 to 29.12.38	3.1.39
153 *† <i>British Endurance</i> , M.S. (tank)	R. O. Putt	M. Hutchinson, J. D. Johnston	H. D. Johnston	"	"	" " 16.11.38 to 20.2.39	6.3.39
054 *† <i>British General</i> (tank)	W. D. Jefferies	D. M. H. Walker, R. S. Hughes, W. D. Cayton.	W. Gillies	"	"	" " 4.11.38 to 1.3.39	7.3.39
*† <i>British Grenadier</i> (tank)	J. A. Ferrier	E. J. Simpson, D. L. O. Smith, C. H. Humphries.	T. Gledhill	"	"	" " 2.3.38 to 28.5.38	2.6.38
*† <i>British Gannet</i> (tank)	C. W. G. Stook	R. Jary, H. G. Geary, R. A. Harrison.	T. H. Knill	"	"	Fm. 911 18.11.38 to 2.3.39	6.3.39
257 *† <i>British Hussar</i> (tank)	F. O. Armstrong	R. L. Campbell, G. R. Mackillochan, B. W. Hope.	R. W. Mortimer	"	"	Fms. 911 & 138 1.11.38 to 25.2.39	7.3.39
076 *† <i>British Officer</i> (tank)	R. H. Guswell	R. M. Anderson, K. Johnson	W. E. Saunders	"	"	" " 17.11.38 to 1.2.39	11.2.39
*† <i>British Power</i> (tank)	E. G. Dobson	R. Robinson	"	"	"	Fm. 911 2.11.38 to 16.2.39	24.2.39
*† <i>British Premier</i> (tank)	B. M. Naylor	P. Taylor, W. H. Sharp, D. L. O. Smith.	A. J. Locke	"	"	Fms. 911 & 138 7.11.38 to 13.2.39	7.3.39
*† <i>British Resolution</i> , M.S. (tank)	J. C. Leybourne	A. G. Davidson, J. Weddle	L. G. Sparks	"	"	Fm. 911 7.12.38 to 28.12.38	19.1.39
225 *† <i>British Statesman</i> (tank)	J. H. Sloan	F. E. Jones, B. Samuel, J. Arthur.	W. Dunderdale	"	"	Fms. 911 & 138 7.11.38 to 17.2.39	21.2.39
273 *† <i>British Strength</i> , M.S. (tank)	A. McMichael	A. R. Evans, S. A. Cave, T. W. Coffey.	J. Cunningham	"	"	Fm. 911 8.11.38 to 25.2.39	4.3.39
*† <i>British Workman</i> (tank)	S. D. Bumstead	R. T. Hedley	J. M. Mullin	"	"	Fms. 911 & 138 12.11.38 to 29.1.39	8.2.39
249 *† <i>Buteshire</i>	S. Y. Strange	R. McAdam, W. J. Jones, E. Parsons-Smith, F. J. Meyrick.	W. W. Whewell	S.	Houston Line	" " 8.11.38 to 18.1.39	6.2.39
200 *† <i>Cairnesk</i>	E. A. Organ	S. W. Parks, R. Preston, A. L. Swapp.	F. A. Munday	"	Cairns, Noble & Co., Ltd.	" " 3.12.38 to 16.2.39	18.2.39
241 *† <i>Cairnglen</i>	A. W. Melling	F. W. Fairley, J. Henderson, E. H. Organ.	R. A. Penny	"	"	Fms. 911 & 138 2.12.38 to 16.2.39	18.2.39
112 *† <i>Cairnross</i>	L. Halerow	D. Easson, A. J. Dunn, F. Usher.	H. Jardine	"	"	Fm. 912 10.11.38 to 28.1.39	30.1.39
075 *† <i>Cairnvalona</i>	A. C. Dickson	R. Armstrong, A. Molineux, E. Cairns.	J. Sargent	"	"	Fms. 911 & 138 16.12.38 to 28.2.39	2.3.39
031 †† <i>Caledonia</i>	A. Collie	G. Ramage, G. Howson, H. L. P. King.	J. F. Reid	"	Anchor Line, Ltd.	Fm. 912 16.12.38 to 28.2.39	2.3.39
077 †† <i>California</i>	R. W. Smart	"	"	"	"	Fms. 911 & 138 8.11.38 to 5.12.38	8.12.38
						" " 27.11.38 to 13.2.39	28.2.39

FLEET LIST

Name of Vessel.	Captain	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed up to 8.3.39	Date Last Return Received.
223 *† Cambria ...	A. Marsh ...	H. Williams ...	J. Pritchard ...	S.	L.M. & S. Rly. ...	Fms. 911 & 138 25.11.38 to 28.1.39	10.2.39
*† Cambridge ...	A. Angell ...	T. Norris, G. E. Mason, O. Longford-Thomas.	P. McConnachie ...	"	Federal S.N. Co., Ltd.	" " 17.7.38 to 8.12.38	29.12.38
042 †† Cameronia ...	G. B. Kelly ...	J. D. Mackenzie, J. L. Gibson, R. F. Caldwell.	B. T. Thompson ...	"	Anchor Line, Ltd.	{ " " 13.11.38 to 10.2.39 Fm. 912 13.11.38 to 9.2.39	13.2.39
252 *† Camito ...	R. J. Bostock ...	R. Philpott ...	R. E. Blizzard ...	"	Elders & Fyffes, Ltd.	Fms. 911 & 138 6.12.38 to 4.2.39	7.2.39
037 †† Canton ...	H. M. Jack ...	"	"	M.S.	P. & O. S.N. Co.	" " " " "	"
117 *† Cape of Good Hope M.S.	A. T. McGlashan ...	J. S. Binnie, P. A. Wallace, A. W. J. Justen.	S. E. Cowling ...	S.	Lyle Shipping Co., Ltd.	Fms. 911 & 138 12.11.38 to 29.11.38	7.2.39
188 †† Capetown Castle, M.S.	E. J. Thornton, R.D., Capt., R.N.R.	A. O. Wilkins ...	H. Oliver ...	"	Union Castle Mail S.S. Co. Ltd.	" " 5.11.38 to 15.2.39	18.2.39
266 †† Carinthia ...	A. C. Greig, O.B.E., R.D. Capt., R.N.R.	T. T. Sheehan, J. C. Bryce, W. J. Foster.	A. F. Porter ...	"	Cunard White Star, Ltd.	" " 28.11.38 to 4.2.39	25.2.39
264 †† Carnarvon Castle, M.S.	A. H. Blackman ...	A. O. White ...	A. G. Blow ...	"	Union Castle Mail S.S. Co., Ltd.	" " 13.11.38 to 23.2.39	28.2.39
155 †† Carthage ...	H. Williams ...	P. M. Jones, A. E. Clay, A. A. Terry.	F. Rose ...	M.-S.	P. & O. S.N. Co.	" " 20.11.38 to 22.2.39	25.2.39
184 †† Cathay ...	H. R. Rhodes ...	M. A. Trenfield ...	E. L. Boyce ...	"	" " "	" " 6.11.38 to 24.11.38	19.12.38
127 *† Cavina ...	W. T. Forrester, O.B.E.	B. R. Coe, W. J. Maxwell ...	A. N. Taylor ...	S.	Elders & Fyffes, Ltd.	" " 23.11.38 to 28.2.39	1.3.39
*† Celtic Monarch ...	G. C. Winchester ...	"	"	M.L.	Monarch S.S. Co. Ltd.	" " " " "	"
011 †† Ceramic ...	H. C. Elford ...	V. H. Vizer, W. Dickson, W. J. Strange.	W. M. Ross ...	S.	Shaw, Savill & Albion Co., Ltd.	Fms. 911 & 138 28.8.38 to 18.2.39	1.3.39
029 *† Cheshire, M.S.	C. Fountain ...	A. N. Williamson, J. B. Quinn, A. D. Quayle.	F. W. Greaves ...	"	Bibby Bros. & Co.	" " 4.11.38 to 27.1.39	20.2.39
067 *† Chinese Prince, M.S.	W. Irvine ...	D. G. P. Tait, A. H. Kent, E. J. Roberts, D. George.	D. T. de Witt ...	M.L.	Furness Lines Ltd.	Fm. 915 13.9.38 to 23.12.38	18.1.39
192 †† Chitral ...	W. E. L. S. Pocock ...	W. B. Vickers, R. H. Turner, F. Collison.	W. B. Goodsell ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 6.11.38 to 1.2.39	11.2.39
051 *† City of Auckland	H. G. Jenkins, O.B.E.	J. C. Storey, R. G. Jones, T. V. Birkett.	H. Davies ...	S.	Ellerman Lines, Ltd.	" " 18.11.38 to 17.2.39	1.3.39
135 *† City of Barcelona	E. J. Myles ...	A. M. Bowman, H. G. Williams, N. Fitch.	W. Batten ...	M.	" " "	" " 6.1.38 to 15.1.39	26.1.39
265 *† City of Baroda	G. P. M. O'Halloran ...	D. M. Williams, R. S. Steel, J. Spillman.	W. Gaines ...	S.	" " "	" " 19.11.38 to 16.1.39	21.1.39
057 †† City of Benares ...	A. Lee ...	H. H. Asher, J. Slater ...	A. B. Fairweather ...	M.-S.	" " "	" " 2.12.38 to 10.2.39	23.2.39
*† City of Bombay ...	O. Cheverton Brown ...	G. Jackson ...	"	"	" " "	" " 21.11.38 to 18.2.39	21.2.39
158 *† City of Cairo ...	A. J. Phillip ...	F. Nuttall, H. N. Jones, C. G. Parry.	G. S. Creighton ...	M.	" " "	" " 22.11.38 to 21.12.38	30.12.38
215 *† City of Canberra	H. R. Jackson ...	J. Sapp ...	C. Kerrage ...	"	" " "	" " 17.12.38 to 19.1.39	28.1.39
033 *† City of Canton ...	E. Scrymgeour ...	R. W. Tyrrell, W. A. Lambert, E. Routledge.	T. J. C. Manson ...	"	" " "	" " 14.12.38 to 25.12.38	2.1.39
157 *† City of Delhi ...	F. W. Penberthy ...	P. C. Arthur, J. Weatherspoon, Tabwell.	T. A. Walker ...	S.	" " "	" " 10.11.38 to 14.2.39	25.2.39
030 *† City of Dieppe	W. J. Merchant ...	E. A. Chapman, J. Mitchell, E. Colville.	A. Emslie ...	"	" " "	" " 19.12.38 to 20.1.39	10.2.39
*† City of Edinburgh	H. Cartwright ...	J. F. Lindall ...	"	M.	" " "	Fm. 911 4.9.38 to 19.11.38	18.1.39
049 *† City of Evansville	G. Vickers ...	P. Winship, B. M. Postlethwaite, R. H. Broadbent.	E. Phillips ...	"	" " "	Fms. 911 & 138 29.12.38 to 7.1.39	26.1.39
220 †† City of Exeter ...	A. V. Radcliffe ...	P. C. Wilson, V. H. Lewis, O. J. Inglis.	L. Hugo ...	S.	" " "	" " 22.8.38 to 31.10.38	24.12.38
089 *† City of Hereford	R. A. Grove ...	W. G. Stobbs, N. Williams, I. M. McBeath.	J. R. Birch ...	M.	" " "	" " 13.9.38 to 15.2.39	20.2.39
237 †† City of London ...	R. P. Longstaff ...	W. G. McCulloch, M. Winter, A. K. Gillespie.	O. A. Read ...	S.	" " "	" " 9.1.39 to 27.1.39	4.2.39
256 *† City of Lyons ...	T. Cooper ...	R. L. Pallister, A. Spence, K. Gregory.	G. Webb ...	M.	" " "	" " 22.9.38 to 30.9.38	18.10.38
066 †† City of Nagpur ...	D. L. Lloyd ...	N. Groundwater, J. Stuart, J. G. Makin.	A. E. Dove ...	S.	" " "	" " 17.10.38 to 18.12.38	28.12.38
074 †† City of Paris ...	L. Nicol ...	W. G. Stubbs, A. J. Barnett, C. Clark.	G. Fenton ...	"	" " "	" " 14.12.37 to 13.2.38	21.2.38
271 *† City of Roubaix	H. Spencer, D.S.C.	S. G. Hyder, A. H. G. Jones, P. R. Winship.	V. H. Davis ...	M	" " "	" " 6.6.38 to 10.7.38	14.7.38
272 *† City of Singapore	T. R. Watkins ...	L. E. Brook, S. G. Hider, J. M. Hatherley.	H. Cant ...	"	" " "	" " 2.1.39 to 29.1.39	20.2.39
035 *† City of Sydney ...	W. Hull ...	R. M. Hall, E. M. Robertson, R. Clark.	F. Harrop ...	"	" " "	" " 13.12.38 to 30.1.39	20.2.39
167 *† City of Tokio ...	G. Burton ...	J. H. Aldridge, R. K. Walker, M. L. Hernan.	T. Meminn ...	S.	" " "	" " 21.10.38 to 25.12.38	2.1.39
136 *† City of Winchester	W. S. Coughlan ...	H. Laird, W. Scott-Craig, H. Lewis.	G. F. Winn ...	"	" " "	" " 8.11.38 to 3.2.39	16.2.39
125 *† City of Windsor	E. E. Bulkeley ...	J. Vizer, N. Bradley, H. G. White.	R. Macalister ...	"	" " "	" " 20.12.38 to 6.3.39	7.3.39
027 *† Clan Farquhar ...	C. E. O'Byrne ...	F. Sherratt, C. J. Harris, J. Brown.	A. MacIennan ...	M.	Clan Line Steamers, Ltd.	" " 30.11.38 to 21.1.39	27.2.39
050 *† Clan Macalister	R. W. Mackie ...	P. Philip, E. G. G. Mobbs, K. Banks, G. C. Willis.	C. J. Andrews ...	S.	" " "	" " 15.9.38 to 12.11.38	7.12.38
222 *† Clan Macdougall, M.S.	C. C. Parfitt ...	F. Lionnet, F. Hannah, G. Matheson.	H. A. Croft ...	"	" " "	" " 25.11.38 to 6.1.39	10.1.39
101 *† Clan Macfarlane	H. Andrews ...	R. G. Castle, R. L. Smallbone, C. Rodgers.	M. Woodward ...	"	" " "	" " 27.9.38 to 8.2.39	15.2.39
118 *† Clan Macindoe ...	A. G. Macpherson ...	A. T. May, A. Palethorpe, K. Simson, W. R. Williamson.	J. Badcock ...	"	" " "	" " 23.11.38 to 22.2.39	2.3.39
082 *† Clan Macnair ...	R. J. W. Bennet ...	R. W. Crawford, T. O. Mann, A. W. Cook.	R. F. W. Bafton ...	"	" " "	" " 6.10.38 to 28.10.38	25.1.39
255 *† Clan Macneil ...	H. E. G. Scott Smith, O.B.E., R.D., Lieut.-Commr., R.N.R.	J. C. Matheson, D. Devall, H. Whitehead.	W. Hayes ...	"	" " "	" " 30.10.38 to 26.1.39	14.2.39
001 *† Clan Macphee ...	H. C. Simpson ...	R. C. Steel, T. Gillies, R. Lumsden.	W. Scott ...	"	" " "	" " 27.10.38 to 17.11.38	19.12.38
168 *† Clan Macgarrart	F. W. Last ...	F. Chisholm ...	J. G. Wood ...	"	" " "	" " 13.12.38 to 21.2.39	25.2.39
261 *† Clan Mactavish	R. P. Galer, R.D., Capt., R.N.R.	A. Clark, S. R. Woods, J. E. Clayton.	A. M. Forbes ...	"	" " "	" " 29.11.38 to 22.1.39	20.2.39
002 *† Clan Macwhirter	E. E. Arthur ...	W. P. Creak, A. Woodall, R. G. Bagnell.	D. Lamb ...	"	" " "	" " 1.1.39 to 25.1.39	6.2.39
109 *† Clan Morrison ...	B. A. Hardinge ...	O. King, A. Hunter, J. H. Holman.	C. Ashcroft ...	"	" " "	" " 12.11.38 to 3.2.39	27.2.39
214 *† Clement ...	R. B. Furneaux ...	T. E. Williams, C. Smethurst, H. Sapsworth...	T. P. Jones ...	"	Booth S.S. Co., Ltd.	" " 24.11.38 to 9.2.39	15.2.39

FLEET LIST

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed up to 8.3.39.	Date Last Return Received.
171 *† <i>Hertford</i> ...	T. J. C. Tuckett ...	R. W. Corn, R. T. Birkin, R. G. Hollingdale.	W. Iveson ...	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 31.8.38 to 21.1.39	31.1.39
*† <i>Hibernia</i> ...	J. R. Bulmer, M.B.E. ...	R. E. Sherwood ...	D. T. Rocky ...	"	L.M. & S. Railway	" " 5.11.38 to 26.1.39	3.2.39
182 †† <i>Highland Brigade</i> , M.S.	C. E. Rathkins, R.D., Capt., R.N.R.	F. J. Swallow, E. Card, K. Reid, R. G. Owen.	E. A. Reynolds...	M.-S.	Royal Mail Lines, Ld.	" " 20.12.38 to 7.2.39	19.2.39
116 †† <i>Highland Chieftain</i> , M.S.	J. Hodges, R.D., Commr. R.N.R.	D. H. New, Q. Ballardee, W. E. Bruce.	T. Desboro ...	"	" " "	" " 7.11.38 to 27.12.38	30.12.38
099 †† <i>Highland Monarch</i> , M.S.	S. Weller ...	W. B. Avison, J. Shillitoe, H. D. Bowler.	E. F. Weatherhead.	"	" " "	" " 26.10.38 to 13.12.38	16.12.38
230 †† <i>Highland Patriot</i> , M.S.	R. H. Robinson ...	G. E. Leech, J. Shillitoe, Fraser.	M. Carpenter ...	"	" " "	" " 12.10.38 to 19.2.39	24.2.39
250 †† <i>Highland Princess</i> , M.S.	A. R. Murley ...	S. M. Phillips, H. V. Todd, J. A. Weekes, J. Jones.	L. P. Thayne ...	"	" " "	" " 25.11.38 to 8.1.39	16.1.39
*† <i>Hopecrown</i> , M.S.	R. W. D. Gilbertson ...	W. A. Hall, J. Aylwin, W. Georgeson.	C. Walsh ...	S.	A. Stott & Co., Ld.	" " 26.10.38 to 22.2.39	4.3.39
*† <i>Hopepeak</i> , M.S.	J. Hardy ...	J. Marshall, R. Atkinson, E. G. Painter.	W. L. Cowan ...	"	" " "	" " 24.10.38 to 23.12.38	23.1.39
*† <i>Hopestar</i> ...	J. Steward ...	W. A. Watson, J. Hamilton ...	H. V. Evans ...	"	" " "	" " 15.10.38 to 17.2.39	21.2.39
178 *† <i>Imperial Star</i> M.S.	D. R. Macfarlane ...	H. H. Arton, R. M. Thorne, R. Laycock.	C. North ...	M.	Blue Star Line, Ld.	" " 27.9.38 to 14.1.39	20.1.39
260 *† <i>Inanda</i> ...	J. T. Ling ...	B. H. Band, E. P. Simmons, D. N. Mathews.	E. J. Cook ...	M.-S.	T. & J. Harrison	" " 15.12.38 to 10.1.39	16.1.39
*† <i>Inkosi</i> ...	W. H. Gibbings ...	D. Kerr, V. Harrison, R. Sutcliffe.	T. Fleetwood ...	"	" " "	" " 6.11.38 to 7.1.39	15.2.39
144 *† <i>Inverbank</i> , M.S.	A. C. Loads ...	F. H. Cummings, A. T. Stansfield, B. G. Gale.	G. Cabage ...	S.	A. Weir & Co. ...	" " 3.12.38 to 13.12.38	10.1.39
*† <i>Isle of Guernsey</i>	F. W. Hodges, R.D., Comdr. R.N.R.	A. Light ...	T. Stubbs ...	"	Southern Rly. ...	" " 30.11.38 to 28.12.38	2.1.39
*† <i>Isle of Jersey</i> ...	R. J. Large ...	A. Light ...	D. Stubbs ...	"	" " "	" " 4.11.38 to 22.2.39	2.3.39
*† <i>Isle of Sark</i> ...	R. J. Large ...	C. C. Durley, W. F. Mason ...	T. Baron ...	"	" " "	" " 16.12.38 to 1.2.39	2.2.39
269 *† <i>Ixion</i> ...	R. G. Sturrock ...	E. Jacques, H. S. Clark, J. G. Sibley.	F. C. Wall ...	M.L.	A. Holt & Co. ...	Fm. 915 6.6.38 to 8.9.38	16.11.38
226 *† <i>Javanese Prince</i> , M.S.	C. S. Smith ...	N. Gale, J. T. Gray, C. J. P. Martin, C. N. Clare.	T. V. Goodman	"	Furness Lines ...	" " 13.5.38 to 20.8.38	18.10.38
206 *† <i>Karamea</i> , M.S. ...	E. T. Grayston, D.S.C., R.D., Commr., R.N.R.	R. L. M. Owen, W. Hill, A. Chandler.	D. G. Read ...	S.	Shaw Savill & Albion Co., Ld.	Fms. 911 & 138 19.6.38 to 10.10.38	12.10.38
262 *† <i>Kemmendine</i> ...	R. B. Reid ...	P. McCabe, W. D. Tulloch, J. S. Grassick.	W. Clark ...	M.	P. Henderson & Co., Ld.	" " 3.10.38 to 12.12.38	28.12.38
190 *† <i>Kenbane Head</i> ...	J. R. Moore ...	W. J. Leinster, J. Green, W. A. Haddock.	A. McCartney ...	S.	G. Heyn & Sons	" " 2.9.38 to 27.11.38	30.11.38
*† <i>Kingston Cyanite</i> S.T.	A. R. Cornish ...	A. R. Cornish ...	F. Saltfleet ...	"	Kingston Steam Trawling Co. Ltd.	Fm. 912 2.9.38 to 12.9.38	5.10.38
147 †† <i>Laconia</i> ...	W. C. Battle, D.S.C., R.D., Capt., R.N.R.	C. S. Paling, R. Conway, J. G. Bradley.	W. M. McArdley	"	Cunard White Star, Ld.	Fms. 911 & 138 27.11.38 to 6.2.39	14.2.39
150 †† <i>Lancastria</i> ...	C. G. Illingworth, R.D., Capt., R.N.R.	...	...	"	...	...	...
267 *† <i>Lassell</i> , M.S. ...	G. Scott ...	S. Dickinson, T. J. Sweeney, C. E. Legg.	T. T. Allen ...	"	Lampont & Holt Line, Ld.	Fms. 911 & 138 8.8.38 to 19.10.38	29.10.38
083 *† <i>Lautaro</i> , M.S. ...	C. Stowe ...	S. Armitage ...	C. R. Pill ...	M.	Pacific S.N. Co. ...	" " 25.10.38 to 28.2.39	6.3.39
251 *† <i>Leverbank</i> , M.S.	H. A. Jones ...	D. Robertson, D. Harrison ...	P. L. O'Byrne ...	S.	A. Weir & Co. ...	" " 27.9.38 to 16.11.38	8.12.38
097 †† <i>Llangibby Castle</i> , M.S.	F. A. Smyth, R.D., Lt.-Commr., R.N.R.	W. A. D. Ramsay ...	R. Batchelor ...	"	Union Castle Mail S.S. Co., Ltd.	" " 8.10.38 to 2.2.39	11.2.39
*† <i>Lochavon</i> , M.S. ...	F. Cook ...	...	...	M.	Royal Mail Lines, Ld.	...	...
137 *† <i>Logician</i> ...	W. Jones ...	W. S. Eustance, G. H. Howard, D. V. Jones.	E. G. Carver ...	"	T. & J. Harrison	Fms. 911 & 138 19.11.38 to 26.2.39	2.3.39
*† <i>Lord Austin</i> , S.T.	G. Arnason ...	G. Arnason ...	D. Leonard ...	S.	Pickering & Haldane Steam Fishing Co., Ld.	" " 15.12.38 to 9.2.39	14.2.39
*† <i>Lord Snowden</i> , S.T.	...	...	...	"	" " "	...	...
268 *† <i>Loriga</i> M.S. ...	M. Armstrong, D.S.O.	C. R. Mayne, D. W. Hutchinson, A. G. Muir.	B. Coyle ...	M.	Pacific S.N. Co. Ld.	Fms. 911 & 138 6.12.38 to 24.12.38	12.1.39
008 *† <i>Losada</i> , M.S. ...	J. V. Langford ...	J. H. Allenby ...	...	"	" " " "	" " 24.10.38 to 23.1.39	3.2.39
062 *† <i>Mahia</i> ...	W. T. Thompson ...	D. Ashley, J. Jackson, E. Vaughan.	T. Murphy ...	S.	Shaw, Savill & Albion Co., Ld.	" " 13.8.38 to 20.12.38	3.1.39
140 *† <i>Mahratta</i> ...	W. Hill ...	B. Exley, G. Mansell, P. D. McKenzie.	B. L. Smith ...	M.	T. & J. Brocklebank, Ld.	" " 27.11.38 to 30.1.39	6.3.39
014 *† <i>Mahronda</i> ...	A. Anderson ...	V. H. Froebel, J. B. Newman, H. Fosbrooke.	W. H. Ritch ...	"	" " "	" " 16.12.38 to 23.2.39	2.3.39
015 *† <i>Mahsud</i> ...	D. Ison ...	P. D. McKenzie, H. Simpson, M. R. Melville.	R. Burton ...	"	" " "	" " 21.5.38 to 13.8.38	20.8.38
018 *† <i>Makalla</i> ...	J. Greenall ...	L. J. Unsworth, H. Gillespie, P. Bathurst.	H. C. Norman ...	"	" " "	" " 17.10.38 to 4.1.39	10.1.39
236 *† <i>Malayan Prince</i> , M.S.	J. Smith ...	J. A. Reeves, J. A. Taylor, B. M. Collard.	H. W. N. Noreliffe	M.L.	Furness Lines ...	Fm. 915 14.8.38 to 21.11.38	19.1.39
195 †† <i>Maloja</i> ...	R. C. Dene ...	P. V. James, L. J. Brown, A. G. Stansfield.	A. Babbage ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 22.8.38 to 23.11.38	26.11.38
009 *† <i>Manchester Brigade</i>	T. Makin ...	G. S. Jones, F. Downing, N. Lane.	J. H. Bradford ...	S.	Manchester Liners Ld.	" " 1.12.38 to 6.1.39	17.1.39
060 *† <i>Manchester Citizen</i>	G. M. Mitchell ...	W. E. Quirek, W. E. Todd, A. A. Meyer.	W. H. Critchley	"	" " "	" " 12.11.38 to 30.1.39	3.2.39
179 *† <i>Manchester Commerce</i>	J. E. Riley ...	A. Hutton, W. H. Downing, M. Barnes.	J. J. Hand ...	"	" " "	" " 18.12.38 to 26.2.39	3.3.39
187 *† <i>Manchester Division</i>	E. E. Bonnard ...	A. Starmer, M. E. Bewley, W. W. King.	L. Green ...	"	" " "	" " 29.4.38 to 19.8.38	31.8.38
253 *† <i>Manchester Producer</i>	G. S. Ronald ...	J. L. McLaren, W. Hine, L. A. Muir.	J. Milne ...	"	" " "	" " 7.11.38 to 20.1.39	22.2.39
*† <i>Manchester Progress</i>	J. Barclay ...	...	...	"	" " "	...	...
146 *† <i>Mandasor</i> ...	A. G. Dixon, R.D., Capt., R.N.R.	D. M. Edwards, J. B. Lee, W. Robertson.	J. Duffy ...	M.-S.	T. & J. Brocklebank, Ld.	Fms. 911 & 138 23.10.38 to 31.12.38	16.1.39
213 *† <i>Mashobra</i> ...	P. Taylor ...	H. J. Wright, J. Bell, C. Erskine.	R. L. Salway ...	"	British India S.N. Co., Ld.	" " 8.11.38 to 21.1.39	30.1.39
235 †† <i>Mataroa</i> ...	W. H. Hartman ...	R. Grant, F. J. Patterson, Robertson.	J. P. Carey ...	S.	Shaw, Savill & Albion Co., Ld.	" " 18.11.38 to 21.12.38	24.12.38

FLEET LIST

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteoro-logical Instrument Equip-ment.	Owners.	Logs, Registers, or Records Contributed up to 8.3.39.	Date Last Return Received.
177 *† Port Wellington	R. Needham ...	R. W. Niccol, L. E. Ring, E. Dalziel	T. S. Johnstone	S.	Port Line Ld. ...	Fms. 911 & 138 15.10.38 to 21.1.39	16.2.39
003 *† Port Wyndham, M.S.	W. J. Enright, R.D., Capt., R.N.R.	L. B. Philpott, L. J. Brice, P. Stansbury.	F. E. Smith ...	"	" " "	" " 2.9.38 to 6.12.38	19.12.38
*† Prague ...	C. Baxter ...	R. H. Wright, F. Woods ...	A. C. Potter ...	"	L. & N.E. Rly. ...	" " 2.12.38 to 5.2.39	8.2.39
063 *† Queen City	J. C. Cornwell ...	D. Williams, K. Germany.	F. Constable ...	"	Sir Wm. Reardon Smith & Partners, Ld.	" " 18.7.38 to 8.10.38	26.10.38
263 †† Queen Mary ...	R. B. Irving, O.B.E., R.D., Capt., R.N.R.	E. A. G., Davies, W. J. Lane, G. T. Marr.	A. H. Farman ...	"	Cunard White Star, Ld.	" " 27.11.38 to 1.3.39	4.3.39
205 †† Rajputana ...	W. L. Pope, R.D., Capt., R.N.R.	M. F. Shute, Dunkley, Farmiloe.	J. A. Skinner ...	M.-S.	P. & O. S.N. Co.	" " 15.8.38 to 16.11.38	18.11.38
228 †† Ranchi ...	J. Sparkes ...	J. Johnston ...	" " " "	"	" " "	" " 28.8.38 to 13.1.39	3.2.39
224 †† Rangitane, M.S.	H. L. Upton ...	G. C. Mather, J. R. Vincent, C. D. Pool.	N. J. Hallet ...	"	New Zealand Shipping Co., Ld.	" " 24.7.38 to 18.2.39	1.3.39
217 †† Rangitata, M.S.	E. Holland ...	R. E. Walker ...	" " " "	"	" " "	" " 14.10.38 to 16.1.39	3.2.39
105 †† Rangitiki, M.S.	H. Barnett ...	I. B. Rose, L. W. Fulcher, J. D. Bennett.	L. Horn ...	"	" " "	" " 16.9.38 to 22.12.38	4.1.39
207 †† Ranpura ...	J. N. Legg ...	R. B. Webster, W. Richardson, G. Randall.	J. R. C. Johnson	"	P. & O. S.N. Co.	" " 11.9.38 to 14.12.38	17.12.38
071 †† Rawalpindi ...	M. G. Draper, R.D., Commr., R.N.R.	A. P. Godfrey, C. C. Gardner, H. J. Collett.	S. W. Sharp ...	"	" " "	" " 16.10.38 to 7.2.39	22.2.39
247 *† Recorder ...	W. Baird ...	L. Seddon, G. H. Jolly, J. Downing.	A. H. Williams	M.	T. & J. Harrison	" " 24.5.38 to 25.7.38	2.8.38
132 *† Reina del Pacifico, M.S.	A. Ridyard, O.B.E.	H. Matthews, G. H. Rice, J. P. Edwards, F. J. Leicester.	J. B. Stone ...	M.-S.	Pacific S.N. Co. ...	" " 6.11.38 to 28.12.38	2.1.39
276 †† Remuera ...	F. W. Robinson ...	F. J. Jones, T. N. Devitt, S. Crossley.	J. B. Stockman	S.	New Zealand Shipping Co., Ld.	" " 24.8.38 to 7.12.38	5.1.39
094 †† Rimutaka ...	C. B. Lamb ...	" " " "	" " " "	M.-S.	" " "	" " " "	" " " "
139 *† Robert F. Hand (tank)	J. A. Collie ...	F. J. Hewlett, G. Robson, T. Lloyd Jones	S. C. Baldwin ...	S.	Anglo - American Oil Co., Ld.	Fms. 911 & 138 25.11.38 to 10.1.39	14.1.39
032 *† Rotorua ...	A. E. Lettington, D.S.C.	R. H. Chapman, C. A. T. Shalcross, O. Farmer.	E. G. Stride ...	M.	New Zealand Shipping Co., Ld.	" " 29.8.38 to 7.1.39	10.1.39
*† Royal Sceptre ...	J. L. Williams ...	P. M. Williams, M. Dodds ...	R. Waylett ...	S.	Hall Bros. ...	Fm. 911 15.9.38 to 27.12.38	2.1.39
231 *† Ruahine ...	G. Kinnell ...	K. A. Vasey, C. W. Roberts, D. B. Brittain.	W. Fordham ...	"	New Zealand Shipping Co., Ld.	Fms. 911 & 138 4.7.38 to 7.11.38	12.11.38
*† St. Cathan, S.T.	J. H. Ellis ...	J. H. Ellis ...	B. Clingley ...	"	Thos. Hamling & Co. Ld.	" " 4.12.38 to 19.2.39	23.2.39
*† St. Helier ...	R. Pitman ...	G. Cartwright ...	R. Littell ...	"	G.W. Railway ...	Fm. 912 2.12.38 to 21.2.39	23.2.39
*† St. Julien ...	L. Richardson ...	T. E. Martin ...	E. Trappnell ...	"	" " "	" " 27.9.38 to 1.11.38	2.11.38
*† St. Patrick ...	H. C. Bond ...	E. Hawkyard, B. E. Williams	H. B. Dyer ...	"	" " "	" " 3.11.38 to 31.1.39	6.2.39
100 †† Samaria ...	J. McRostie ...	J. E. Woolfenden, T. E. Patchett, H. Hudson.	R. A. J. Owlett	"	Cunard White Star, Ld.	" " 20.11.38 to 4.2.39	7.2.39
*† San Adolfo, M.S. (tank)	A. Hulbert ...	F. White, W. Macleod, E. McCreadie.	A. Julius ...	M.-S.	Eagle Oil & Shipping Co., Ld.	Fm. 911 3.12.38 to 5.1.39	7.1.39
108 *† San Alberto, M.S. (tank)	C. Vidot ...	J. B. Harrison, J. Shaw, G. O. Pritchard.	R. S. Evans ...	M.	" " "	Fms. 911 & 138 26.11.38 to 23.2.39	4.3.39
*† San Alvaro, M.S. (tank)	E. A. Kennett ...	D. B. Young, J. Taylor ...	W. H. Rees ...	M.-S.	" " "	Fm. 911 7.12.38 to 22.1.39	11.2.39
073 *† San Arcadio, M.S. (tank)	S. Perry ...	A. P. Shaw, G. W. Clark, L. Mays.	G. W. Watson ...	M.	" " "	Fms. 911 & 138 21.11.38 to 25.1.39	1.2.39
159 *† San Casimiro, M.S. (tank)	L. G. Emmott ...	K. E. Spencer, C. H. Emmer-son.	E. B. Haynes ...	"	" " "	" " 19.11.38 to 28.2.39	8.3.39
*† San Cirilo, M.S. (tank)	F. S. Bailey ...	G. Tweedy, H. Craig, H. J. McKilligan.	D. I. Jones ...	M.-S.	" " "	Fm. 911 11.11.38 to 6.1.39	16.1.39
*† Scotia ...	A. W. Bateman ...	A. C. Borthwick ...	J. H. Rockey ...	S.	L.M. & S. Railway	Fms. 911 & 138 30.9.38 to 4.2.39	20.2.39
170 †† Seythia ...	W. C. Battle, R.D., Commr., R.N.R.	M. R. Thompson, O. V. Lucas, E. W. Kent.	R. M. Shaw ...	"	Cunard White Star, Ld.	" " 6.2.39 to 25.2.39	1.3.39
211 *† Shropshire, M.S.	R. S. Evans, O.B.E.	A. E. Young, G. Washington, W. Collins.	G. C. Talbot ...	"	Bibby Bros. & Co.	Fms. 911 & 138 31.7.38 to 6.10.38	12.10.38
121 *† Siamese Prince, M.S.	E. J. Jones ...	E. A. Parritt, F. R. Elliott, S. A. Heaton, C. Blakey, G. Lindsay.	A. S. Fraser ...	M.L.	Furness Lines ...	Fm. 915 18.6.38 to 10.12.38	31.12.38
*† Silversandal, M.S.	J. Harrison Leask ...	R. W. Cherry, A. Boniwell, T. H. Whiston, R. Fielding.	" " " "	"	S. & J. Thompson, Ld.	" " 29.3.38 to 5.7.38	3.9.38
*† Silverwalnut, M.S.	R. Cross ...	A. Nicolson, H. J. Pursey, J. Eccleston.	R. H. V. Gilli-brand.	"	" " "	" " 2.8.38 to 5.12.38	3.1.39
Silvio ...	A. W. Calvert ...	" " " "	" " " "	"	Ellerman's Wilson Line, Ld.	" " " "	" " " "
141 *† Somerset ...	N. Rice ...	C. C. Wilson, H. C. R. Dell, R. M. Roberts.	A. G. Peeling ...	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 12.6.38 to 25.10.38	29.10.38
052 *† Spero ...	W. A. Dossor ...	W. S. Hepton, J. R. Atkinson	B. R. Davy ...	"	Ellerman's Wilson Line, Ld.	" " 26.11.38 to 26.2.39	27.2.39
176 *† Staffordshire, M.S.	W. Logan Foster ...	G. Mordant, A. A. Mackenzie, D. Depledge.	F. G. Blinco ...	"	Bibby Bros. & Co.	" " 20.11.38 to 26.1.39	30.1.39
134 †† Stirling Castle, M.S.	H. R. Northwood ...	E. Triggs ...	G. Scurr ...	"	Union-Castle Mail S.S. Co., Ld.	" " 19.11.38 to 4.1.39	10.1.39
020 *† Stirlingshire, M.S.	A. Mackinlay ...	A. M. Kennedy, H. Lockyer, A. J. Thompson.	W. D. Gooderidge	"	Turnbull, Martin & Co., Ld.	" " 20.7.38 to 13.9.38	2.11.38
047 *† Stockport ...	H. S. Brown ...	A. Dobbs ...	J. P. Edmunds...	"	Associated Humber Lines.	" " 10.11.38 to 8.1.39	11.1.39
270 †† Strathaird (t-e)...	J. M. M. Tickell ...	G. R. Peters, J. R. Fox, R. E. Simmons.	A. Morris ...	M.-S.	P. & O. S.N. Co.	" " 23.10.38 to 30.11.38	7.12.38
210 †† Strathallan ...	J. H. Biggs, R.D., Commr., R.N.R.	A. McHattie, R. H. Danger, J. C. Langdon.	W. Banbury ...	"	" " "	" " 17.9.38 to 21.12.38	28.12.38
238 †† Stratheden ...	R. Harrison, D.S.O., R.D., Capt., R.N.R.	G. C. Forest, R. C. Cawell, A. O. Gething.	H. S. Horne ...	"	" " "	" " 19.10.38 to 12.1.39	30.1.39
039 †† Strathmore ...	F. E. French, R.D., Capt., R.N.R.	B. H. Pollitt, M. R. Prouse, C. V. Taylor, R. H. Danger, P. C. Watson.	S. W. Mitchell ...	"	" " "	" " 2.10.38 to 14.2.39	23.2.39
059 †† Strathnaver (t-e)	E. P. Lyndon, R.D., Lt.-Commr., R.N.R.	S. E. Edmundson, N. W. Leach, N. Thompson.	P. R. Hobbs ...	"	" " "	" " 29.10.38 to 1.2.39	7.2.39
229 *† Tactician ...	A. L. Peterkin ...	T. Davies, L. Harriman, R. Myles.	J. Milne ...	M.	T. & J. Harrison	" " 22.11.38 to 28.12.38	5.1.39
*† Talhybius ...	P. Purkis ...	J. B. Anderson, D. J. R. Davis, J. P. Brown.	" " " "	M.L.	A. Holt & Co. ...	Fm. 915 12.7.38 to 6.12.38	3.1.39
021 †† Tamaroa ...	W. Dawson ...	G. Hawley, G. A. Simmers, A. Anderson.	P. Maloney ...	M.-S.	Shaw Savill & Albion Co., Ld.	Fms. 911 & 138 7.8.38 to 15.11.38	21.11.38
165 *† Tantalus, M.S. ...	T. G. Nivison ...	T. R. Walker, N. O. Freeland, T. W. Craig.	W. W. Bee ...	S.	A. Holt & Co. ...	Fms. 911 & 138 21.11.38 to 7.1.39	16.2.39
*† Taranaki, M.S. ...	W. G. West ...	E. L. Haysen, M. Forster, H. Wynyard.	J. Byrne ...	"	Shaw Savill & Albion Co., Ld.	" " 24.10.38 to 26.2.39	4.3.39

PUBLISHED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE

MARINE METEOROLOGY.

ATLASES :—

ATLANTIC (NORTH) :—

Atlas of Currents on the Main Trade Routes of the North Atlantic. (No. 323, 1930.) 6s. 6d. (29½ × 19½ in.)

BAFFIN BAY AND DAVIS STRAIT :—

Monthly Meteorological Charts of Baffin Bay and Davis Strait. (No. 221, 1917.) 8s. (30 × 25½ in.)

INDIAN OCEAN :—

Indian Ocean Currents. (No. 392, 1936.) 10s. (30 × 20 in.)

RED SEA :—

Meteorological Charts of the Red Sea. (No. 106, 1895.) 21s. (22 × 13½ in.)

SOUTHERN OCEAN :—

Meteorological Charts of the Southern Ocean between the Cape of Good Hope and New Zealand. (No. 123, 1917.) 7s. 6d. (12½ × 9½ in.)

PACIFIC (SOUTH) :—

South Pacific Currents. (No. 435, 1938.) 7s. 6d. (34 × 22 in.)

BOOKS :—

A Handbook of Weather, Currents and Ice, for Seamen. (No. 379, 1935.) 4s. (8vo.)

The Marine Observer's Handbook. Sixth Edition. (No. 218, 1936.) 3s. (8vo.)

Decode for use with the International Code for Wireless Weather Messages from Ships, with notes for the guidance of masters of British ships for making Weather Reports. Sixth Edition. (No. 329, 1938.) 6d. (8vo.)

JOURNAL :—

The Marine Observer.

The quarterly review of the Marine Division of the Meteorological Office in co-operation with Voluntary Marine Observers; with monthly supplements.

Deals with Weather, Climate, Currents and Ice as they are met in daily life at sea :—

Quarterly numbers 4s. net, 3d. postage; Monthly Supplements 6d. each net, 1d. postage.

Annual Subscription (including Supplements) 21s., post free. Cover for Volume 2s. net, 4d. postage.

The Publications in this list can be purchased directly from
H.M. STATIONERY OFFICE at the following addresses :—
York House, Kingsway, London, W.C.2; 120 George Street, Edinburgh 2; 26 York Street, Manchester 1;
1 St. Andrew's Crescent, Cardiff; 80 Chichester Street, Belfast;
or through any bookseller

Printed under the authority of His Majesty's Stationery Office
By Eyre and Spottiswoode Limited, London

ORIGINAL ARTICLES

BOOK REVIEW

1. The author of this paper, Dr. J. H. ...
2. The author of this paper, Dr. J. H. ...
3. The author of this paper, Dr. J. H. ...

4. The author of this paper, Dr. J. H. ...
5. The author of this paper, Dr. J. H. ...
6. The author of this paper, Dr. J. H. ...

7. The author of this paper, Dr. J. H. ...
8. The author of this paper, Dr. J. H. ...
9. The author of this paper, Dr. J. H. ...

THE JOURNAL

The purpose of this journal is to provide a forum for the publication of original research articles, clinical reports, and reviews. It is intended to be a comprehensive source of information for the medical profession.

10. The author of this paper, Dr. J. H. ...
11. The author of this paper, Dr. J. H. ...
12. The author of this paper, Dr. J. H. ...

MARINE METEOROLOGY

Books Published by the Authority of the Meteorological Committee,

Air Ministry, London

A HANDBOOK OF WEATHER, CURRENTS AND ICE, FOR SEAMEN

Published on 1st March, 1935

THIS book is intended mainly for the great majority of the navigating officers of the merchant navy who do not receive information regularly through the medium of the "Marine Observer."

In this small volume, in language simple to seamen, is compressed as much of the information as is most desirable for seamen, that can be now given with confidence.

About the air and the sea, the wind systems of the oceans, tropical revolving storms and rules for handling ships in them; weather in middle and high latitudes, and how to forecast it; the currents of the oceans; floating ice, that obstacle harder than salt water which has been responsible for the end of many a fine ship, with a chapter upon modern ocean pilotage. An appendix gives the necessary Tables for reducing the barometer readings to the standard datum, and the international scales and notations for use at sea.

Marginal notes for ready reference are given throughout the book, with a good index, and there are 34 illustrations.

(M.O. 379.) 4s. (4s. 4d.)

DECODE for use with the INTERNATIONAL CODE for WIRELESS WEATHER MESSAGES FROM SHIPS

6th Edition. Revised to 1st September, 1938

NOW includes a fuller description of the Selected Ship system, schedule for communication, tables for coding and decoding weather reports, and notes for the guidance of the masters of British ships which are not Selected Ships.

This pamphlet has been recommended to the owners of all ships fitted with W.T., registered in Great Britain and Northern Ireland.

With it, reports made by Selected Ships of all nations may be decoded.

(M.O. 329.) 6d. (7d.)

MARINE OBSERVER'S HANDBOOK

6th Edition. December, 1936.

This book has been rewritten as a companion to "A Handbook of Weather, Currents and Ice for Seamen," and also as a guide to the Voluntary System

of Marine Meteorological Observation of the British Meteorological Office.

(M.O. 218.) 3s. (3s. 5d.)

All prices are net, those in brackets include postage

Obtainable from

HIS MAJESTY'S STATIONERY OFFICE

LONDON, W.C.2: York House, Kingsway

EDINBURGH 2: 120 George Street

MANCHESTER 1: 26 York Street

CARDIFF: 1 St. Andrew's Crescent

BELFAST: 30 Chichester Street

Or through any bookseller