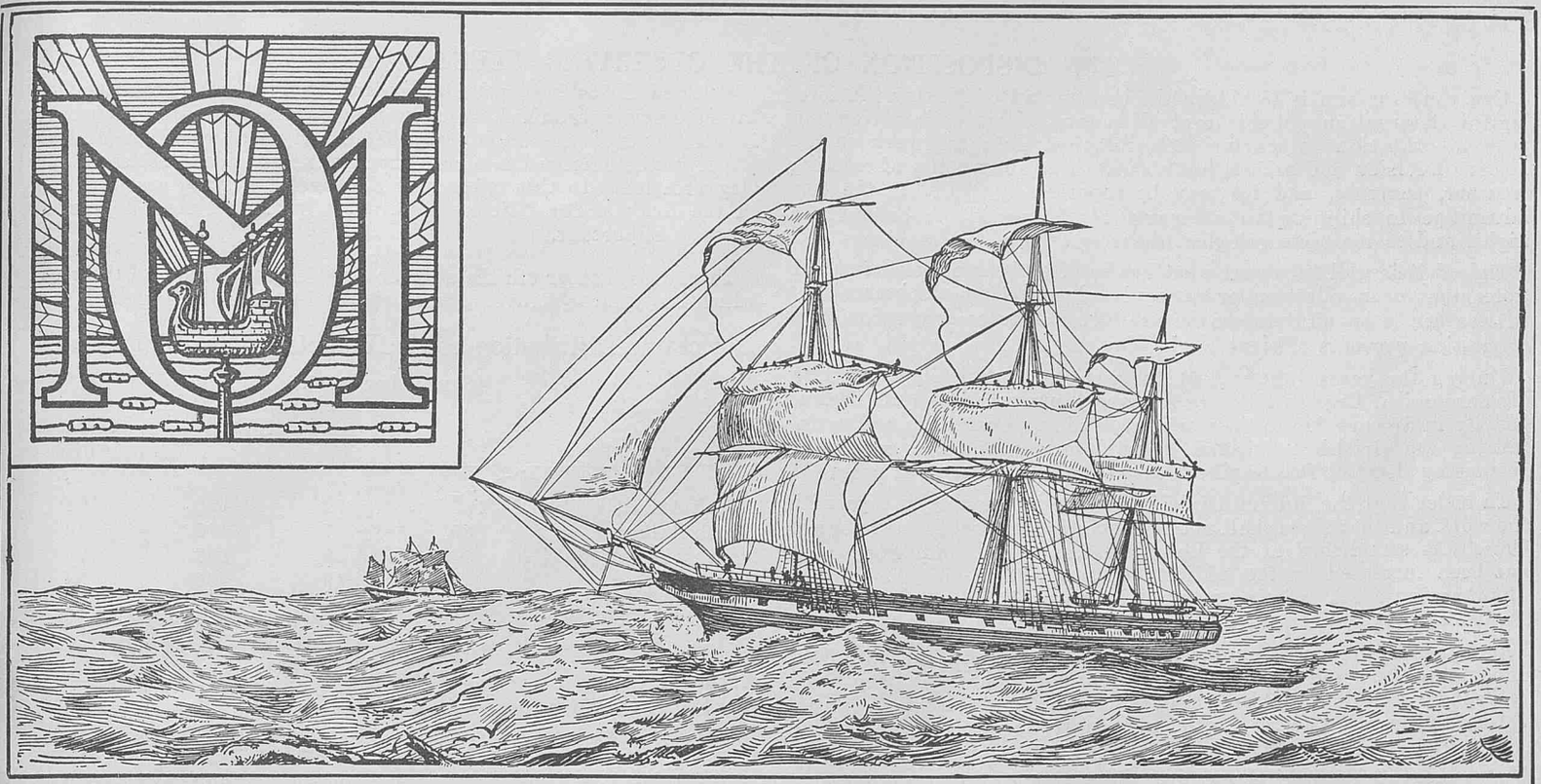

VOL. VIII. No. 96. THE MARINE OBSERVER. DECEMBER, 1931.

TABLE OF PRINCIPAL CONTENTS.

VOLUME VIII.

With this number of THE MARINE OBSERVER which completes the eighth volume the index is published and title page provided.

Most hearty thanks to all who have contributed to this volume of THE MARINE OBSERVER—not only those whose names appear in it—but all those who have helped in its production afloat and ashore by providing information ready for press, data which have been used in compiling the information published and also those who have assisted in preparing the information for press and those who have printed it.

THE MARINE OBSERVER has this year—following the strides made in the organization of the Voluntary Observing Fleet generally and British "Selected Ships" in particular—become more valuable as a means of co-ordination of the work at sea than ever.

We could not conduct the work as it is now done without it.

All concerned are reminded that a specially made binding cover may be purchased from the Stationery Office and it is hoped that all observing ships will take the precaution of having their numbers for the past year bound. Each year there are only a limited number of MARINE OBSERVERS printed and it is desirable that as many complete volumes as possible, whether ship's equipment, privately owned or official property, should be preserved.

To bind the year's twelve numbers of THE MARINE OBSERVER to the best advantage we recommend that in each of the numbers the cover, advertisement pages, list of Voluntary Observing Ships and North Atlantic Ice Chart containing information which is not permanent or which may be repeated, should be dispensed with.

When these have been removed there will remain pages numbered in sequence throughout each number, also pages unnumbered containing lithographic charts which follow the numbered pages as they are published in the monthly numbers. These should be placed in the volume cover and bound.

So that THE MARINE OBSERVER may hold its place, not only as a means of communicating advice to regular observing ships and information compiled in the Marine Division to the Sea services, but as a virile sea journal always of interest to all who use the sea, we earnestly appeal to the Captains of observing ships to do all they can to provide first hand information. Remarks, notes, or articles upon experiences at sea, descriptions of instruments and all matters connected with meteorology, seamanship, and navigation which will interest and benefit seamen are desired and will be most welcome.

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THE DISPOSITION OF THE OBSERVING FLEET.

Our constant aim is to obtain the best spread of Marine Meteorological Observation possible over all oceans. This with a view not only to collection of marine meteorological data for work in the Marine Division and ashore, but also so that information of existing weather, currents, and ice may be reported by W/T. to the best advantage to shipping in all parts of the world, to aircraft in flight, and to the Meteorological Services ashore.

Indeed it is well to repeat what has so often been stressed in these notes that over-collection or unregulated collection of observations of weather is harmful to the service, for it creates congestion, and congestion prevents efficient work.

During the years 1928 to 1931 the work of completely extracting Meteorological Logs as they are received, commenced in 1920, became heavily in arrears due to the work involved in working up and maintaining the British "Selected Ships" service and the constantly increasing demand for Marine Meteorological information ashore.

In order that the Marine Division may be better able to cope with the work and that there shall not be congestion, a Port Meteorological Office was established at the London Docks; the headquarters staff has been increased by the addition of two clerks; and the number of observing ships is being reduced by about 100.

In future it is not intended that the Meteorological Log shall be kept by observing ships regularly navigating oceans which have been adequately surveyed and charted for climate, but that they shall be kept by a limited number of ships navigating the North Atlantic, North and South Pacific, Arctic and Antarctic Oceans.

It is intended that other observing ships should keep "The Ships Meteorological Record" Form 911, which is mainly for the purpose of regulating synchronized observation, by which not only is the "Selected Ships'" Service of routine W/T. weather reports maintained, but synchronized observations are collected so that the weather in all parts of the world may be investigated whenever desirable either in the Marine Division or by the International Meteorological Organization. In this connection the careful writing and returning of the Register for "Selected Ships'" Wireless Meteorological Reports is important.

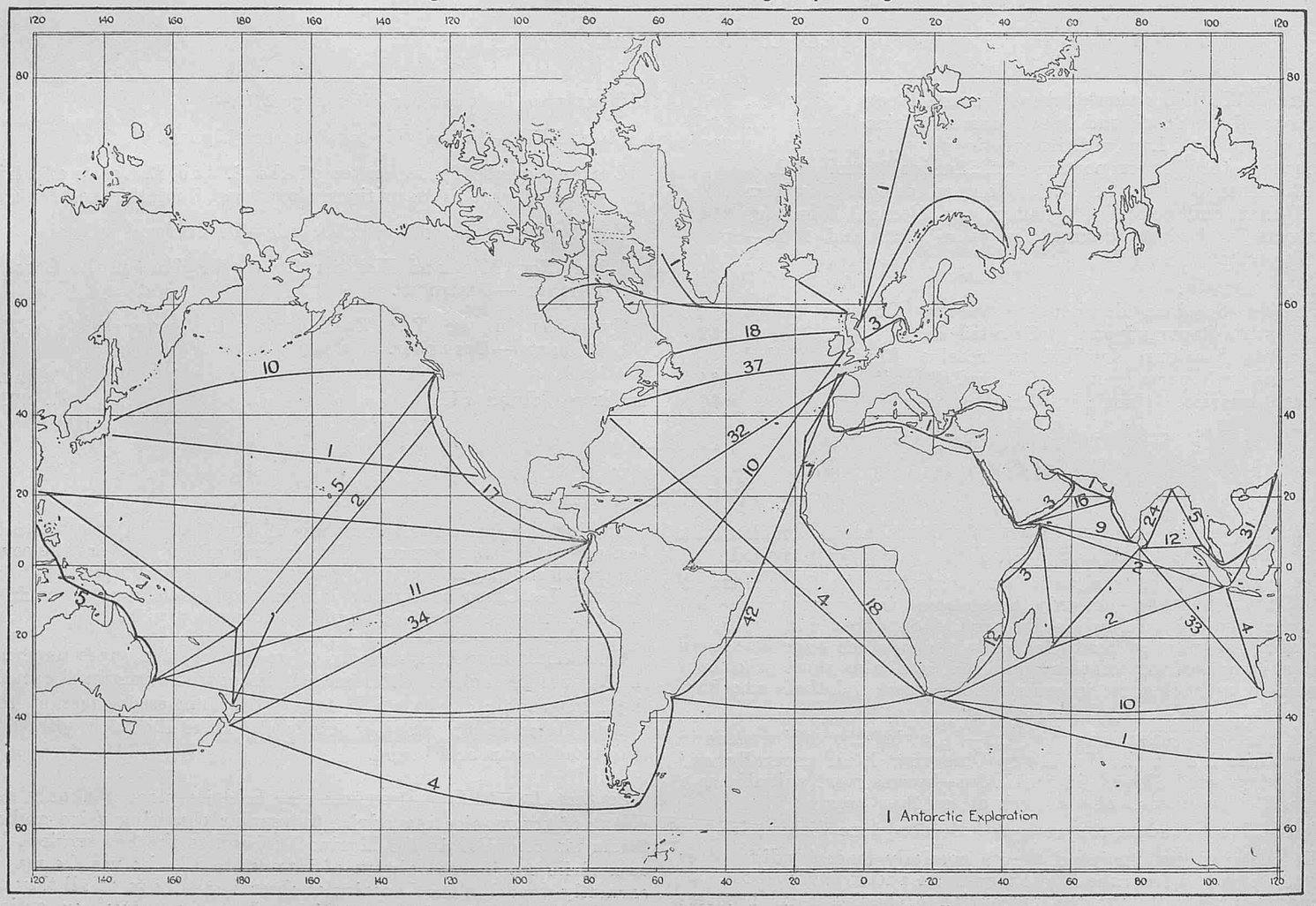
To-day September 8th the number of observing ships and the oceans which they mainly traverse is as shown in the following table:—

Oceanic Distribution of the Voluntary Observing Fleet.

September 1931.

Ocean.	Form 911.	M.L.	Total.	Selected Ships.
North Atlantic ...	103	19	122	62
South Atlantic ...	69	7	76	53
North Indian ...	94	9	103	70
South Indian ...	41	19	60	54
North Pacific ...	25	16	41	27
South Pacific ...	27	22	49	40
Arctic	3	—	3	—
Antarctic	—	1	1	—
Stationary Ships and Stations.	—	—	10	—
Totals	362	93	465	306

Chart of the World Indicating the Number of British Observing Ships using the Different Trade Routes.



439 Foreign going British Observing Ships indicated on routes.
26 Stations and Observing Ships engaged in Home Waters, not indicated.

Total 465

These numbers are of course approximate and it should be understood that observing ships shown as traversing an ocean may also traverse other oceans and that the majority of observing ships commence and end their voyages from ports in Great Britain. (Only about 35 per cent. of observing ships are at sea at any time.)

The same applies to the track chart of the world above; the number of observing ships indicated as using a track may of course actually be greater than that shown; for instance the number of observing ships (32) indicated as using the track from the British Isles to the West Indies and Panama is actually 101, viz. that number added to 69 using the routes Panama to New Zealand and Australia, etc. These numbers indicate that the disposition of the observing fleet can be improved and the Merchant Navy and Fishing Fleets are asked to do all in their power to help us to improve it.

"Selected Ships" are only detailed by the Marine Division in London from observing ships in the fleet list. The Port Meteorological Officers at Liverpool and London constantly watch the disposition of the Observing Fleet and in their offices similar tables and charts to the above are kept. They and the Merchant Navy Agents at other ports are each and all responsible for the maintenance of a certain number of observing ships suitably disposed.

The Merchant Navy is asked to assist us in the organization of this voluntary work done in aid of safe and economical navigation, in the general national interest and in accordance with an International plan. The assistance which we now most need is the willing compliance with the verbal advice given by the Port Meteorological Officers and Agents, and the written advice given through the medium of this journal. Working thus, our tasks of administration in the Marine Division in London will be lightened so that the arrears of data extraction may be recovered and better information compiled and published for the use of the Sea Services and for general purposes so making this voluntary work at sea a greater factor in true national economy.

CURRENTS OFF THE SOUTH AND EAST COASTS OF AFRICA.

No part of the investigation of the currents observed on the trade routes of the world has proved more interesting or profitable to date than that carried out during the past year, the results of which are given in this volume.

Navigators have long sought more precise information of the seasonal variations of those great streams, the Agulhas, Mozambique and East African Coast currents, their mean velocity at different distances off the coast and their breadth. Answers to these questions as far as they can be given will be found in these pages. More information or confirmation of the inshore counter currents and the currents which are said to run towards the land off certain parts of the South African Coast has also been sought but here we are not able to add materially to what was known before the present investigation.

In the March number we made a strong appeal to all who were able to assist us in this investigation. The Commanders and Officers of observing ships who have returned observations of current in these waters since the year 1910 now have their reward, for it is with the data which they supplied that the charts have been constructed and the information compiled. Very few replies to our appeal for general information of current were received and this makes that of Captain R. G. SARGEANT, which was published in the September number and which is referred to elsewhere in this number, the more valuable. The fact that few have been able to give general information of current is really an indication of the fact that such information to be accurate can alone be derived from great numbers of tabulated observations. This is of course the function of the Marine Division. Independent generalizations such as those made by Captain SARGEANT are of great assistance for they act as a check, stimulate interest and help to bring out the true significance of the facts obtained by compilation and charting.

It is remarkable how this investigation proves that the currents change with the prevailing winds.

MARINE SUPERINTENDENT.

London.

September 10th, 1931.

THE MARINE OBSERVER'S LOG.

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

WEATHER CHARTS MADE AT SEA.

Western North Atlantic.

The accompanying weather chart and remarks have been received with the Meteorological Log of S.S. *Culebra*, Commander C. E. RATHKINS, R.N.R., London to Bermuda, observer Mr. H. E. SANG.

"A very intense depression was encountered on the evening of December 6th 1930, and *Culebra* passed through the centre of this in Lat. 32° 38′ N., Long. 63° 04′ W., at 0040 G.M.T. December 7th (8.40 p.m. December 6th Ships Time).

A weather chart for Noon G.M.T. December 6th was constructed on board from the weather bulletin broadcast from Arlington at 1500 G.M.T and from intercepted ship weather messages.

A depression of moderate but increasing intensity, was situated a little more than 100 miles S.W. of Bermuda, which from our previous observations was moving in a Northerly direction.

Culebra was steering 255°, speed 9.5 knots. Barometer had fallen steadily 13.1 mb. in the past 24 hours, but for the past 12 hours the wind had remained steady at S.E. force 5.

Our forecast was for a gradual veering of the wind to South and S.W. but without much increase in its strength.

At 1.30 p.m. ships time, wind veered to S.S.E. in a squall and then remained steady in that direction with very little increase in force before 4.00 p.m., the Barometer by then having fallen another 3.6 mb. from Noon, to 991.1 mb.

From 4.00 p.m. the Barometer fell with extraordinary rapidity and the wind increased very quickly in force accompanied by violent squalls of wind and rain which came at more and more frequent intervals. At 8.00 p.m., I judged we were very near the centre of the disturbance as the wind was still steady in direction at S.S.E. but still increasing in force, it was at this time force 11.

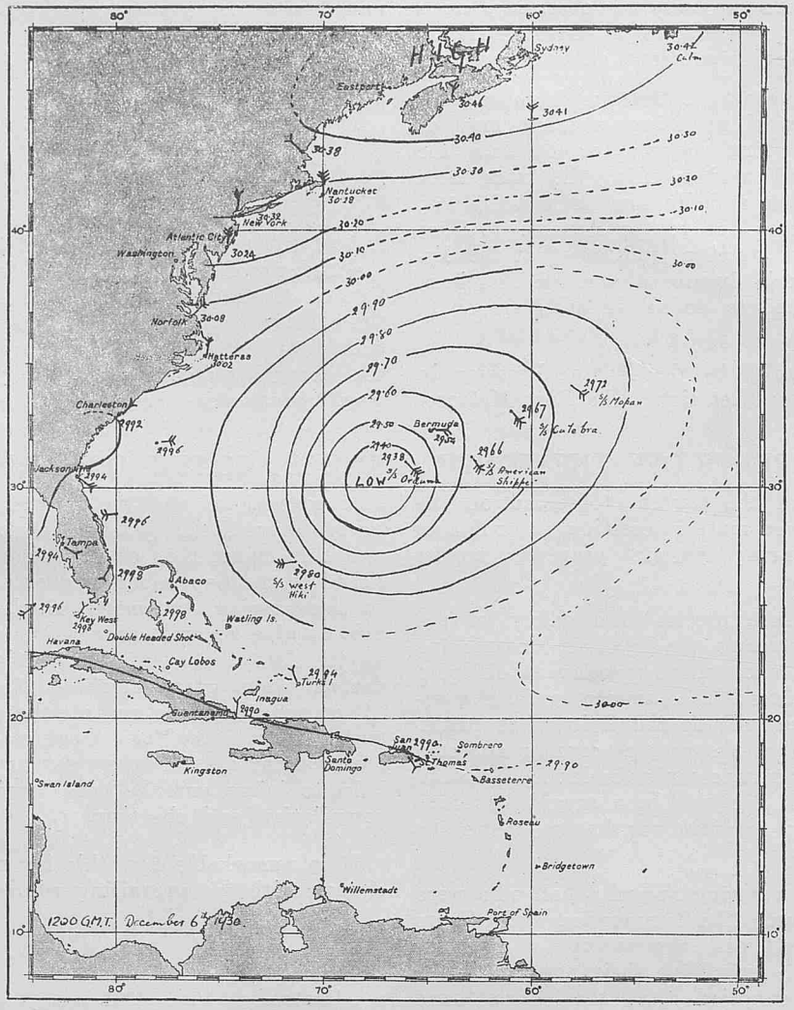
Barometer reached its lowest reading at 8.40 p.m. at position given above, 985.5 mb., the wind dropped at this time and sky commenced to clear.

At 9.00 p.m., wind came away from West force 10 and sky clouded over again for a short period but quickly cleared and by midnight the wind had dropped to force 6 in the same direction—West—with a rapidly rising barcmeter, but with not so steep a gradient as on the Eastern side of the depression.

The Barometer had commenced to rise at 8.40 p.m. and had already gone up 1.5 mb. when the shift of wind took place.

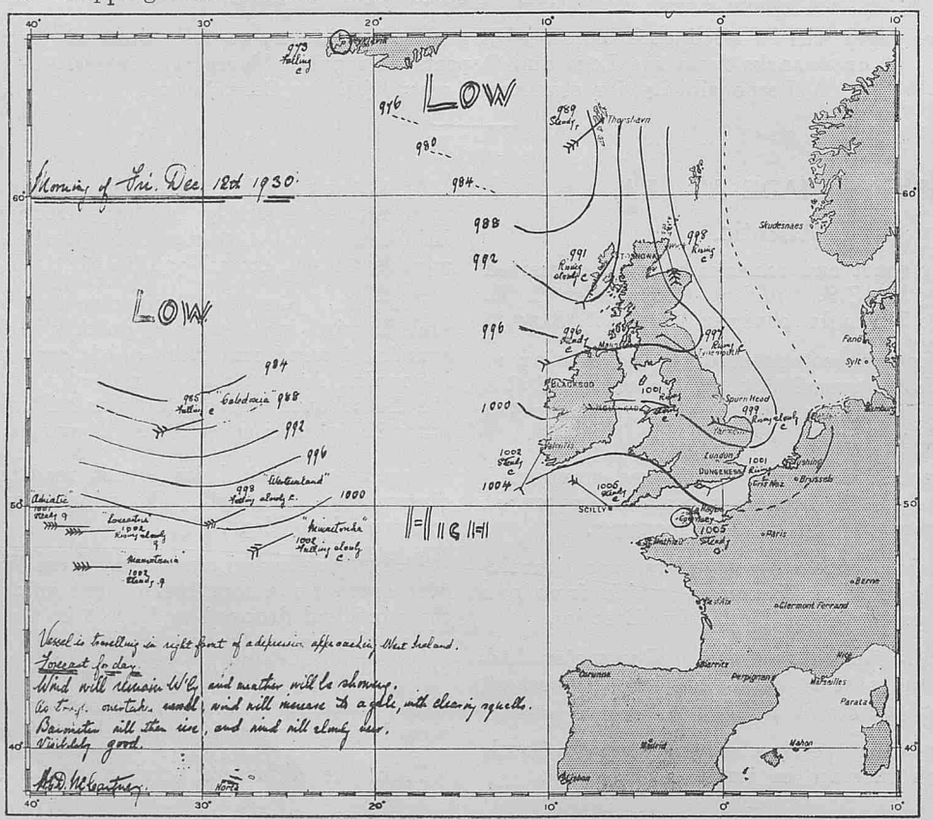
From the difference between our anticipated weather and that

which we actually experienced, we came to the conclusion that the path of the storm altered from a Northerly to an E.N.E. direction, probably owing to the area of high pressure to the Northward and that it very rapidly intensified.



Eastern North Atlantic.

Weather Chart made at sea on board S.S. *Minnetonka*, Captain T. F. Gates, C.B.E., New York to London, by Mr. H. E. D. McCartney from the Weather Shipping Bulletin and from the observations of "Chosen Selected" Ships on the Roll Call for the day.



SQUALL.

Mediterranean Sea.

THE following is an extract from the Meteorological Record of S.S. *Kashgar*, Commander F. SUDELL, R.D., R.N.R., London to Yokohama. Observer, Mr. R. P. EDDY, 2nd officer.

"December 18th, 1930, at noon the weather was fine and cloudy, the sky being three parts overcast and the remainder consisting of Strato-Cumulus. A moderate N.N.W'ly swell was in evidence and the barometer reading 29.89 (corrected), the wind variable, force 2, and the temperature 59°.

From that time to 1800, continuous rain with occasional fierce wind squalls from the E.S.E. were experienced and a heavy easterly swell commenced. At 1900 one of these squalls attained hurricane force, spume being lifted higher than the mast heads and covering the ship with a white pall of spray. This lasted for three minutes; the barometer which had fallen from 29.80 to 29.57 in half an hour now commenced to rise equally rapidly; the wind suddenly became light and veered to South, at the same time the weather cleared and Engela Light was observed 17 miles outside the range (a total distance of 34 miles), whereas formerly the visibility had been very poor, in fact, actually during the above mentioned squall, a matter of a few yards only.

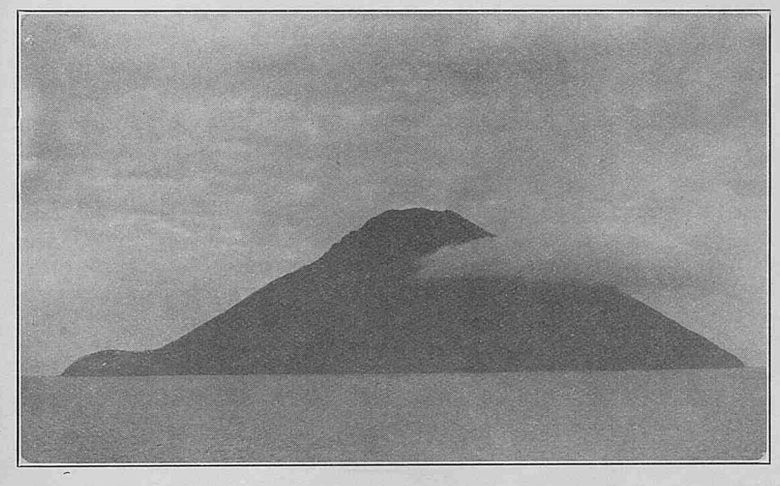
At 2000 the glass had risen to 29.77 and the wind maintained its direction and force, with a short confused S.E'ly swell, although the land was only about seven miles to the southward.

From then on weather conditions were normal.

Position of ship, Latitude 37° 20′ N., Longitude 8° 40′ E."

CLOUD CAP ON STROMBOLI.

THE following is an extract from the Meteorological Record of S.S. *Mongolia*, Captain H. R. RHODES, Brisbane to London. Observer, Mr. M. R. WOOD, 3rd officer.



The accompanying photograph was taken on December 3rd, 1930, at 11.57 a.m. Ship's Time, Stromboli being distant 2 miles N.54°E. Cloud cap seen in photo. had been completely encircling the summit some minutes previously and was slowly drifting to the right.

Barometer 30.10 in., Temperature 64° F., Wind E'ly, force 1-2.

CLOUD MOVEMENT.

China Sea.

THE following is an extract from the Meteorological Record of S.S. *Alipore*, Captain E. P. LYNDON, Shanghai to Hong Kong. Observer, Mr. W. L. DOBBIN, 3rd officer.

On Sunday 7th December, 1930, about 9.0 p.m., off Tung Yung Lighthouse drizzling rain and poor visibility. Wind N.N.W. force 4. Three layers of clouds were observed, the upper layer was practically stationary, the middle layer of stratus was moving from the S.W. while the lower layer, also stratus, from the N.N.W. The two layers on meeting revolved at a considerable speed for a short period, when the middle layer appeared to rise slightly, falling again to cause another disturbance of the cloud forms when the two air currents met. This went on for about two hours.

ABNORMAL REFRACTION AT SUNSET.

Spencer Gulf, South Australia.

THE following is an extract from the Meteorological Log of S.S. *Ascanius*, Captain C. A. WILSON, Adelaide to Fremantle. Observer, Mr. R. L. HOLDSTOCK, 3rd officer.

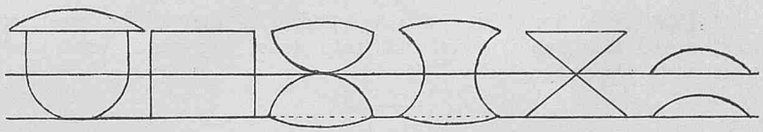


Figure 1. Figure 2. Figure 3, Figure 4. Figure 5. Figure 6.

December 2nd, 1930, 7.10 p.m. A.T.S. 0948 G.M.T. Time of sunset 7.06 p.m. The first observation appeared like a saucer placed on top of a basin. Then it changed to an oblong, afterwards the sides seemed to concave, giving the appearance of a ship's capstan as in FIGURES. 3 and 4. The sides disappeared giving the appearance of two cones, FIGURE 5, and finally set as in FIGURE 6.

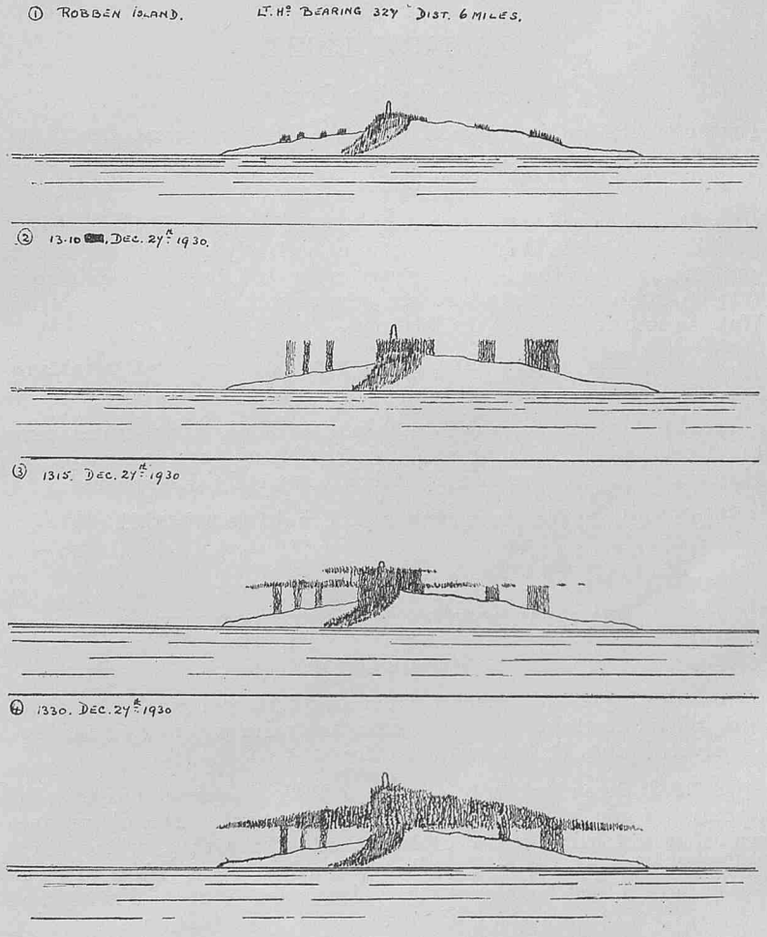
The time from first observation until sun finally set was four minutes. Clouds Ci. and A.-St., the sky being half covered. Temperature, air 66° F., sea 64° F.

Ship's position, Latitude 35° 11½′ S., Longitude 137° 53′ E.

MIRAGE.

Table Bay.

THE following is an extract from the Meteorological Record of S.S. *Clan Macgillivray*, Captain A. MACKINLAY, Cape Town to Philadelphia. Observers, Messrs. S. R. J. WOODS, 3rd officer and D. HALL, 4th officer.



December 27th, 1930, whilst at anchor in Table Bay with Robben Island Lighthouse bearing 327° distance 6 miles, a mirage appeared over the island.

At 1310 A.T.S. the trees and Lighthouse appeared elevated, as in FIGURE 2, and continued in varying forms and intensity until 1320 when it had disappeared. At 1325 it again appeared and gradually increased until a complete island was seen superimposed upon the island (see FIGURE 4). The mirage continued in varying forms until 1345 when it had totally disappeared.

Weather conditions were as follows:—Barometer 29.83, Steady. Temperature 82°. Wind N.W., force 1-2. Cloudy with fog bank along the Northern and Western horizons. At 1320 Wind dropped to a flat calm.

At 1353 vessel weighed and proceeded. At 1857 whilst steering 325°, speed 11.5 knots, vessel ran into dense fog which continued until 0245 December 28th.

LUNAR HALO AND CORONA.

South China Sea.

THE following is an extract from the Meteorological Log of S.S. *Arracan*, Captain S. THOMSON, Rangoon to Saigon, Observer, Mr. G. DAVIDSON, 2nd officer.

"Tuesday 30th December, 1930, at 9.50 p.m. A.T.S., the moon became visible through Ci.-Cu. clouds and round it appeared a brilliant corona and a complete 22½° halo. The aureole was light blue, and the brown ring 1½° radius and ¼° wide. The colours visible from the ring were green, yellow, orange and red, the green being specially bright. The inside ring of the halo was red, and orange and yellow were distinguished. As the Ci.-Cu. clouds passed south the corona disappeared by 10.30 p.m.

Temperature, Dry bulb 79°, Wet bulb 76°. Predominating cloud Ci.-Cu. Wind N. by E., force 2.

Position of ship, Latitude 4° N., Longitude 105° E."

ZODIACAL LIGHT.

South Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *Pakeha*, Captain H. C. ELFORD, London to Australia via Suez. Observer, Mr. A. J. TILLOT, 3rd officer.

On December 8th 1930 after sunset, a faint white Zodiacal Light was observed in the Western horizon, of a clearly defined cone shape, and having an altitude of approximately 38°, base approximately 17°; its luminosity was of rather greater intensity than the Milky Way, as seen from Northern latitudes.

Sky cloudless at the time, stars very brilliant and twinkling. No moon.

The light persisted until 08.30 p.m. A.T.S., after which time the light became diffused and fainter, losing its cone shape, by moonrise at 09.00 p.m. A.T.S. it had completely disappeared.

Ship's position, Latitude 17° 45′ S., Longitude 94° 18′ E.

FORMATION OF A WATERSPOUT.

Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *Piako*, Captain E. P. C. ASLIN, Australia to United Kingdom. Observer, Mr. A. D. WILSON, 3rd officer.

On 22nd December, 1930, at 0010 G.M.T. the vessel passed what appeared to be the beginning of a waterspout. The disturbance was first noticed about 2 cables ahead of the ship, where, from the S.E. edge of a very dark heavy Cu.-Nb. cloud, wisps of cloud could be seen slowly descending. These wisps were broken up and unattached either to each other or to the "mother cloud" which had not the usual pap-like pendant which marks the formation of the average spout. As the vessel approached, the water directly below the phenomenon was observed to be violently agitated and to be revolving in an anti-clockwise direction as were also the "Fracto" clouds.

The whole thing was moving with the clouds from N.W. and passed along the vessel's starboard side. As it passed, a canvas screen on the foredeck was snatched into the air and the smoke from the funnel was drawn into the vortex making it appear as a pillar of smoke.

Whether the ship broke the formation or not was not seen as the phenomenon was hidden from view by the heavy rain shower which immediately followed it.

Ship's position, Latitude 0° 42′ S., Longitude 85° 19′E. Barometer remained steady at 29.80 in., and the temperatures of the air and sea at 78° and 80° respectively.

METEORIC SHOWERS.

Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Port Adelaide*, Captain R. WILLIAMS, Albany to Suez. Observer, Mr. F. W. ELGAR, 3rd officer.

On December 13th, 1930, during the 8 to 12 p.m. watch observed a great number of meteors to the N.E. Practically all appeared to fall in a perpendicular line, but some seemed to fall in a West to East direction. One at the latter part of watch was for a second very bright reflecting quite a glare on the surface of the sea.

The weather at the time was very clear no wind or clouds, sea or swell. Ship's position from Latitude 0° 41′ S., Longitude 63° 07′ E., to Latitude 0° 0′, Longitude 62° 25′ E.

South Pacific Ocean.

THE following is an extract from the Meteorological Log of S.S. *Mahana*, Captain J. M. CAMERON, Wellington to London via Panama. Observer, Mr. A. E. MASTERS, 3rd officer.

On December 14th, 1930, at 0430 G.M.T. observed a group of eight small meteors appearing together in the vicinity of Orion and travelling in a S.Wly direction, duration of flight approx. 2.0 secs. Three minutes later one large meteor having long white tail appeared in vicinity of Canopus travelling towards Aldebaran, and disappearing in that vicinity. Magnitude equal to Venus, duration of flight approx. 3.0 secs. At 0503 G.M.T. two more small meteors appears in the vicinity of Orion travelling S.W. Magnitude equalling Canopus. Wind E.S.E. Sky cloudless. Ship's position Latitude 12° 04′ S., Longitude 98° 57′ W.

METEOR.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Princesa*, Captain A. B. FRIEND, Santos to Tenerife.

December 9th, 1930, at 2130 G.M.T. observed a very bright meteor bearing 147°, and falling towards Southward. Altitude when first observed 35°. Visible for about seven seconds, then appeared to break up, and disappear in about altitude 22°. Colour was reddish when breaking up; it at first appeared circular, but disappeared in pear-shaped fragments. Diameter difficult to estimate, but approximately one quarter that of moon. Moderate N.E. Trades and clear sky.

Ship's position, Latitude 18° 55′ N., Longitude 23° 35′ W.

CLISSOLD'S POSITION PLOTTER.

THE following notes are contributed by Lieutenant P. CLISSOLD, R.N.R., of R.M.M.V. *Warwick Castle*, Captain G. OWEN.

"This instrument does its work simply and speedily. It is made of transparent celluloid, graduated in degrees and $\frac{1}{8}$ inches, and is sufficiently small to be kept in the work book in which it is used, requiring no squared paper or any other assistance than a pencil.

Its use can best be illustrated from actual observations taken:—

In D.R. position	26° 55′ S. 11° 27′ E.	Canopus	bore S.43°E. (T)	intercept $1\frac{1}{2}'$	Towards.
		Sirius	,, S.82°E.	,, 4′	Away.
		☾	,, N.37$\frac{1}{2}$°E.	,, $8\frac{1}{2}'$	Away.

FIGURE 1.—Place the Plotter on any convenient place in the work-book—either on a blank page or over one's previous calculations—with its longer diameter upon one of the lines to get it into a horizontal position. Place a dot on the Plotter's centre to represent the D.R. position, and dots at the stars' respective azimuths.

Fig 1. LAYING OFF THE AZIMUTHS.

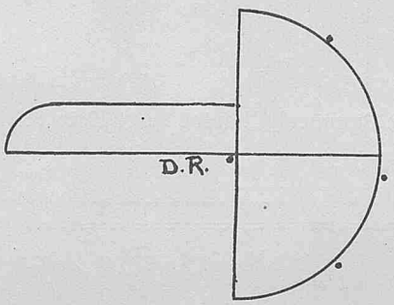


FIGURE 2.—To draw the position lines. Slew the Plotter round so that its longer diameter lies upon the two dots representing the D.R. position and the Stars' Azimuth; and make the distance from the D.R. dot to the Plotter's centre equal to the Intercept (you will notice that when the Intercept is *away* the semi-circular end of the Plotter is *away* from the star, and vice-versa). Draw the position-line along the Plotter's shorter diameter.

Fig 2. DRAWING A POSITION-LINE

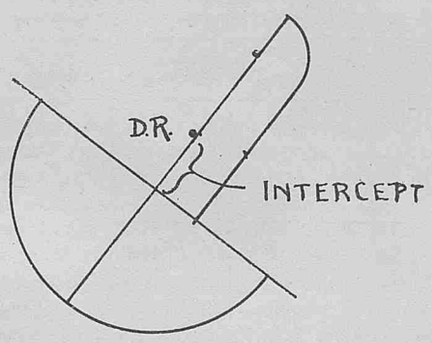
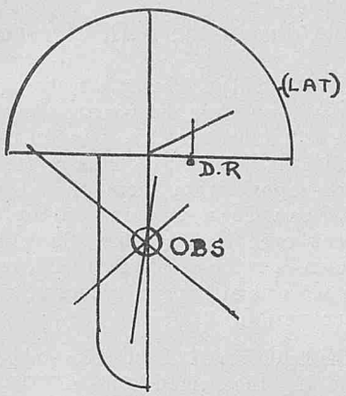


FIGURE 3.—Having thus drawn the position-lines and found the ship's position relative to the D.R., place the Plotter as in FIGURE 3 and read off the diff. Lat. (in this case 7′S.) and the dep. (5′ W.). To change Dep. into Diff. Long. one may use either the Traverse Table, or find it by construction, which is possibly quicker. In the latter case, without moving the Plotter, draw in the departure, place a dot at the angle corresponding to the Latitude and then complete the triangle; the hypotenuse being the Diff. Long.

Apply the d. Lat. and d. Long. to the D.R. and the Observed position is found; and, if the current's set and drift is required it can be quickly measured.

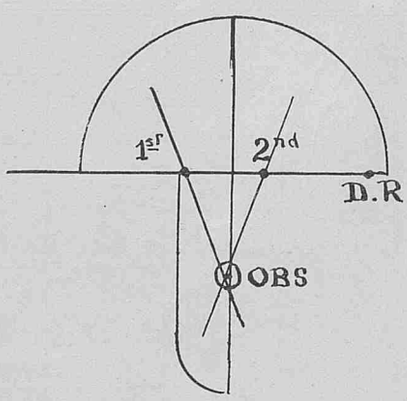
It sometimes happens in cloudy weather that there is an appreciable interval between each star sight, which means, of course,

Fig 3 FINDING DIFFS. OF LAT. DEP. & LONG



that the run must be allowed for when plotting the position. In this case one can proceed as follows. Place the Plotter anywhere convenient as before and from the D.R. position (which, for example, we will assume to be worked out for the time at which the first sight was taken) lay off the first position-line, and then the true course in the *opposite direction*. Along this course measure the distance run to the second observation and lay off the second position-line from that point; and on again to the third observation, if any. Then proceed as before, in the usual way. It is considerably shorter than the orthodox method.

Fig. 4. PLOTTING A "SUMNER".



SUMNERS.—To illustrate the Position Plotter's use when SUMNER'S method is employed, another example will suffice.

At 6.21 a.m. an observation of the sun gave a Longitude 8′ West of D.R.

At 9.19 a.m. a second observation gave a longitude $4\frac{1}{2}'$ West of D.R.

The "A" and "B" corrections were found in the usual way, but the sun's bearings were taken out of Table "C" for *Latitude* 0°, *as if the ship was on the equator;* because, as BLACKBURN says, "It must be borne in mind that this does not give the *true* geographical line of position, but lines of position which will give the same result as to Latitude and Longitude on a plane chart as the true lines of position would give on the Mercator's chart".

Now, as before, place the Plotter at any convenient place in the work-book, put a dot to represent the D.R. position, and if you like, draw a line to represent the D.R. Latitude.

Mark off the difference of the two observed longitudes from this position (in this example 8′ W. and $4\frac{1}{2}'$ W.) and through them draw the appropriate position lines.

Where they cross is the ship's position, and the difference in Latitude and *Longitude* from the D.R. is measured as before with the Position-Plotter."

CURRENTS IN THE WESTERN PORTION OF THE INDIAN OCEAN.

III.—Currents during the N.E. Monsoon Period (Northern Winter and Southern Summer) and General Summary.

The Agulhas Current.—This is somewhat stronger in November to April than during the summer half-year, May to October. The greatest mean drift, 58.3 miles per day, is found in February to April between Durban and Latitude 32° S. This is the largest mean drift shown on the charts, apart from those of 63.1 and 60.4 miles per day in the East African Coast Current during the S.W. Monsoon period. The current over the Agulhas Bank between Longitude 24° E. and Cape Town is twice as strong in November to April as in May to October, on account of the prevalence of strong south-easterly winds in the former period.

The maximum drift observed from November to April in the Agulhas Current during the period 1910 to 1930 was at the rate of 120 miles on three occasions, between Latitudes 31° S. and 32° S.

The Mozambique Current.—This is also stronger during the two quarters of the N.E. Monsoon period and is at its maximum in the months of November to January when there is a mean drift of 39.0 miles per day between Latitudes 12° S. and 14° S. In the Bight of Sofala during February to April a mean set off-shore of 9.7 miles per day is shown off Beira with a weak set on-shore to the northward.

The East African Coast Current.—The set of this current is northerly to north-easterly in both quarters from Cape Delgado to Latitude 2° S. but the drift is only half as strong as in the period May to October. North of Latitude 2° S. however the character of this current is entirely altered. In the quarter November to January there is a strong south-westerly set with a mean drift of 33.4 miles per day between Latitude 2° N. and 4° N. The change from the N.E. set is fairly sudden and occurs in November. The change back to the N.E. set is more gradual and occupies two months, February and March, when the mean sets are westerly. The N.E. set is re-established by the beginning of April.

The maximum drift of the S.W. set of the East African Coast Current observed during the period 1910 to 1930 was S.21° W., at the rate of 95 miles per day, recorded by S.S. *Llandaff Castle* on January 1st, 1928, in Latitude 1° 14′ S., Longitude 43° 01′ E.

INDIAN OCEAN.

General flow of Main Current during the S.W. Monsoon Season (Northern Summer) Charted in 1929 to 1931.

(To be completed as investigation proceeds.)

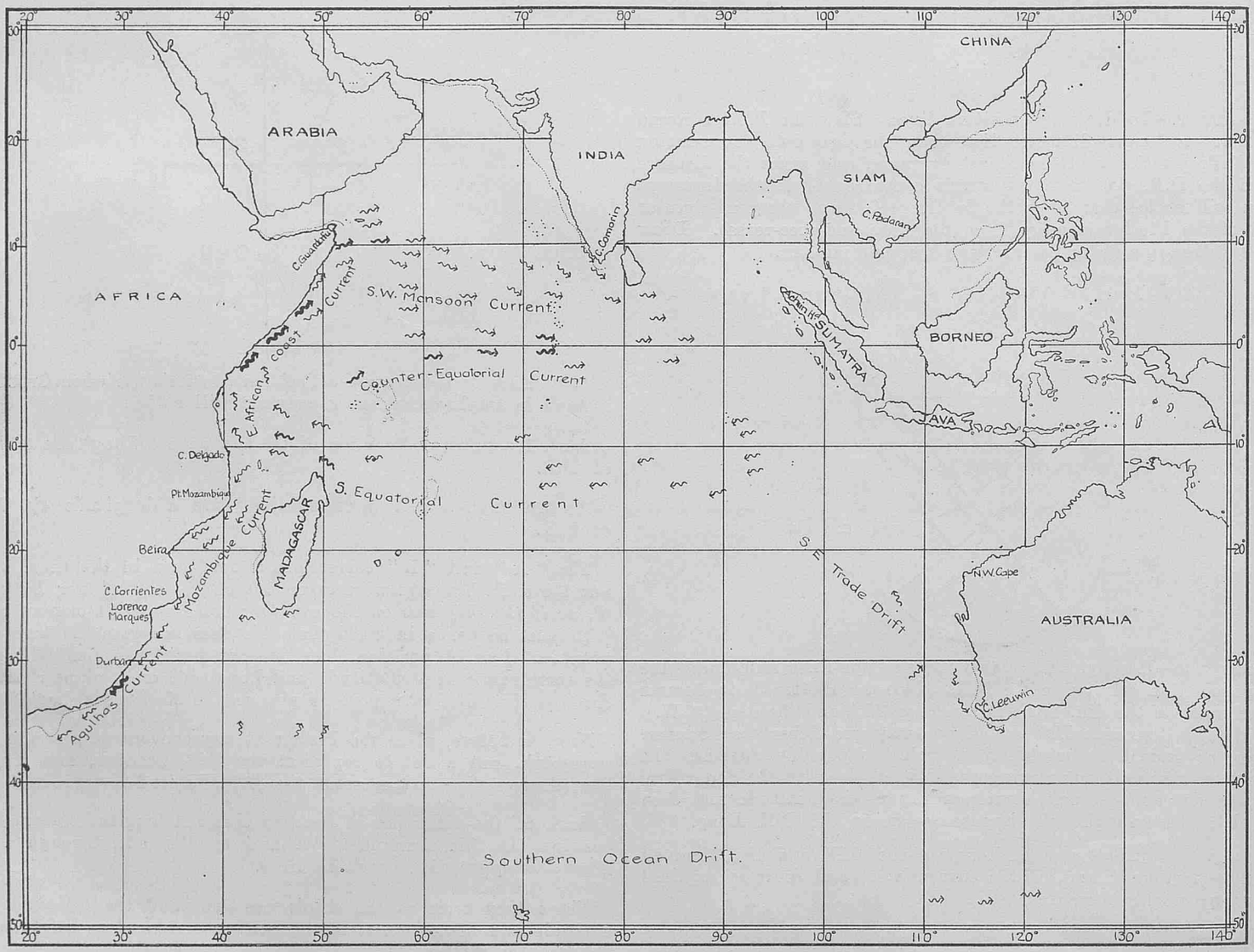


Figure 1.

INDIAN OCEAN.

General flow of Main Current during the N.E. Monsoon Season (Northern Winter) Charted in 1929 to 1931.

(To be completed as investigation proceeds.)

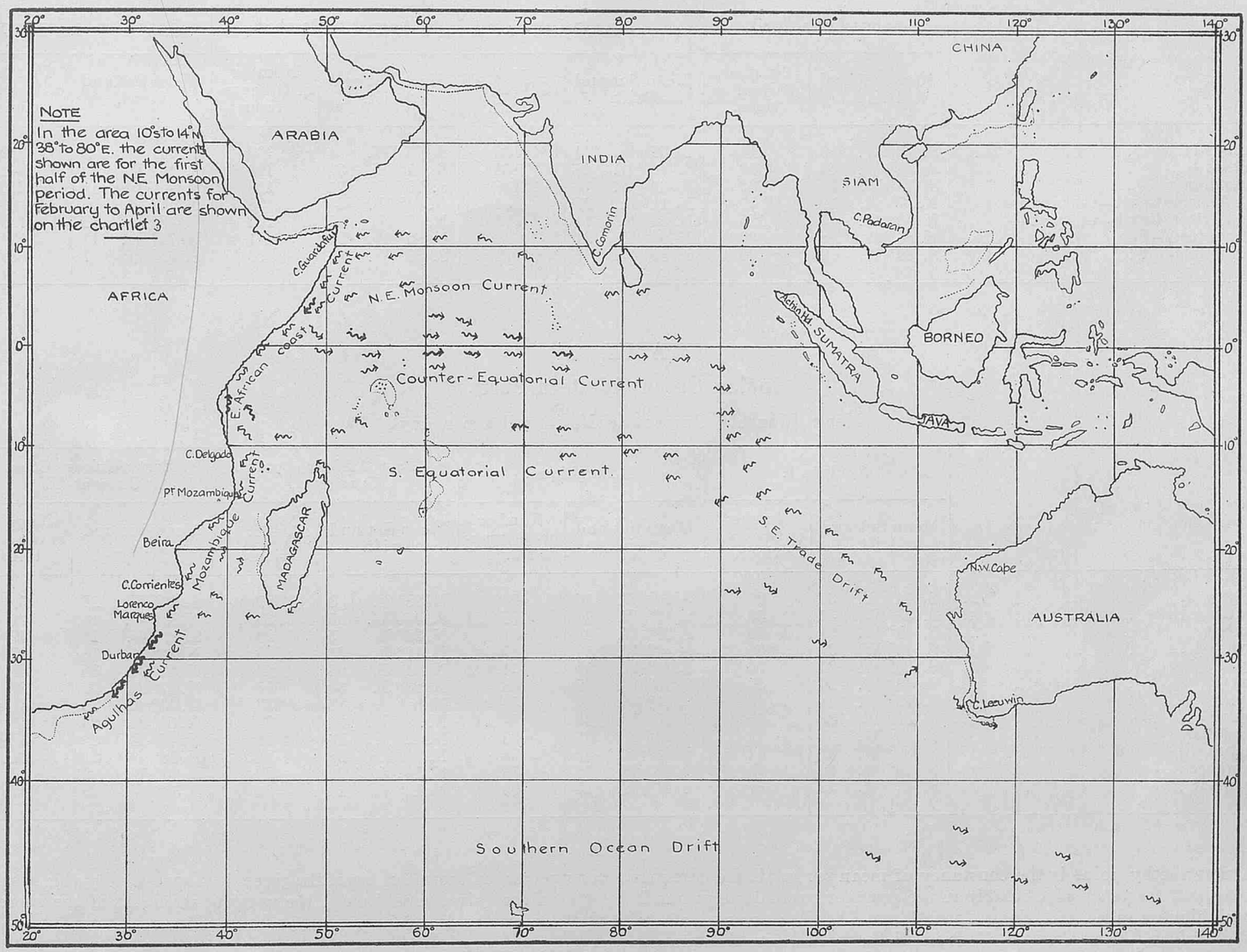


Figure 2.

The Counter-Equatorial Current.—The western part of this current is very clearly shown on the chart for November to January, between Latitudes 2° N. and 4° S. It is considerably stronger in this quarter than during the remainder of the year. It now forms a continuation of the East African Coast Current which flows S.W. and turns eastward into the ocean in equatorial latitudes.

Currents of the Mozambique Channel.—These are weak in November to April but the current sets more frequently to the northward in the centre of the Channel than during the S.W. Monsoon period.

The South Equatorial Current.—The sets past Cape Amber and Cape St. Mary during November to April are similar to those of the S.W. Monsoon period and the remarks in the second article about the absence of a continuous current from the neighbourhood of Mauritius to Durban during May to October, apply also to the remainder of the year. While the westerly current flowing south of Madagascar remains at approximately the same strength throughout the year the branch which flows past Cape Amber is only half as strong in November to April as during the remainder of the year.

Seasonal Variations of the Currents in the Western Portion of Indian Ocean.—The main currents of the ocean are shown in FIGURES 1 and 2. The ocean is being divided into sections which are shown in FIGURE 4. Seven sections have been added for the western portion of the Indian Ocean now being dealt with. The south-going current from Cape Delgado is divided into three sections of which Agulhas I is the main part of the Agulhas Current. The East African Coast Current is divided into two sections at Latitude 2° S. This point was chosen because north of it the current is reversed in direction during the quarter November to January. The mean set and drift for each quarter have been computed for each of the sections, the values being given in TABLE 1.

General flow of Current during the months of February to April.

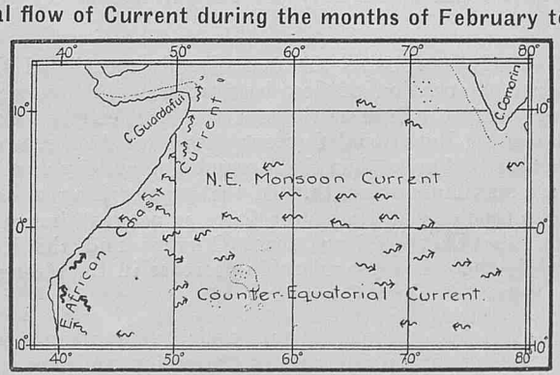


Figure 3.

TABLE 1.

Indian Ocean (Western Part).

Mean Quarterly Current (drift in miles per day).

Current.	February to April.		May to July.		August to October.		November to January.	
	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.
Agulhas II...	S. 72° W. 9	114	S. 36° W. 4	100	S. 75° W. 4	100	S. 74° W. 9	152
Agulhas I	S. 41° W. 33	193	S. 40° W. 25	168	S. 41° W. 31	173	S. 43° W. 32	244
Mozambique	S. 30° W. 12	283	S. 32° W. 9	207	S. 25° W. 15	213	S. 20° W. 19	246
East African Coast—Current I ...	N. 7° E. 10	79	N. 11° E. 27	52	N. 4° W. 23	78	N. 14° E. 13	86
East African Coast—Current II ...	N. 53° W. 7	125	N. 53° E. 44	76	N. 47° E. 27	104	S. 48° W. 18	105
S. Equatorial IV	N. 88° W. 8	39	N. 66° W. 24	41	N. 82° W. 21	41	N. 74° W. 11	33
S. Equatorial V...	S. 86° W. 9	36	S. 59° W. 7	70	S. 58° W. 10	69	S. 45° W. 7	59

TABLE 2.

Indian Ocean (Western Part).

Mean Monthly Current (drift in miles per day).

Month.	Agulhas I.		Mozambique.		East African Coast Current I.		East African Coast Current II.	
	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.	Mean Set and Drift.	Number of Observations.
January	S. 44° W. 35	99	S. 20° W. 16	120	N. 78° E. 0	29	S. 41° W. 22	31
February	S. 39° W. 32	59	S. 17° W. 17	75	S. 49° W. 6	30	N.89° W. 14	31
March	S. 40° W. 34	80	S. 30° W. 10	91	N. 32° E. 5	23	S. 86° W. 14	47
April	S. 43° W. 37	54	S. 41° W. 11	117	N. 12° E. 33	26	N. 32° E. 15	47
May	S. 36° W. 25	76	S. 35° W. 10	101	N. 4° E. 28	22	N. 62° E. 34	38
June	S. 43° W. 26	50	S. 16° W. 8	68	N. 23° E. 34	17	N. 47° E. 60	27
July...	S. 42° W. 24	42	S. 37° W. 7	38	N. 18	13	N. 49° E. 38	11
August	S. 37° W. 32	55	S. 29° W. 13	74	N. 9° W. 24	33	N. 51° E. 23	33
September	S. 45° W. 31	74	S. 24° W. 10	65	N. 2° W. 16	24	N. 42° E. 37	37
October	S. 39° W. 30	44	S. 23° W. 19	74	N. 28	21	N. 55° E. 21	34
November	S. 45° W. 30	78	S. 18° W. 19	53	N. 14° E. 26	23	S. 26° W. 2	27
December	S. 41° W. 32	67	S. 21° W. 23	73	N. 12° E. 16	34	S. 52° W. 26	47

A noteworthy point is the constancy of mean set in all the currents throughout the year, particularly in the stronger currents, Agulhas I, Mozambique and East African Coast I and II. The reversal of the East African Coast Current II from N.E. to S.W. in the quarter November to January stands out clearly. The strongest part of the Agulhas Current has the most constant set of all, the extent of variation in the mean quarterly current throughout the year being only 3°.

TABLE 1 clearly establishes the fact already mentioned that there is a seasonal alternation of flow between the north-going and the south-going current. Both sections of the East African Coast Current, and also the Equatorial Current past Cape Amber, are weakest from November to April, when the Mozambique and Agulhas Currents are at their maximum strength. In the quarter May to July when the S.W. Monsoon is at its height there is a great increase in the strength of the East African Coast Current and the Equatorial Current while there is a considerable decrease in the strength of the Mozambique and Agulhas Currents.

On account of this interesting fact and the importance to navigation of the strong coastal currents of the region under consideration it has been thought desirable to carry the investigation a stage further. The mean set and drift for the four chief current sections have therefore been computed for each month and are given in TABLE 2.

On account of the reversed flows in the East African Coast Current during part of the year it is not possible to represent the actual strengths of the four current sections graphically. The curves in FIGURE 5 are obtained by plotting the north or south components of the mean currents given in TABLE 2. By this method we obtain a fair comparison of the varying strengths of the currents and the reversals of direction are also shown.

From FIGURE 5 it is seen that the Agulhas Current is the most constant in strength, the Mozambique Current taking second place in this respect. Although these two currents together constitute the great south-going flow from Cape Delgado there is not an exact correspondence of the curves except during the months July to September. The minimum drift of the Agulhas Current occurs in May to July and that of the Mozambique Current in June and July. On the other hand the maximum drift of the Agulhas Current is in April, just before the decrease of strength, while that of the Mozambique Current is in December.

There is less correspondence between the two sections of the East African Coast Current. The maximum of Section II is in June while that of Section I is in April with a secondary maximum in June. The reversal of the current from N.E. to S.W. in the East African Coast Current II occurs in November, December and January. In February and March the current is seen from TABLE 2 to be nearly due west, the N.E. set not being re-established till April. In the quarterly current charts the arrows show no reversal of the East African Coast Current Section I, but TABLE 2 shows that it becomes South-Westerly during one month, February. The value of 0 given for the drift of this current in January does not mean that the currents are very weak during the month but that N.E. and S.W. sets exist in almost equal numbers and strength, this being a transition month. FIGURE 5 shows a curious alternation in the relative strength of Sections I and II of the East African Coast Current during the months of July to September.

Areas for Calculating Mean Current.

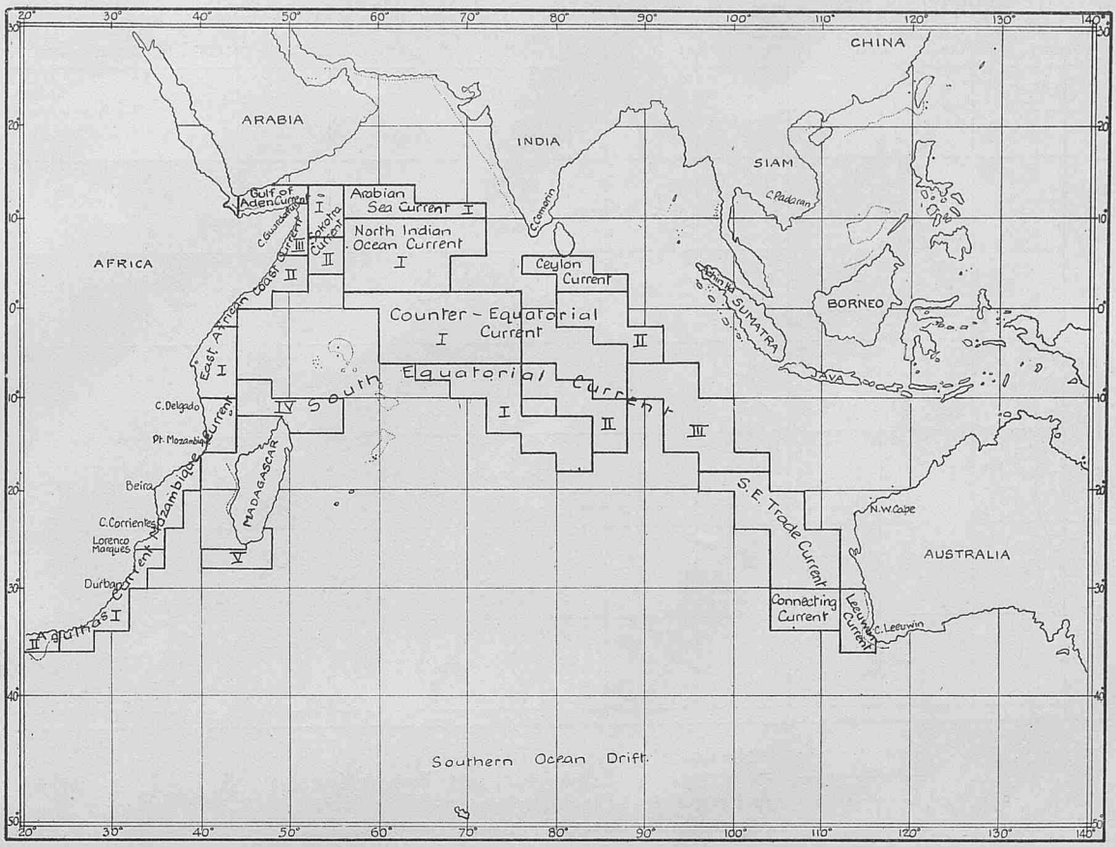


Figure 4.

Variation of Current Strength with Distance from Coast.

In the Notes on Current off the East Coast of Africa, Cape Guardafui to Cape Delgado by Captain R. G. SERGEANT, Port Captain of Mombasa, published in the current volume of THE MARINE OBSERVER, No. 93, page 186, the following passage occurs with reference to the East African Coast Current during the S.W. Monsoon:—"A very good expectation of the average strength of this current, which sets parallel with the land, is as follows:—1 mile per hour between 150 and 200 miles off the land; 1 to 2 miles per hour between 50 and 100 miles off the land, and 2 to 4 miles per hour from close inshore to 50 miles off the land". An investigation has been made of the currents from which the Marine Observer charts were constructed in order to see how the information so derived compares with the results of Captain SERGEANT'S experience. For this purpose all the currents within the area of Latitude 2° N. to 2° S., from the coast to Longitude 48° E. for the quarter May to July were plotted. The total number of currents available for the quarter is 46 and all but one were observed at distances exceeding 60 nautical miles from the coast. The number of observations is hardly sufficient to draw detailed conclusions but the following results are clearly shown. The strongest currents, 100 to 105 miles per day, a little over 4 knots, are found at 30 to 35 miles from the coast, with one at 40 miles. All the currents up to 60 miles from the coast exceed 2½ knots, with four exceptions. All the currents between 60 and 120 miles are less than 2½ knots, with four exceptions. It is curious that most of these exceptions, the stronger currents, were recorded far from the coast and an observation of a current of 88 miles per day was made at a mid-distance of about 130 miles. It is obvious that while the strongest current runs between the coast and a line 35 miles distant from it and while on the whole currents decrease with increasing distance from the coast yet the decrease is not uniform. Even in such a strong current as this the variability of drift is very marked. The foregoing remarks apply entirely to currents with north-easterly sets. With one exception all currents with sets in other directions plotted in this area were observed at distances exceeding 100 miles from the coast. The agreement with Captain SERGEANT'S statement is very striking, the only real difference being that the Marine Observer Charts show no evidence of the current beyond 130 miles from the shore. The number of observations at distances greater than this is, however, few.

A similar investigation has also been made for the strongest part of the Agulhas Current, the area of Latitude 30° S. to 34° S., from the coast to Longitude 34° E. The quarter February to April was chosen, this being the time when the Agulhas Current reaches its maximum strength. As the information may be of value to ships making a landfall from the eastward the original plottings are reproduced in FIGURE 6. The number of observations available is 71. The distribution of the observations is quite different to that for the East African Coast Current, two-thirds of these lying within the 30 miles line. The drifts exceeding 100 miles a day were observed between 12 and 16 miles from the coast. The weakest drifts in the area up to 30 miles from the coast were all observed within 10 to 15 miles off the coast. Drifts of from 2 to 4 knots are without apparent relation to distance from the coast. Very few observations are available for distances of over 50 miles from the coast but the currents shown are mainly weak. The south-westerly drift has, however, been observed up to about 150 miles from the coast between Latitude 31° S. and 32° S.

It is interesting to compare these results with the "three ship observation" made by H.M.S. *Birmingham*, repeated on page 58 of this volume of THE MARINE OBSERVER. This observation was made on July 18th, 1926, in Latitude 32° 13.5′ S., Longitude 29° 23.8′ E. H.M.S. *Verbena*, whose course lay 12 miles from the shore experienced the strongest current while H.M.S. *Birmingham* at 17 miles from the shore had less current, and H.M.S. *Lowestoft* at 22 miles from the shore had the weakest current. The strongest current on this occasion lay just within the limits given above by the investigation from the charts.

It is probable from the investigation that the strongest currents are experienced near the 100-fathom line, but outside it. The 100-fathom line is not laid down fully in the Admiralty Charts but is about 10 miles from the coast where shown.

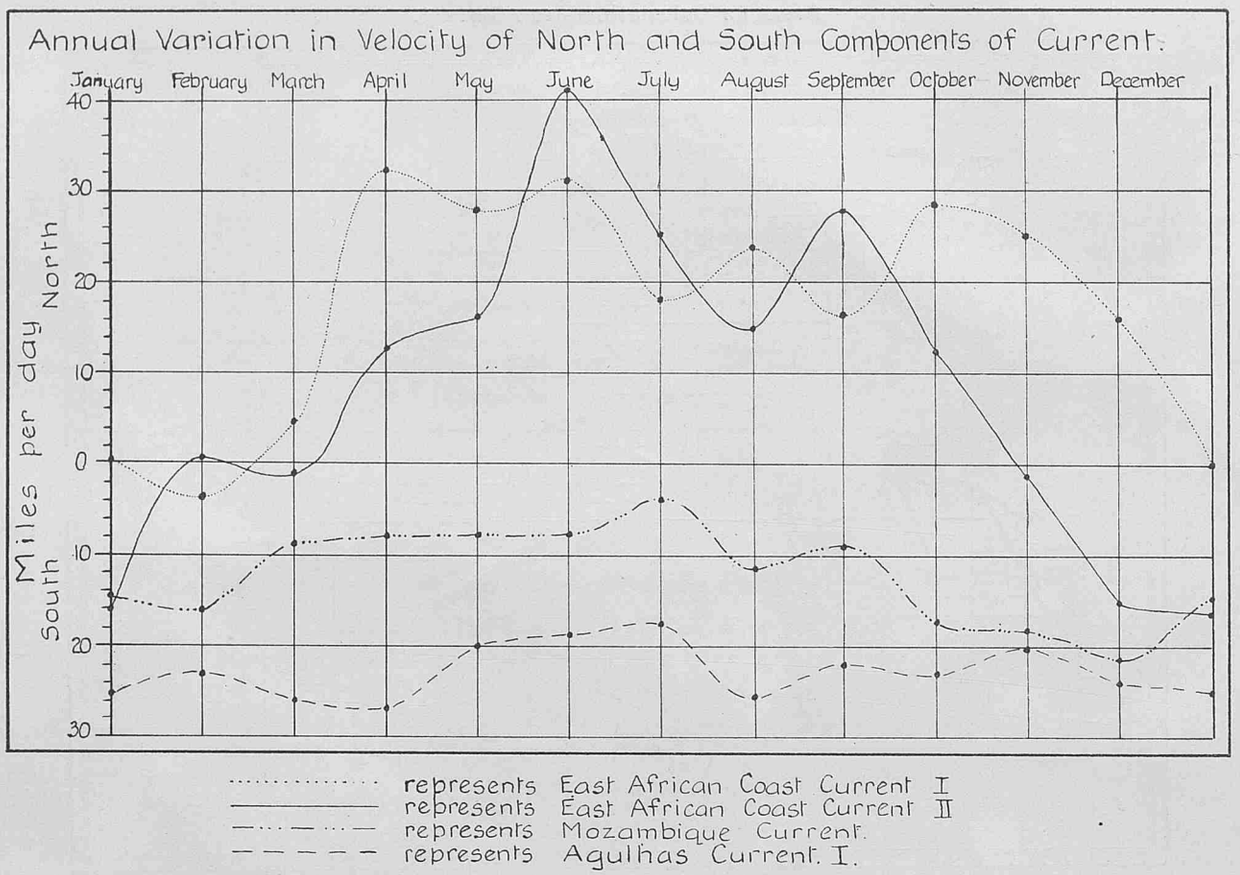


Figure 5.

General Summary.—FIGURE 1 shows the general flow of the main currents during the S.W. Monsoon period over the whole of the Indian Ocean so far investigated. The main part of the East African Coast Current leaves the coast in about Latitude 10° N. to flow eastward and form the strong current found to the south of Sokotra. Thereafter it merges into the S.W. Monsoon Current of the Arabian Sea. While the East African Coast Current right up to Cape Guardafui is at its maximum strength in May to July, the early part of the S.W. Monsoon, the current south of Sokotra does not reach its maximum until the following quarter, August to October.

FIGURE 2 shows the general flow of the main currents during the N.E. Monsoon period. In the western portion of the ocean south of Latitude 2° S. the general flow is similar to that of the S.W. Monsoon period. Between Latitude 10° N. and 2° S. the East African Coast Current is reversed, setting S.W. and passing into the Counter-Equatorial Current. The S.W. Monsoon continues to blow on the East African Coast until the end of October, while the N.E. Monsoon is established towards the end of November. The East African Coast Current sets N.E. with considerable strength in October and sets S.W. with considerable strength in December. November, as shown in TABLE 2, is a month of transition, for while the mean set is S.W. the mean drift is only 2 miles a day, implying that N.E. and S.W. sets are experienced in almost equal numbers. The change in the current is therefore simultaneous with the change of the Monsoon.

The East African Coast Current does not set S.W. after January and it is therefore necessary to show in FIGURE 3 the currents in this area during the latter half of the N.E. Monsoon period, February to April. During these months a weak northerly set flows up the coast from Latitude 4° N. to Cape Guardafui while south of Latitude 4° N. the mean set is westerly, on to the coast. There is thus no sweep of the Counter-Equatorial Current from the East African Coast Current as in FIGURE 2. The Counter-Equatorial Current in February to April originates in about Latitude 2° S. to 4° S., Longitude 48° E., just as it does during the S.W. Monsoon period. There is one important difference, however. In February to April a westerly current was found to flow between Latitude 2° N. and 2° S. westward of Longitude 68° E., as shown in the current chart for this quarter in MARINE OBSERVER Vol. VII, 1930, at the end of the March number. This is now seen to reach as far as Longitude 52° E. and to pass by south-westerly sets into the Counter-Equatorial. We also found last year that the Counter-Equatorial Current has its maximum drift in November to January; this is the quarter when, as we now see, it forms a continuation of the S.W. set of the East African Coast Current.

Summary of Main Differences from Previous Knowledge.—The South Equatorial Current of the Indian Ocean has not yet been completely investigated, the portion between Longitude 56° E. and Longitude 72° E. not being covered by the work so far done. Nevertheless it appears probable that the main line of flow across the ocean is between Latitudes 8° S. and 15° S. In other words the current appears to flow parallel to the Equator and the portion which passes north of Cape Amber and into the East African Coast Current is directly in the main line of this flow. There is no evidence *so far* for the older statement that the main body of the Equatorial Current is directed to the neighbourhood of Mauritius, there dividing and passing partly to the north and partly to the south of Madagascar. It is certain that there is no continuous current throughout the year from Mauritius to Durban, past the south of Madagascar, though a short extent of weak westerly current off Cape St. Mary is found.

The seasonal variations of the Agulhas Current are greater than was formerly supposed. TOYNBEE was correct in assigning the month of July for the weakest flow of this current, but incorrect in stating the greatest strength to be in February. The seasonal alternation in strength between the Agulhas Current and the East African Coast Current is an entirely new fact.

The maximum strength of the East African Coast Current was stated with fair accuracy, but it was not emphasised that this current during the height of the S.W. Monsoon is one of the

Portion of the South African Coast off which the Agulhas Current is strongest.

INDIVIDUAL OBSERVATIONS FOR THE MONTHS OF FEBRUARY TO APRIL 1910–30.

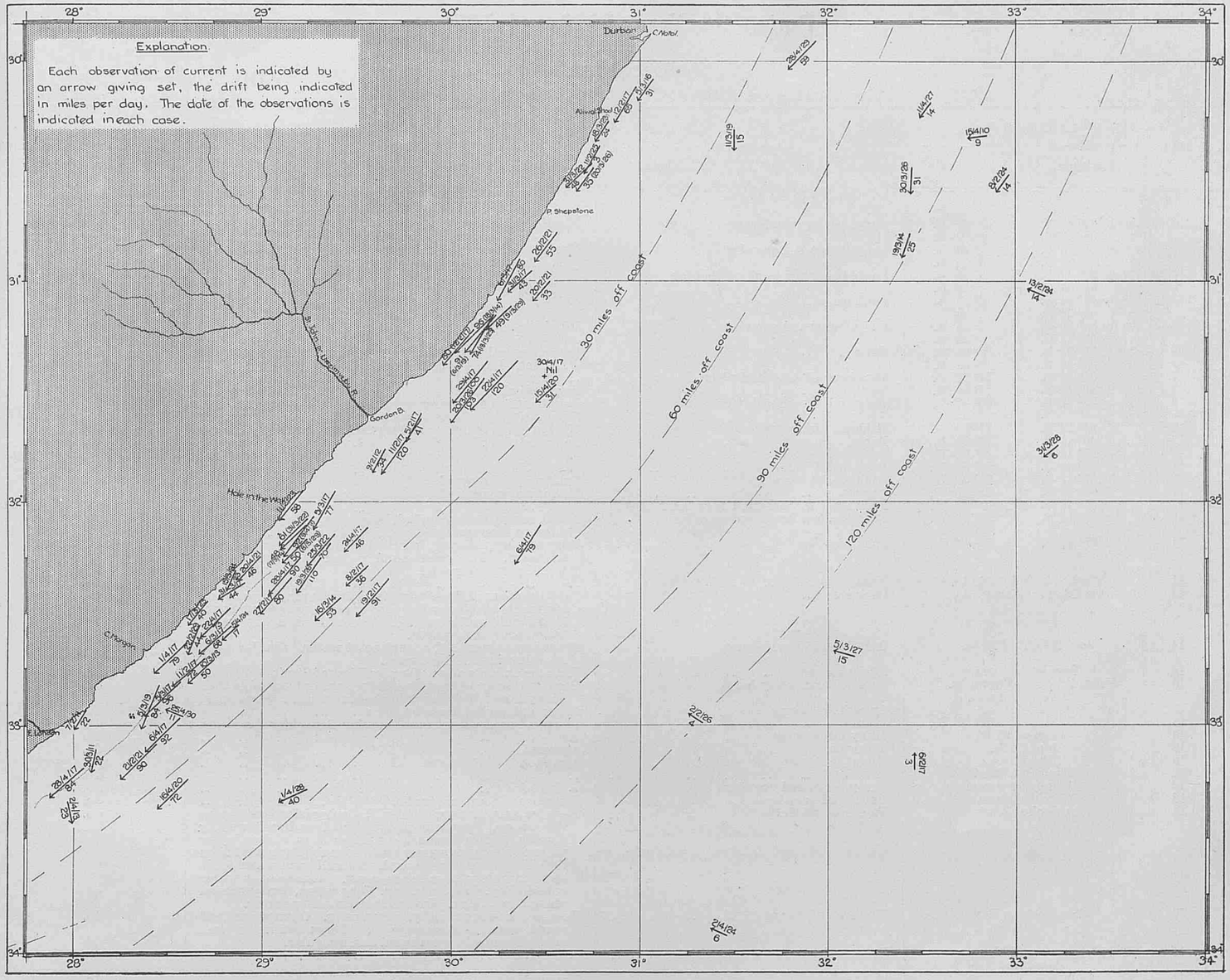


Figure 6.

strongest, and probably the strongest, extended flow of current in any ocean.

The older remarks about the point of origin of the Counter-Equatorial Current are not entirely correct. This current originates during the S.W. Monsoon period to the westward of the Seychelles, but probably not by a broad sweep of current northward and north-eastward along the whole of the line from the Chagos Archipelago to Zanzibar, as was stated in the first article. This broad sweep of the Equatorial Current passes mainly into the strong East African Coast Current. The existence, in February to April, of the strong westerly current along the equator which turns south about Longitude 50° E. and flows back as the Counter-Equatorial Current was not previously recognised. The origin of the Counter-Equatorial Current given in the first article for the N.E. Monsoon period is essentially correct as regards the months of November to January, but this current appears to be derived mainly from the S.W. set of the East African Coast Current north of Latitude 2° S. The N.E. set of the coastal current south of Latitude 2° S. may not contribute much to the eastward flow of the Counter-Equatorial Current, but it probably assists in diverting the S.W. current out into the ocean.

Counter-Currents between the Agulhas and the Mozambique Currents and the Coast.—In response to the request of the Marine Superintendent published in a note on page 57 of the March number of the current volume of THE MARINE OBSERVER a few replies dealing with the currents experienced off the south and east coasts of Africa have been received. The general account of the currents from Cape Guardafui to Cape Delgado, received from Captain Sergeant and referred to above, is in very close agreement with the results shown by the MARINE OBSERVER Charts. The other replies, which refer mainly to currents in local coastal areas, have all been examined, together with extracts from ships' logs and forms in the possession of the Marine Division. It would require much space to set out the results in detail, but the information has proved useful regarding the question of inshore counter-currents and sets on or off the land. All the information available goes to confirm the remarks about counter-currents made in the first article. Weak counter-currents are undoubtedly experienced at times, particularly in the localities mentioned in the first article, and the same applies to sets on and off the land, but the counter-currents cannot be relied on and do not form continuous flows. In the Bight of Sofala the existence of these sets is frequent enough to be indicated by the mean current arrows on the charts in three of the four quarters. It may also be noted that in the investigation of the strength of the Agulhas Current at varying distances from the shore, no counter-currents or any other unusual sets were found, although observations of the Agulhas Current were recorded close to the coast.

SOUTHERN ICE REPORTS.

During the Years 1929 and 1930.

December.

Year.	Day.	Position of Ice. Latitude.	Position of Ice. Longitude.	Description.	Remarks.	Name of Ship reporting.
1929	23	From 61° 03′ S. to 58° 18′ S.	1° 18′ E. to 1° 40′ E.	Large bergs, growlers and pack ice ..	Number unknown	S.S *Southern King.*
	24	From 58° 18′ S. to 54° 28′ S.	1° 40′ E. to 3° 13′ E.	Large bergs and growlers	Numerous large bergs observed to be aground on Bouvet Is. Over 75 bergs counted at Noon	do.
	18-22	From 58° 49′ S. to 61° 03′ S.	2° 45′ E. to 1° 18′ E.	Large bergs and pack or field ice	.. ..	do.
	18-19	From 58° 49′ S. to 60° 30′ S.	2° 51′ E. to 2° 25′ E.	Pack ice	.. ..	do
	25	From 54° 28′ S. to 51° 23′ S.	3° 13′ E. to 5° 56′ E.	Large bergs and growlers	300 observed at 4.0 a.m.	do.
	26	From 51° 23′ S. to 48° 19′ S.	5° 56′ E. to 8° 48′ E.	Bergs	Large, several passed during afternoon. Heights average 300 feet. Lengths up to 1 mile.	do.
	7	58° 55′ S.	77° 33′ E.	Two bergs, 1 detached piece	.. ..	Aux. Bq. *Discovery*
	7	59° 09′ S.	77° 36′ E.	Berg	Large tabular	do.
	8	59° 31′ S.	77° 45′ E.	Berg and 3 detached pieces	Berg rounded and water worn, dark bottle green in colour, Length 230 feet, height 93 feet.	do.
	8	60° 16′ S.	77° 50′ E.	31 bergs, numerous detached pieces ..	Most of bergs irregular and weather worn	do.
	7	59° 11′ S.	77° 54′ E.	Berg	Large tabular	do.
	25	68° 12′ S.	75° 11′ W.	Pack ice, 65 bergs..	.. ..	R.R.S. *William Scoresby.*
	24	68° 00′ S.	74° 57′ W.	Pack ice, 39 bergs	.. ..	do.
	23	67° 47′ S.	74° 54′ W.	Pack ice, 39 bergs	Drifting to Westward	do.
	29	67° 25′ S.	74° 27′ W.	9 bergs	Moderate, weathered	do.
	22	67° 47′ S.	74° 07′ W.	Pack ice, 1 small berg, 1 very large berg ..	.. ..	do.
	30	67° 14′ S.	70° 14′ W.	Pack ice, few bergs and growlers	Loose, rotten, honeycombed, hummocky pack for first five miles to Eastward (Discoloured) then heavy.	do.
	21	67° 47′ S.	73° 43′ W.	Pack ice	Edge of pack followed from Adelaide Is. Few Bergs to S.E'ward. Pack and small rotten discoloured floes. Heavily snow covered.	do.
	31	West Side Adelaide Is.		Numerous bergs	.. ..	do.
	13	Pitt Island to Amiot Is.		Pack ice	Pack ice of small floes interspersed with much brash and fragments and heavily snow covered averaging from 10 to 25 miles off coast. Floes about 2 feet above water. 100 square yards in area.	do.
	14	Amoit Is. to Pitt Is.		Pack ice and many bergs	Floes cover about 70% of surface of water. Similar pack ice returning to Northward.	do
	15	Pendleton Strait		About 60 bergs	Pack ice extends about 15 miles West of Strait	do.
	15	From 12′ N. of Martin Is. To Peterman Is.		Pack ice and many bergs	Pack Rotten and snowcovered for 2 miles from edge then heavy floes not rotten and some more than 20 feet thick.	do.
	13	West of Pitt Is.		Approx. 100 bergs	Large and Rotten loose Pack ice..	do.
	13	65° 04′ S.	64° 50′ W.	3 bergs	1 Large, 1 moderate, 1 small tabular. Some loose brash ice.	do.
	13	Hoogaard Is.		Many large bergs	.. ..	do.
	16	Joubin Is.		Many bergs	Aground	do.
	18	Booth Is.		About 200 bergs	Stranded	do.
	12	Bismarck Strait		30 bergs	.. ..	do.
	16	Bismarck Strait		Many bergs and growlers	.. ..	do.
	18	Bismarck Strait		Bergs and growlers	Entrance to Strait covered	do.
	18	Beascoche a Bay		Pack ice and Bergs	Pack ice extends about 1 mile N. of outer islands of Argentine Group. First mile pack rotten floes discoloured by diatons. After 1 mile heavy floes 10 to 25 feet below water. Bergs too numerous to count. (Estimated from 1000 to 3000) mostly aground. 2 small open water leads approximately parallel to coast. 4 miles open water outside Bay. Fast ice in bay. Very rotten, honeycombed about 3 feet thick. Ice cracked but not working.	do.
	19	Beascoche a Bay		Fast ice and bergs	Fast ice, thawing rapidly, very slushy. Open water lead round coast to Argentine Is. Bergs estimated well over 1000, mostly weathered and irregular.	do.
	17	Port Lockroy and Channel	d Neumayer	Bergs and fragments of glacier ice	.. ..	do.
	11	Neumayer Channel		1 Large berg	Aground	do.
	11	De Gerlache Strait		Few bergs, large number of growlers ..	.. ..	do.
	10	Melchior Harbour		4 bergs, growlers and fragments	Moderate, stranded. Much ice passing through harbour.	do.
	10	Dallman Bay		Growlers and fragments	Covered	do.
	10	Vicinity Austin Rocks		Many bergs	.. ..	do.
	5	Whalers Cove		Floe ice	Covered with large pieces, very rotten, heavily snow covered.	do.
	25	South Georgia		Berg	No ice sighted but observers in Price Olaf's Harbour state that only one berg has been reported this season in the vicinity of the island. That was on 25th December and was drifting West across the harbour entrance.	S.S. *Gloxinia.*
	12-13	From 54° 19′ S. to 54° 33′ S.	30° 56′ W. to 24° 25′ W.	8 bergs, several growlers	.. ..	S.S. *Southern King.*
	13-14	From 54° 33′ S. to 54° 51′ S.	24° 25′ W. to 17° 44′ W.	20 bergs, numerous growlers	.. ..	do.
	14-15	From 54° 51′ S. to 55° 07′ S.	17° 44′ W. to 10° 47′ W.	10 bergs, several growlers	.. ..	do.
	15-16	From 55° 07′ S. to 55° 27′ S.	10° 47′ W. to 4° 11′ W.	Over 200 bergs, innumerable growlers ..	.. ..	do.
	16-17	From 55° 27′ S. to 57° 16′ S.	4° 11′ W. to 0° 12′ W.	100 bergs and pack ice	.. ..	do.
	17-18	From 57° 16′ S. to 58° 49′ S.	0° 12′ W. to 2° 51′ E.	Pack ice and numerous bergs	.. ..	do.
1930	1	Between 52° 36′ S. and 52° 36′ S.	6° 20′ W. to 0° 37′ E.	Pack ice and bergs	Passing along outer edge of pack ice, distance 40 miles. Continually passing between bergs 200 feet to 536 feet in height. Average speed of bergs 2¼ knots.	do.
	3	52° 52′ S.	7° 30′ E.	Bergs	200 300 feet high	do.
	4	52° 57′ S.	14° 17′ E.	Edge of pack ice and several large bergs..	.. ..	do.
	5	53° 49′ S.	21° 05′ E.	Pack ice	Outer edge 30 miles away	do.
	6	55° 35′ S.	27° 49′ E.	Pack ice	Outer edge 20 miles away	do.
	7	57° 22′ S.	33° 49′ E.	Some pancake ice	Pack ice 10 miles away	do.
	31	52° 15′ S.	36° 05′ E.	3 small bergs	100 feet high	M.V. *Telena.*
	8	58° 45′ S.	39° 26′ E.	Pack ice also moderate bergs	156 feet to 170 feet high	S.S. *Southern King.*
	9	61° 43′ S.	45° 50′ E.	Pack ice	About 80 miles or more wide	do.
	1	53° 47′ S.	158° 59′ E.	Berg	Small, irregular, about 40 feet high, 200 feet long	Aux. Bq. *Discovery.*
	1	54° 27′ S.	158° 18′ E.	Berg	Large, irregular, highest point 260 feet (range finder and sextant angles).	do.
	5	55° 20′ S.	158° 39′ E.	Berg	Irregular, about 100 feet high, 300 feet long	do.
	6	56° 08′ S.	158° 39′ E.	2 bergy bits	Small	do.
	1	54° 44′ S.	158° 48′ E.	Berg	Off West side of Macquarie Island, apparently aground	do.
	6	57° 22′ S.	158° 52′ E.	Berg	Small, tabular, about 70 feet high	do.
	5	55° 03′ S.	159° 44′ E.	2 bergs	Western side, Bishop and Clerk Rocks	do.
	5	55° 03′ S.	159° 44′ E.	Berg	Eastern side, Bishop and Clerk Rocks	do.
	5	55° 03′ S.	159° 44′ E.	3 bergs	Southern side, Bishop and Clerk Rocks	do.
	7	57° 49′ S.	159° 56′ E.	Berg and brash	Small, irregular berg, breaking up	do.
	7	57° 53′ S.	160° 02′ E.	Berg	Moderate size, irregular	do.

SOUTHERN ICE REPORTS *(continued)*

Year.	Day.	Position of Ice. Latitude	Position of Ice. Longitude.	Description.	Remarks.	Name of Ship reporting.
1930	7	57° 53′ S.	160° 32′ E.	2 bergs and 2 bergy bits	Bergs, large irregular, one with two high peaks, about 190 feet high.	Aux. Bq. *Discovery.*
	8	59° 16′ S.	160° 59′ E.	Berg	Irregular, about 90 feet high	do.
	8	59° 06′ S.	161° 10′ E.	Berg	Irregular, about 150 feet high	do.
	8	59° 27′ S.	161° 20′ E.	Berg	Small irregular, about 70 feet high and 170 feet long	do.
	8	59° 56′ S.	161° 22′ E.	Berg	Irregular, about 100 feet high	do.
	8	59° 50′ S.	161° 28′ E.	3 growlers		do.
	31	67° 17′ S.	74° 46′ W.	Drift ice		R.R.S. *Discovery II.*
	31	67° 18′ S.	74° 41′ W.	Several bergs		do.
	31	From 66° 48′ S. to 66° 48′ S.	71° 21′ W. to 71° 52′ W.	Loose pack and open leads		do.
	30-31	From 67° 06′ S. to 66° 51′ S.	70° 26′ W. to 71° 17′ W.	Close pack		do.
	30	66° 48′ S.	69° 35′ W.	Loose pack		do.
	30	From 65° 33′ S. to 65° 41′ S.	67° 19′ W. to 67° 41′ W.	Pack ice		do.
	29	65° 22′ S.	66° 57′ W.	Loose pack ice		do.
	29	65° 20′ S.	66° 54′ W.	Numerous bergs		do.
	29	64° 29′ S.	65° 44′ W.	Many bergs		do.
	29	From 64° 20′ S. to 64° 28′ S.	64° 48′ W. to 65° 38′ W.	Pack ice		do.
	27	Whalers Cove, Port Foster.		Small ice	Cove filled with small ice from further up the bay	do.
	23	N. of Roberts I.		Many bergs in vicinity		do.
	22	63° 49′ S.	60° 19′ W.	Many bergs in vicinity		do.
	21	63° 04′ S.	59° 06′ W.	Many bergs in vicinity		do.
	20	62° 46′ S.	57° 11′ W.	Many bergs in vicinity		do.
	19	61° 48′ S.	54° 41′ W.	Many bergs		do.
	18	60° 24′ S.	51° 37′ W.	Many bergs		do.
	18	From 60° 16′ S. to 60° 24′ S.	50° 55′ W. to 51° 37′ W.	Occasional drift ice		do.
	18	60° 16′ S.	50° 55′ W.	Numerous bergs		do.
	18	60° 11′ S.	50° 08′ W.	Tabular berg	15 feet long	do.
	17	60° 18′ S.	48° 29′ W.	Few bergs		do.
	17	59° 53′ S.	47° 27′ W.	Several bergs		do.
	17	59° 47′ S.	45° 18′ W.	Pack ice		do.
	17	59° 59′ S.	44° 12′ W.	Many bergs	Pack round S. Orkneys and to Southward	do
	17	60° 14′ S.	43° 22′ W.	Bergs and Pack ice	Bergs, visible 20 to 30 miles	do.
	16	60° 02′ S.	42° 53′ W.	Many bergs		do.
	16	59° 12′ S.	41° 57′ W.	Many bergs		do.
	16	58° 24′ S.	41° 13′ W.	Innumerable bergs		do.
	16	58° 24′ S.	40° 12′ W.	Pack ice		do.
	15	58° 21′ S.	37° 22′ W.	Many bergs. Much drift ice		do.
	15	57° 35′ S.	34° 45′ W.	Many bergs		do.
	14	56° 21′ S.	34° 20′ W.	32 bergs		do.
	14	57° 26′ S.	34° 07′ W.	Innumerable small bergs, much loose ice		do.
	14	55° 55′ S.	33° 59′ W.	Several bergs		do.
	12	55° 17′ S.	33° 21′ W.	3 small bergs		do.
	12	55° 19′ S.	32° 43′ W.	Pack ice		do.
	13	55° 04′ S.	32° 23′ W.	Many bergs		do.
	12	55° 27′ S.	31° 37′ W.	64 bergs		do.
	13	55° 16′ S.	31° 04′ W.	Many bergs and loose ice		do.
	12	55° 36′ S.	30° 31′ W.	Pack ice		do.
	12	55° 32′ S.	30° 12′ W.	Numerous detached floes		do.

Reports of Ice previous to December, 1929, will be found in the Marine Observer, Vol. VI, No. 72, p. 272.

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

WEATHER SIGNALS.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

Urgent Meteorological reports should be made at any time. Any ship at any time encountering a tropical revolving storm should report to all ships and the appropriate station, continuing to report at intervals of three hours so long as the ship remains under the influence of the storm.

Ships experiencing gales in which the wind reaches Force 10 or above in the Beaufort Scale should inform all ships within range.

Ships encountering Ice or other navigational dangers should report immediately to all ships and the appropriate station; see instructions for Danger to Navigation Signals for all ships, pages 31 and 32, Vol. VIII, No. 85.

For full particulars of "Selected Ships" Routine Meteorological Reports with Schedule for Communication, see pages 16 to 19, Vol. VIII, No. 85.

See List of W/T Stations detailed to receive reports from **A Selected Ships** with particulars up to date below, also on Chart XIII.

In parts of the world where such stations and particulars are not given, British **A Selected Ships** should make their reports to **CQ** on 2100 metres (143 kc/s) as stated on page 18 Vol. VIII, No. 85 (January, 1931, MARINE OBSERVER).

B Selected Ships broadcast their report to C.Q. on 600 m. spark, and these may be intercepted by the stations ringed in on Chart XIII. In making these reports to C.Q. "B Selected Ships" should make special endeavour to ensure that the report is received at these shore stations. With a view to assisting Meteorological Services who have provided information and to ensuring that routine reports from all "Selected Ships" within range of certain coast stations may be received by those services a list of stations specially detailed to receive reports from "B Selected Ships" is also given on pages 264 and 265. The procedure given on pages 16 to 19, Vol. VIII, No. 85, should be adhered to as far as possible.

According to agreement reached by the International Meteorological Conference, 1929, all arrangements for the co-operation of shipping in Voluntary Marine Meteorological work are to be made through the Meteorological Services of the different countries in which the ships are registered, in accordance with the agreed upon International plan for all parts of the World, following the International Convention for Safety of Life at Sea, 1929.

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

Request for Information.

THE ATTENTION OF METEOROLOGICAL SERVICES IS INVITED TO THE INVITATION GIVEN ON PAGE 16 OF VOL. VIII, NO. 85, JANUARY MARINE OBSERVER.

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length. For Station to call up "Selected Ships."	Frequency and Wave Length. For "Selected Ships" to report to Station.	Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
North Atlantic and North Sea.	Portishead.	Lat. 51° 28′ 41″ N. Long. 2° 47′ 30″ W.	GKU.	149 kc/s. (2013 metres).	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. and North of Latitude 38° N., but not within 300 miles of station. (see Chart XIII.)	Weather London	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	Control system. "Selected Ships" chosen to report in given order notified by station daily at 2230, 0330, and 1030 G.M.T. Roll call thus—Weather begins — Call signs of chosen "Selected Ships" —Weather ends.
	Chatham Mass., Sayville N.Y. or West Palm Beach.	Lat. 41° 42′ N. Long. 70° 00′ W. Lat. 40° 42′ N. Long. 73° 06′ W. Lat. 26° 42′ N. Long. 80° 02′ W.	WCC. WSL. WMR.		142·9 kc/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.	No control. All British "A Selected Ships" within area 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.
	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	CTH.		125 kc/s. (2400 metres).	North Atlantic South of Latitude 38° N. and East of Longitude 40° W.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	No control — all British "A Selected Ships" within area should report in accordance with Schedule.

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

(Continued.)

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.				
Mediterranean and Red Sea.									
South Atlantic.									
Indian Ocean.	Colombo	Lat. 6° 55′ 14″ N. Long. 79° 52′ 46″ E.	VPB	2300 metres.	2100 metres.	Ind an Ocean including Arabian Sea and Bay of Bengal within a range of about 1500 miles.	Obs.	Weather only. No. 6 Supplementary groups preferred.	No control — all British "A Selected Ships" within area should report in accordance with Schedule.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long. 114° 15′ 19″ E.	VPS.		125 kc/s. (2400 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory.	Weather only, preferably No. 6 Supplementary Groups.	No control — all British "A Selected Ships" within area should report in accordance with Schedule.
South Pacific.									

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

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	CTH.	Radio Horta	Weather only, up to 7 groups, preferably No. 3 Supplementary Groups.	
South Atlantic.	Salinas	Lat. 0° 35′ 00″ S. Long. 47° 18′ 45″ W.	PPL.	Meteoro Rio.	Weather only, including supplementary groups.	
	S. Luiz	Lat. 2° 31′ 48″ S. Long. 44° 16′ 51″ W.	PXM.			
	Fortaleza	Lat. 3° 46′ 21″ S. Long. 38° 32′ 26″ W.	PPC.			
	Natal	Lat. 5° 46′ 41″ S. Long. 35° 18′ 24″ W.	PXN.			
	F. Noronha	Lat. 3° 50′ 24″ S. Long. 32° 24′ 48″ W.	PXF.			
	Olinda	Lat. 8° 00′ 35″ S. Long. 34° 51′ 00″ W.	PPO.			
	Amaralina	Lat. 13° 00′ 12″ S. Long. 38° 30′ 45″ W.	PPA.			
	Abralhos	Lat. 17° 57′ 30″ S. Long. 38° 41′ 05″ W.	PXH.			
	Victoria	Lat. 20° 10′ 00″ S. Long. 40° 17′ 46″ W.	PPT.			
	Rio	Lat. 22° 53′ 42″ S. Long. 43° 13′ 24″ W.	PPR.			
	Santos	Lat. 23° 56′ 27″ S. Long. 46° 19′ 28″ W.	PPS.			
	Floriano-polis.	Lat. 27° 36′ 00″ S. Long. 48° 30′ 18″ W.	PPF.			
	Juncçao	Lat. 32° 04′ 00″ S. Long. 52° 07′ 00″ W.	PPS.			
Indian Ocean.	Calcutta.	Lat. 22° 33′ 31″ N. Long. 88° 20′ 16″ E.	VWC.	Weather.	Weather only up to 6 groups, No. 6 Supplementary Groups preferred.	
	Rangoon.	Lat. 16° 45′ 57″ N. Long. 96° 11′ 51″ E.	VTR.			
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″ E.	VWM.			
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″ E.	VWB.			
	Karachi.	Lat. 24° 51′ 05″ N. Long. 67° 02′ 32″ E.	VWK.			
	Matara.	Lat. 6° 01′ 07″ N. Long. 80° 35′ 39″ E.	GZP.			
	Mauritius.	Lat. 20° 23′ S. Long. 57° 35′ E.	VRS.	Observatory Mauritius.	Weather 4 universal groups and first of No. 6 Supplementary Groups.	

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

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long. 114°15′19″E.	VPS.	Royal Observatory.	Weather only, preferably No. 6 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50′ 36″ S. Long. 174°46′08″E.	ZLD.	Weather Wellington.	Weather only, up to 7 groups.	Apia, Rarotonga and Chatham Island relay to New Zealand. Rarotonga keeps watch 0630 to 1330 G.M.T. Chatham Island 0430 to 1230 G.M.T. Remainder cover schedule. Reports desired through nearest station when "B Selected Ships" are within 1,000 miles of New Zealand.
	Wellington.	Lat. 41° 16′ 26″ S. Long. 174°01′00″E.	ZLW.			
	Awarua.	Lat. 46° 30′ 27″ S. Long. 168°22′21″E.	ZLB.			
	Chatham Island.	Lat. 43° 57′ 02″ S. Long. 176°31′04″W.	ZLC.			
	Rarotonga.	Lat. 21° 11′ 54″ S. Long. 159°48′51″W.	ZKR.			
	Apia.	Lat. 13° 15′ 17″ S. Long.170°49′42″W.	ZMA.			

II.—WIRELESS WEATHER SIGNALS.

WIRELESS WEATHER BULLETINS.

The method of decoding station weather reports made in code from shore stations intended for shipping was described in the British "Weather Shipping" Bulletin, on page 51 of Volume VIII, No. 86 (The February, 1931, Number.)

The same method of decoding weather reports applies in all cases where the International Code is used having regard to the Key figures given in each case where they differ from the British Weather Shipping Bulletin.

Chile.

C.W. Issues.

Santiago Central, W.T. Station.—Approximate Latitude 33° 26′ S., Longitude 70° 38′ W.

Call Sign.—**CCS.**

Wave length.—3000 metres C.W.

Times of transmission.—0130, 1430 and 2030 G.M.T.

The message issued at 0130 G.M.T. is based upon 2300 G M.T. observations, the 1430 G.M.T. message is based on the 1200 G.M.T. observations, and the 2030 G.M.T. message is based on the 1800 G.M.T. observations. They consist of three parts.

Part I.—General Inference, "*en clair*" (Spanish).

Part II.—Report in code giving actual observations with station numbers at a selection of the following coast stations:—

Code No.	Station.	Latitude.	Longitude.
19	Arica	18° 28′ S.	70° 20′ W.
20	Iquique	20° 12′ S.	70° 11′ W.
21	Tocopilla	22° 05′ S.	70° 12′ W.
22	Mejillones	23° 05′ S.	70° 30′ W.
23	Antofagasta	23° 39′ S.	70° 25′ W.
24	Taltal	25° 25′ S.	70° 34′ W.
25	Caldera	27° 03′ S.	70° 53′ W.
26	Huasco	28° 27′ S.	71° 14′ W.
27	Coquimbo	29° 57′ S.	71° 22′ W.
28	Los Vilos	31° 54′ S.	71° 32′ W.
29	Zapallar	32° 32′ S.	71° 30′ W.
30	Quintero	32° 46′ S.	71° 32′ W.
31	Valparaiso	33° 01′ S.	71° 38′ W.
32	Juan Fernandez	33° 37′ S.	78° 50′ W.
33	Más Afuera	33° 45′ S.	80° 51′ W.
34	Constitución	35° 21′ S.	72° 26′ W.
35	Pta. Carranza	35° 36′ S.	72° 38′ W.
36	Talcahuano	36° 43′ S.	73° 07′ W.
37	Tumbes	36° 37′ S.	73° 06′ W.
38	Lavapié	37° 08′ S.	73° 33′ W.
39	Mocha	38° 29′ S.	73° 38′ W.
40	Pto. Dominguez	38° 54′ S.	73° 14′ W.
41	Valdivia	39° 48′ S.	73° 14′ W.
42	Corral	39° 52′ S.	73° 25′ W.
43	Pta. Galera	40° 01′ S.	73° 44′ W.
44	Co. Quedal	41° 03′ S.	73° 58′ W.
45	Pto Montt	41° 28′ S.	72° 57′ W.
46	Maullin	41° 37′ S.	73° 35′ W.
47	Ancud (Corona)	41° 47′ S.	73° 52′ W.
48	Guafo	43° 34′ S.	74° 45′ W.
49	Guamblin	44° 55′ S.	75° 05′ W.
50	Aysen	45° 25′ S.	72° 45′ W.
51	C. Raper	46° 50′ S.	73° 35′ W.
52	S. Pedro	47° 43′ S.	74° 58′ W.
53	Pto. Bories	51° 42′ S.	72° 41′ W.
54	Evangelistas	52° 24′ S.	75° 06′ W.
55	B. Félix	52° 27′ S.	74° 38′ W.
56	Magallanes	53° 10′ S.	70° 54′ W.
57	Porvenir	53° 18′ S.	70° 21′ W.
58	S. Isidro	53° 47′ S.	70° 58′ W.
59	Navarino	55° 10′ S.	67° 30′ W.

The Key and Code used is the same as that used for the British Weather Shipping Bulletin given in the February number and in the Pamphlet, M.O. 329.

Part III.—Weather Forecast.

No information as to the area for which these forecasts are intended is available.

Argentina.

C.W. Issue.

Buenos Aires-Dársena Norte W/T Station, approximate Latitude 34° 37′ S., Longitude 58° 22′ W., call sign **LOL**, broadcasts a weather bulletin, "*en clair*," in Spanish, at 0230 G.M.T., on a wave-length of 1,053 metres C.W. The bulletin will contain a weather forecast for the ensuing 24 hours for the Rio de la Plata.

Brazil.

The Brazilian W/T coast stations given in the list below transmit, **every four hours**, the state of weather and sea, as well as the force and direction of the wind. The elements so transmitted are direct observations made at the W/T stations. They are sent in Portuguese "*en clair.*"

W/T Station.	Position (approx.). Latitude.	Longitude.	Call Sign.	Times of Sending. G.M.T.
S. Luiz (Maranham)	2° 32′ S.	44° 17′ W.	PXM	0300, 0700, etc., etc.
Natal	5° 47′ S.	35° 18′ W.	PXN	0330, 0730, etc., etc.
Olinda (Pernambuco)	8° 01′ S.	34° 51′ W.	PPO	0345, 0745, etc., etc.
Amaralina (Bahia)	13° 01′ S.	38° 28′ W.	PPA	0315, 0715, etc., etc.
Fernando Noronha	3° 51′ S.	32° 25′ W.	PXF	0315, 0715, etc., etc.
Santos	23° 56′ S.	46° 20′ W.	PPS	0245, 0645, etc., etc.
Florianopolis	27° 36′ S.	48° 34′ W.	PPF	0315, 0715, etc., etc.
Juncçaõ (Rio Grande do Sul)	32° 04′ S.	52° 07′ W.	PPJ	0345, 0745, etc., etc.

The wave-length used by the above stations for the transmission of the messages is 600 metres.

Rio de Janeiro W/T station, approximate Latitude 22° 59′ S., Longitude 43° 11′ W., call sign **PPR**, broadcasts weather reports similar to the above stations at 1200, 1500 and 2100 G.M.T. on 600 metres

This station also broadcasts daily two special weather bulletins at 0100 and 2100 G.M.T. on 600 metres.

These bulletins are divided into three parts; the first part contains 1200 G.M.T. observations in code* of various Brazilian, Uruguayan and Argentine meteorological stations given below; the second part contains upper air observations in code; the third part contains detailed weather forecasts in Portuguese, "*en clair.*"

Indicator Number.	Station.	State.	Position (approx.). Latitude.	Longitude.
01	Ondina	Bahia	13° 00′ S.	38° 31′ W.
02	Caetité	„	14° 03′ S.	42° 37′ W.
03	Victoria	Esp. Santo	20° 10′ S.	40° 18′ W.
04	Bello Horizonte	Minas Geraes	19° 55′ S.	43° 56′ W.
05	Uberaba	„ „	19° 45′ S.	47° 57′ W.
06	Pirapora	„ „	17° 18′ S.	44° 57′ W.
07	Juiz de Fora	„ „	21° 45′ S.	43° 20′ W.
08	Rio de Janeiro	Rio de Janeiro	22° 54′ S.	43° 10′ W.
09	Cabo Frio	„ „	22° 52′ S.	42° 01′ W.
10	S. Paulo	São Paulo	23° 33′ S.	46° 38′ W.
11	Santos	„ „	23° 56′ S.	46° 19′ W.
12	S. Paulo dos Agudos	„ „	22° 28′ S.	49° 00′ W.
13	Cuyaba	Matto Grosso	15° 35′ S.	56° 05′ W.
14	Coxim	„ „	18° 28′ S.	54° 45′ W.

* The code used is not the International Ships' Wireless Weather Code referred to in "Wireless Weather Signals from the Shore," page 36, Vol. VIII, No. 86, February Marine Observer.

Indicator Number.	Station.	State.	Position (approx.). Latitude.	Longitude.
15	Tres Lagoas	„ „ ...	20° 47′ S.	41° 42′ W.
16	Curityba	Paranà ...	25° 25′ S.	49° 16′ W.
17	Florianopolis	S. Catharina ...	27° 36′ S.	48° 30′ W.
18	Palmas	Paranà ...	26° 28′ S.	51° 58′ W.
19	Porto Alegre	Rio G. Sul ...	30° 01′ S.	51° 13′ W.
20	Uruguayana	„ „ ...	29° 45′ S.	57° 05′ W.
21	S. Luiz das Missões ...	„ „ ...	28° 23′ S.	54° 58′ W.
22	Rio Grande	„ „ ...	32° 01′ S.	52° 05′ W.
23	Bagé	„ „ ...	31° 20′ S.	54° 06′ W.
24	S. Victoria do Palmar	„ „ ...	33° 31′ S.	53° 21′ W.
25	Sta. Izabel	Uruguay ...	32° 45′ S.	56° 32′ W.
26	Montevidéo	„ ...	34° 54′ S.	56° 12′ W.
27	Buenos Aires	Buenos Aires	34° 36′ S.	58° 22′ W.
28	Oran	Salta	23° 06′ S.	64° 20′ W.
29	Adalgala	Catamarca ...	27° 30′ S.	66° 26′ W.
30	Corrientes	Corrientes ...	27° 27′ S.	58° 49′ W.
31	Santa Fé	Santa Fé ...	31° 40′ S.	60° 42′ W.
32	Mendoza	Mendoza ...	32° 53′ S.	68° 49′ W.
33	Victorica	Pampa Central	36° 10′ S.	65° 21′ W.
34	Cipoletti	Rio Negro ...	38° 56′ S.	68° 08′ W.
35	Bahia Blanca	Buenos Aires...	38° 45′ S.	63° 15′ W.
36	P. Madryn	Chubut... ...	42° 49′ S.	64° 58′ W.
37	Sarmiento	„	45° 30′ S.	69° 00′ W.
38	I. de Outubro	„	42° 12′ S.	71° 08′ W.

WIRELESS STORM WARNINGS.

South America.

Chile.

I.C.W. Issue.

Valparaiso W/T Station, call sign **CCE**, broadcasts storm warnings when necessary, on a wave length of 600 metres (I.C.W.).

III.—WIRELESS TIME SIGNALS.

Chile.

C.W. Issue.

W/T Station.	Call Sign.	Wave-length Metres.	G.M.T. of Time Signal.
Valparaiso Lat. 33° 01′ 04″ S. Long. 71° 39′ 27″ W.	**CCL**	1,100 (C.W.).	h m s h m s 00 55 00–01 00 00

SYSTEM.—The Time Signal commences at 00h. 55m. 00s. G.M.T. and continues for 5 mins., and consists of a series of dots which represent each second, except that the dots at the 29th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th and 59th seconds of each of the five minutes are omitted. The dot at the 60th second of each minute is the time signal.

NOTES.—(1) Sent daily except Sundays.

(2) Time Signal controlled by the Hydrographic Office.

(3) In the event of failure or irregularities in the Time Signal the word "Señal nula" (Signal annulled) will be made three times in succession, one minute after 0100 G.M.T.

Brazil.

I.C.W. Issues.

W/T Station.	Call Sign.	Wave-length Metres.	G.M.T. of Time Signal.
Rio de Janeiro—Arpoador Lat. 22° 59′ 19″ S. Long. 43° 11′ 26″ W.	**PPR**	1,000 (I.C.W.).	h m s 14 00 00 and 24 00 00

The Time Signals are relayed from Rio de Janeiro Observatory in accordance with the New International system of W/T Time Signals.

The procedure is as follows:—

G.M.T.	Signal.	Meaning.
h m s 13 / 23 } 56 05 to { 13 / 23 } 56 50	every alternate 5 seconds.	
57 00 „ 57 49	etc.	
55 56 57 58 59 60		Time
57 55 „ 58 00		Signal.
58 08 „ 58 10		
58 18 „ 58 20		
58 28 „ 58 30		
58 38 „ 58 40		
58 48 „ 58 50		
55 56 57 58 59 60		Time
58 55 „ 59 00		Signal.
59 06 „ 59 10		
59 16 „ 59 20		
59 26 „ 59 30		
59 36 „ 59 40		
59 46 „ 59 50		
13 / 23 } 59 55 „ { 14 / 24 } 00 00	55 56 57 58 59 60	Time Signal.

The duration of the dash is one second, and that of the dot 0.2 of a second. The final dot, therefore, terminates at

14h / 24h } 00m 00.2s, G.M.T.

In the event of failure, the time signals are transmitted thirty minutes later—the word "Correção" being sent in conjunction with this series of signals.

NOTE.—Sent daily except Sundays and public holidays.

IV.—VISUAL STORM WARNINGS.

South America.

Chile.

Valparaiso.

From 15th April to 15th October, annually.—The following signals are exhibited from the Maritime Government Building:—

By day.	By night.	Barometer.	Signification.
Flag D (Int.), close up ...	—	30·05	Fine weather.
Flag D (Int.), half-mast...	—	30·00	
Flag D (Int.), low down...	—	29·95	

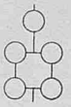
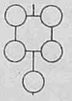
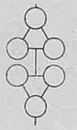
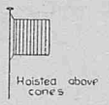
By day.	By night.	Barometer.	Signification.
One ball, close up	One green light	29·94	Variable.
One ball, half-mast	Two green lights	29·90	
One ball, low down	Three green lights	29·85	
Two balls, close up	One red light	29·74	Storms or bad weather.
Two balls, half-mast	Two red lights	29·65	
Two balls, low down	Three red lights	29·60	
No day signal	One red light and one green light, hoisted in a vertical line. During fine weather no signal will be made at night.		Barometer falling rapidly.

Argentina.

Buenos Aires.

The following storm signals for the Rio de la Plata are exhibited, when necessary, from a flagstaff on the roof of the Ministry of Agriculture, situated near Dock No. 1:—

Signals for Local Gales—Probable up to the Next Day.

By day.	By night.	Meaning.
		Gale from N.W. quadrant.
		Gale from S.W. quadrant.
		Gale from N.E. quadrant.
		Gale from S.E. quadrant.
		Hurricane.
		Caution. Gales predicted are imminent or may occur on same day.

Uruguay.

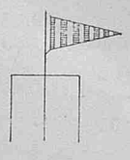
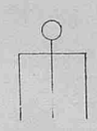
Montevideo.

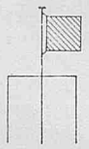
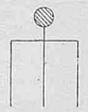
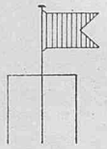
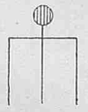
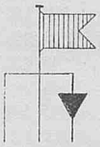
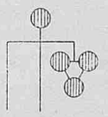
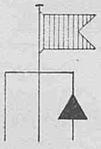
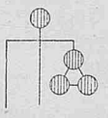
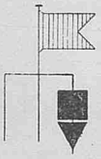
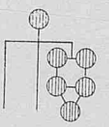
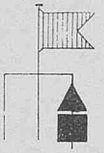
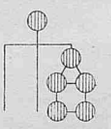
The following signals are exhibited from a flagstaff at the north-west angle of the **Custom House** to indicate the approach of storms or bad weather:—

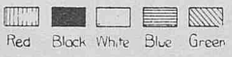
By day.—Red and white flag hoisted *under* the national flag.

By night.—Red light in place of the flag.

The following signals are exhibited as necessary from the **Observatory semaphore**, 137 feet above mean sea level:—

By day.	By night.	Meaning.
		Fair weather.

By day.	By night.	Meaning.
		Changeable.
		Bad weather.
		Southerly winds, strong.
		Northerly winds, strong.
		Southerly gale.
		Northerly gale.



Brazil.

The following system of Visual Storm Signals is in operation at Brazilian seaports, the symbols being hoisted when necessary:—

By day.	By night.	Meaning.
		Wind from any quarter, dangerous for small craft.
		Strong winds from S.E.
		Strong winds from N.E.
		Strong winds from N.W.
		Strong winds from S.W.

At Rio de Janeiro the signals are exhibited from the Time Signal Tower at the Observatory daily, also at Copacabana Fort, on the western side of the approach to the harbour, and from Ilha das Cobras; at Santos from the signal station on Monte Serrat; and at Cape Frio, from the signal station.

Special Notices Regarding Personnel.

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

OBITUARY.

Captain J. S. James, D.S.C.

The death of Captain J. S. JAMES, D.S.C., on September 26th, 1931, on board S.S. *Dromore Castle* at Beira, Portuguese East Africa, is noted with regret.

He commenced his sea career in 1894 as boy in the full rigged ship *Cardigan Castle*, 1,214 tons, on a 12 months' voyage to Australia and back.

After serving for a few months as O.S. in the Steamship *Labrador*, on voyages to Canada, he returned to "sail" and was from 1896 to 1899 in the full rigged ship *Thirlmere*, 1,782 tons, as O.S. and A.B.

Gaining his promotion, he then sailed as 2nd Mate of the full rigged ship *Angerona*, 1,290 tons, from 1899 to 1901.

In October, 1901, he left square rigged ships and went into "steam", and was for a year 2nd Mate of the S.S. *Sir R. Grenville.*

He joined the Union Castle Line as fourth officer in February, 1903, and passing through the various ranks, was appointed to the command of S.S. *Carlowe Castle*, in October, 1928.

Later he commanded *Bampton Castle*, *Grantully Castle* and *Eider*, and had been in *Dromore Castle* since July last.

During the War, Captain JAMES served as an officer in the Royal Naval Reserve from January, 1915, to March, 1919, and saw considerable service, mostly in the Mediterranean, in command of various small naval craft, including a "*Q*" brig.

In February, 1918, he was awarded the Distinguished Service Cross for anti-submarine work.

Captain JAMES was a member of the Corps of Voluntary Marine Observers when he was in command of the *Bampton Castle.*

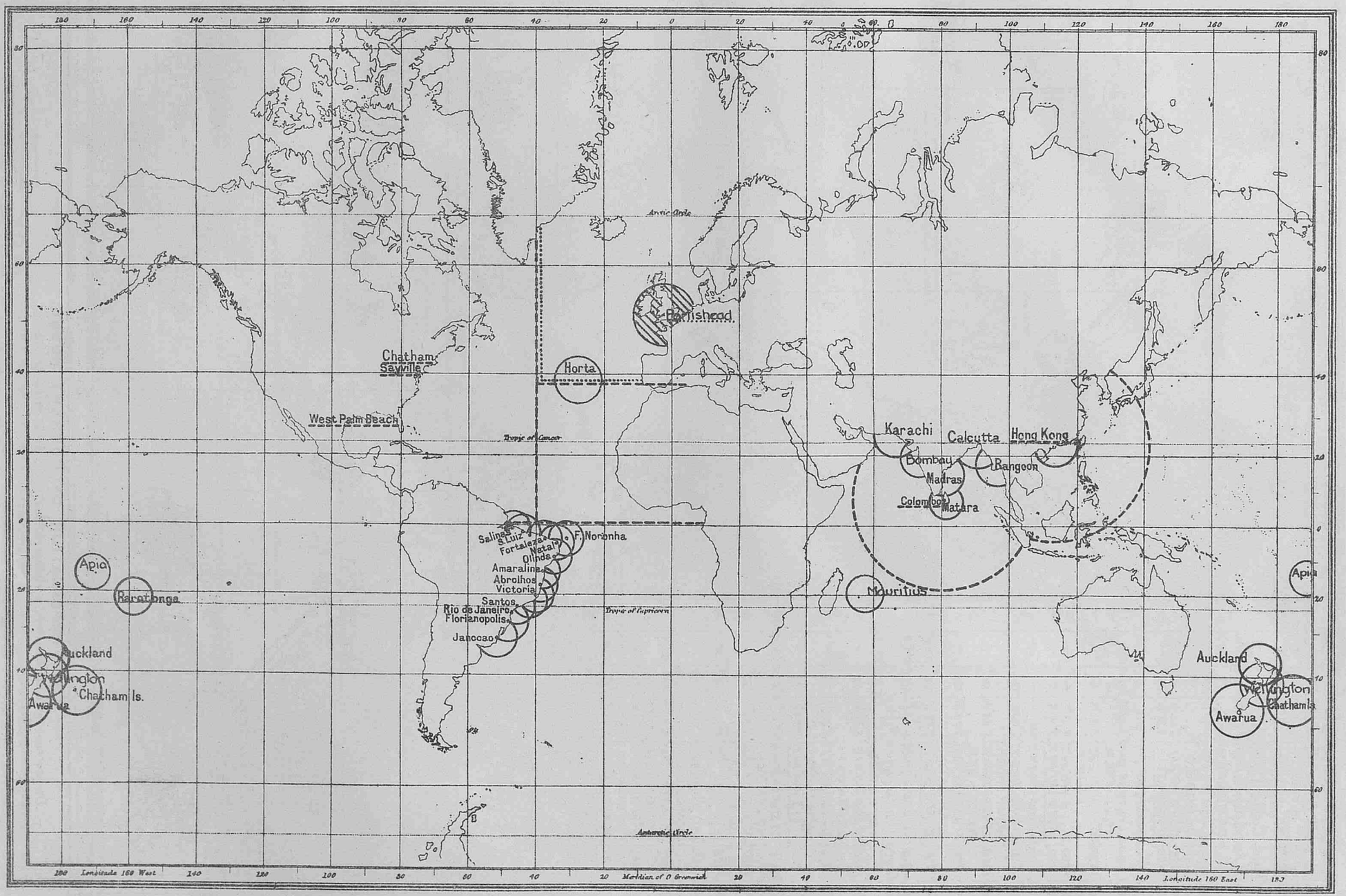
Captain A. Maclean.

Captain A. MACLEAN, commander of the British India Steam Navigation Company's S.S. *Karapara*, has retired after 32 years' service in the Company.

A member of our Corps, Marine Observers join with the Marine Division in wishing Captain Maclean long life and happiness in his retirement.

Chart XIII — SHIPS' WIRELESS WEATHER SIGNALS.

Stations for Reception of Routine Wireless Weather Reports from "Selected Ships."



The dotted line indicates the area in which British "A Selected Ships" report under control to Portishead. The small shaded circle indicates the area from which reports are prohibited to Portishead.

A pecked line indicates the reporting area round stations in other countries to which British A "Selected Ships" should report. The names of such stations being also underlined with a pecked line.

The full-line circles indicate the areas round islands and coast stations which could receive spark Selected Ships' reports to C.Q.

CURRENTS ON THE TRADE ROUTES OFF THE S. AND E. COASTS OF AFRICA AND WESTWARD OF MAURITIUS.

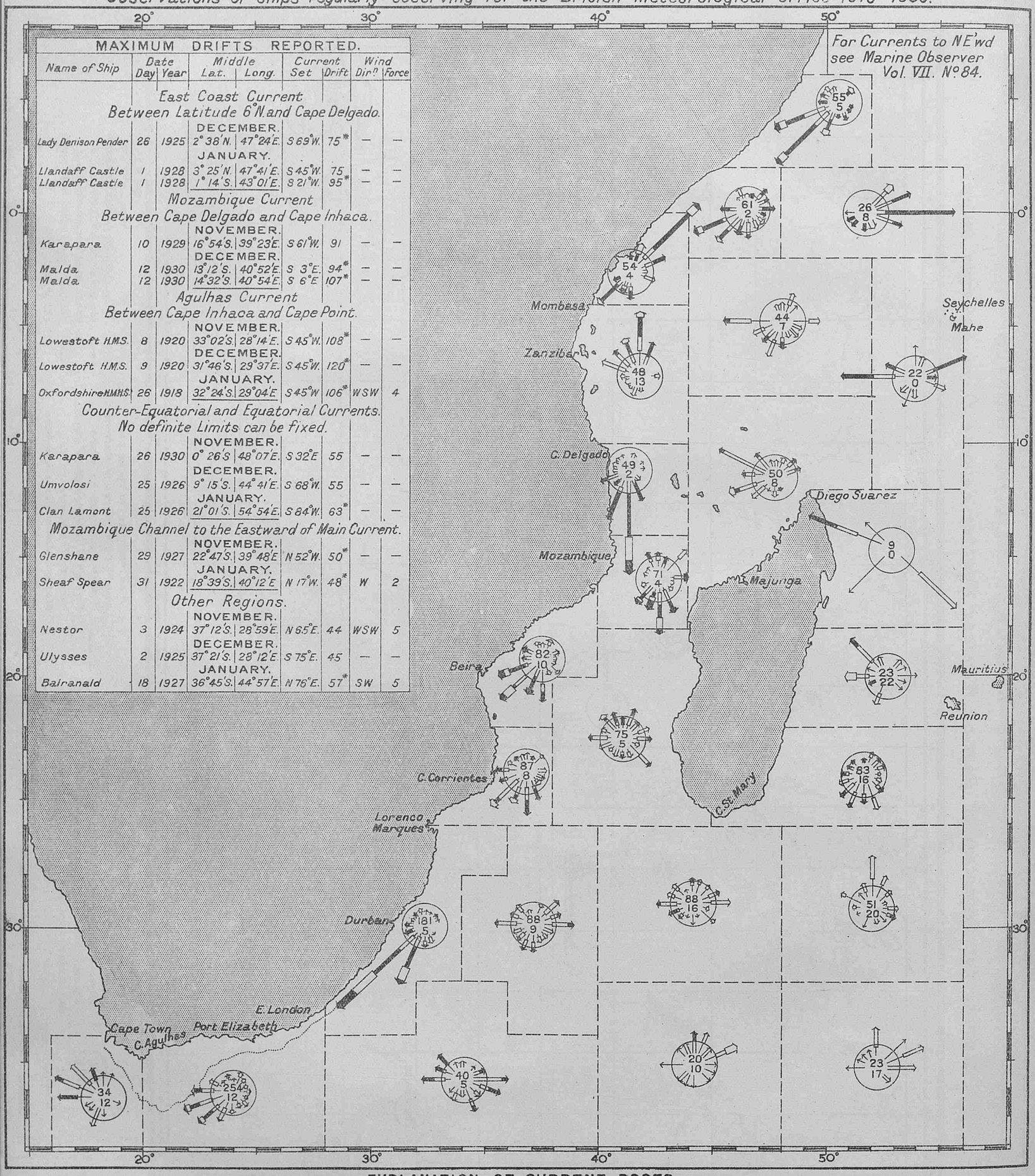
NOVEMBER DECEMBER. and JANUARY,

Observations of ships regularly observing for the British Meteorological Office 1910–1930.

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dirn	Wind Force
East Coast Current Between Latitude 6°N. and Cape Delgado.								
			DECEMBER.					
Lady Denison Pender	26	1925	2°38'N.	47°24'E.	S 69°W.	75*	—	—
			JANUARY.					
Llandaff Castle	1	1928	3°25'N.	47°41'E.	S 45°W.	75	—	—
Llandaff Castle	1	1928	1°14'S.	43°01'E.	S 21°W.	95*	—	—
Mozambique Current Between Cape Delgado and Cape Inhaca.								
			NOVEMBER.					
Karapara	10	1929	16°54'S.	39°23'E.	S 61°W.	91	—	—
			DECEMBER.					
Malda	12	1930	13°12'S.	40°52'E.	S 3°E.	94*	—	—
Malda	12	1930	14°32'S.	40°54'E.	S 6°E	107*	—	—
Agulhas Current Between Cape Inhaca and Cape Point.								
			NOVEMBER.					
Lowestoft H.M.S.	8	1920	33°02'S.	28°14'E.	S 45°W.	108*	—	—
			DECEMBER.					
Lowestoft H.M.S.	9	1920	31°46'S.	29°37'E.	S 45°W.	120*	—	—
			JANUARY.					
Oxfordshire H.M.S.	26	1918	32°24'S.	29°04'E	S 45°W	106*	WSW	4
Counter-Equatorial and Equatorial Currents. No definite Limits can be fixed.								
			NOVEMBER.					
Karapara	26	1930	0°26'S.	48°07'E.	S 32°E	55	—	—
			DECEMBER.					
Umvolosi	25	1926	9°15'S.	44°41'E.	S 68°W.	55	—	—
			JANUARY.					
Clan Lamont	25	1926	21°01'S.	54°54'E.	S 84°W.	63*	—	—
Mozambique Channel to the Eastward of Main Current.								
			NOVEMBER.					
Glenshane	29	1927	22°47'S.	39°48'E	N 52°W.	50*	—	—
			JANUARY.					
Sheaf Spear	31	1922	18°39'S.	40°12'E	N 17°W.	48*	W	2
Other Regions.								
			NOVEMBER.					
Nestor	3	1924	37°12'S.	28°59'E.	N 65°E.	44	WSW	5
			DECEMBER.					
Ulysses	2	1925	37°21'S.	28°12'E.	S 75°E.	45	—	—
			JANUARY.					
Balranald	18	1927	36°45'S.	44°57'E.	N 76°E.	57*	SW	5

For Currents to N.E'wd see Marine Observer Vol. VII. No 84.



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 ...

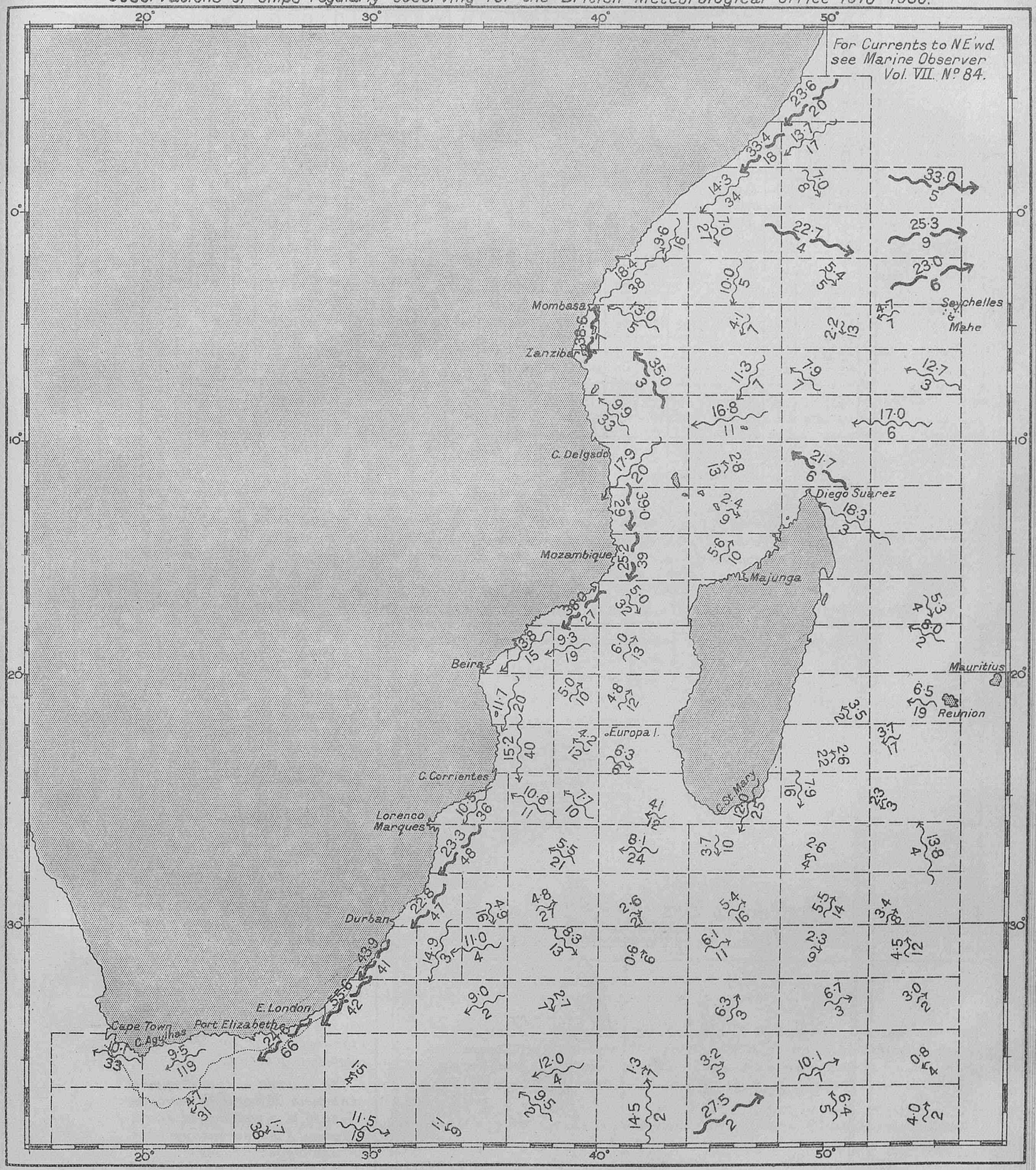
Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%

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

CURRENTS ON THE TRADE ROUTES OFF THE S. AND E. COASTS OF AFRICA AND WESTWARD OF MAURITIUS.

NOVEMBER DECEMBER, and JANUARY,

Observations of ships regularly observing for the British Meteorological Office 1910–1930.

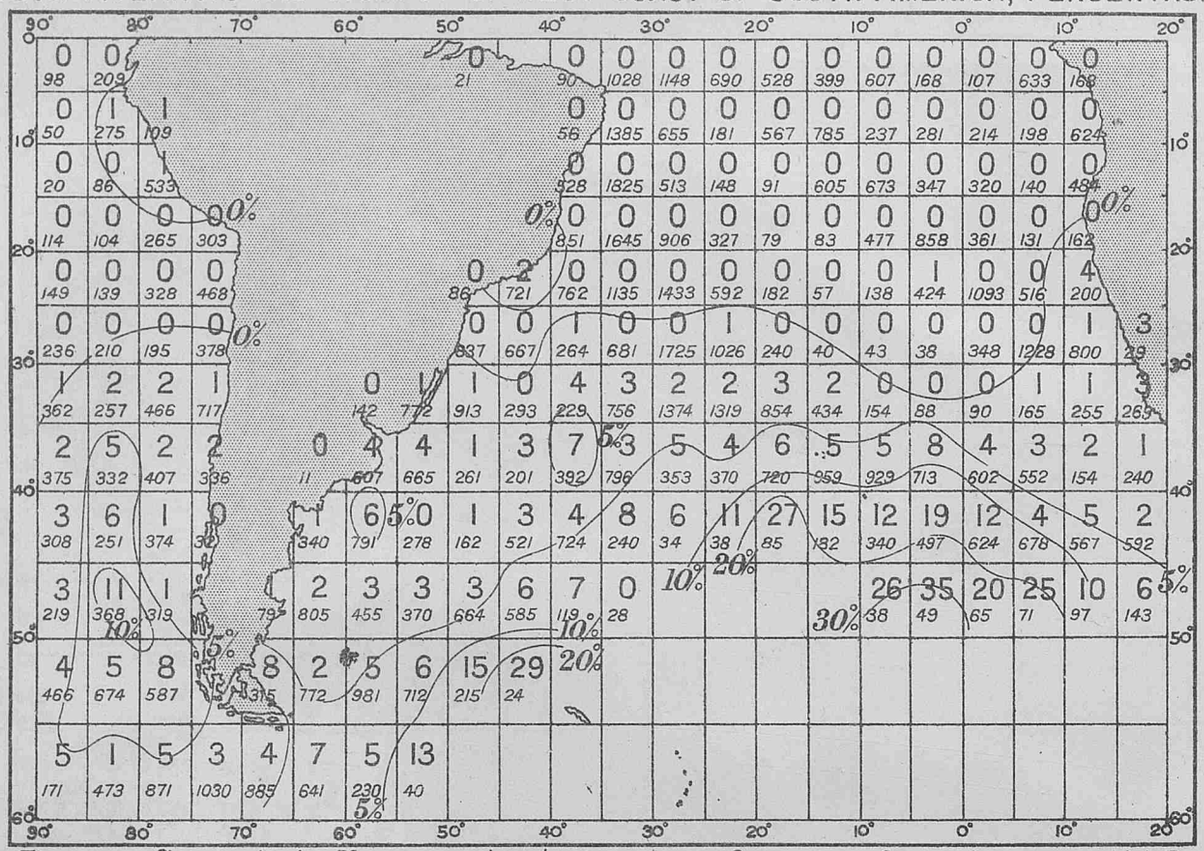


EXPLANATION OF CURRENT ARROWS.

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 of current in miles per day; the figures below the arrows the number of observations. In cases where the arrows drawn to scale are inconveniently long the symbol ~~~~ is substituted.

DECEMBER.

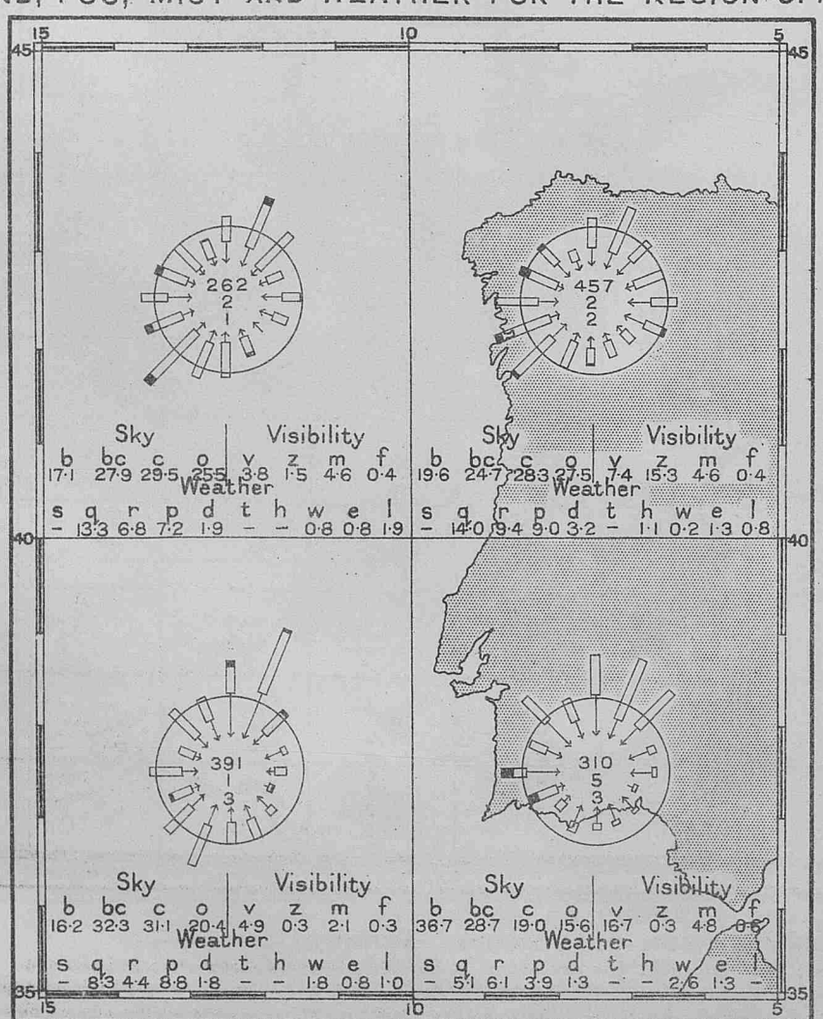
Fog in the South Atlantic and vicinity of west coast of South America, Percentage Frequency.



The upper figures in the 5° squares give the percentage frequency of occasions upon which Fog was logged, the lower figures the total number of observations. Lines are drawn for 0, 5, 10 and 20%. The chart is compiled from observations from British Ships for the period 1855 to 1899.

DECEMBER.

Wind, Fog, Mist and Weather for the Region off the Coast of Portugal.



EXPLANATION.

The Wind roses are drawn from Sea observations within the 5° squares.

Arrows fly with the wind, length represents frequency, thickness strength.

Gales. Moderate. Light.
8–12 4–7 1–3

Distance from head of arrow to circle represents 5%,

Scale:- 0 10 20%

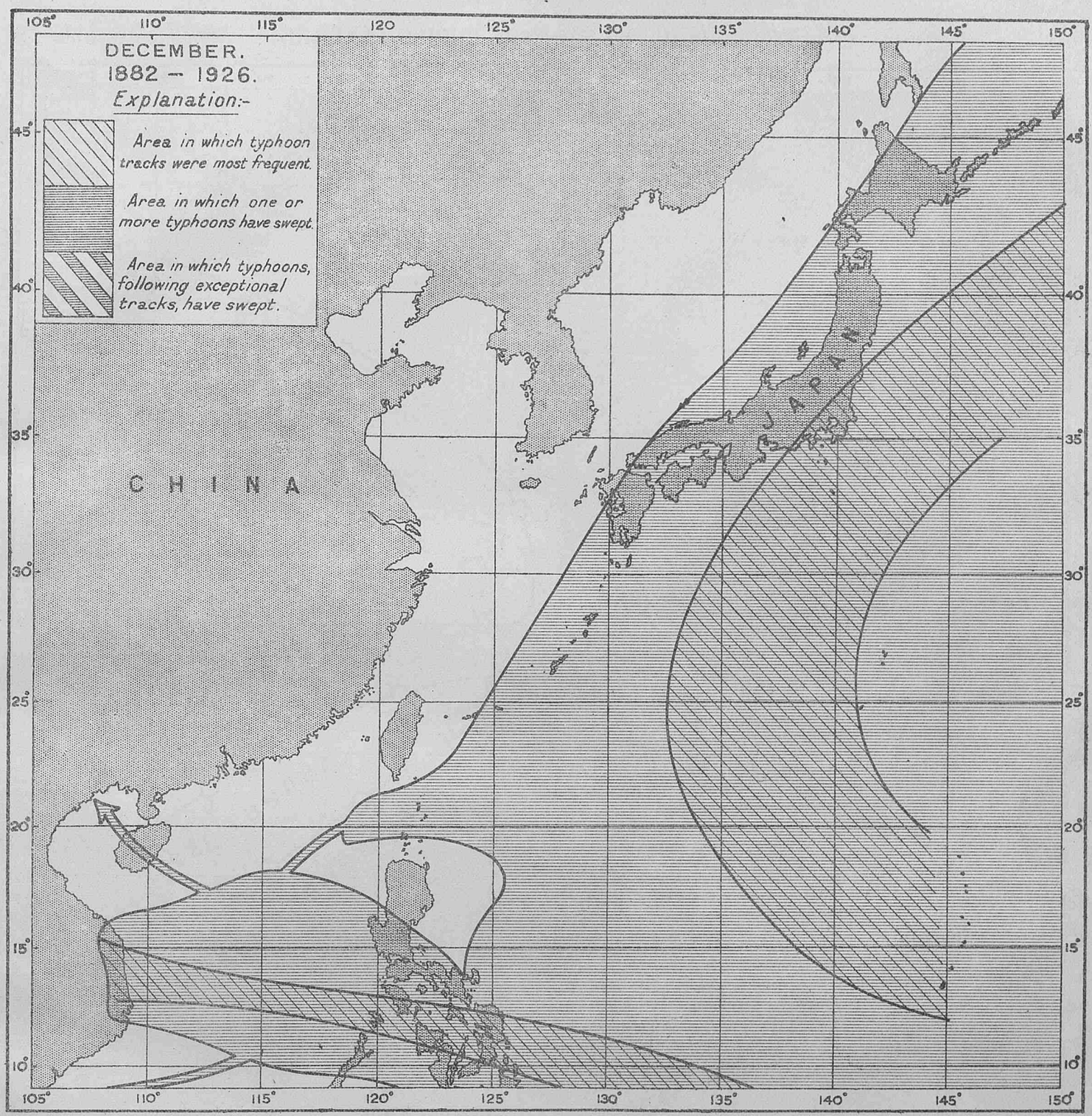
The upper figure in the centre of the rose gives total number of observations, the middle figure the percentage frequency of calms and the lower figure the percentage frequency of variable winds.

The percentage frequency of types of weather are shown in the lower half of each 5° square by the figures beneath each of the letters of the Beaufort weather notation.

For example, in the 5° square Latitude 35° to 40° N. Longitude 5° to 10° W. c was logged 19 times in every 100 observations while r was logged 6 times.

Compiled from observations of British Ships received since the adoption of the Hollerith system of extraction, covering the years 1921–1928.

TYPHOONS IN THE FAR EAST DURING 45 YEARS.



DECEMBER — Single Chart: *41 observations of Typhoons.*

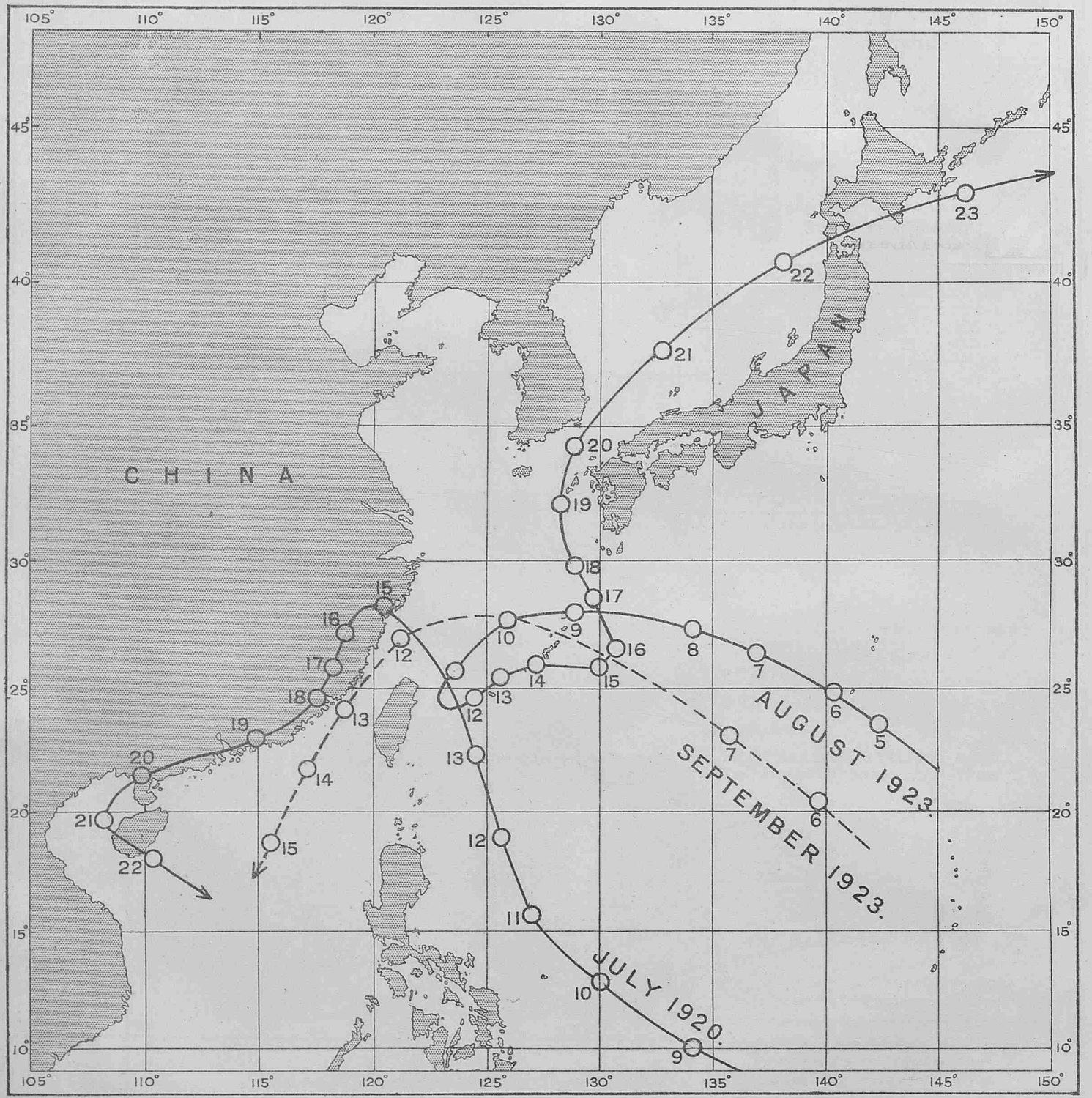
The coast of China remains clear, but the wedge S. of Formosa narrows down N. of Luzon. Cyclonic centres (small typhoons) form West of the Bashee and Balintang Channels and travel N.E. The northern danger zone widens out including all Japan, while the mean isobars for those islands have a steeper gradient. The same thing takes place over the South China Sea and its northern limit the prevalence of WSW tracks due to the high pressures on the continent is clearly shown.

Two tracks. *One followed by typhoons turning N.E. on the wide expanse between the Riu Kiu and Bonin Islands; the other in the South of the Sea of China but further North than in November between latitude 16° and 12° North.*

Starting points: *South of Guam and South of Yap. On the coast of China a violent monsoon blows from between N.W. and N.E. (between strength 6 & 10 of the scale) with strong currents especially in the Formosa Straits. Fog is scarce. Snowstorms over the Yellow Sea and at times over the East China Sea near Shanghai.*

(From "Atlas of the Typhoons of the China Seas 1882 to 1926" by the Rev. P.E. Gherzi S.J., Director Zi-ka-wei Observatory, near Shanghai China.)
Published by The Hydrographic Institute of the Royal Marine Genoa

TYPHOONS IN THE FAR EAST DURING 45 YEARS.



THREE RECENT EXCEPTIONAL TRACKS.

To avoid confusion the dates are only given along the extraordinary tracks.

(From "Atlas of the Typhoons of the China Seas 1882 to 1926" by the Rev. P.E. Gherzi S.J., Director Zi-ka-wei Observatory, near Shanghai China.)
Published by The Hydrographic Institute of the Royal Marine Genoa

H.M. Stationery Office Press, Kingsway, W.C.2.

Ps. 330/2325. W& T A. D.21. Gp. 908 1350 10/31

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Chart No. III, Chart of the World, showing positions of British " Selected Ships " at Sea on June 1st, 1930.
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Chart IX., Ships' Wireless Weather Signals.
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Typhoons in the Far East during the years 1882 to 1926 (three charts), August.
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Wind, Fog, Mist and Weather for the Region off the Coast of Portugal, September.
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Chart XI., Ships' Wireless Weather Signals.
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Wind, Fog, Mist and Weather for the Region off the Coast of Portugal, October.
Typhoons in the Far East during the years 1882 to 1926 (three charts), October.
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Fog frequency in the South Atlantic, November.
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After page 270, December number :—
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Wind, Fog, Mist and Weather for the Region off the Coast of Portugal, December.
Typhoons in the Far East during the years 1882 to 1926 December, and Three Recent Exceptional Tracks.

INTERNATIONAL SHIPS' WIRELESS WEATHER TELEGRAPHY CODE.

ERRATA.

Volume VIII, No. 90.

Currents on the Trade Routes off the S. and E. coasts of Africa and Westward of Mauritius, May, June and July.

Lithographic chart showing current arrows.

In the area latitude 26° S. to 28° S., longitude 40° E. to 44° E., the number of observations given as 130 *should be 25.*

In the area latitude 34° S. to 36° S., longitude 16° E. to 20° E., the number of observations given as 2 *should be 12.*

NOTICES.

IMPORTANT.

The special attention of Marine Observers is invited to the list of Agents overleaf, also to the notice headed "Marine Meteorology."

The Port Meteorological Offices and Agencies exist for the purpose of assisting in the collection and dissemination of Marine Meteorological information and to encourage the practical application of meteorology in the Merchant Navy and Fishing Fleets.

Much time and correspondence may be saved by consulting the Port Meteorological Officers and Agents at ports.

Observing Ships using ports where there are Agencies should hand their Meteorological Logs, Form 915, to the Agents. The Ships' Meteorological Record Form 911 should in all cases be sent direct to the Meteorological Office in London. (Wireless Registers Form 138 used in "Selected Ships" should always accompany the Meteorological Log or Record.)

Forms 911, Ships' Meteorological Record; Forms 138, Wireless Weather Register for "Selected Ships"; Form 912, Ice Report and Form 913, Blue Post Card for Barometer comparison are sent to observing ships monthly with The Marine Observer. The Meteorological Log, the Original Note Book, Outline Weather Charts and all other forms necessary for the work at sea are supplied to observing ships as necessary through the Port Meteorological Officers and Agents.

The Captains and Officers of regular observing ships are requested to refer intending Marine Observers to the appropriate Port Meteorological Officer or Agent. Ports with Agencies are allotted an appropriate number of places in the list of regular observing ships, and it is intended that the observing fleet should be well and fairly distributed, not only in the different trades so as to maintain the best possible geographical distribution of observations, but also amongst ships sailing from different ports and amongst the different types and owners so that the number of ships comprising the Voluntary Observing Fleet shall be the best possible representation of the British Merchant Navy and Fishing Fleets.

A certain number of observing ships (in accordance with the national proportion of the World tonnage) are detailed as "Selected Ships" for the purpose of Organised Ships' Weather Telegraphy, *see* List of Voluntary Observing Ships.

COVER FOR MARINE OBSERVER.

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

The arrangements for assembling the numbers for binding is described in this Number, page 247.

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

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POSTAL ARRANGEMENTS.

THE MARINE OBSERVER is published, when circumstances permit, on the first Wednesday of the month previous to that to which the number refers.

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

S.S...... *Captain*.....

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

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

ICE CHART.

WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

(C) From 1st July to 10th April, inclusive.

(E) From 1st December to 14th February, inclusive.

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

ROUTE NOTICES.

For latest information *re* Tracks *see* pages 87-88 of Vol. VIII, No. 88, April, 1931, Number, and Notice of Changes on the Ice Chart in May, 1931 number

SYMBOLS USED ON THE CHART.

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

Reports of Ice sighted between October 1st and October 31st, 1931, which have been received by the Meteorological Office, are shown by the Symbols plotted in the position reported, the figures indicating the day of the month.

PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position: Lat.	Position: Long.	Remarks.
Dec. —, 1903	S.S. Lord Antrim ...	42°00′N.	55°00′W.	Ice.
,, 22, 1915	S.S. Carolyn	42°53′N.	57°39′W.	Large Berg.
,, 16, 1920	S.S. Oriana	43°53′N.	44°39′W.	Berg.
,, 16, 1927	S.S. Ascania... ...	47°52′N.	40°50′W.	Four large Bergs.
		(Approximate).		

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DECEMBER M.O., 1931. H.M. Stationery Office Press, Kingsway W.C.2

NOTICES.

MARINE METEOROLOGY.

CO-OPERATION OF SHIPOWNERS, MASTERS AND MATES.

Captains and officers who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officers or Agents, a list of these gentlemen with addresses is given below.

A general description of Marine Meteorological Work, including the particulars desired from intending Marine Observers, is given in Chapter I of THE MARINE OBSERVER'S HANDBOOK, 5TH EDITION, which may be obtained from H.M. Stationery Office direct, or through any booksellers, price 2s. 6d.

The names of vessels regularly observing for the Meteorological Office, London, together with their Commanders and Observing Officers, are given monthly in THE MARINE OBSERVER, which may be obtained from H.M. Stationery Office, price 2s., 2s. 2d. post free.

The Captains and Officers of regular observing ships constitute the Corps of Voluntary Marine Observers. For certain branches of this work selected instruments are lent to the Captains of British ships registered at ports in Great Britain. A certain number of Regular Observing ships are detailed as "Selected Ships" for the purpose of the World Wide Scheme of Routine Ships' Wireless Weather Telegraphy Reporting. These "Selected Ships" are indicated monthly in the "Fleet List" in THE MARINE OBSERVER by a number.

To decode "Selected Ships'" reports the pamphlet M.O. 329, price 3d. may be obtained from H.M. Stationery Office.

Only ships registered at Ports in Great Britain will, in future, be included in the Meteorological Office, London, "Fleet List."

Marine Observers are asked to send in their Meteorological Log through the appropriate Port Meteorological Officer or Agent (accompanied by Form 138 in the case of "Selected Ships") at intervals of not more than six months. The Meteorological Record Form 911 (accompanied by Form 138 in the case of "Selected Ships") should be posted direct to the Meteorological Office, London, at the end of each voyage.

When sending in the Meteorological Log or Record, Regular Observing Ships will render great assistance if they will notify the Port Meteorological Officer or Agent of their requirements.

The Port Meteorological Officers and Agents inspect official instruments at regular intervals, replacing those which are defective.

Where ships' instruments are found by comparison to be reliable they may be used for the work of "Selected Ships." A reliable mercurial barometer is essential as part of the equipment of a "Selected Ship."

A copy of THE MARINE OBSERVER is sent monthly to the Captain of every observing ship for the information and guidance of the officers doing this work. He is also supplied with THE MARINE OBSERVER'S HANDBOOK and such charts and atlases as are considered necessary as Meteorological equipment for The Work of a Regular Observing ship in a particular trade.

WIRELESS AND WEATHER AN AID TO NAVIGATION, published by H.M. Stationery Office, which affords information and guidance for the practical application of Marine Meteorology to Navigation, may be purchased through any bookseller, price 5s.

Returns made by Regular Observing ships are acknowledged monthly in THE MARINE OBSERVER, and a list of those Commanders and Officers who have performed specially fine work is published yearly in THE MARINE OBSERVER and Excellent Awards are made to them.

The work done by Regular Observing Ships in making written returns, and by "Selected Ships" in broadcasting routine information by W/T, together with "Weather Shipping" Bulletins broadcast from the shore, conforming with the recommendations of the International Convention for Safety of Life at Sea, 1929, provide the necessary information for the use of all shipping. Thus by shipowners encouraging the specialist work of those of their ships whose names appear in THE MARINE OBSERVER, this Voluntary Work under the supervision of the Meteorological Office provides a service to all shipping at minimum cost to the National funds.

Shipowners are asked to facilitate the forwarding of postal matter from the Air Ministry addressed to the Captains of their ships.

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position. Latitude.	Position. Longitude.	Description.
NORTH SEA.			
8.10.31	56°44′N.	7°53′E.	Drifting wreck.
21.10.31	53°40′N.	5°27′E.	Quantity of loose board lumber, dangerous to navigation.
25.10.31	51°18′N.	1°56′E.	Floating black buoy.
ENGLISH CHANNEL.			
23.10.31	48°56′N.	4°18′W.	Red conical buoy.
23.10.31	3 miles E. of Royal Sovereign Light Vessel.		Spherical white buoy.
25.10.31	50°24′N.	1°40′W.	Log, 1½ ft. in diameter, floating vertically, nearly totally submerged.
25.10.31	48°50′N.	4°25′W.	Black conical buoy.
NORTH ATLANTIC.			
3.10.31	41°31′N.	64°39′W.	White lattice-work buoy, with a red band and marked *No. 4*, with red barrel alongside.
3.10.31	38°57′N.	73°03′W.	Heavy piece of wreckage.
6.10.31	48°55′N.	12°11′W.	Large log, about 45 ft. long, covered with barnacles; dangerous to navigation.
11.10.31	36°46′N.	8°18′W.	Large spar, about 20 ft. long, 4 ft. in diameter; dangerous to navigation.
12.10.31	49°11′N.	15°15′W.	Large red lightbuoy.
20.10.31	51°19′N.	12°50′W.	Log, about 20 ft. long by 3 ft. square, covered with marine growth.
22.10.31	48°10′N.	5°54′W.	Buoy, painted black and red horizontal stripes.
25.10.31	49°04′N.	21°19′W.	Large spherical buoy, surmounted by topmark; dangerous to navigation.
CARIBBEAN SEA.			
5.10.31	18°35′N.	74°30′W.	Log, 30 ft. long, 3 ft. in diameter, covered with marine growth.

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

LONDON ... ... Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent.
Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant.
Room 319, Adastral House, Kingsway, W.C.2.
(*Telephone No.: Holborn 3434 Extension 421*).
Nearest station Temple, District Railway.

THAMES ... ... Lieut. 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 Docks 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.

BELFAST ... ... Captain J. MCINTYRE, Harbour Master, Harbour Office. (*Telephone No.: Belfast 4090*).

BRISTOL CHANNEL Captain T. JOHNSTON, Technical College, Cathays Park, Cardiff. (*Telephone No.: Cardiff 6813*).

CLYDE ... ... Mr. ROBERT CLEARY, Master Mariner, The Clutha Stevedoring Co., Ltd., Princes Dock, Glasgow. (*Telephone No.: 513 Ibrox*).

FREMANTLE ... Captain J. J. AIREY, Deputy Director of Navigation, Customs House.
W. Australia. (*Telephone No.: B 1391*).

Agents (*contd.*).

HONG KONG, China. Lieut. Commander G.B.R. RUDYERD-HELPMAN R.N., Superintendent, Admiralty Chart and Chronometer Depot, H.M. Dockyard. (*Telephone No.: 108 Dockyard*).

HUMBER ... ... Captain A. M. BROWN, Ellerman Wilson Line Office, Hull. (*Telephone No.: Central 2180*).

FORTH ... ... Captains C. G. BONNER, V.C., D.S.C., and D AITCHISON, Leith Salvage and Towage Co., Ltd., 2, Commercial Street, Leith.

SOUTHAMPTON Mr. R. I. T. MCEWAN, Master Mariner, Gilchrist Navigation School, 5, Union Bank Chambers, 1, Bernard Street. (*Telephone No. Southampton 4277*).

SYDNEY, New South Wales. Commander G. D. WILLIAMS, D.S.O., R.D., R.N.R., Deputy Director of Navigation.
Captain C. LINDBERGH.
Customs House.
(*Telephone No.: B6421*).

TYNE ... ... Captain J. J. MCEWAN, Marine School, South Shields.

VANCOUVER, British Columbia. Mr. T. S. H. SHEARMAN, 61, Leigh Spencer Building, 553, Granville Street.
(*Telephone No.: Seymour 3309*).

FLEET LIST.

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

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

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

Only in special cases will individual letters be sent.

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

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

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

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

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

Explanation of Abbreviations.

Unless otherwise stated, vessels on the following list are s.s.—M.V. indicates Motor Vessel; S.T. = Steam Trawler.

M.L. = Equipped with tested Instruments lent by the Meteorological Office for keeping Meteorological Logs.

W.T. = Equipped wholly or partly with tested Instruments lent by the Meteorological Office for reporting in code by W/T in the International Selected Ship system.

No. = No Meteorological Office instrumental equipment on board.
M = Ship's barometer *mercurial.*
A = Ship's barometer *aneroid.*

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

To indicate the nature of the wireless apparatus of Selected Ships—

†† preceding ship's name indicates fitted for long range continuous wave transmission and reception.

*† = Short range transmission and long range continuous wave reception.

** = Short range transmission and reception.

The numbers preceding the names of ships are for identification purposes, when observations are re-transmitted in synoptic messages by wireless or cable, and are not intended for use at sea.

Selected Ships.

Those ships in this list which have a number and symbols indicating W/T apparatus before their names are "Selected Ships" invited to make by W/T, reports of observations taken at arranged G.M. Times to "All Ships."

Name of Vessel	Captain	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31.	Date Received.
233 †† *Aba*, M.V.	Spence, T.	G. L. Donald, R. Cherry ...	W.T	Elder Dempster ...	Forms 911 & 138 13.8.31 to 14.9.31	16.9.31
121 †† *Abinsi*	Sola, P.	J. J. Smith, G. Baker	„	„ „ ...	„ „ 5.8.31 to 11.9.31	14.9.31
122 †† *Accra*, M.V. ...	Shooter, J. C.	R. B. Ellis	W.T.-M.	„ „ ...	„ „ 26.8.31 to 28.9.31	2.10.31
155 *† *Achilles*	Cosker, W.	C. Broad, J. Simpson, J. S. Stratford.	M.L.	A. Holt	Form 915 28.3.31 to 4.8.31 ...	10.8.31
055 *† *Actor*	Whyte, D. L.	G. Penston, E. Pearce, P. Harrow.	No. M.	Harrison	Forms 911 & 138 26.2.31 to 1.5.31	21.5.31
123 †† *Adda*, M.V. ...	Lawson, J. H. ...	N. E. Thomas, F. C. Langton	W.T.-M.	Elder Dempster ...	„ „ 20.8.31 to 31.8.31	10.9.31
050 †† *Adriatic*	Binks, J. W., R.D., Lt.-Commr., R.N.R.	G. T. Kavanagh, O. V. Lucas, G. B. Jones.	W.T.	White Star	„ „ 21.9.31 to 10.10.31	13.10.31
090 *† *Aeneas*	Wallace, W. K. ...	A. McL. Pilcher	M.L.	A. Holt	Form 911 13.5.31 to 19.6.31 ...	20.6.31
166 *† *Agamemnon* ...	Beswick, W., D.S.C., Commr., R.N.R.	W. K. Hole, O. V. Jones ...	W.T.	„	Forms 911 & 138 23.8.31 to 7.9.31	25.9.31
Alban	Harries, F. C. P. ...	J. G. Tippett, A. G. Malcolm, E. G. Roberts.	M.L.	Booth	Form 915 11.7.31 to 7.9.31 ...	21.9.31
127 *† *Albion Star* ...	Hall, J. B.	T. Gilchrist	No M.	Blue Star	... ...	...
080 †† *Alcantara*, M.V. ...	Wakeman, E. C. ...	W. W. Dovell, E. V. Scullard, R. C. Smith.	W.T.	R.M.S.P.	Forms 911 & 138 3.7.31 to 17.8.31	22.8.31
178 *† *Alipore*	Lyndon, E. P., R.D., Lt.-Commr., R.N.R.	J. P. McArthur	No. M.	P. & O.	Forms 911 30.7.31 to 8.9.31 ...	28.9.31
175 †† *Almanzora* ...	Hannam, F. S. ...	G. W. Martin, J. S. Drake, J. G. Scott.	W.T.	R.M.S.P.	„ 29.8.31 to 12.10.31 ...	16.10.31
012 †† *Almeda Star* ...	Turner Russell, W ...	H. Metcalf, E. Russell, C. L. Williams.	No. M.	Blue Star	Forms 911 & 138 12.7.31 to 26.8.31	1.9.31
Alondra	Scott, L. S.	P. Hamilton	„ A.	Yeoward	Form 911 30.8.31 to 20.9.31 ...	25.9.31
Alynbank	Robertson, J.	G. E. Beaton	„ A.	A. Weir & Co. ...	„ 14.8.31 to 2.10.31 ...	16.10.31
103 †† *Andalucia Star* ...	Vernon, R.	W. Cumming, P. Clarke, H. Heggen.	„ M.	Blue Star	Forms 911 & 138 28.6.31 to 11.8.31	15.8.31
Antilochus ...	Dougall, W. T. ...	C. F. Lock	„ A.	A. Holt	Form 911 24.8.31 to 5.9.31 ...	11.9.31
209 †† *Aorangi*, M.V.	Spring Brown, J. F. Crawford, R.	E. Anderson, D. H. Richards, J. Billingham.	M.L.	Canadian-Australasian	Form 915 14.1.31 to 22.5.31 ...	4.8.31
120 †† *Apapa*, M.V. ...	Beith, A.	J. Boyd, V. Feeney	W.T.-M.	Elder Dempster ...	Forms 911 & 138 16.7.31 to 15.8.31	20.8.31
029 †† *Appam*	Draper, J. M.	W. M. M. Hutchings, C. V. Evans, H. O. Forster.	W.T.	„ „ ...	„ „ 2.9.31 to 9.10.31	10.10.31
Araby	Lee, J., D.S.C.	H. Haigh	No. A.	MacIver	Form 911 7.6.31 to 21.8.31 ...	3.9.31
115 †† *Arandora Star* ...	Moulton, E. W. ...	H. T. Partridge, T. Graham, F. Gudgin.	„ M.	Blue Star	Forms 911 & 138 11.9.31 to 22.9.31	8.10.31
278 *† *Architect*	Mowat, I.	G. Dewar	„ M.	Harrison	Forms 911 & 138 20.4.31 to 19.6.31	28.6.31
293 *† *Ariguani*	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	B. E. Druce, A. Crone, A. F. Moss.	M.L.	Elders & Fyffes ...	Form 915 4.5.31 to 1.9.31	4.9.31
Ariosto	Jackson, W. H. ...	N. F. Hewetson, R. W. Holdsworth.	No. A.	Ellerman Wilson ...	Form 911 8.7.31 to 7.10.31 ...	16.10.31
144 †† *Arlanza*	Clarke, E., R.D., Commr., R.N.R.	S. A. Gammon, H. V. Todd, F. T. Brett.	W.T.	R.M.S.P.	Forms 911 & 138 1.8.31 to 14.9.31	16.9.31
091 †† *Armadale Castle* ...	Whitfield, G. J. ...	W. Pace, C. Lloyd, A. H. Parry	W.T.	Union Castle	Form 915 6.12.30 to 26.4.31 ...	29.4.31
296 *† *Arracan*	Thomson, S.	G. Davidson, H. H. Brown, J. P. Anderson.	M.L.	P. Henderson ...	„ 1.5.31 to 19.8.31	8.9.31
Arundel	Shaw, B.	E. Hill	C.C.	Southern Rly. ...	Telegraphic Report 16.10.31 ...	16.10.31
095 †† *Arundel Castle* ...	Le Brocq, C.	G. L. Clarke, H. Baty	W.T.	Union Castle ...	Form 915 16.5.31 to 6.9.31	16.10.31
280 *† *Astronomer* ...	Richards, J.	W. P. Baker, R. Williams, E. B. Stephens.	No. M.	Harrison	Forms 911 & 138 5.7.31 to 7.10.31	13.10.31

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31.	Date Received.
065 ††	*Asturias* M.V. ...	LeBrecht, H. A. ...	H. G. Whittle, S. J. Hill, T. W. Stevens.	W.T.	R.M.S.P. Co.	Forms 911 & 138 15.8.31 to 24.9.31	25.9.31
	Atreus	Wilcox, J. H.	E. A. H. Gepp	No. A	A. Holt	Form 911 7.6.31 to 21.9.31... ...	5.10.31
281 *†	*Auditor*	Owen, W. T. ...	L. Richardson	,, M.	Harrison	Forms 911 & 138 2.8.30 to 29.9.31...	14.10.31
	Ausonia	Carr, L. R., R.D., Commr., R.N.R.	E. R. Taylor, P. G. Britten, A. G. Cuthill.	,, A.	Cunard	Form 911 19.7.31 to 10.8 31 ...	17.8.31
212 *†	*Australia*	Scutt, W.	H. Falkiner, E. H. Lidstone, L. Smith.	M.L.	British India	Form 915 28.3.31 to 28.7.31 ...	4.8.31
010 ††	*Avelona Star* ...	Thomas, R. J. ...	F. N. Johnson	No. M.	Blue Star	Forms 911 & 138 16.8.31 to 30.9.31	5.10.31
124 ††	*Avila Star*	Hopper, G.E.... ...	W. J. Stratta, C. Barratt, R. C. Freaker.	,, M.	,, ...	,, ,, 26.7.31 to 8.9.31	23.9.31
179 *†	*Balranald*	Short, C. E.	J. A. Stewart	No. M.	P. & O. Branch ...	Form 911 1.9.31 to 3.9.31	21.9.31
051 ††	*Baltic*	Davies, E.	J. Law, N. E. Banks, S. Fieldwood.	W.T.	White Star	Forms 911 & 138 31.8.31 to 20.9.31	22.9.31
248 *†	*Banffshire*	Page, W. J.	A. Banks, F. Westacott ...	No. M.	Turnbull Martin ...	,, ,, 1.7.31 to 5.8.31	7.9.31
180 *†	*Baradine*	Elliot Smith, H. ...	C. B. Roche, L. A. Hill, C. F. Halliday.	M.L.	P. & O. Branch ...	Form 915 10.4.31 to 17.7.31 ...	21.7.31
037 *†	*Baronesa*	Compton, R. W. ...	H. N. Sherwell, F. W. Kent, J. G. Freeman.	No. M.	Houlder	Forms 911 & 138 4.5.31 to 26.6.31	1.7.31
	Baron Forbes ...	Cairns, W.	L. Maclean	,, A.	H. Hogarth & Sons...	Form 911 4.2.31 to 26.2.31 ...	9.3.31
213 *†	*Barpeta*	Partridge, F. ...	M. F. Harvey	,, M.	British India	Forms 911 & 138 20.8.31 to 17.9.31	5.10.31
181 *†	*Barrabool*	Sheepwash, J. S. ...	F. N. Mosey, G. Hussey, C. B. Holmes.	,, M.	P. & O. Branch ...	,, ,, 16.5.31 to 21.8.31	4.9.31
294 *†	*Barranca*	Edwards, A. C. ...	... ...	M.L.	Elders & Fyffes ...	Form 915 25.5.30 to 18.5.31 ...	27.5.31
070 ††	*Bayano*	Harvey, A. E. ...	L. J. Mott, A. Sandham ...	W.T.	,, ,, ...	Forms 911 & 138 18.8.31 to 20.9.31	23.9.31
	Beaverburn ...	Landy, E, ...	... ...	M.L.	Canadian Pacific ...	... ...	...
059 ††	*Belgenland* ...	Morehouse, W. A. ...	J. R. Loe, J. Mackie, W. A. Fletcher.	W.T.	Red Star	Forms 911 & 138 6.9.31 to 26.9.31	29.9.31
183 ††	*Bendigo*	Wyatt, F. N.	H. Morgan, R. S. Frost, G. C. Forrest.	No. M.	P. & O. Branch ...	Form 911 12.7.31 to 3.10.31 ...	12.10.31
	Bengore Head ...	Milligan J.	C. J. Rea	,, A.	Ulster S.S. Co. ...	Form 911 12.9.31 to 9.10.31 ...	12.10.31
145 *†	*Berwickshire* ...	Evens, E. H.	J. O. Woodall, R. Frankish, G. Dunn	W.T.	Turnbull Martin ...	Forms 911 & 138 2.7.31 to 18.8.31	21.8.31
	Brenda	Wright, J.	F. G. Fraser	No. A.	Scottish Fishery Brd.	Form 911 2.9.31 to 28.9.31 ...	5.10.31
057 ††	*Britannic* M.V. ...	Summers, F. F, R.D., Commr., R.N.R.	J. W. Peters, A. Thompson. F. Patchett.	W.T.	White Star	Forms 911 & 138 13.9.31 to 4.10.31	6.10.31
269 *†	*British Admiral* ...	Putt, R. O.	H. J. Were, W. Barnsfield ...	No. M.	British Tankers ...	,, ,, 22.8.31 to 14.9.31	9.10.31
283 *†	*British Dominion*	Taylor, R. J.	J. E. Jones	,, M.	,, ,, ...	,, ,, 29.5.31 to 9.8.31	11.8.31
266 *§	*British Lantern* ...	Penton, P. M.... ...	T. Snowling, L. Hambling, D. Malcolm.	,, M.	,, ,, ...	,, ,, 19.9.31 to 17.9.31	16.10.31
249 *†	*Buteshire*	Gibb, A. W. P. ...	P. McMillan, S. W. Brown, F. C. Doyle.	M.L.	Turnbull Martin ...	Form 915 20.4.30 to 24.8.30 ...	12.9.30
031 ††	*Caledonia*	Collie, A.	J. McMillan, W. Harvey, J. MacWalters.	W.T.	Anchor...	Forms 911 & 138 30.8.31 to 21.9.31	23.9.31
139 ††	*California*	Smart, R. W.	D. Morrison, A. C. Johnston, J. F. Adams.	,,	,, ...	,, ,, 6.9.31 to 27.9.31	1.10.31
	Cambria	Copland. C. P. ...	O. W. Ll. Jones	C.C.	L.M. & S. Rly.... ...	Telegraphic Report 15.10.31 ...	15.10.31
	Cambridge	Williams, R.	T. Farrar	No. A.	Federal	... ...	...
295 ††	*Camito*	Forrester, W. T., O.B.E.	H. H. Dunning, W. A. Calderhood, W. Ireland.	M.L.	Elders & Fyffes ...	Form 915 20.2.31 to 13.6.31 ...	17.6.31
101 *†	*Canonesa*	Brodie, W. H. ...	F. E. Flint, A. Hurry ...	No. M.	Furness Houlder ...	Forms 911 & 138 27.4.31 to 17.5.31	19.5.31
	Cape of Good Hope	Jacobson, T. A. ...	W. R. Carling	,, A.	Lyle S.S. Co.	Form 911 14.9.31 to 25.9.31 ...	12.10.31
282 ††	*Carinthia*	Townley, J. C., R.D., Capt., R.N.R.	J. Chapman, A. B. Fasting, G. S. Hutchinson.	W.T.	Cunard	Forms 911 & 138 7.9.31 to 26.9.31	29.9.31
092 ††	*Carnarvon Castle* M.V.	Morton Betts, W. ..	G. F. Pettitt, E. Clancy ...	,,	Union Castle ...	,, ,, 22.8.31 to 11.10.31	13.10.31
273 *†	*Carnarvonshire* ...	Gulston, H. S. ...	S. W. Spencer	No. M.	Glen	,, ,, 20.7.31 to 6.8.31	7.9.31
	Casanare	Browne, S.	... ...	,, A.	Elders & Fyffes ...	Form 911 11.2.31 to 13.3.31 ...	23.3.31
184 ††	*Cathay*	Smith, J. A.	A. J. McHatlie. G. W. Wood, G. S. Ring.	,, M.	P. & O	Forms 911 & 138 13.7.31 to 20.8.31	17.9.31
	Cavina	Riseley, A. D. ...	B. R. Coe	,, A.	Elders & Fyffes ...	Form 911 25.8.31 to 28.9.31 ...	30.9.31
052 ††	*Cedric*	Freeman, C. P., R.D., Commr., R.N.R.	R. Hawkins, H. R. Wilkinson, R. S. Walker.	W.T.	White Star	Forms 911 & 138 7.9.31 to 26.9.31	29.9.31
157 *†	*Centaur* M.V. ...	Ward Hughes, J. ...	B. L. Brind. D. M. McAdam, D. R. Bannerman.	M.L.	A. Holt & Co. ...	Form 915 25.7.30 to 27.1.31 ...	16.6.31
056 ††	*Ceramic*	Lloyd, W.	H. G. Williams. A. Waters ...	W.T.	White Star	Forms 911 & 138 30.8.31 to 15.9.31	5.10.31
	Cerinthus M.V. ...	Ramsay, N.	E. Allen, C. L. Seaman, V. H. Kirkland.	M.L.	Hadley Shipping ...	Form 915 2.7.31 to 2.10.31 ...	10.10.31
	Changuinola ...	Thorburn, R. A., R.D., Commr., R.N.R.	H. K. Houghton	No. A.	Elders & Fyffes ...	Form 911 20.10.30 to 22.11.30 ...	28.11.30
	Chindwin	Paterson, G.	J. A. Wilson	,, A.	Henderson	,, 9.5.31 to 25.7.31 ...	7.8.31
	Chirripo	Cossentine, R. M. ...	S. Waddington, C. E. Gardiner.	,, A.	Elders & Fyffes ...	,, 19.4.31 to 26.6.31 ...	6.7.31
192 ††	*Chitral*	Siggers, O.	T. D. Forbes, N. H. Thompson, S. H. Gerrans.	,, M.	P. & O.	Forms 911 & 138 14.7.31 to 17.9.31	19.9.31
265 *†	*City of Baroda* ...	Bremner, D. M. ...	H. G. Williams, R. W. Leese, E. Bonfield.	W.T.	Ellerman	Form 915 28.2.31 to 19.4.31 ...	12.8.31
	City of Cambridge	Wilson, E. G.	H. H. Asher	No. A.	,, ...	Form 911 30.5.31 to 13.7.31 ...	18.7.31
	City of Carlisle ...	Mordue, J. A. ...	... ...	,, A.	,, ...	,, 6.8.31 to 24.8.31 ...	14.9.31
061 ††	*City of Exeter* ...	McNeil, N. M. ...	... ...	W.T.	,, ...	... ...	...
274 *†	*City of Harvard* ...	MacMillan, J.... ...	F. Deighton. A. J. Tyrrell, E. Brook-Williams.	M.L.	,, ...	Form 915 9.5.31 to 22.7.31 ...	28.7.31
089 *†	*City of Hereford* ...	Ricketts, R. J. ...	J. F. Lindell. F. Tibbetts ...	No. M.	,, ...	Forms 911 & 138 16.7.31 to 1.10.31	9.10.31
	City of Hong Kong	Walton, H. L., O.B.E., R.D., Commr., R.N.R	W. G. Baillie	,, A.	,, ,, ...	Form 911 9.8.31 to 30.8.31 ...	28.9.31
026 ††	*City of London* ...	Brown, J. G.	A. J. Barnett	W.T.	,, ...	... ...	...
237 ††	*City of Nagpur* ...	McNiel, N.	... ...	,,	,, ...	... ...	...
300 ††	*City of Paris* ...	McMillan, J.	... ...	,,	,, ...	... ...	...
271 *†	*City of Roubaix* ...	Radcliffe, A. V., R.D., Lt.-Commr., R.N.R.	J. A. Williams, J. L. Robertson, A. N. G. Jones	No. M	,, ...	Forms 911 & 138 14.10.30 to 3.11.30	15.12.30
272 *†	*City of Singapore*	Kendall. J. W. ...	F. Wrigley	,, M.	,, ...	,, ,, 15.4.31 to 10.5.31 ...	20.5.31
035 *†	*City of Sydney* ...	Mason, E.	C. Humphries, H. Griffith ...	,, M.	,, ...	,, ,, 6.8.31 to 6.10.31 ...	12.10.31
	City of Yokohama	Singleton, J. G. ...	J. Kinley, N. Dawson, H. Nish	,, A.	,, ...	Form 911 29.10.30 to 20.11.30 ...	25.11.30
	Clan Alpine ...	Young, A. H., R.D., Commr., R.N.R.	K. A. Elkins	,, A.	Clan	,, 19.7.31 to 30.7.31 ...	5.8 31
027 *†	*Clan Keith*	Waterhouse, J. ...	—Todman	W.T.	,, ...	... ...	...
	Clan Kenneth ...	Brown, R. H. ...	T. A. Pearson	No. A.	,, ...	Form 911 4.4.31 to 4.7.31 ...	22.7.31

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31.	Date Received.
	Clan Macalister ...	Stenson, F. J., A.D.C., R.D., Capt., R.N.R.	T. M. Rees Davis	No. A.	Clan	Form 911 28.6.31 to 25.7.31 ...	1.8.31
	Clan MacBean ...	Boag, J.	L. Thomson	„ A.	„	„ 9.7.31 to 30.7.31 ...	1.9.31
	Clan Macbeth ...	Giles, H. J., R.D., R.N.R.	W. R. Woodriffe, L. W. Gibbins, I. Cape Scott.	„ A.	„	„ 4.7.31 to 23.8.31 ...	25.9.31
	Clan Macfadyen ...	Laird, C.	W. C Dalzell	„ A.	„	„ 21.7.31 to 1.8.31 ...	17.8.31
	Clan Macfarlane ...	Redford, L. F., Lt.-Commr. R.N.R.	W. H. Simpson	„ A.	„	1.6.31 to 22.6.31 ...	31.8.31
	Clan Macgillivray	Mackinlay, A. ...	S. R. J. Woods	„ A.	„	„ 2.5.31 to 25.5.31... ...	22.7.31
	Clan Macindoe ...	Scott-Smith, H. E. G. O.B.E., R.D., Lt.-Commr., R.N.R.	J. C. Dunphy	„ A.	„	„ 5.9.31 to 10.10.31 ...	13.10.31
	Clan Mackellar ...	Lyall, A. B.	A. V. Howard	M.L.	„	„ 23.1.31 to 7.2.31 ...	7.3.31
001 *†	*Clan Macphee* ...	Gourlay, J. B. ...	E. H. Stone, G. Drake, A. Pollock.	W.T.	„	Form 915 13.5.31 to 14.9.31 ...	16.10.31
004 *†	*Clan MacNair* ...	Holman, W. G. ...	F. H. Petheridge A. Woodrow, J. Napier.	„	„	Forms 911 & 138 10.4.31 to 11.6.31	15.6.31
	Clan Macquarrie ...	West, W. F.	J. H. Thorpe	No. A	„	Form 911 4.1.31 to 17.4.31 ...	21.4.31
002 *†	*Clan Macwhirter* ...	Low, A.	M. J. Lewis, H. Whitehead, C. Rodger.	M.L.	„	Form 915 31.1.31 to 12.5.31 ...	1.6.31
003 *†	*Clan Malcolm* ...	George, L. S.	A. Lynch, H. Hind, S. Ewing	„	„	„ 17.4.31 to 13.8.31 ...	18.8.31
	Clan Morrison ...	Porterfield, W. M., Lt.-Commr., R.N.R.	H. W. Peletier, A. G. Beynon, R. K. Phillips.	No. A.	„	Form 911 19.8.31 to 14.9.31 ...	17.9.31
	Clan Murdoch ...	Wynne, R. H.... ...	P. S. Evans	„ A.	„	„ 16.5.31 to 31.8.31 ...	3.9.31
	Clan Ranald ...	Hawley, F. J. ...	H. C. Carter	„ A.	„	„ 25.6.31 to 18.7.31 ...	27.8.31
	Clan Ross	Calderwood, W. ...	R. C. Steel	„ A.	„	„ 28.8.31 to 1.10.31 ...	5.10.31
	Clan Sinclair ...	Cater, H.	D. Mc Allister	„ A	„	„ 27.4.31 to 5.7.31... ...	9.7.31
017 *†	*Colonial*	Baird, W.	W. Moore, A. P. Brown A. Smart.	„ M.	Harrison	„ 24.8.31 to 20.9.31 ...	12.10.31
298 *†	*Comedian*	Cadogan, A.	F. M. Eales	„ M.	„	„ 6.7.31 to 29.7.31 ...	22.8.31
185 ††	*Comorin*	Cartright, C.W., D.S.C	R. E. Tucker	„ M.	P. & O.	Forms 911 & 138 26.7.31 to 20.8.31...	28.9.31
198 *†	*Contractor*	Harraden, W. E. ...	... ...	„ M.	Harrison	„ „ 4.6.31 to 15.8.31	25.8.31
049 **	*Coptic*, M.V. ...	Williams, G.	H. A. Hill, P. Saville, W. Burt.	W.T.	Shaw, Savill & Albion	„ „ 14.5.31 to 21.8.31	10.9.31
100 *†	*Cornwall*	Almond, J. G. ...	W. H. G. Timberlake... ...	M.L.	Federal	Form 911 17.4.31 to 21.5.31 ...	28.5.31
006 ††	*Coronado*	Thorburn, R. A. ...	A. Orchard, A. Magill, G. Binks.	W.T.	Elders & Fyffes ...	Forms 911 & 138 3.9.31 to 4.10.31	6.10.31
214 *†	*Counsellor*	Jackson, J.	G. C. Heaton, W. A. Short, J. L. Curle.	No. M.	Harrison	„ „ 31.5.31 to 2.9.31...	8.9.31
301 *†	*Culebra*	Goble, C. J.	H. D. Hooper, T. Davies, H. A. Wright.	M.L.	R.M.S.P. Co.	Form 915 11.5.31 to 29.9.31 ...	14.10.31
036 *†	*Cumberland* ...	Maltby, T. L.	... ...	„	Federal	... ...	...
285 *†	*Custodian*	O'Connor, T.	W. F. O'Neill, W. H. Corlett, J. L. Williams.	No. M.	Harrison	Forms 911 & 138 2.4.31 to 16.6.31	20.6.31
	Dakarian	Brown, W.	A. A. Johnson	No. A.	Leyland	... ...	...
	Dardanus	Christie, W.	J. S. Ogilvie	„	A. Holt	Form 911 11.7.31 to 4.8.31 ...	12.8.31
302 ††	*Darro*	Green. J.	W. Roberts, A. J. Barff ...	W.T.-M.	R.M.S.P. Co.	Forms 911 & 138 19.7.31 to 10.9.31	18.9.31
	Davisian	Thomas, R.	T. Slivinton	No. A.	Leyland	Form 911 21.8.30 to 3.9.31 ...	19.9.31
303 ††	*Demerara*	Matthews, G. P. ...	E. N. Gillet, W. Lowe, J. Phillips.	W.T.-M.	R.M.S.P. Co.	Forms 911 & 138 21.6.31 to 13.8.31	20.8.31
	Denis	Harris F. C. P. ...	A. W. Hanchett, J. H. Stoker	M.L.	Booth	„ „ 6.5.31 to 21.5.31	29.5.31
304 ††	*Deseado*	Buret, J.	C. A. Steel	W.T.-M.	R.M.S.P. Co.	„ „ 26.4.31 to 19.6.31	22.6.31
117 ††	*Desna*	Huff. G.	G. L. Elliott, H. Lang... ...	„	.. ..	„ „ 2.3.31 to 23.4.31	14.5.31
252 *†	*Devon*	Kinnell, G.	G. Chaplin, J. D. Marks. M. Willinott.	No. M.	Federal	„ „ 7.4.31 to 14.7.31	16.7.31
	Dieppe	Lidbetter. W.... ...	E. A. Biles	C.C.	Southern Railway ...	Telegraphic Report 4.10.31 ...	4.10.31
284 *†	*Director*	Worthington, B. ...	M. G. O'Brien, A. M. Hughes, A. E Rogers.	No. M.	Harrison	Forms 911 & 138 27.4.31 to 1.8.31...	8.8.31
138 *†	*Discovery II.*, R.R.S.	Carey, W. M., Commr., R.N.	R. A. B. Ardley, A. L. Nelson, L. C. Hill.	M.L.	Falkland Is. Govt. ...	Form 915 31.3.31 to 31.5.31 ...	30.9.31
	Dominia, C.S. ...	Campos, V., O.B.E., Lt.-Commr., R.N.R	W. E. Allen, A. S. Muir, W. F. Anderson.	„	Telegraph Construction & Maintenance.	„ 5.9.30 to 24.11.30 ...	6.12.30
	Dorelian	Hugan, C.	J. A. Kendall	No. A.	Leyland	Form 911 20.3.31 to 25.5.31 ...	1.6.31
136 *†	*Doric Star*	Mills. D. H	— Anderson	No. M.	Blue Star	... ...	...
275 *†	*Dramatist*	Meek, A. J.	G. H. Howard, I. W. Page ...	„ M.	Harrison	Forms 911 & 138 16.7.31 to 4.9.31	10.9.31
142 ††	*Duchess of Atholl*...	McQueen, D. S. ...	G. Mowatt, C D. Watt, E. Glennie.	W.T.-M.	Canadian Pacific ...	„ „ 19.9.31 to 8.10.31	16.10.31
152 ††	*Duchess of Bedford*	Sibbons, H.	J. Roche, A. Antrobus, F. Stell.	„	„ „ ...	„ „ 6.9.31 to 22.9.31 ...	24.9.31
151 ††	*Duchess of Richmond.*	Freer, A., Capt., R.N.R.	W. A Stanley	„	„ „ ...	„ „ 28.9.31 to 1.10.31...	8.10.31
143 ††	*Duchess of York* ...	Stuart, R. N., V.C., D.S.O., Commr., R.N.R.	D. Parsons, J. B. Saunders ...	„	„ „ ...	„ „ 13.9.31 to 29.9.31...	5.10.31
098 ††	*Dunbar Castle*, M.V	Vincent, E. S., R.D., Commr., R.N.R.	J. Daziel, T. W. McAllen, P. G. MacIver.	W.T.	Union Castle	„ „ 4.10.31 to 22.9.31...	13.10.31
	Dunrobin	Ramsay, J. D. ...	W. R. Holt, J. Y. Butt ...	No. A.	Glen & Co.	Form 911 23.7.31 to 20.9.31 ...	15.10.31
	Dunster Grange ...	Wilson, G. F.	J. Allerton	„ M.	Houlder	Forms 911 & 138 21.6.31 to 26.8.31	29.8.31
102 *†	*Duquesa*	Owen, R.	L. W. Palmer	„ M.	Furness Withy ...	„ „ 26.1.31 to 29.3.31	22.8.31
215 *†	*Durenda*, M.V. ...	Moon, J.	H. Stott	„ M.	British India	„ „ 11.6.31 to 5.7.31	8.7.31
077 ††	*Edinburgh Castle* ...	Gilbert, E. F.... ...	W. Aldous, R. Pembry ...	W.T.	Union Castle	Forms 911 & 138 27.6.31 to 16.8.31	18.8.31
107 *†	*El Argentino*, M.V.	Ellis, F., D.S.C. ...	W. Findlay, J. Burch, C. G. Adlard.	No. M	Houlder	„ „ 11.5.31 to 15.7.31	13.8.31
009 *†	*Elmworth*, M.V. ...	Dick, J.	J. M. Whyte	„ M.	R. S. Dalgleish ...	Form 911 3.9.31 to 23.9.31 ...	9.10.31
158 *†	*Elpenor*	Wilson, R. J.	E. Roberts, J. Macfarlane, G. Rowlands.	M.L.	A. Holt	Form 915 14.3.31 to 7.7.31 ...	16.7.31
108 *†	*Elstree Grange* ...	Williams, W. E. ...	P. A. Hawkesworth	No. M.	Houlder	Forms 911 & 138 15.5.31 to 9.8.31	25.8.31
109 *†	*El Paraguayo* ...	Frost, C. R.	G. Fletcher, F. J. G. Rice, R. L. Aldridge.	„ M	„	„ „ 15.6.31 to 6.8.31	11.8.31
110 *†	*El Uruguayo* ...	McNamara. T. ...	F. E Hailstone	„ M.	„	„ „ 12.9.31 to 13.8.31	5.10.31
088 *†	*Empire Star* ...	Owen, G., R.D., Lt.-Commr., R.N.R.	... ...	M.L.	Blue Star	... ...	...
006 ††	*Empress of Australia*	Griffiths, E., Lt.-Commr., R.N.R.	A. Tippett, M. Williams, O. F. Pennington.	W T.	Canadian Pacific ...	Forms 911 & 138 10.9.31 to 26.9.31	2.10.31
034 ††	*Empress of Britain*	Latta, R. G.	... ...	„	„ „ ...	... ...	...
154 ††	*Empress of Canada*	Hailey, A. J., Lt.-Commr., R.N.R.	G. O. Baugh, R. H. Foley, H. Kennedy.	M.L.	„ „ ...	Form 915 28.3.31 to 8.7.31 ...	31.8.31

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31	Date Received.
153 ††	*Empress of Japan*	Robinson, S., C.B.E., R.N.R.	R. Goss, R. Wolfenden, A. Le Maistre.	M.L.	Canadian Pacific ...	Form 915 7.8.30 to 13.1.31 ...	16.2.31
	Eumaeus	Hodgson, R. N. ...	W. G. Coxshall...	No. A.	A. Holt...	Form 911 4.8.31 to 11.10.31 ...	16.10.31
	Euripides	Vaughan, P. R., D.S.C., R.D., Commr. R.N.R.	... ...	W.T.—M.	White Star	... ...	...
	Euryades	Ewan, W. B	D. S. Bruce	No. A.	A. Holt...	Form 911 21.1.31 to 26.1.31 ...	17.2.31
	Explorer	Allan, J.	A. Stout	„ A.	Scottish Fishery Brd.	„ 14.9.31 to 30.9.31 ..	5.10.31
067 *†	*Ferndale*	Beighton, J. N. ...	L. J. Hopkins	„ M.	Aberdeen Commonwealth.	Form 911 25.6.31 to 27.7.31 ...	21.9.31
074 *†	*Fordsdale*	Avern, J., Commr. R.N.R.	F. H. E. Vaughan	„ M.	Aberdeen Commonwealth.	Forms 911 & 138 18.7.31 to 25.8.31	8.9.31
030 ††	*Franconia*	Gibbons, G., R.D., Capt., R.N.R.	W. M. Stewart, W. B. Tanner, R. Pollitt.	W.T.	Cunard	„ „ 2.7.31 to 30.7.31	14.8.31
	Freya	Lamont. A.	W. Pirrie...	No. A.	Scottish Fishery Brd.	Form 911 17.6.31 to 29.6.31 ...	6.7.31
159 **	*Gascoyne*	Johnson, L.	J. S. Macbryde. C. O. Melson, W. Uttley,	M.L.	A. Holt & Co.... ...	Form 915 12.2.31 to 3.7.31 ...	31.8.31
125 *†	*Glenamoy*, M.V. ...	Ings, W. J.	F. Laycock, L. Eccles, A. C. Radley.	„	Glen Line	„ 2.2.31 to 8.5.31 ...	16.5.31
126 *†	*Glengarry*, M.V. ...	Angier, J.	G. Morgan, I. G. Neill, S. W. Bell.	No. M.	„	Forms 911 & 138 19.6.31 to 4.10.31	9.10.31
	Glenluce, M.V. ...	Kennett, W. H. ...	J. A. Evans	„ A	„	Form 911 4.2.31 to 3.6.31	7.7.31
	Glentworth ...	Aitchison, D.M. ...	... ...	„ A.	R. S. Dalgleish ...	„ 20.6.31 to 8.9.31 ...	29.9.31
085 *†	*Governor*	Windsor, G. R. ...	A. Watson, J. Stanhope ...	„ M.	Harrison	Forms 911 & 138 25.6.31 to 23.8.31	27.8.31
111 *†	*Hardwicke Grange*	Fowler, W. H. ...	W. L. Baker, A. W. Seybold, W. E. Ellis.	„ M.	Houlder	„ 2.8.31 to 7.10.31...	13.10.31
	Harmonides ...	Elwell, F. R. ...	L. Pogson, J. C. Robertson, J. MacLeod.	„ A.	R. P. Houston ..	Form 911 22.7.31 to 28.8.31 ...	10.9.31
262 **	*Hauraki*, M.V.	Norton, A. T.... ...	D. W. Blacklaws, D. McLeish, H. A. Brockett.	M.L.	Union S.S. Co., N.Z. ...	Form 915 8.12.30 to 16.7.31 ...	28.9.31
		Hender, W.					
	Herminius	Roberts, T. V., R.D., Lt.-Commr., R.N.R.	F. W. Gilroy	No. A.	Aberdeen Commonwealth.	Form 911 6.3.31 to 12.4.31 ...	18.4.31
253 *†	*Hertford*	Burton Davies, J. ...	P. Shakespeare, P. Block, P. M. Devitt.	M.L.	Federal	Form 915 14.2.31 to 24.6.31 ...	6.7.31
	Hibernia	Williams, E. R. ...	C. A. Marsh	C.C.	L.M. & S. Railway ...	Telegraphic Report 10.10.31 ...	10.10.31
182 ††	*Highland Brigade*	Lloyd, H.	W. Stephen, N. Hersee, C. Morgan.	No. M.	Nelson	Forms 911 & 138 9.8.31 to 27.9.31	7.10.31
116 ††	*Highland Chieftain*, M.V.	Robinson. R. H. ...	W. J. Presland	„ M.	„	„ „ 16.7.31 to 1.9.31	4.9.31
099 ††	*Highland Monarch*. M.V.	Ashby Graves, F. ...	R. Polden	„ M.	„	„ „ 27.6.31 to 19.8.31	26.8.31
250 ††	*Highland Princess* M.V.	Collins, D.	C. Leech, J. Fitton, D. Seabrook.	„ M.	„	„ „ 26.7.31 to 13.9.31	19.9.31
	Hilary	Jones, W. C. H., R.D., Commr., R.N.R.	... ...	M.L.	Booth	... ...	...
079 *†	*Hildebrand* ...	Buck, R. H., R.D., Capt., R.N.R.	F. H. Good	W.T.	„	Forms 911 & 138 19.7.31 to 24.8.31	1.9.31
075 *†	*Hobson's Bay* ...	Roberts, T. V., R.D., Lt.-Commr., R.N.R.	J. Worrall, C. C. Good, C. Carroll.	No. M.	Aberdeen Commonwealth.	Form 915 4.2.31 to 10.5.31 ...	22.6.31
054 ††	*Homeric*	Bulman, J. B. ...	H. G. Morgan, M. Bennett, W. Poustie.	W.T.	White Star	Forms 911 & 138 6.8.31 to 10.9.31...	14.9.31
	Hubert	Briscoe, W.	R. Parry, G. G. Westhorp, L. A. Sterling.	M.L.	Booth	Form 915 17.5.31 to 25.7.31 ...	28.7.31
261 *†	*Huntingdon* ...	Field, H. G. B. ...	P. S. Calcutt, H. F. Wilkinson, M. T. D. Walter.	W.T.	Federal...	Forms 911 & 138 26.4.31 to 15.8.31	27.8.31
200 *†	*Huntsman*	Russell, H.	J. Richardson. A. Brimms, D. H. Goddard.	No. M.	Harrison	Form 911 4.7.31 to 24.7.31... ...	18.8.31
289 *†	*Inanda*	Gibbings, W. H. ...	D. C. Brown. R. L. Williams, T. W. Kent.	„ M.	„	Forms 911 & 138 15.8.31 to 24.9.31	5.10.31
	Ingoma	Richardson, R. ...	D. Douglas Kerr	„ M.	„	„ „ 18.7.31 to 22.8.31	29.8.31
160 *†	*Ixion*	Stewart, J. A. ...	G. L. Oldrich, W. H. Deans, F. G. Brown.	M.L.	A. Holt	Form 915 9.10.30 to 18.3.31 ...	29.5.31
	Jamaica Merchant	Bach, L. G., R.D., Lt.-Commr., R.N.R.	R. C. Vigurs, B. W. Smith, D. T. Sharrock.	„	Jamaica Direct Fruit	„ 10.6.31 to 21.8.31 ...	3 9.31
072 **	*Jamaica Planter* ...	Towell. W. C.... ...	G. R. Wortley	W.T.	„ „	Forms 911 & 138 12.8.31 to 12.9.31	22.9.31
	Jamaica Producer	Allen, P. D.	H. C. Braine	No. A.	„ „	Form 911 18.6.31 to 29.6.31 ...	24.7.31
	Jamaica Settler ...	McColm, A.	R. C. Vigins	„ A.	„ „	„ 26.8.31 to 26.9.31 ...	29.9.31
	Javanese Prince, M.V	Smith, J.	C. E. Edney	„ A.	Prince	„ 21.5.31 to 5.7.31 ...	18.7.31
187 *†	*Jeypore*	Harris, W. L.... ...	A. G. Edwards...	„ M.	P. & O.	Forms 911 & 138 28.6.31 to 28.7.31	7.8.31
188 ††	*Kaisar-i-Hind* ...	Headlam, P. C., R.D., Commr. R.N.R.	T. T. Ferguson, H. Flint, L. Irons.	„ M.	„	„ „ 12.4.31 to 19.5.31	30.5.31
189 *†	*Kalyan*	Cooper, C. P., O.B.E., R.D., Capt. R.N.R.	M. G. Morris	„ M.	„	„ „ 7.6.31 to 17.7.31...	4.8.31
041 *†	*Karamea*, M.V. ...	Kenworthy, —. ...	N. S. Milne, C. Sendall, H. M. Clark.	M.L.	Shaw, Savill & Albion	Form 915 4.3.31 to 11.6.31 ...	22.6.31
217 *†	*Karapara*	White, R. W.	J. B. Walker, C. W. Furze ...	No. M.	British India... ...	Forms 911 & 138 17.7.31 to 10.8.31	21.9.31
285 *†	*Karmala*	McBryde, A.	A. Storr, L. Porter, F. W. J. Pearce.	„ M.	P. & O.	„ „ 28.6.31 to 2.10.31	8.10.31
190 *†	*Kashgar*	Sudell, F., R.D., Commr., R.N.R.	R. P. Eddy	„ M.	„	„ „ 4.5.31 to 7.8.31...	11.8.31
191 *†	*Kashmir*	Axford, R. G.... ...	Cadets —	„ M.	„	„ „ 6.6.31 to 12.7.31	20.8.31
114 ††	*Kenya*	Miller, A.C.	R. Lord, A. Ralph, H. Evans	„ M.	British India ...	„ „ 16.7.31 to 20.8.31	14.9.31
218 *†	*Khandalla*	Baird, S. K.	W. Gordon Jones	„ M.	„ „	„ „ 27.2.31 to 10.4.31	4.5.31
186 *†	*Kidderpore* ...	Wright, C. S., R.D., Commr., R.N.R.	J. Collard, G. B. Roche ...	„ M.	P. & O.	„ „ 30.5.31 to 27.8.31	21.9.31
169 **	*Kwangchow* ...	Stringer. C. B. L. ...	B. C. Finch, E. J. Cox ...	M.L.	China Nav. Co. ...	Form 915 26.11.30 to 1.5.31 ...	29.6.31
147 ††	*Laconia*	Hawkes, W. R. D., Capt. R.N.R.	J. D. Archer, R. V. Youd, M. Boston.	W.T.	Cunard...	Forms 911 & 138 7.9.31 to 27.9.31	29.9.31
	Lagarto, M.V. ...	Kirkwood, J. H. ...	F. Grant	No. A.	Pacific S.N. Co. ...	... ...	...
	Laguna, M.V. ...	Dunn, R.E., O.B.E. ...	W. Billington	„ A.	„ „	Form 911 16.5.31 to 2.6.31 ...	5.6.31
193 *†	*Lahore*	Hollow, J. H.... ...	J. G. K. Gregory, F. Hull, S. R. Eva.	„ M.	P & O.	Forms 911 & 138 19.7.31 to 12.10.31	14.10.31
	Lalande	Symons, P.	C. Legg	„ A.	Lamport & Holt ...	Form 911 30.1.30 to 24.2.31 ...	4.3.31
	Laomedon	Davidson, T. W. ...	A. E. Martin	„ A.	A. Holt...	„ 911 30.6.31 to 17.7.31 ...	23.7.31

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log. Register, or Record Contributed. Received up to 16.10.31.	Date Received.
082 *† *La Paz*, M.V. ...	Morgan, D. R. ...	R. W. Hanson, J. Sutherland, G. Pattison.	No. M.	Pacific S.N. Co. ...	Forms 911 & 138 15.3.31 to 13.4.31	16.4.31
Laplace	Wilkinson, E. ...	N. R. Perons	„ A.	Lamport & Holt ...	Form 911 29.6.31 to 29.9.31 ...	5.10.31
134 †† *Lapland*	Harvey, H.	W. Jenkins, H. Patterson ...	W.T.	Red Star	Forms 911 & 138 23.9.31 to 10.10.31	12.10.31
076 *† *Largs Bay*	Jermyn, W. M. ...	F. B. Marsden, B. S. Mackenzie.	No. M.	Aberdeen Commonwealth.	„ „ 17.5.31 to 28.6.31	28.9.31
112 *† *La Rosarina* ...	Webb, C.	W. S. Hamblin...	„ M.	Houlder	„ „ 12.7.31 to 17.9.31	22.9.31
Lassell	Lindsay, J.	P. Casey	„ A.	Lamport & Holt ...	Form 911 11.2.31 to 6.5.31... ...	14.5.31
064 †† *Laurentic*	Hume, R.	C. Cochrane, R. Conway, G Harris.	W.T.	White Star	Forms 911 & 138 13.9.31 to 3.10.31	6.10.31
083 *† *Lautaro*, M.V. ...	Kite, E.	J. Lloyd Jones, J. Williams...	No. M.	Pacific S.N. Co. ...	„ „ 20.8.31 to 12.9.31	25.9.31
254 *† *Limerick*	Molyneux, P. L. ...	J. Trotter, N. A. Thomas ...	„ M.	Federal...	„ „ 7.6.31 to 20.7.31	7.9.31
093 *† *Llandaff Castle* ...	Attwood, J.	J. M. Goode	W.T.	Union Castle	„ „ 19.6.31 to 24.8.31	27.8.31
097 †† *Llangibby Castle*, M.V	Nicholl, D.	H. S. Warren	„	„ „ „	„ „ 18.7.31 to 19.9.31	5.10.31
094 *† *Llandovery Castle*	Morgan, A. O., R.D., Commr., R.N.R.	T. C. Goldstone, F. R. Pope, R. C. J. Hatt.	M.L.	„ „	Form 915 1.5.31 to 5.7.31	27.7.31
216 *† *Llanstephan Castle*	Bickford, C. N. ...	J. B. Duncan, G. H. Pickering, S. Smith.	W.T.	„ „	Forms 911 & 138 28.6.31 to 28.8.31	3.9.31
084 *† *Lobos*, M.V. ...	Leyne, R. W.	R. H. Sissons	No. M.	Pacific S.N. Co. ...	„ „ 21.4.31 to 10.8.31	14.8.31
Lochgoil, M.V. ...	Schlanbusch, O. V. ...	P. Burrell	„ A.	„ „ ...	Form 911 27.6.31 to 10.9.31 ...	29.9.31
Loch Katrine ...	Cocks, A., D.S.C., R.D. Captain R.N.R.	J. E. Pardoe Matthews ...	„ A.	„ „ ...	„ 24.12.30 to 21.3.31 ...	27.3.31
Lochmonar, M.V....	Purvis, A.	F. G. Dawson, A. Yeatman	„ A.	„ „ ...	„ 26.1.31 to 24.4.31 ...	7.5.31
137 *† *Logician*	Herschel, R. J. ...	T. Winstanley, E. L. Stockley	„ M.	Harrison	Forms 911 & 138 8.2.31 to 14.5.31	19.6.31
London Citizen ...	Westgarth, W. A. ...	H. Richardson, E. W. Capper, S. Rylands.	„ A	Furness Withy ...	Form 911 30.8.31 to 2.10.31 ...	5.10.31
London Exchange	Griffiths, J.	C. T. V. Rixham	„ A.	„ „ ...	„ 19.7.31 to 19.8.31 ...	22.8.31
Loriga, M.V. ...	Grant, F. H.	J. D. Richards, W. Horsfall...	„ A.	Pacific S.N. Co. ...	„ 15.6.31 to 6.7.31 ...	8.7.31
008 *† *Losada*	Clapham, E. C. ...	D. W. Hutchinson	„ M.	„ „ ...	Forms 911 & 138 28.8.31 to 16.9.31	18.9.31
013 *† *Macharda*	Hanna, R. G.	C. Lindsay Miller, C. Parry, G. A. Jackson.	No. M.	Brocklebank	Forms 911 & 138 1.7.31 to 17.7.31	10.8.31
232 *† *Madura*	Wright, J. A.	A. Usher, E. Roberts, T. R. Jackson	„ M.	British India... ...	„ „ 2.8.31 to 25.8.31	18.9.31
078 *† *Magician*	Bury, E. R.	W. E. Shotton, J. Johnson ...	„ M.	Harrison	„ „ 18.5.31 to 14.9.31	17.9.31
141 *† *Mahia*	Andrews, C. M. ...	G. Sangwin, M. P. Congdon, J. Jackson.	W.T.	Shaw, Savill & Albion	„ „ 1.3.31 to 15.6.31	22.6.31
140 *† *Mahratta*	Williams, E. R. ..	T. C. Eddy, H. F. Scoins, A. McPhee.	No. M.	Brocklebank	„ „ 4.8.31 to 7.9.31	19.9.31
014 *† *Mahronda*	Sharpe, F. W. ...	W. Le Brocq, M. Melville, H. Wellington.	„ M.	„	„ „ 6.8.31 to 30.8.31	26.9.31
015 *† *Mahsud*	Kershaw, R. W. ...	S. Richardson, J. R. Paisley	„ M.	„	„ „ 20.5.31 to 6.8.31	14.9.31
016 *† *Maidan*	Ison, W. A	F. Moore, F. L. Attwood, L. E. Jeans.	„ M.	„	„ „ 26.2.31 to 8.5.31	12.5.31
042 *† *Maimoa*	Johnson, J. W ...	A. Winton. E. Sainsbury, D. O. V. Pickersgill.	M.L.	Shaw, Savill & Albion	Form 915 18.1.31 to 15.5.31 ...	19.5.31
Maimyo	Anderson, C.	O. Jones	No. A.	Brocklebank	Form 911 7.5.31 to 12.8.31 ...	9.9.31
018 *† *Makalla*	Maughan, J. W. ...	E. Williams	„ M.	„	„ 25.5.31 to 25.8.31 ...	1.10.31
225 ** *Makura*	MacDonald, D. ...	A. P. Cousin, S. H. Crawford, H. McRae.	M.L.	Canadian-Australasian	Form 915 16.4.31 to 1.8.31 ...	1.10.31
019 *† *Malakuta*	Adamson, F. L. ...	H. Simpson	No. M.	Brocklebank	Forms 911 & 138 26.11.30 to 4.3.31	1.4.31
020 *† *Malancha*	Whitham, F.	R. Humble, J. H. Chadwick, M. Mackenzie.	„ M.	„ ...	„ „ 6.6.31 to 6.7.31	4.8.31
219 *† *Malda*	Denne, G. H. A. ...	D. Lattin, K. Male, W. Hirst	„ M.	British India ...	Form 911 16.6.31 to 5.9.31 ...	14.10.31
195 †† *Maloja*	Browning, J. B., R.D., Commr. R.N.R.	R. E. Baldwin - Wiseman, C. H. Hand. G. R. Peters.	„ M.	P. & O.	Forms 911 & 138 28.6.31 to 30.9.31	6.10.31
196 †† *Malwa*	Britten, P. O.	P. G. Lawrence...	„ M.	„	„ „ 19.7.31 to 11.9.31	24.9.31
053 *† *Manaar*	Thowless, E.	A. L. Harrop, J. Robinson, R. G. Widdon.	„ M	Brocklebank	„ „ 7.5.31 to 28.5.31	24.6.31
Manchester Brigade	Stott, C. H.	E. E. Bonnaud, J. Eccles, W. E. Hardman.	M.L.	Manchester Liners ...	Form 915 14.3.31 to 1.8.31 ...	10.8.31
Manchester Hero ...	Mitchell, G. M. ...	R. O. Jones	„	„ „ ...	Form 911 11.11.30 to 16.12.30 ...	1.1.31
028 †† *Mandala* ...	Kinnear, A. D. ...	W. E. F. Powell	No. M.	British India... ...	Forms 911 & 138 24.3.31 to 12.6.31	16.6.31
146 *† *Mandasor*	Longhurst, J. H. ... Richardson, T. ...	F. C. Madden, T. S. Cullen, J. Alexander.	„ M.	Brocklebank	„ „ 15.6.31 to 15.7.31	21.7.31
220 *† *Manela*	Maples, S. H. ...	W. F. Solly, T. M. Robertson, F. C. Conolly.	„ M.	British India	„ „ 26.8.31 to 8.9.31	5.10.31
022 *† *Manipur*	Cochran, G. N. ...	L. F. Dodson. R. Penston, A. Hill.	„ M.	Brocklebank	„ „ 4.7.31 to 16.7.31	10.8.31
221 *† *Manora*	Hudson, H. T., R.D., Commr., R.N.R.	W. Brawn, F. Scott, J. Toms	„ M.	British India... ...	„ „ 21.6.31 to 19.7.31	5.8.31
177 *† *Mantola*	James, D. F.	M. Sharp, S. Henderson, R. H. Ayres.	„ M.	„ „	„ „ 6.6.31 to 21.8.31	9.9.31
197 †† *Mantua*	Hignett, R.D., Commr. R.N.R.	J. D. Homidge	W.T.-M.	P. & O.	„ „ 9.8.31 to 21.8.31	14.9.31
299 ** *Marella*	Donaldson, A. ...	A. W. Blane, D. Pemberton, A. G. W. Thomas.	M.L.	Burns Philp	Form 915 31.12.30 to 28.5.31 ...	3.9.31
Marengo ...	Aspinall, A. E. ... Bean, A. ... ... Sibree, J. S.	H. Bryan, G. W. Revell, W. L. Hepson, F. Brown, C. Newton, J. E. Dobson.	„	Ellerman Wilson ...	„ 21.10.30 to 16.3.31 ...	19.3.31
222 †† *Margha*	Kitson, G. A.	P. Wright, H. Watkins, J. Campbell.	W.T.	British India... ...	Forms 911 & 138 23.8.31 to 16.9.31	5.10.31
104 *† *Marquesa*	Smiles, R. S.	J. Wetherall	No. M.	Furness Houlder ...	„ „ 25.5.31 to 31.7.31	6.8.31
021 *† *Masula*	Fitt, W. H.	G. P. Price	„ M	British India	„ „ 27.8.31 to 16.9.31	29.9.31
251 *† *Matakana*	Gordon, H. R.	H. Thompson	M.L.	Shaw, Savill & Albion	Form 911 20.6.31 to 29.9.31 ...	2.10.31
044 †† *Mataroa*	Gaskell, J. H., R.D., Lt.-Commr., R.N.R.	F. Eadon, F. C. Charnley, T. H. Davies.	„	„ „ „	Form 915 22.5.31 to 30.8.31 ...	1.10.31
023 *† *Matheran*	Mulcahy, J. J. ...	S. S. Slade, J. F. Butterworth. W. Cowrie.	No. M.	Brocklebank	Forms 911 & 138 29.8.31 to 27.9.31	30.9.31
223 *† *Matiana*	Green, F. V.	L. A. Bunn, P. M. Wilson ...	„ M.	British India... ...	„ „ 11.9.31 to 22.9.31	16.10.31
024 *† *Matra*	Cornish, N. P. ...	C. Shaw, W. Robertson, J. G. Nuttall.	„ M.	Brocklebank	„ „ 30.3.31 to 17.6.31	30.6.31
032 †† *Mauretania*... ...	Peel, R. V., R.D., Capt., R.N.R	R. H. C. Crawford, H. V. Clarke, G. Duguid.	W.T.	Cunard	„ „ 13.9.31 to 28.9.31	30.9.31
Mercian	Manning, C. H. ...	F. P. Sheerbad	No. A.	Leyland	Form 911 14.3.31 to 26.5.31 ...	29.5.31
270 *† *Minderoo*	Macphedran W. J. ...	H. Lancaster	„ M.	Western Australian S.N. Co.	Forms 911 & 138 26.7.31 to 8.8.31	21.8.31
Minna	Mackenzie, G. G. ...	A. M. Campbell	„ A.	Scottish Fishery Brd.	Form 911 15.9.31 to 11.10.31 ...	14.10.31
068 †† *Minnetonka* ...	Gates, T. F., C.B.E. ...	H. E. D. McCartney, W. S. Harrison, T. W. Pullan.	„ M.	Atlantic Transport ...	Forms 911 & 138 31.8.31 to 20.9.31	24.9.31
069 †† *Minnewaska* ...	Claret, F. H., C.B.E., Commr., R.N.R.	E. Pengelly, D. Davies, F. Mummery.	W.T.-M.	„ „ ...	„ „ 14.9.31 to 14.10.31	7.10.31
Mississippi, M.V. ...	Finch, E.	A. C. Clay	No. A.	„ „ ...	Form 911 10.2.31 to 26.3.31 ...	2.4.31
224 *† *Modasa*	Gilchrist, J. W ...	E. Hale, K. Kirkup, H. C. Pearson.	„ M.	British India	Forms 911 & 138 6.7.31 to 20.9.31...	24.9.31
194 †† *Moldavia*	Allen, C. H.	T. E. Heath	„ M.	P. & O.	Form 911 6.9.31 to 16.9.31 ...	30.9.31
199 †† *Mongolia*	Rhodes, H. R. ...	H. Lee, H. C. Slinn, W. S. Joliffe.	„ M.	„ „	Forms 911 & 138 19.8.31 to 7.9.31	5.10.31

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed Received up to 16.10.31.	Date Received.
260 ††	*Monowai*	Toten, A. T.	L. B. Elhert, T. W. Gibson, L. J. Drew.	M.L.	Union S.S. of N.Z. ...	Form 915 22.1.31 to 9.5.31 ...	4.8.31
148 ††	*Montcalm*	Rothwell, A.	T. L. Gillette, A. Mackie	W.T.-M	Canadian Pacific ..	Forms 911 & 138 20.8.31 to 10.9.31	14.9.31
149 ††	*Montclare*	Carr-Jones, D. J. ...	A. Watt, J. Sharples, J. Soames.	W.T.	,, ,, ...	,, ,, 23.8.31 to 11.9.31	30.9.31
150 ††	*Montrose*	Dott, J. F.	K. Hutchings, E. A. Shergold, L. L. Thornton,	,,	,, ,, ...	,, ,, 30.8.31 to 17.9.31	21.9.31
164 ††	*Mooltan*	Morton, A. J.	R. M. Richardson, J. L. Dunkley, A. D. Dennis.	No. M.	P. & O.	,, ,, 31.5.31 to 3.9.31	17.9.31
226 ††	*Mulbera*	Caffyn, F.	H. C. Martin, G. B. Adams ...	,, M.	British India	,, ,, 19.7.31 to 22.8.31	25.8.31
290 *†	*Musician*	Bostock, O.	K. H. Davies, H. Philpott, S. H. Diamond.	,, M.	Harrison	,, ,, 9.5.31 to 26.7.31	28.7.31
073 *†	*Nagara*	Cocks, A.	R. L. Matheson...	,, M.	R.M.S.P. Co.	Forms 911 & 138 7.6.31 to 30.7.31	7.8.31
201 ††	*Naldera*	Harrison, R., D.S.O., R.D., Capt. R.N.R.	H. J. Mann, G. D. Copeland, L. J. Brown.	W.T.	P. & O.	Form 915 4.4.31 to 8.7.31 ...	14.7.31
	Natia	Purvis, A, ...	F. Thacker	No. M.	R.M.S.P.	... ...	...
227 *†	*Nardana*	Reilly, J. V.	L. D. Macfadyen, H. Goater, H. Grace.	M.L.	British India	Form 915 25.4.31 to 21.8.31 ...	24.8.31
118 **	*Narenta*	Clayton, R.G., D.S.C.	J. Smith, C. K. Brown, M. A. Murch.	No. M.	R.M.S.P. Co.	Forms 911 & 138 15.5.31 to 12.8.31	19.8.31
202 ††	*Narkunda*	Cadiz, F. G., D.S.C....	J. C. Davies, J. Travis, J. A. Williams.	,, M.	P. & O.	Form 911 21.8.31 to 12.9.31 ...	5.10.31
	Navasota	Miles, A. G.	F. G. Dawson, J. T. Pardoe, Matthews.	,, A.	R.M.S.P. Co.	,, 5.7.31 to 27.8.31... ...	2.9.31
305 *†	*Nebraska*	Falconer, A. C. ...	H. D. Bowker, H. Collinson, P. R. Cocks.	,, M.	,, ,, ...	Forms 911 & 138 10.8.31 to 4.9.31	8.9.31
203 ††	*Nellore* ... {	Diamond, L. S. ...	J. F. M. Heddle, H. E. Nuzum, J. W. Kavanagh.	M.L.	E. & A. S.S. Co. ...	Form 915 1.5.31 to 27.7.31 ...	17.9.31
	{	Skinner, M.B. ...					
162 *†	*Nestor*	Adcock, F.	W. T. Harris, P. Elder, W. Pearse.	,,	A. Holt	,, 4.1.31 to 8.5.31	23.5.31
	Newfoundland ...	Foxworthy, A. W.	R. F. Handley, E. Sainty, J. L. Macklin.	,,	Furness Withy ...	,, 13.2.31 to 5.8.31 ...	12.8.31
210 **	*Niagara*	Hill, T. V.	G. H. Kime, D. A. Menlove L. P. Bourke.	,,	Canadian-Australasian	,, 5.3.31 to 24.4.31 ...	2.8.31
	Ningchow	Ewan, W. B.	E. Butler	No. A.	A. Holt...	Form 911 1.8.31 to 2.9.31 ...	17.9.31
256 *†	*Norfolk*	Howell-Price, J., D.S.O., D.S.C.	G. C. Hocart, H. Cockerell, H. Dash.	M.L.	Federal	Form 915 4.4.31 to 11.7.31 ...	21.7.31
	Norna	Angus, W.	T. R. Ness, J. Murray ...	No. A.	Scottish Fishery Brd	Form 911 8.9.31 to 19.9.31 ...	6.10.31
297 *†	*Northumberland* ...	Upton, H. L., D.S.C., R.D., Commr., R.N.R	H. Rogers, G. B. Cathie, H. I. Phillips.	,, M.	Federal...	Forms 911 & 138 24.4.31 to 9.8.31...	13.8.31
267 *†	*Novara*	Dene. R. C.	N. W. Leach	,, M.	P. & O.	,, ,, 14.9.31 to 24.9.31 ...	2.10.31
	Nova Scotia ...	Furneaux, S. J. ...	J. E. Wilson, A. Hender, N. Forsythe.	M.L.	Furness Withy ...	Form 915 17.4.31 to 28.9.31 ...	2.10.31
230 *†	*Nowshera*	Longhurst, J. H. ...	R. Burch, B. H. Bentall	No. M.	British India	Forms 911 & 138 18.1.31 to 29.1.31	11.5.31
231 *†	*Nuddea*	Beeching, P. H. ...	D. A. Jones, W. Monk, W. G. Pitcher.	,, M.	,, ,, ...	,, 16.4.31 to 7.6.31 ...	13.7.31
243 *†	*Opawa*	Robinson, F. W. ...	J. W. Pring H. P. Williamson, R. H. Chapman.	,, M.	New Zealand S.S. Co.	Forms 911 & 138 24.5.31 to 21.9.31	25.9.21
170 ††	*Orama*	Matheson, C. G., D.S.O., R.D., Capt. R.N.R.	E. V. Bilger, W. Eliot, R. W. Roberts.	W.T.	Orient	,, ,, 25.5.31 to 25.8.31	3.9.31
	Oranian	Gittings, R. P. ...	H. O. Quinn	No. A.	Leyland	Form 911 26.11.30 to 17.1.31 ...	29.1.31
086 ††	*Orcoma*	Benson, E. W. ...	T. R. Scott, H. J. Jones, H. D. Dillon.	W.T.-M.	Pacific S.N. Co. ...	Forms 911 & 138 2.8.31 to 30.9.31	7.10.31
087 ††	*Orduna*	Ridyard, A., O.B.E....	T. J. Naylor, R. F. A. Cox, E. B. James.	,,	,, ,, ...	,, ,, 10.1.31 to 23.3.31	2.4.31
258 *†	*Oregon Star* ...	Lewis, G.	E. T. Blaxland	No. M.	Blue Star	... ...	...
171 ††	*Orford*	Owens, A. L., Commr. R.D., R.N.R.	B. W. Gorman, B. H. Jones, C. H. Denton.	,, M.	Orient	Forms 911 & 138 17.2.30 to 16.5.31	9.6.31
174 ††	*Ormonde*	James, L. V., D.S.C.	T. L. Shurrock, N. Smith, C. Blake.	W.T.	,, ...	,, ,, 29.3.31 to 1.7.31	9.7.31
172 ††	*Oronsay*	Cameron, E. P., R.D., Commr., R.N.R.	E. M. Mackay, D. Madeley	,,	,, ...	,, ,, 21.6.31 to 22.9.31	5.10.31
173 ††	*Orontes*	O'Sullevan, F. R. ...	J. M. Swanson	No. M.	,, ...	,, ,, 19.5.31 to 7.6.31	13.6.31
105 ††	*Orsova*	Thorne, G. G., R.D. Commr., R.N.R.	R. B. Stannard	W.T.	,, ...	,, ,, 27.4.31 to 26.6.31	5.8.31
156 ††	*Otranto*	Staunton, H. G., C.B.E. R. D. Commr., R.N.R.	A. E. Coles	W.T.-M.	Orient	... ...	...
287 *†	*Pacific Enterprise*, M.V.	Newman, G. W. A....	C. G. White	M.L.	Furness Withy ...	Form 911 9.4.31 to 1.7.31	16.7.31
279 *†	*Pacific Exporter* ...	Holland, C. E., R.D., Commr., R.N.R.	W. Edmonds	W.T.	,, ,, ...	Forms 911 & 138 2.7.31 to 23.9.31	5.10.31
	Pacific Shipper, M.V	Nuttall, E. L.... ...	S. Porter	No. A.	,, ,,	Form 911 16.6.31 to 16.9.31 ...	21.9.31
	Pancras ... {	Barlow, F. P. ...	L. A. Sayers, S. Adams ...	M.L.	Booth	Form 915 9.2.31 to 16.7.31 ...	29.7.31
	{	Reynolds, W.... ...					
	Paris	Hill, A....	T. Mahoney	C.C.	Southern Rly. ...	Telegraphic Report. 15.10.31 ...	15.10.31
	Patia	Sapsworth, S. A. ...	R. O. Laycock, R. S. Howlett.	No. A.	Elders & Fyffes ...	Form 911 27.8.31 to 26.9.31 ...	29.9.31
	Patrician	Low, J.	W. E. Williams, E. Bennett, A. E. Jackson.	,, M.	Harrison	... ...	...
	Peisander	Findlay, J.	C. T. Morgan	,, A.	A. Holt...	Form 911 3.2.31 to 23.4.31 ...	12.5.31
058 ††	*Pennland*	Making, V. L. ...	J. Flett, C. Otterson, J. Cross	W.T.	Red Star	Forms 911 & 138 31.8.31 to 19.9.31	21.9.31
204 *†	*Peshawur*	McBryde, A. M. ...	D. Meikle, J. T. Sheffield, T. E. Wrigley.	M.L.	P. & O.	Form 915 1.2.31 to 16.6.31 ...	24.6.31
238 *†	*Piako*	Aslin, E. P. C. ...	A. D. Wilson, A. W. Marshall, R. H. Carter.	No. M.	New Zealand S.S. Co.	Forms 911 & 138 11.6.31 to 30.7.31	13.8.31
039 *†	*Planter*	Packe, M. G.	W. S. Eustance, J. J. Devereux, W. H. Slaughter	,,	Harrison	Forms 911 & 138 2.6.31 to 2.8.31	13.8.31
040 *†	*Port Adelaide* ...	Williams, R.	F. W. Elger	W.T.	Commonwealth & Dominion.	... ...	...
255 *†	*Port Alma*	Hayter, S. W.... ...	G. Dean	M.L.	,, ,, ,,	... ...	...
128 *†	,, *Auckland* ...	Kippins, T.	R. Forrest, A. Brown, E. Mickleburgh.	,,	,, ,, ,, ,,	Form 915 14.1.31 to 16.5.31 ...	27.5.31
268 *†	,, *Bowen* ...	Brown, A. H.... ...	F. R. Gorman	W.T.	,, ,, ,,	Form 911 3.1.31 to 28.4.31... ...	5.5.31
129 *†	,, *Campbell* ...	Gregory, S. E. A. ...	J. C. Goddard, N. M. Muzzell, C. Midwinter.	M.L.	,, ,, ,,	Form 915 8.3.31 to 18.7.31 ...	23.7.31
136 *†	,, *Caroline* ...	Hearn, G. W.... ...	V. G. Battle, E. W. R. Young, R. E. Garner.	,,	,, ,, ,, ,,	,, 16.12.30 to 23.4.31 ...	1.5.31
131 *†	,, *Darwin* ...	Hudson, J. J.... ...	K. D. Morgan, W. R. Johnson, L. C. Asser.	,,	,, ,, ,, ,,	,, 5.5.31 to 27.8.31 ...	11.9.31
132 **	,, *Denison* ...	Hall, G. S.	A. G. Newbury, R. A. Holloway, H. Duckling.	,,	,, ,, ,, ,,	,, 23.4.31 to 26.8.31 ...	3.9.31

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31.	Date Received.
133 *†	*Port Dunedin*, M.V.	Mason, W. S., D.S.C.	H. M. Post. C. A. Hodson, R. W. Chamberlain.	M.L.	Commonwealth and Dominion.	Form 915 15.5.31 to 1.9.31 ..	7.9.31
	„ *Fremantle*, M.V.	Gilling, W.	A. Naismith	No. A.	„ „ „	Form 911 12.8.31 to 17.9.31 ...	21.9.31
176 *†	„ *Gisborne*, M.V.	Higgs, W. G.	... ...	M.L.	„ „ „	„ 28.1.31 to 20.5.31 ...	27.5.31
135 *†	„ *Hunter* ...	... ...	G. T. C. Harris, C. R. Townshend, P. A. Munday.	„	„ „ „	Form 915 13.3.31 to 27.6.31 ...	8.7.31
	„ *Wellington* ...	Jones, C. N.	W. B. Hopkins	No. A.	„ „ „	Form 911 6.4.31 to 13.7.31 ...	26.8.31
106 *†	*Princesa*	Friend, A. B.	F. Poulson, E. Lougheed, O. Sheard.	„ M.	Houlder	Forms 911 & 138 5.7.31 to 10.9.31	14.9.31
163 *†	*Protesilaus*	Holden, W. R. F. ...	J. Cooper, J. Holden, H. N. Hardie.	M.L	A. Holt	Form 915 10.12.30 to 9.5.31 ...	31.8.31
	Pyrrhus	Wilkinson, T. G. ...	J. C. Podmore	No. A.	„	Form 911 9.6.31 to 27.7.31 ...	28.7.31
205 ††	*Rajputana*	Jask, H. M.	G. Aspinall, D. Buckley, C. F. Wright.	„ M.	P. & O.	Form 911 & 138 15.6.31 to 17.9.31	2.10.31
063 *†	*Rancher*	Mc.Cullum, J.... ...	G. Harvey, C F. Minshull, A. L. Lewis,	„ M.	Harrison	„ „ 12.7.31 to 29.9.31	2.10.31
228 ††	*Ranchi*	Hartley, J. W. ...	T. A. Sergeant, H. E. Holt ...	„ M.	P. & O	„ „ 8.8.31 to 27.8.31	29.8.31
236 ††	*Rangitane* M.V. ...	Holland, E.	A. Brown, R. C. Aldridge, C. J. P. Guille.	M.L.	New Zealand S.S. Co.	Form 915 13.2.31 to 28.5.31 ...	2.6.31
257 ††	*Rangitata* M.V. ...	Hunter, J. L. B. ...	J. Oxnard, D. Chadwick, S. Leggett.	W.T.-M.	„ „ „	Forms 911 & 138 6.6.31 to 16.9.31	28.9.31
240 ††	*Rangitiki* M.V. ...	Barnett, H.	H. Hill, L. F Malcouronne, C. Cruttenden.	„	„ „ „ „	„ „ 13.4.31 to 21.7.31	28.7.31
207 ††	*Ranpura*	Furlong, G. H. S., R.D., Capt. R.N.R.	G. M. MacLean, R. A. Perry, H. Toon.	No. M.	P. & O.	„ „ 1.8.31 to 21.9.31	28.9.31
071 ††	*Rawalpindi* ...	Stringer, O.B.E., R.D., Commr., R.N.R.	H. J. M. Perry, F. G. Davies, D. West.	W.T. M.	„	„ „ 8.6.31 to 19.8.31	22.8.31
247 *†	*Recorder*	Egerton, J. J. ...	G. Morrice, H. C. Blyth, W. Weatherall.	No. M.	Harrison	„ „ 31.5.31 to 16.9.31	23.9.31
306 *†	*Reina del Pacifico*, M.V.	Roberts, E.	W. A. Hearle, R. Bridson, J. K. Campbell.	„ M.	Pacific S.N. Co. ...	„ „ 23.6.31 to 12.8.31	19.8.31
239 *†	*Remuera*	Wilde, H. J.	A. J. Angell, J. R. Vincent, H. N. Lawson.	M.L.	New Zealand S.S. Co.	Form 915 13.3.31 to 26.6.31 ...	4.7.31
	Rhexenor	Stout, G. L.	J. S. Parry	No. A.	A. Holt...	Form 911 1.6.31 to 26.6.31... ...	11.8.31
	Rhodesian Transport.	Bowen, A. C.	H. S. Butler	„ A.	Houlder Bros. ...	„ 5.4.31 to 5.7.31 ...	30.7.31
	Ross, S.T.	Johnson, H.	... ...	,, A.	W. Grant & Sons ...	... ...	...
	Rother	Woodhead, T. H. ...	T. V. Robinson	„ A.	Goole Steam Shipping	Form 911 5.9.31 to 26.9.31 ...	30.9.31
241 *†	*Rotorua*	Lamb, C. B.	L. W. Fulcher, K. L. Jones, J. G. Gould.	M.L.	New Zealand S.S. Co.	Form 915 3.4.31 to 22.7.31 ...	29.7.31
062 *†	*Royal Star*... ...	Walsh, W.	A. F. Day, J. Hoggin ...	„	Blue Star	Forms 911 & 138 16.12.30 to 10.3.31	18.3.31
246 *†	*Ruahine*	Maltby, T. L.	A. Hocken, R. Warren, L. Mercer.	W.T.	New Zealand S.S. Co.	„ „ 7.5.31 to 22.8.31	29.8.31
	St. Helier	Pitman, R.	A. C. Ricketts	C.C.	G.W. Railway ...	Telegraphic Report 13.10.31 ...	13.10.31
	St. Julien	Richardson, L. ...	A. E. Ricketts, H. D. Freeman.	„	„ „ ...	„ „ 3.10.31 ...	3.10.31
	St. Minver, S.T. ...	Hatton, A.	... .	No. A.	Crampian Steam Fishing Co.	Form 911 28.8.31 to 21.9.31 ...	25 9.31
	St. Patrick	... ...	F. E. Martin	C.C.	G. W. Railway ...	Telegraphic Report 15.9.31 ...	15.9.31
038 ††	*Samaria*	Malin, R. G., Lt.-Commr., R.N.R.	A. MacKellar, F. G. Watts, J. A. Myles.	W.T.	Cunard	Forms 911 & 138 1.8.31 to 22.8.31...	26.8.31
291 *†	*Scholar*	Peterkin, A. G. ...	A. Robertson	No. M.	Harrison	„ „ 20.7.31 to 25.9.31	2.10.31
	Scotia	O'Neill, J.	W. H. Hughes	C.C.	L.M. & S. Railway ...	Telegraphic Report 3.10.31 ...	3.10.31
033 ††	*Scythia*	Oram. B. B., R.D., Commr., R.N.R.	F. P. Collins, A. Bridgewater, H. L. Pryse.	W.T.	Cunard	Forms 911 & 138 27.7.31 to 13.9.31	16.9.31
211 *†	*Shropshire*, M.V. ...	English, G. L. ...	A. D. Quayle, R. Cumming. D. Hetherington	„	Bibby	Form 915 24.7.31 to 3.10.31 ...	6.10.31
	Silksworth ...	Blacklock, G.... ...	F. J. Mullett	No. A.	R. S. Dalgleish ...	Form 911 1.8.31 to 15.8.31 ...	24.8.31
	Somerset	... ...	C. Edgecombe	„ A.	Federal	... ...	...
277 *†	*Spero*	Montgomery, H. ...	H. W. Vickers, A. Kirk ...	M.L.	Ellerman Wilson ...	Form 915 28.3.31 to 3.10.31 ...	7.10.31
	Stephen	Jones, W. C. H., R.D., Commr., R.N.R.	J. Whayman, G. H. Daniels	„	Booth	„ 25.1.31 to 3.6.31 ...	17.6.31
259 *†	*Surrey*	Lettington, A. E. ...	R. Rees, D. J. Murray, H. H. Mackillican.	„	Federal...	„ 17.5.31 to 16.9.31 ...	26.9.31
	Sylvafield, M.V.	MacDonald, W. ...	J. Johnson	No. A.	Hunting & Son ...	Form 911 23.8.31 to 26.9.31 ...	29.9.31
	Tacoma City ...	Paul, H.	H. Small	„ A.	Reardon Smith ...	... ...	...
229 *†	*Tactician*	Trinick, F., O.B.E. ...	E. P. Simmons	„ M.	Harrison	Form 911 19.7.31 to 7.10.31 ...	10.10.31
045 ††	*Tainui*	McIntosh, A. ...	G. A. Harvey, E. Baker. A. G. Collins.	M.L.	Shaw, Savill & Albion	Form 915 30.1.31 to 15.5.31 ...	23.5.31
081 *†	*Tairoa*	Christie, D.	G. L. Almond, C. A. Meyer, L. B. Miller.	„	„ „ „ „	„ 27.5.31 to 1.10.31 ...	5.10.31
234 *†	*Talma*	Harley, G. J.	M. H. Vincent, R. Potter, R. H. Weatherseed.	W.T.-M.	British India	Forms 911 & 138 17.5.31 to 21.9.31	12 10.31
046 ††	*Tamaroa*	Hartman, W. H. ...	L. R. Bull, R. R. Roseman, F. Lutyen,		Shaw, Savill & Albion	„ „ 18.5.31 to 7.6.31	13.6.31
264 **	*Tanda*	Pilcher, E. T., Lt.-Commr., R.N.R	R. Lloyd-Harry, G. C. Smith, B. M. Dun.	M.L.	E. & A. S.S. Co. ...	Form 915 28.2.31 to 23.5.31 ...	23.7.31
165 *†	*Tantalus*, M.V. ...	Melling, C. F.... ...	A. C. H. Jones, J. J. Daniell, W. C. Angus.	„	A. Holt	„ 2.2.31 to 4.6.31	25.6.31
047 *†	*Taranaki*, M.V ...	Wood, C., D.S.C. ...	R. K. Bolton, R. Bitmead, S. P. Wallis.	M.L.	Shaw, Savill & Albion	Form 915 11.4.31 to 7.7.31 ...	14.7.31
	Tarantia	Caithness, J. B. ...	J. M. Cherry	No. A.	Anchor	Form 911 23.8.31 to 15.9.31 ...	12.10.31
	Tasmania	Williams, J. V. ...	R. J. Coffey	„ A.	New Zealand S.S. Co.	„ 2.12.30 to 2.5.31 ...	8.5.31
	Tetrastas	Wilkinson, W. H. ...	F. Stott	„ A.	A. Holt & Co.	„ 18.3.31 to 6.6.31 ...	10.6.31
	Tetela	Brice, E. H.	J. D. Paterson	„ A.	Elders & Fyffes ...	„ 7.9.31 to 9.10.31 ...	15.10.31
	Teucer	Davies, J.	C. C. L'Estrange	„ A.	A. Holt	„ 26.4.31 to 15.8.31 ...	24.8.31
048 ††	*Themistocles* ...	Young, A. D.	... ...	W.T. M.	Aberdeen Commonwealth.	... ...	...
007 *†	*Thistleglen*	Whitfield, G.A., O.B.E.	S. B. Davis, H. B. Meek, G. L. Hetherington.	M.L.	Allan Black & Co. ...	Form 915 12.2.31 to 14.5.31 ...	18.5.31
235 *†	*Tilawa*	Coleborn, E.	E. Cullerne, F. Haigh, J. W. Walker.	No. M.	British India... ...	Form 911 28.6.31 to 22.8.31 ...	14.9.31
168 *†	*Tinhow*	Scobie, A.	G. W. Seth, P. Aydon, C. H. Smith.	„	A. Weir & Co. ...	Forms 911 & 138 12.4.30 to 5.7.31	17.8.31
161 *†	*Titan*	Elford, W. J.	F. B. Smith, A. K. Sanderson, W. H. Deans.	W.T.	A. Holt	Form 915 23.5.31 to 29.9.31 ...	7.10.31
244 *†	*Tongariro*	Hamilton, F. S. ...	G. Dibley, D. Baldwin, W. M. Glover.	M.L.	New Zealand S.S. Co.	„ 22.2.31 to 17.6.31	24.6.31

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.10.31.	Date Received
025 †† *Transylvania* ...	Gemmell, W.... ...	A. Middleton, J. A. Lefevre, T. Greene.	W.T.	Anchor	Forms 911 & 138 26.6.31 to 10.7.31	13.7.31
288 *† *Traveller*	Barrow, W. T. C. ...	R. Ledger	No. M.	Harrison	„ „ 4.6.30 to 14.8.31	24.8.31
Trecarrell	Old, E. G.	W. E. McEwan, G. A. Solly	„ A.	Hain S.S. Co.	Form 911 26.3.31 to 29.4.31 ...	19.5.31
242 *† *Trematon*	Cundy, F.	J. Jenkyn, C. M. Quick, T. M. Meakin.	M.L.	„ „	... ...	...
119 *† *Trojan Star* ...	Griffin, G. A.	A. Emerson, L. S. Hassell ...	No. M.	Blue Star	Forms 911 & 138 14.6.31 to 30.8.31	4.9.31
245 *† *Turakina*	Laird J.	A. Weatherall, E. G. Williams. J. Reeve.	„ M.	New Zealand S.S. Co.	„ „ 4.3.31 to 12.6.31	17.6.31
276 †† *Tuscania*	Rome, W. B.	D. Blair, G. Noble, J. Walmsley.	W.T.	Anchor...	„ „ 13.9.31 to 4.9.31	6.10.31
167 *† *Tyndareus*... ...	McClure, W.	J. R. C. Evans. W. F. Lochead, E. B. Sandon.	M.L.	A. Holt	Form 915 23.12.30 to 25.5.31 ...	4.7.31
Uffington Court ...	Clarke, E. J	T. Glover	No. A.	Haldin & Co.... ...	Form 911 25.3.31 to 8.6.31 ...	23.6.31
113 *† *Upwey Grange*, M.V.	Goodrick, H. P. ...	A. Bradbury, G. T. Hurst, P. J. Walker.	„ M.	Houlder	Forms 911 & 138 8.6.31 to 12.8.31	18.8.31
292 †† *Viceroy of India* ...	Thornton, E. J., R.D., Capt., R.N.R.	W. R. B. Noall, F. Shute ...	„ M.	P. & O.	„ „ 25.8.31 to 15.9.31...	21.9.31
Vigilant	Simpson, E. S. S. ...	J. Wilson	„ A.	Scottish Fishery Brd.	Form 911 2 9.31 to 30.9.31 ...	5.10.31
206 ** *Waiotapu*	Hender, W. H. ...	... ...	„ M	Union S.S. Co. of N.Z.	„ 16.11.30 to 10.12.30 ...	28.1.31
263 ** *Wairuna*	Stewart. A. R. ...	J. E. Warwick, G. M. Coote, C. T. Robb,	M.L.	„ „	Form 915 14.10.31 to 23.6.31 ...	23.9.31
Warfield	Steele, R.	J. Gunning	No. A.	„ „	Form 911 7.6.31 to 17.6.31 ...	20.7.31
005 †† *Warwick Castle* ...	Owens, G.	P. Clissold, W. Mackenzie ...	W.T.	Union Castle ...	Forms 911 & 138 8 8.31 to 23.8.31	29 9.31
060 †† *Westernland* ...	Doughty, J. H. ...	J. L. McLaren, G. P. Boyle, W. L. Wood.	„	Red Star	„ „ 13.9.31 to 3.10.31	5.10.31
William Scoresby, R.R.S.	Joliffe, T. A., Commr., R.N.	W. A. Ellison, F. E. C. Davies	M.L.	Falkland Islands Government.	Form 915 1.4.31 to 30.7.31... ...	5.10.31
208 †† *Winchester Castle* M.V.	Gardner, G. F., O.B.E. Lt.-Commr. R.N.R.	G. F. Moon, A. G. Parey ...	W.T.	Union Castle	Forms 911 & 138 4.7.31 to 22.8.31	25.8.31
096 †† *Windsor Castle* ...	Herbey, J. H.... ...	F. Hunter, E. H. Dixey, J. Trayner	M.L.	„ „	Form 915 28.3.31 to 20.9.31 ...	23.9.31
Worthing	Marmery, S.	C. Munton, E. Balcombe ...	C.C.	Southern Railway ...	Telegraphic Report 15.10.31 ...	15.10.31
043 ** *Zealandic*, M.V.	Elford, H. C.	P. Horwood, J. Thompson, B. Morris.	W.T.	Shaw, Savill & Albion	Forms 911 & 138 16.4.31 to 9.7.31	13.7.31
Zent	Moore, J. A.	W. Pearce	No. A.	Elders & Fyffes ...	Form 911 17.7.31 to 18.9.31 ...	23.9.31
Conway, H.M.S. ...	Richardson, F. A., D.S.C., Commr., R.N.	The Senior Cadets	Cadets' M.L.	... ...	Cadets' Met. Log. 3.5.31 to 24.7.31	1.8.31
Pangbourne Nautical College	Tracy, A. F. G., Commr., R.N.	„ „	„	... ...	Cadets' Met. Log. 26.4.31 to 23.7.31	28.7.31
Worcester, H.M.S.	Steele, G. C., V.C., Lieut.-Commr., R.N.	„ „	„	... ...	Cadets' Met. Log. 8.5.31 to 29.7.31	4.8.31
Abaco	... ...	The Keepers	Lighthouse Register.	... ...	Lighthouse Register 1.7.30 to 31.12.30	22.5.31
Cay Lobos	... ...	„	„	... ...	Lighthouse Register 1.1.31 to 30.6.31	10.8.31
Double Headed Shot	... ...	„	„	... ...	Lighthouse Register 1.1.31 to 30.6.31	10.8.31
Inagua	... ...	„	„	... ...	Lighthouse Register 26.2.31 to 5.9.31	5.10.31
Sombrero	... ...	„	„	... ...	Lighthouse Register 1.1.31 to 30.6.31	4.8.31
Watling Island ...	... ...	„	„	... ...	Lighthouse Register 1.1.31 to 30.6.31	10.8.31
Cape Pembroke ... (Falkland Is.)	... ...	„	„	... ...	Lighthouse Register 1.1.31 to 30.6.31	13.8.31

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Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., received up to 30.9.31.	Date Received.
Dakarian	Brown, W.	A. A. Johnson	Leyland	Water Samples	...
Darian	Hannaford, W.	W. R. Vaughan	„	„ „	18 9 31
Darro	Green, J.	A. J. G. Barff	R.M.S.P. Co.	„ „	18 9 31
Davisian	Thomas, R.	F. Steventon	Leyland	„ „	7.8.31
Dorelian	Hughan, C.	F. R. Hatton	„	„ „	8.6.31
Hildebrand...	Buck, R. H., R.D., Capt. R.N.R.	F. H. Good	Booth	„ „	3.9.31
Mercian	Hughan, C.	W. Parry	Leyland	„ „	7.10.30

December, M.O., 1931.

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MARINE METEOROLOGY, ATLASES, BOOKS AND MEMOIRS.

CHARTS:—

ATLANTIC (NORTH AND SOUTH):—

Monthly Current Charts for the Atlantic Ocean, from information collated and prepared in the Meteorological Office. (No. 132, 1897) (22½ × 18 in.) (Published by the Admiralty.)

Charts of Meteorological Data for the Nine 10° Squares of the Atlantic which lie between 20° N. and 10° S., and extend from 10° to 40° W., with accompanying Remarks, ending with the Best Routes across the Equator. (No. 27, 1876) 24*s.* (17 × 20 in.)

ATLANTIC (NORTH):—

Atlas of Currents on the Main Trade Routes of the North Atlantic. (No. 323, 1930. 6*s.* 6*d.*) (29¼ × 19½ in.)

Meteorological Charts of the North Atlantic for each month of the year, giving normals of Pressure, Air and Sea Surface Temperature and Ocean Currents, with Frequencies of Winds, also Ice Limits. (No. 149A, 1923.) 1*s.* each (35 × 22½ in.). Sold by J. D. Potter, 145, Minories, E.1.

Synchronous Weather Charts of the North Atlantic and the adjacent Continents, 1st August, 1882, to 3rd September, 1883. Parts I to IV (33 sheets each). (No. 71, 1886) 17*s.* each Part. (26 × 22 in.)

Charts of Meteorological Data for Square 3, Lat. 0°-10° N., Long. 20°-30° W. (20 × 13½ in.) and Remarks to accompany the Monthly Charts, which show the Best Routes across the Equator for each Month, &c. (17 × 16½ in.) (No. 20, 1874). 20*s.*

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Wind Charts for the Coastal Regions of South America, from information collated and prepared in the Meteorological Office. (No. 159, 1902.) (27 × 20½ in.) (Published by the Admiralty.)

The relation between Pressure, Temperature, and Air Circulation over the South Atlantic Ocean. By M. W. Campbell Hepworth, C.B., R.D., Captain R.N.R., Marine Superintendent. (No. 177, Second Edition, 1917.) 1*s.* (8vo.)

BAFFIN BAY AND DAVIS STRAIT:—

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

CHARTS:—*continued.*

INDIAN OCEAN:—

Meteorological Charts of the East Indian Seas for each month of the year, giving Normals of Pressure, Air and Sea Temperatures and Ocean Currents, with Frequencies of Winds. (No. 181A, 1923.) 1*s.* each. (35 × 22½ in.) Sold by J. D. Potter, 145, Minories, E.1.

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