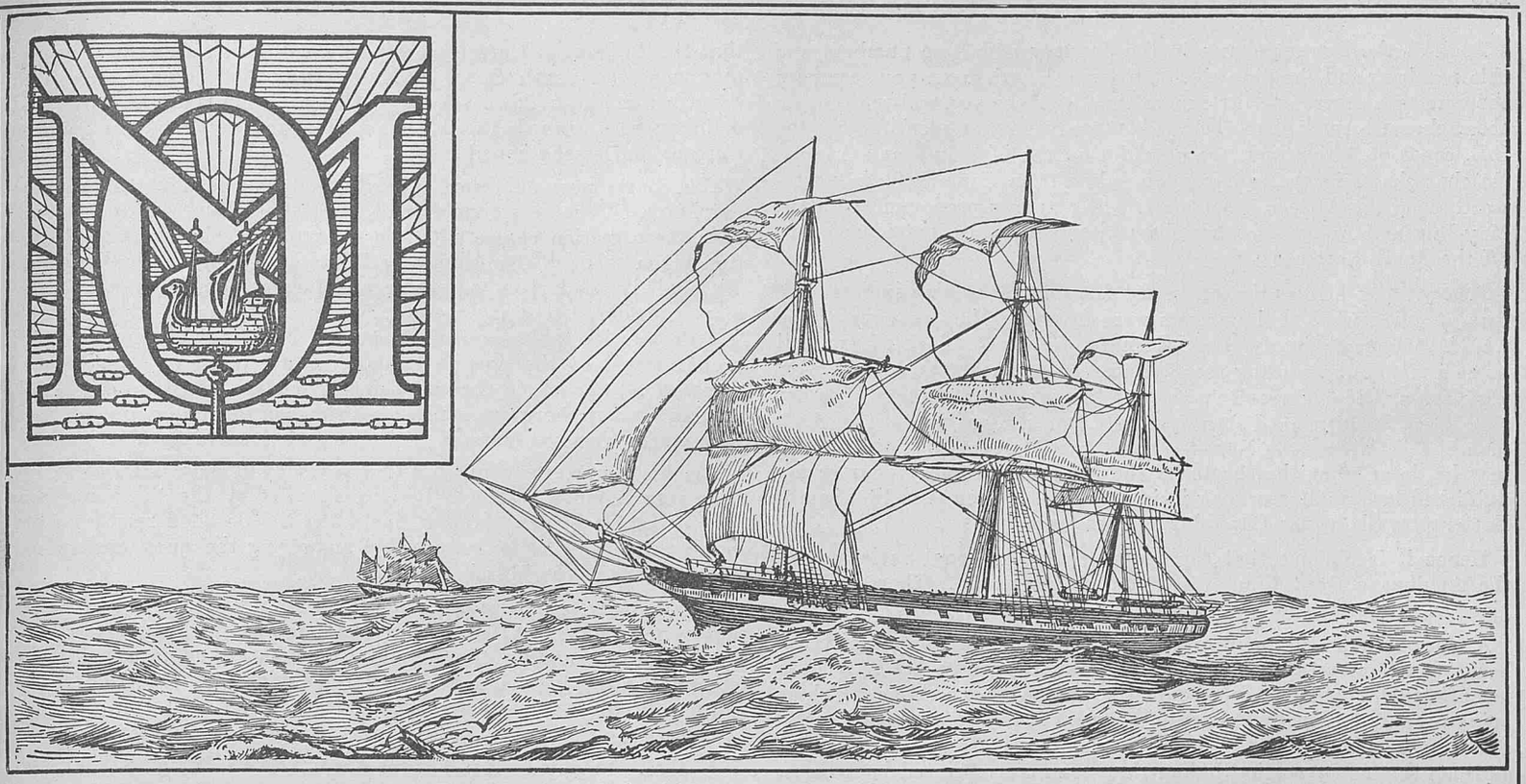
M.O. 262.



VOL. VIII. No. 93. THE MARINE OBSERVER. SEPTEMBER, 1931.

TABLE OF PRINCIPAL CONTENTS.

THE PRESENT POSITION OF OUR INVESTIGATION OF OCEAN CURRENTS IN THE INDIAN OCEAN.

IN the March number we referred to questions which should if possible be answered about the currents off the South and East Coasts of Africa in the interests of navigation as a result of the investigation now in progress. We considered these so important that we headed our notes "A Matter of Great Interest to the Merchant Navy," hoping to thus secure the attention of those best placed to assist in answering these difficult questions.

In the June number we published a general description of the currents in these regions as they were known according to published information *before* the present investigation.

In this number we publish a general description of the currents as they are indicated by the charts published in this and the June number for the period when the S.W. monsoon prevails North of the Equator, that is during the northern summer and the southern winter. In this number we also publish in the Marine Observer's Log the most useful reply to our questions received up to date; Notes on Current off the East Coast of Africa, Cape Guardafui to Cape Delgado, by Captain R. G. SARGEANT, Port Captain of Mombasa.

Those navigating East African Waters northward from Cape Delgado will do well to give consideration at once to the recommendations and hints now put forward by Captain SARGEANT. Later, if the observations are sufficiently distributed and we have been able to work out in greater detail than at present the varying velocities of the current with distance from the coast it will be interesting to compare the results with Captain SERGEANT'S "expectations of the average strength of the current."

His general conclusions appear to tally very closely with our own.

Already this investigation is revealing matters which should be of great interest to all who navigate these waters, and as the same laws of nature must apply to ocean currents on all coasts and in all oceans and the currents of these waters appear—according to our present information—to be the strongest in the world, they should interest navigators the world over.

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Look at the current charts in the January and June numbers and this number, and, holding them at arm's length from you, compare the current arrows. At little more than a glance you will see that on the February-April chart heavy black arrows are plentiful off the S.E. coast of Africa and less plentiful on the May-July and August-October charts in the same region, while from Cape Delgado northward along the African coast heavy black arrows predominate on the May-July and August-October charts when they are less conspicuous off the South-East coasts.

Heavy black arrows broken in the middle are used to indicate the mean current when if the arrows were drawn to the usual scale they would be inconveniently long. Hence these heavy black arrows tell us at a glance that during the S.W. monsoon season the current runs very strong from Cape Delgado northwards. The Agulhas current runs stronger during February-April than it does when the S.W. monsoon is driving the East African Coast Current northward, and, may be, later when the charts for the November-January quarter are published, we shall see that it is also strong then, for the South-Easter prevails at the Cape during these months.

Hence it is obvious that there are greater seasonal variations in the Agulhas current than was formerly recognised. These will be given in detail in a later number.

A close examination may reveal inconsistencies in the use of these heavy black arrows or the lighter arrows drawn to scale. These inconsistencies will be adjusted in the Indian Ocean Atlas which is being prepared from these section charts. This is only one of many advantages gained in our method of investigating and charting currents section by section before they are finally printed in Atlases. We are continually learning and it is well that the Corps of Voluntary Marine Observers should have every opportunity of comparing our computations with their experiences, during the process of the investigation.

As Mr. Barlow tells us in his Articles, " Currents in the Western Portion of the Indian Ocean," I and II, it was formerly supposed that the Equatorial Current divided near Mauritius, one branch running past the South Coast of Madagascar and, joined by a third branch which ran down the East Coast of Madagascar, continued mainly across towards the African Coast, and so joined the Agulhas Current and strengthened it.

The charts now published indicate that this is not generally so; but Marine Observers should read the articles referred to and compare these section charts with the old currents charts, the information given them in the Admiralty Pilots and their own experiences. We shall be glad then to receive any further comments which they may consider necessary before finally reproducing these charts in Atlases with tables and diagrams which are now in the course of preparation. By the time this number is published we hope to have received all replies to the questions which we asked in the March number, but if there are still those who can usefully reply to them we request them to forward their remarks immediately.

The last quarterly chart for this region will be published in the December number, and will be accompanied by the third and concluding article by Mr. Barlow, including the detailed results of our investigation and as far as possible answering the questions set out in our notes in the March number.

Next year we intend to chart the currents observed along the trade routes in the Persian Gulf, Northern portion of the Arabian Sea, Bay of Bengal and in the region of Sumatra, and if possible the following is the programme for the remainder of the section charts which will go to make up an Indian Ocean Atlas of currents:—

1933.—Southern Indian Ocean, Latitude 30° S. to 50° S.

1934.—Region to the N.E. of Fremantle to Colombo track and the Red Sea.

1935.—China Seas; and central portion of Indian Ocean not dealt with in previous years.

Marine Superintendent.

London,

20th June, 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 Records of regular Marine Observers. Responsibility for statements rests with the Contributor.

OCEAN CURRENTS AND NAVIGATION OFF THE S. AND E. COASTS OF AFRICA.

In response to our appeal which was made under the above heading in the March number, Captain R. G. Sargeant, Port Captain of Mombasa, contributes the following notes, based on his own experience in navigating these waters, and first hand information received by him in his capacity in the port department in the Kenya and Uganda Colonial Service.

Notes on Current off the East Coast of Africa. Cape Guardafui to Cape Delgado.

The Ocean currents off the East Coast of Africa, between Cape Guardafui and Cape Delgado, are generally speaking strong. They are, however, subject to a good deal of variation according to the time of year.

Every seaman knows that, to lay down any definite rule concerning the variation in strength and direction of currents is an impossibility. Local knowledge, however, is of great assistance in estimating currents, and it is in the light of such knowledge that I make the following notes.

Currents are influenced by wind. On the East Coast of Africa winds are periodic. The periods of the Monsoons are well known; North East Monsoon from December to March, and South West Monsoon from May to September. During the intervening periods, the wind becomes light, and veers round through East.

The prevailing current between Cape Guardafui and Mombasa, the first port of call for the majority of ships proceeding South (Italian ships call at their own Colonial Ports in Somaliland), is Northerly. It varies in strength from 1 to 5 knots.

The worst conditions generally are therefore encountered on this Coast by ships proceeding South during the South West Monsoon, against strong head wind and high sea, and when the current attains a speed of 3 to 4 knots, sometimes even more. The maximum on record is, I believe, 5½ knots.

Between Cape Guardafui and Ras Hafun, considerably less current is experienced close inshore. It is best therefore to hug the land between these two Capes.

Having passed Ras Hafun, all except high powered steamers will find it an advantage to stand out, even though, by doing so, they may increase their distance by 100 miles or more.

Formerly, low powered steamers used to stand out to as far as Longitude 53° East, in 5° or 6° North Latitude. The present day modern steamer is, however, provided with better speed, so that this is now hardly necessary, but nevertheless, it often pays to steer to Longitude 52° East, in Latitude 4° North, which will bring the ship 200 miles off the land. From this position, steer parallel with the land, and cross the Equator in Longitude 48° East.

Having thus avoided the strongest part of the East Coast current, a ship bound for Mombasa should now steer for the North end of Pemba Island, in order to counteract the set along the Coast, which nevertheless will still be considerable to the Southward of Latitude 2° South, and which will set the ship towards her port of destination.

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 150 miles off the land, and 2 to 4 miles per hour from close inshore to 50 miles off the land.

Hence the above track being recommended during the South West Monsoon.

During the North East Monsoon, the current is considerably less in strength, and at times, between the parallels 6° North and 2° South, a South Westerly set is experienced at a distance of 250 miles from the land.

A very good illustration of the Northerly set experienced between latitudes 2° and 5° North, which is partly avoided by standing out when proceeding South was obtained at the end of April and beginning of May, last year, when the S.S. *City of Durban* was disabled through having lost her propeller between Cape Guardafui and Mombasa. Another ship of the same Company was diverted to take the S.S. *City of Durban* in tow, whilst one of the Mombasa Port service Tugs was also sent to her assistance. During the time that these vessels were proceeding to the S.S. *City of Durban*, I was kept informed by Wireless of the latter's position. Between the 28th April and the 2nd of May, approximately three and a half days, she drifted, as ascertained from the positions received, N39° E 210 miles, or absolutely parallel with the land, and 50 miles distant from it, at the rate of 2.5 miles per hour. The South West Monsoon had not yet fully set in, and the wind was moderate to fresh and Southerly. The current had not, therefore, by any means reached its maximum strength.

The S.S. *City of Durban* was subsequently towed to Mombasa.

South of Mombasa, the current still sets to the Northward. Between Mombasa and the North end of Pemba Island, it sets slightly off the mainland, at the rate of 2 to 3½ knots during the South West Monsoon, and under 1½ knots during the North East Monsoon.

In the Pemba Channel, and between Zanzibar and Pemba Island, a stronger current, attaining 4 knots in the South West Monsoon, will be encountered and will continue to be felt until the North end of Zanzibar Island has been passed, when it will cease to almost nothing in the sheltered waters of the Zanzibar Channel. To the Eastward of Zanzibar Island, however, it is just as strong as in the Pemba Channel.

During the North East Monsoon, this current will lose its strength considerably, and it may be found at times that less than half a knot is experienced, but never will it be found to run South. It always runs North.

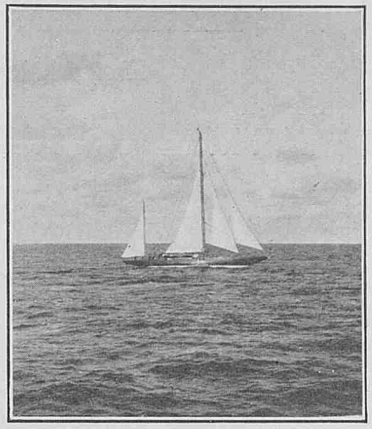
Similar conditions still prevail after having left Zanzibar bound for Mozambique or the Ports South of this.

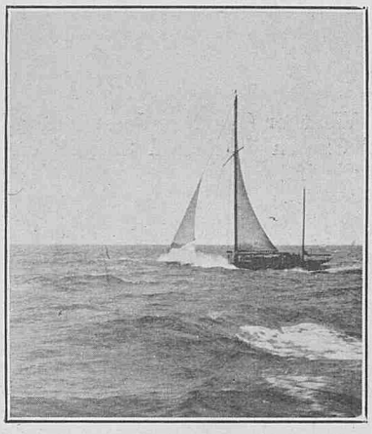
As far South as Cape Delgado, the Northerly set will continue to be experienced, as it is immediately South of Cape Delgado that the Equatorial current, which sets strongly towards the land divides, and sweeps along the Coast North of Delgado, setting off the land in a Northerly direction past Mafia Island.

It necessarily follows that, as such adverse currents are experienced by ships proceeding South along the East African Coast, ships proceeding North will find that a very favourable current will be felt at about 30 miles from the land, but the tendency to being set inshore should be given constant thought.

THE BRITISH CHALLENGER FOR THE AMERICA CUP, 1930.

THE photographs of Sir THOMAS LIPTON'S yacht *Shamrock V*, Captain HEARD, when on passage crossing the North Atlantic, were taken from the escorting steam yacht *Erin*, Captain THOMAS, by WILLIAM CANNON, bosun's mate, having been forwarded by Mr. E. PENGELLY, 4th officer, S.S. *Minnewaska*.





CHANGE OF SEA AND SWELL.

South Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Bampton Castle*, Captain J. S. JAMES, D.S.C., London to Cape Town. Observer, Mr. H. GRAHAM, 3rd officer.

Sunday, September 7th, 1930, at 1500 G.M.T. in Latitude 20° 45′ S., Longitude 17° 43′ W., it was observed that the rough following sea and moderate swell coming from the Nor'ard suddenly modified to a slight sea and swell with a plainly visible line of demarcation. At the same instant the wind which was of a N.E'ly direction also decreased from force 5 to 3, and the temperature of the sea water rose from 70° to 74° F. At 2000 G.M.T. the temperature of the sea was observed to have risen to 84° F. and at this time our position by D.R. was Latitude 19° 45′ N., Longitude 17° 40′ W. There was no apparent reason for the phenomenon.

DISCOLOURED WATER.

South Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *Clan Macfarlane*, Captain L. E. REDFORD, Durban to Saldanha Bay. Observer, Mr. W. H. SIMPSON, 2nd officer.

On September 16th, 1930, at 3 p.m. (standard time) in the vicinity of Cape Infanta, observed scattered patches of brownish water, at first the patches were small and widely separated, but later becoming larger until the sea for many square miles presented quite a marked red colour, resembling flood water from a clayey river, yet bow wave remained white. Drawing a bucket of surface water, temperature was found to be 60°, air 62°, and when poured into a tumbler no discolouration was seen, the only animal life present being one small jelly-fish.

After retaining the water for three hours, for the purpose of examining same with a magnifying glass, I found the sides of tumbler coated with a tiny growth of seaweed (of the bright green gelatinous kind) which adhered thereto after the water was emptied out.

The main patch was about four miles long east and west, and afterwards the patchy appearance was resumed for a further six miles, and at 4 p.m. the sea resumed its normal colour.

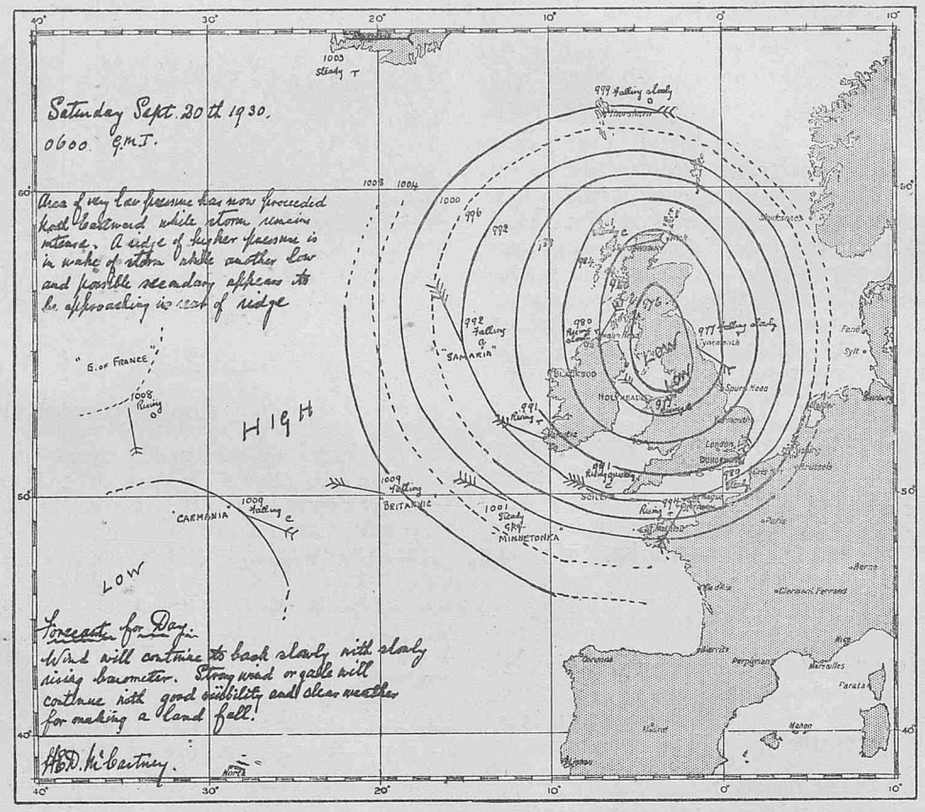
Ship's position, Latitude 34° 50′ S., Longitude 20° 55′ E.

Weather:—Calm, Cloudless sky, Barometer 30.21 in., Air 62°.

WEATHER CHART MADE AT SEA.

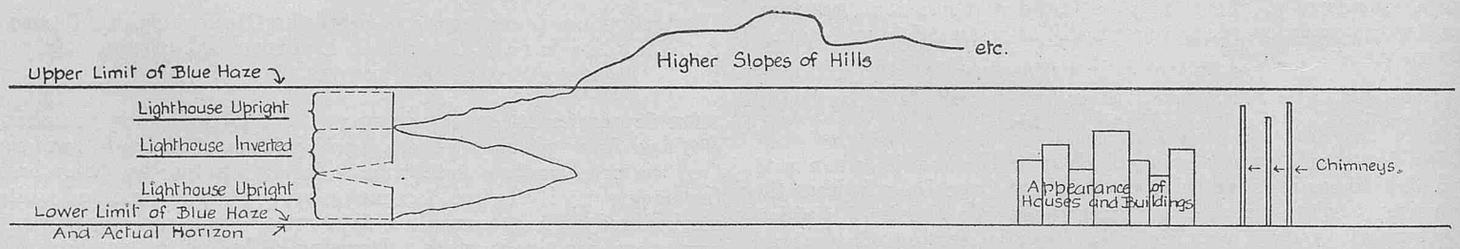
Eastern North Atlantic.

Weather Chart made at sea on board S.S. *Minnetonka*, Captain T. F. GATES, C.B.E., by Mr. H. E. D. MCCARTNEY, from the observations of Chosen "Selected Ships" on the Roll-call for the day, intercepted directly by S.S. *Minnetonka*, and the British Weather Shipping Bulletin.



MIRAGE.

Mediterranean Sea.



THE following is an extract from the Meteorological Record of S.S. *Aeneas*, Captain W. K. WALLACE, Marseilles to London. Observer, Mr. A. Mc. L. PILCHER, 3rd officer.

September 8th, 1930, between 4 p.m. and 5 p.m. (A.T.S.) Calaburras Lighthouse and adjacent land was observed to appear as in the accompanying sketch. A belt of seemingly transparent blue haze lay right around the horizon, from north through west and south to east. The houses of Malaga and surrounding low-lying villages appeared as "Super Skyscrapers." Objects appeared to become normal after 5 p.m. A.T.S. Later (after sunset) Europa Point light was picked up seven miles outside its range and until the light was well above the horizon appeared as two separate vertical columns of light in the first instance. Later these merged into one vertical column.

Position of Ship, Latitude 36° 36′ N., Longitude 4° 10′ W. Temperature of Air 78° F. Sea 76° F.

SETTING OF THE PLANET VENUS.

South Pacific Ocean.

THE following is an extract from the Meteorological Log of S.S. *Wairuna*, Captain A. R. STEWART, Los Angeles to Auckland, N.Z. Observer, Mr. G. M. COOTE, 3rd Officer.

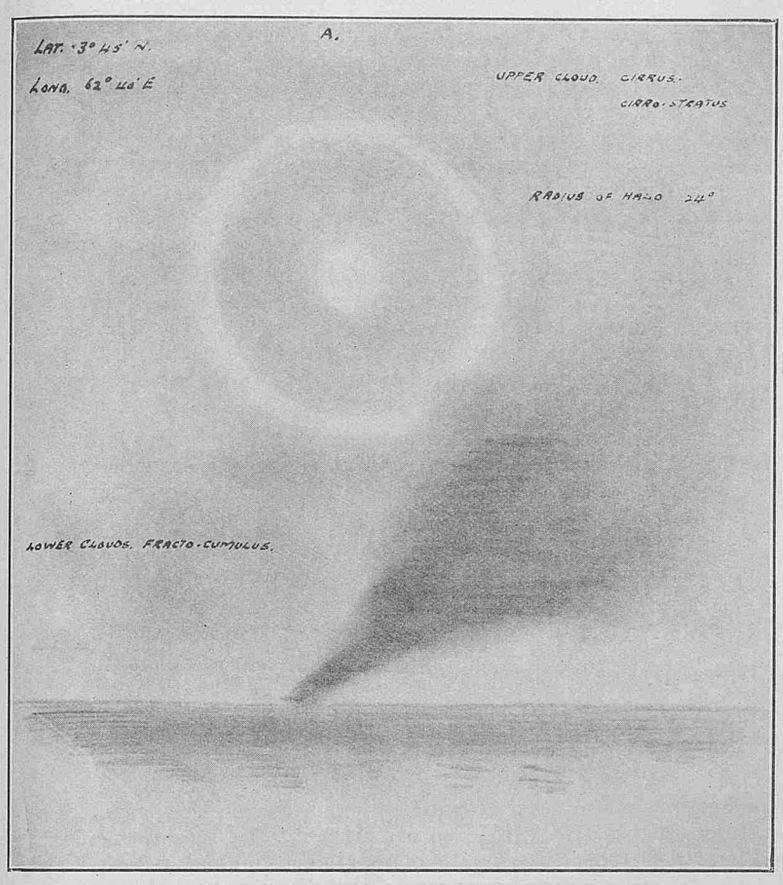
3rd September, 1930, 9.10 p.m. A.T.S. during the first watch observed planet Venus setting with unusual colour effects. At an altitude of 0° 45′. Venus, instead of showing bright white, alternated white and red, and when viewed through binoculars, it was seen that only the lower half of the planet was affected. As the altitude decreased, the frequency of the alterations increased, and for a few seconds before it disappeared it split into two bodies, the upper of which was white and the lower red. Then both merged into one and showed green for an instant before dipping below the horizon. The wind at the time of observation was squally W.S.W., force 2—4. Temperatures 70° Dry, 65° Wet.

Position of Ship: Latitude 21° 30′ S., Longitude 169° 53′ W.

LUNAR HALO—CORONA AND WATERSPOUT.

Indian Ocean.

THE following is an extract from Meteorological Record of S.S. *Karapara*, Captain A. MACLEAN, Seychelles to Murmugao. Observer, Mr. W. C. REID, 3rd Officer.



8th September, 1930, at 9.15 p.m. observed Lunar Halo. The halo consisted of a plain white ring having a radius of 24°, the inner edge of which was a light reddish-brown. At 10.00 p.m. a small bright emerald corona was visible with a radius of approximately 4°. At the same time almost directly under the moon a large water-spout was observed as the sketch shows. At 10.05 p.m., the phenomena had disappeared.

Position of ship, Latitude 3° 45′ N., Longitude 62° 40′ E. The weather at the time of observation was very cloudy. Upper type—Cirrus and Cirro-Stratus and lower type Cumulus and Fracto-Cumulus. Temperature: Air 84°. Sea 84°.

WATERSPOUT.

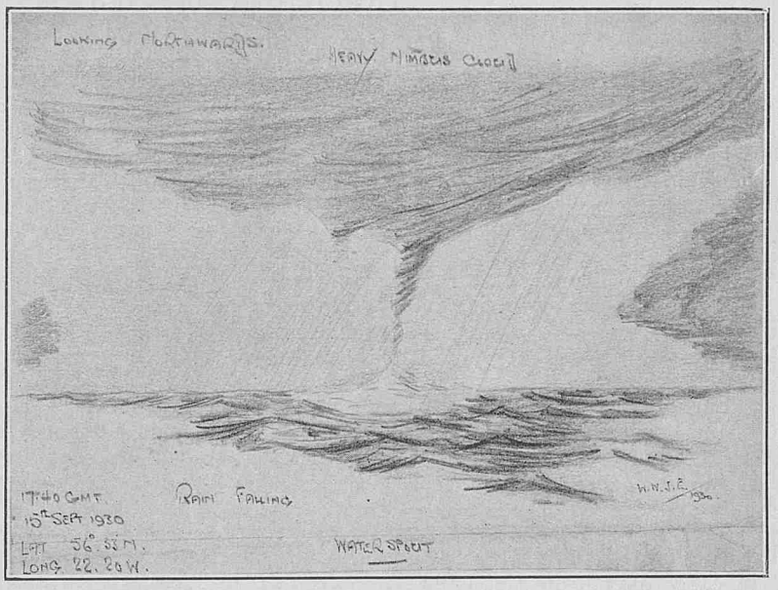
North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Duchess of Atholl*, Captain D. S. MCQUEEN, Liverpool to Montreal. Observer, Mr. W. OWENS, 5th officer

On 15th September, 1930, at 1740 G.M.T. observed fairly large waterspout, crossing ship's track distant 1 mile, travelling N'wards at about 20 knots. Unfortunately the origin of this waterspout was not observed; but I watched its progress until out of sight on northern horizon (about 25 minutes). It took what I take to be the usual course of spouts, having previously observed but three small spouts, at night, in the North Sea.

The pyramid of spray on the sea surface covered quite a large area and revolved rapidly in a clockwise direction and fluctuated in height.

The inverted cone, reaching downwards from the particularly dark nimbus cloud, while revolving rapidly clockwise, seemed undecided whether it should or should not connect with spray-pyramid on the



sea-surface. This it eventually did only to break adrift again a number of times before the whole passed beyond sight. While spout was close at hand, heavy rain was falling from the same nimbus cloud, and, after passing of spout, a heavy shower passed over ship.

Ship's position: Latitude 56° 33′ N., Longitude 22° 20′ W. Course 270°. Speed 16.5 knots. Wind S'ly, force 5. Barometer 29.47 in. falling steadily. Temperature: Air 55°, sea surface 56°. Visibility 12 miles. Cloudy and squally.

METEOR IN DAYLIGHT.

South Pacific Ocean.

THE following is an extract from the Meteorological Log of S.S. *Niagara*, Captain T. V. HILL, Auckland to Suva. Observer, Mr. S. P. BOURKE, 3rd Officer.

25th September, 1930, at 11.30 a.m. A.T.S. (2254 G.M.T.), whilst looking for Venus at an altitude of 39½° bearing 114° a bright whitish body came into view. The body was egg-shaped outer form with a bright spot at the lower end—about the size of Venus. At first it was thought to be Venus, in a distorted form, but it commenced to fall rapidly in a S.E. direction at a speed which made it difficult to keep it in view with the tangent screw. At about 30° altitude the velocity increased greatly and the body was seen to disappear into a bank of cloud at approximately 23° bearing 160°. Ship's position Latitude 26° 55′ S., Longitude 176° 37′ E. Wind S.E., force 1. Sky was half clouded Ci/Ci-st with Cu and Cu-Nb predominating. Distant showers to eastward.

METEOR.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Pacific Exporter*, Commander C. E. HOLLAND, R.D., R.N.R., Colon to London. Observer, Mr. A. L. KNAPP, 2nd officer.

September 29th, 1930, at 00.30 a.m. A.T.S., observed a small meteor, first appearing to the N.E. of the star Bellatrix in about R.A. 5^h. Dec: 10° N.; Mag: +2. The path of flight was about S.S.E., towards γ Eridani where the meteor disappeared in about R.A. $4^h.\ 30^m.$ Dec: 10° ¼ S.

The duration of flight was about 3 or 4 secs. A very beautiful bluish-green trail was formed, which gradually faded to a pale blue; after being visible about 10 secs. this "tail" had become invisible.

The weather was calm and clear and the sky free from all cloud.

Ship's position: Latitude 25° 20′ N., Longitude 61° 05′ W.

TROPICAL CYCLONES OF THE EASTERN NORTH PACIFIC.

Prepared in the Marine Division by H. Keeton, Principal Clerical Assistant.

Up to a few years ago, the available information of cyclones in the Eastern North Pacific was very limited as compared with that of similar storms in the West Indies, China Seas and Indian Ocean. What information there was came from many scattered sources, and much of it was incomplete; and it is only during comparatively recent years that the area has been definitely recognized as a region of dangerous tropical cyclones.

Since the opening of the Panama Canal in 1914, the region has become of increased importance by reason of the greater volume of shipping using its waters, and the occurrence of cyclones therein has received far greater attention than formerly.

Earlier writers, who were handicapped by a lack of reporting island stations and a lack of ships' reports, were mainly dependent on the information obtained from Mexican coast stations; and this led to the belief that hurricanes, locally called "Cordonazos," were only experienced once in six or eight years.

These "Cordonazos," a name given to the storms by the Spaniards in early days, were no doubt those tropical cyclones whose tracks lay closely parallel to the coast or passed inland.

Findlay in his "Directory of the North Pacific Ocean" refers to them in describing the weather conditions on the West Coast of Mexico during the rainy season, June to November, and the following is a summary of his remarks.

Gales and strong breezes from S.E. to S.W. constantly occur, whilst squalls, associated with thunder and lightning, with heavy and almost incessant rain, characterise the season throughout.

Violent and dangerous hurricanes, known as "Cordonazos," occasionally visit this coast, usually at intervals of six to eight years, and generally in early October, but they may occur at any time from the middle of June until early in November. These hurricanes, which are of short duration, usually commence from S.E. The wind quickly veers to S.W. reaching a maximum force, accompanied by heavy rain, thunder, and lightning, and bringing a very high sea. The wind then gradually veers to N.W., and decreases, while the weather clears.

Owing to the generally threatening appearance of the weather on this coast every evening during the bad season, it is almost impossible to foretell the coming of those hurricanes, unless they occur late in the season, when the weather has already commenced to clear.

Locality.—The area affected by these cyclones lies approximately between Latitude 10° and 30° N., extending eastward from Longitude 130° W. to the coasts of Lower California, Mexico, and Central America. In the south-eastern portion of this area, situated between the southern boundary of the N.E. trade and the northern boundary of the S.W. monsoon, conditions during the summer and autumn months are very unsettled, with variable winds and calms, interspersed with squalls and gales. It is here that the greater number of the cyclonic storms develop.

Frequency.—The first important investigation of these storms was made in 1856 by W. C. Redfield, one of the pioneers of marine meteorology, who published a description and tracks of 12 storms which occurred between 1842 and 1855, in the region between the Mexican coast and the meridian of Long. 130° W. These are given in Figure 1, which shows one cyclone as originating in the Pacific but crossing the mainland into the Gulf of Mexico.

Redfield also traced another cyclone which originated in September, 1843, in Latitude 15° N., Longitude 139° W. and travelled west-north-west to the south east of Hawaii.

After Redfield, no serious attempt appears to have been made to investigate these cyclones until in 1897 the Deutsche Seewarte published in their "Segelhandbuch fur den Stillen Ozean" a list of 45 storms occurring in the 61 years period 1832 to 1892. No mention was made therein of the storms described by Redfield, but there is a possibility that two of them were included.

For the period 1893 to 1909, occasional mention was made of various storms, both at sea and in coastal waters, but little attempt has yet been made to investigate the cyclones of this period.

Since 1910 the United States Weather Bureau have made a systematic study of these storms, their main source of information being the network of observations contributed by ships co-operating with them. Previous to 1910, there were doubtless many cyclones which escaped record, and there were sometimes gaps of several years between successively reported cyclones. Any estimate of frequency based on these earlier records cannot therefore be considered reliable.

For the 19 years' period, 1910 to 1928, the U.S.A. Weather Bureau have listed 85 distinct cyclones; while the Mexican Weather Service, who have also since 1920 made a special study of the cyclones affecting their Pacific coast, listed 10 for the years 1921 to 1925, in addition to those identified by the U.S.A. Weather Bureau.

Thus the known number of cyclones for the 19 years, 1910 to 1928, is 95, or an average of five a year, the year of maximum frequency being 1925, with a total of 13 recorded storms. Their distribution was as follows, showing that only two years passed without a storm being recorded.

1910	3	1917	4	1923	5
1911	7	1918	3	1924	3
1912	4	1919	2	1925	13
1913	1	1920	3	1926	8
1914	0	1921	9	1927	9
1915	4	1922	7	1928	10
1916	0				

Season.—As in other tropical cyclone areas the occurrence of these storms shows a marked seasonal variation. The season extends from June to October, the month of maximum frequency being September. They occasionally occur in May, November or December, but are entirely unknown during the remaining months of the year.

The monthly distribution of the 95 cyclones recorded from 1910 to 1928 is as follows:—

May	1
June	11
July	14
August	15
September	34
October	17
November	2
December	1

Tracks.—Figures 1 and 2 show the tracks of a number of recorded storms, from which it will be seen that the majority take a N.W. to W.N.W. course, roughly parallel to the coast; and that a number of them recurve and disappear inland. Others, especially those which originate at a distance from the land, move due westward or even west-south-westward, although how far these travel before dying out or recurving is not known. Generally it appears that during the early part of the season the storms occur at some distance from the coast, while from September onwards their tracks are much closer to the coast.

Occasionally storms are met with outside the usual limits, as far west as Longitude 155° W. Eight of these have been recorded, including the one reported by Redfield in 1843, previously mentioned. Four of these occurred in September, three in July or August, and one in December. The one in December, 1832, was first located in Latitude 13° N., Longitude 148° W. and travelled westward, while one of September, 1870, was traced westward from Latitude 17° N., Longitude 141° W. Other cyclones were those of September, 1911, near Latitude 20° N., Longitude 147° W., and July, 1926, in Latitude 19° N., Longitude 131° W.

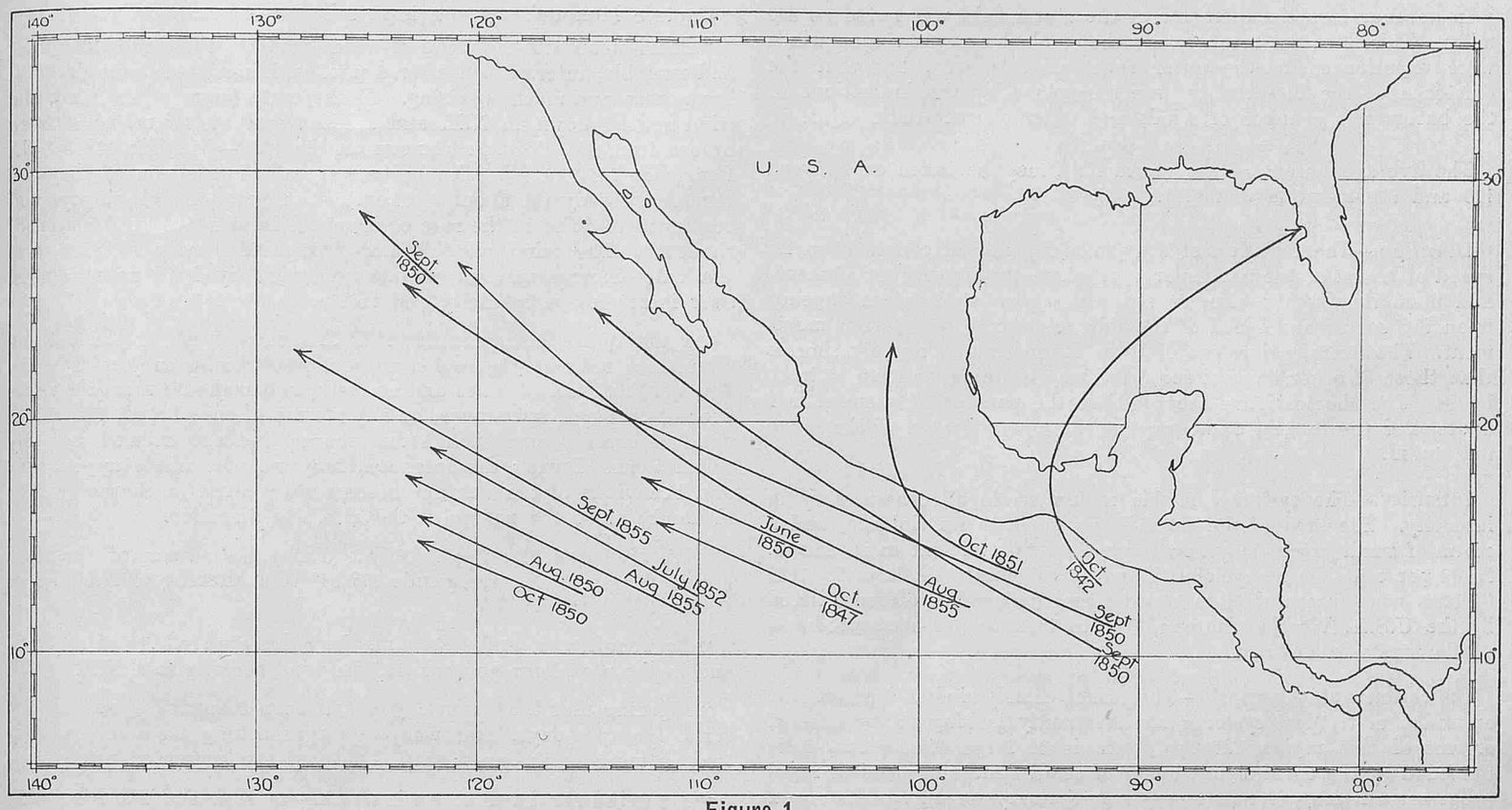


Figure 1.

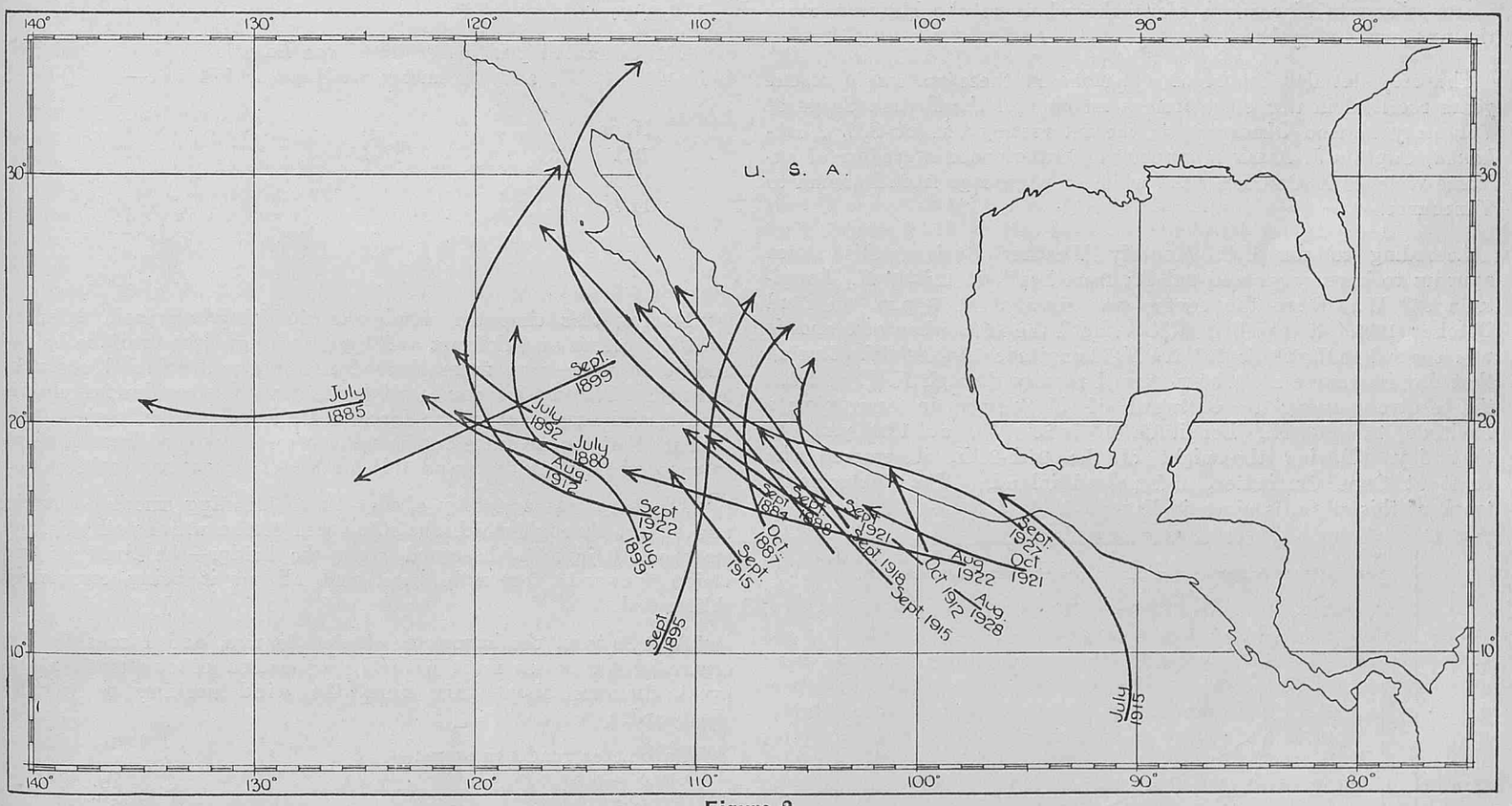


Figure 2.

Rate of Travel.—The rate of progression of these storms varies considerably. REDFIELD reported that some move slower than any he knew of in the Atlantic. On the other hand, some of the recent storms, for which the information is more complete, travelled nearly 300 miles per day. The rate of travel is probably not often more than 12 to 15 miles an hour, nor less than 5 miles an hour, an average of 8 to 10 miles an hour being a fair estimate. The speed of the storms of small dimensions is greater than those covering a larger area.

Area.—There seems no doubt that the majority of the storms are of small diameter, as compared with those of other cyclone regions: and that they do not influence the weather at any great distance from their centres. For example, on the 20th September, 1888, the German barque *Parnass*, while in the harbour of Mazatlan, was blown from her anchorage, and suffered considerable damage from hurricane winds; while a steamer only 50 miles distant reported at that time a fresh S.W. wind, with a steady barometer.

In another case the diameter of the storm field was noted as 800 miles. This does not mean to say that violent or even strong winds were experienced in the outer zones of this area, but that the existence of the disturbance was recognised by the indications of the barometer, changes of wind, and other characteristic signs.

The average extent of the storm field may be taken as between 100 and 200 miles in diameter.

Duration.—The duration of a cyclone depends of course upon its speed of travel at the particular spot where the observer is situated, and upon its extent; also, at sea, the *apparent* duration depends upon the course and speed of the ship relative to the storm's movement. The average duration of these storms is undoubtedly shorter than those of other tropical seas, and may be taken as from 12 to 20 hours. The shortest time recorded for the passage of a storm is 2 hours, and the longest 60 hours, but the circumstances of these are not stated.

Intensity.—The cyclones of this region, as in all others, vary in intensity. The area of the storm is no guide to its violence, and a storm of small extent may nevertheless be most violent in character. In 62 per cent. of the cyclones listed by the Deutsche Sewarte, 1832 to 1892, wind forces of 11 to 12 were recorded; while of those listed by the U.S.A. Weather Bureau, 1910 to 1928, 34 per cent. produced winds of the same force.

Indications of Approach.—The usual timely indications of the approach of tropical cyclones are frequently lacking in the case of storms of this region. If the storm is of large dimensions, it is preceded by the usual signs; but if of small dimensions and of rapid progression it may give little or no preliminary warning of its onset. This handicap is accentuated by the fact that during the rainy season, June to November, along the whole of the Mexican coast the weather is very bad.

The only detailed report of a cyclone in these waters in recent years received in this office from a member of the British Corps of Voluntary Marine Observers, is the interesting one of S.S. *Kathlamba*, Captain J. Allan Mordue, who experienced a cyclone of extreme violence in October, 1925, while on a passage from Panama to Vancouver.

According to the U.S. Monthly Weather Review, this storm appears to have originated not far from Latitude 13° 30′ N., Longitude 96° W., where the centre was situated at 5 p.m. on 22nd October, 1925. It travelled W.N.W. until the 24th, when at 6 a.m. it was central in Latitude 16° 20′ N., Longitude 104° 30′ W. During that day its course must have curved rapidly through N.W. and N., the centre passing to eastward of *Kathlamba*, in approximate Latitude 18° 45′ N., Longitude 106° 20′ W., at 1.30 p.m. of that day. During the night of the 24th-25th, it crossed the coast at Cape Corrientes, and passed inland. The approximate track of this storm is given in Figure 3.

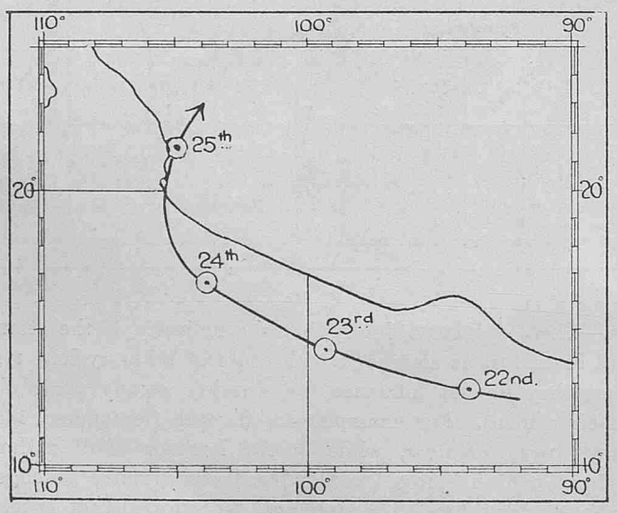


Figure 3.

Captain Mordue's account is as follows:—

"From noon till midnight of 22nd October, the wind was light and variable, interspersed after 8 p.m. with sort, hard squalls, with heavy rain and much lightning. In the early hours of the 23rd, the wind settled down to N.E. and E.N.E., and by 8 a.m. to a fresh breeze from E. Position at noon on the 23rd—Latitude 16° 56′ N., Longitude 102° 25′ W. The barometer, which till noon of the 23rd remained steady (at about 29.84 in.), then began to fall slowly, and continued to do so at the rate of about .04 in. a watch until 8 a.m. of the 24th. The wind all this time remained steady at east, but gradually increasing, and was accompanied by hard rain squalls, ever increasing in intensity and violence.

"I am quite unacquainted with this coast, and as the Sailing Directions refer to the region in general as being subject to much bad weather, violent gales and so forth, and make no mention whatever of cyclones, hurricanes, or any storms of that breed, the likelihood of encountering such a disturbance had not entered into my calculations. During the forenoon, however, the whole appearance and behaviour of the weather became so cyclonic in character that all doubt as to the nature of the gale was dispelled.

"We had been steering N.63°W. (True) since noon of the 22nd (Latitude 14° 58′ N., Longitude 97° 51′ W.), altering to N.55°W. at 4 a.m. on the 24th.

"Between 8 a.m. and 10.30 a.m. the barometer fell .15 of an inch, and in the next hour another .15, the wind backing to E.N.E.

"Figuring that the storm centre had been following almost in our track for two days, and was now approaching us and probably turning more to the northward, I altered our course to west.

"The wind continued to back steadily to N.E. and N., increasing to force 12, and as the wind shifted, I kept the ship away to S.W. and S.S.W.

"Our estimated position at noon was Latitude 18° 53′ N., Longitude 106° 05′ W., and barometer readings as follows:—

	in.
Noon	29.12
12.15	29.05
12.30	28.97
12.45	28.85
1.00	28.65
1.15	28.63
1.30	28.63

"During this time the wind was shrieking overhead. Canvas weather screens and dodgers and light awning decks over the bridge and poop were torn from their fastenings and whirled away to leeward. One of the starboard boats was blown adrift from its chocks, and some idea of the force of the wind can be formed from the fact that the pressure on the steam whistle lanyard was sufficient to cause the whistle to sound full blast at frequent intervals.

"The ship was swept by a continuous blinding smother of rain and spray, through which the dim loom of the white painted foremast could just be discerned from the bridge—the limit of our vision forward; forecastle head and all on it being completely obliterated.

"At 1.30 p.m. the barometer started to rise, and I consider the centre of the storm must have crossed astern of our track at no great distance about this time, the wind backing to the N. Westward.

"Barometer readings were:—

	in.
1.45	28.79
2.00	28.92
2.15	29.04
2.30	29.14
2.45	29.18

"At 4 p.m. barometer 29.47 in., wind W.N.W. and a high, confused sea running from W.-N.W.-N.N.E., I kept to S.W., and at 5 p.m. the barometer showing 29.54 in. and our estimated position being Latitude 18° 30′ N., Longitude 106° 35′ W. we resumed our course—N.55° W.

"The wind remained steady at W.N.W. till 6 o'clock the following morning, gradually decreasing to a moderate breeze, and the sea showing no sign of the recent disturbance.

"The S.S. *City of Stockholm* which was going up the coast ahead of us, appears never to have been nearer than the outskirts of the storm. Her position at noon of the 24th was Latitude 20° 38′ N., Longitude 107° 11′ W., about 120 miles N.W. by N. of the *Kathlamba*, and her weather at that time, fresh N.E. wind with rain, and heavy southerly swell; barometer 29.86 in. (? uncorrected).

"The S.S. *Invergordon*, also bound up the coast, was close to us, and kept her course throughout.

"Captain MURCHISON gave the following particulars:—

'Estimated noon position, Latitude 18° 51′ N., Longitude 105° 54′ W.; wind, E.S.E., shifting to N.E. at 2 p.m., N. at 4 p.m. and N.W. at 5 p.m., at which time the storm reached its maximum, the barometer recording 28.10 (? uncorrected) and her estimated position being Latitude 19° 04′ N., Longitude 106° 25′ W.'"

The following publications have been extensively used in the preparation of the above article:—

"Tropical Cyclones in the North East Pacific," by STEPHEN S. VISHER. U.S. Monthly Weather Review. June, 1922.

"Tropical Cyclones of the Eastern North Pacific Ocean," by WILLIS E. HURD. U.S. Monthly Weather Review, February, 1929, and Pilot Chart of North Pacific Ocean, September, 1928.

CURRENTS IN THE WESTERN PORTION OF THE INDIAN OCEAN.

II—Currents during the S.W. Monsoon Period.

IN this article a description of the current shown on the Marine Observer charts for the two quarters May to July and August to October will be given. This is the period when the S.W. Monsoon is blowing north of the equator. In the concluding article a similar description will be given of the currents during the months November to April, and this will be followed by the results of special investigations in which the variations throughout the whole year will be discussed.

The chart for August to October is essentially of the same character as that for May to July, with some variations in the strengths of the main currents.

The Agulhas Current.—This is strong in both quarters, but the southern part, from Durban to Algoa Bay, increases a little in strength in August to October. The greatest mean drift, 50.3 miles per day, is found during this quarter, between East London and Cape Hermes. The current over the Agulhas Bank between Longitude 24° E. and Cape Town is much weaker than the main body of the Agulhas Current, averaging only about 4.5 miles per day in both quarters. Between East London and Lourenço Marques the rose for each quarter shows that small percentages of currents are experienced flowing in all directions. The reverse sets included in these may be counter-currents flowing near the coast or real reverse sets within the region of the main current. As would be expected, the rose for the area between East London and Cape Agulhas shows a much greater degree of variability than that between East London and Lourenço Marques.

The maximum drift observed from May to October in the Agulhas Current during the period 1910 to 1930 was at the rate of 121 miles per day, S. 45° W., recorded by S.S. *Port Caroline* on 12th September, 1921, in Latitude 32° 30′ S., Longitude 28° 58′ E.

The Mozambique Current.—There is more difference in the strength of the Mozambique Current, from Cape Delgado to Lourenço Marques, in the two quarters than in the case of the Agulhas Current. In May to July, although setting normally down the coast, as shown by the arrows, the drift is comparatively weak. In August to October the strength is considerably increased. The Mozambique Current, however, does not attain the strength of the Agulhas Current or of the East African Coast Current. In both quarters the strongest mean current is experienced at the northern end of the Bight of Sofala, Latitude 16° S. to 18° S., between the coast and Longitude 40° E. It will be seen that the current does not flow straight across from Mozambique to Cape Corrientes in either quarter; it follows the trend of the coast.

In the first article it was stated that counter-currents are often experienced between the coasts of the Bight of Sofala and the Mozambique Current. On the Marine Observer Charts mean sets on shore are shown in the neighbourhood of Beira for each of the two quarters under discussion. There is, however, a total of only five observations for both quarters. Examination of the original observations shows that these five currents were as follow, one setting S.W., the normal direction of the Mozambique Current, one off shore and three on shore. The strongest of the currents setting on shore was that recorded by S.S. *Madura*, N. 15° E., 27 miles per day, on 15th October, 1930, in Latitude 19° 34′ S., Longitude 35° 51′ E.

In both quarters the roses for the Mozambique Current show a considerable proportion of sets in all directions, including reverse sets. The maximum drift observed from May to October during the period 1910 to 1930 was S., 96 miles per day, recorded by H.M.S. *Challenger* on 20th September, 1918, in Latitude 10° 53′ S., Longitude 40° 44′ E.

The East African Coast Current.—This is an extremely strong current in the quarter May to July. The mean drift of 60 miles per day in Latitude 0° to 2° N., based on 25 observations, is the highest derived from so many observations in any current chart so far published in the Marine Observer, not excepting the strongest part of the Gulf Stream. The mean of 63 miles per day shown in the East African Coast Current for August to October, and the isolated cases of mean drifts in the Gulf Stream exceeding 60 miles per day are based on less than 10 observations in each case. Furthermore, the distance over which the East African Coast Current flows in great strength in May to July, from Latitude 4° S. (Mombasa) to Latitude 4° N., is considerably greater than that covered by the Gulf Stream in comparable strength. This section of the East African Coast Current, in May to July, is therefore the strongest current so far determined by the mean values of collected observations over a considerable area.

In THE MARINE OBSERVER, Volume VII, page 195, it was stated that one of the strongest currents in the world is to be found in the region south of Sokotra during the S.W. Monsoon. The area referred to is Latitude 8° N. to 10° N., Longitude 52° E. to 56° E., and will be found on the Marine Observer Charts published in 1930. The mean drift is 38.6 miles per day in May to July and 42.2 miles per day in August to October, derived from 37 observations in each case. This is therefore, undoubtedly, a region of very strong mean current though not as strong as the East African Coast Current. There is, however, another aspect of the matter. In the article referred to above it was shown that when the area south of Sokotra was divided into one-degree squares the currents in a few of these areas showed mean drift of over 70 miles a day in July, August and September. In particular the area Latitude 9° N. to 10° N., Longitude 54° E. to 55° E., showed a mean drift exceeding 90 miles a day in these months. Although there are comparatively few observations in each one-degree square all the evidence points to the essential truth of these results, and for these very small areas the mean currents are the

strongest so far found in any ocean. The East African Coast Current in May to July, on the other hand, is the strongest extended current, covering a considerable area, so far found.

The southern part of the East African Coast Current, from Cape Delgado to Mombasa, flows with considerable strength in May to July and this strength is maintained in August to October in spite of the weakening of the current north of Mombasa.

Currents of the Mozambique Channel.—Apart from the Mozambique Current the only special feature shown on the charts are weak northerly sets. One of these is found in the centre of the Channel in May to July. A stronger northerly set is shown, east of Longitude 40° E. in August to October but is based on few observations. None of the observations in either quarter falls within the limits of the Madagascar Current flowing up the west coast of the island, about which there is therefore no information. The observations of August to October confirm the northerly set past Europa Island, referred to in the first article.

The Equatorial Current.—It was stated in the first article of this series that the Equatorial Current is supposed to divide in the neighbourhood of Mauritius, one branch flowing to Cape Amber, one to Cape St. Mary and a third branch continuing westward and meeting the east coast of Madagascar in about Latitude 20° S. On the Marine Observer Chart a westerly flow of considerable strength is shown past Cape Amber and a weaker westerly flow past Cape St. Mary, but there is no evidence of any continuous flow to these points from the neighbourhood of Mauritius.

The flow past Cape Amber is strongest in May to July, the quarter when the East African Coast Current north of Mombasa is at its greatest strength. Westward of Cape Amber, between the meridians of 44° E. and 48° E., the Equatorial Current flows in this quarter towards the East African Coast Current, on a very wide front, extending from Latitude 2° S. to 12° S. In August to October conditions are similar but the current is weaker. It still shows a definite widening westward of Cape Amber.

The current past Cape St. Mary is a much weaker one but does not differ greatly in the two quarters. As is usual with a weak current, its variability is considerable. In the first article it was stated that the main branch of this current flows across the ocean to join the Agulhas Current near Durban and that its average speed off Madagascar was 1½ knots. The charts show that there is no appreciable flow joining the Agulhas Current in either quarter. Instead therefore of a fairly strong current the whole way from Mauritius to Durban, there is a weak current only off the south of Madagascar, between Longitude 40° E. and 48° E. There are not even isolated mean westerly flows of any strength except in the August to October quarter when there is a considerable area of westerly flow south of Durban and outside the Agulhas Current (Latitude 30° S. to 34° S., Longitude 32° E. to 36° E.).

With regard to the central branch of the Equatorial Current which is said to meet the east coast of Madagascar in about Latitude 20° S., and there divide, one part flowing northwards and the other southwards, the Marine Observer charts afford little information on account of the small number of observations north of Latitude 22° S. An examination has been made of all the currents reported within 3° of the coast of Madagascar between Latitude 16° S. and 24° S. in the period 1910-1930. There are only two observations north of Latitude 20° S. and these are both south-westerly. The currents south of Latitude 20° S. are mainly south-westerly and north-westerly while a few have an easterly component. One strong current, S. 45° W., 76 miles per day, was reported by S.S. *Clan Macindoe* on 6th October, 1926, in Latitude 21° 28′ S., Longitude 48° 35′ E., near the Madagascar coast.

South-east of Madagascar between Latitude 24° S. and 28° S. there are indications of an easterly set of moderate strength in the August to October quarter.

The Counter Equatorial Current.—The beginning of the Counter Equatorial Current is clearly shown in both quarters, north-westward of the Seychelles.

SOUTHERN ICE REPORTS.

During the Years 1929 and 1930.

September.

No reports of Ice, sighted in the Southern Ocean during the month of September, in the years 1929 and 1930, have been received at the Meteorological Office.

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 X.

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 X. 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 197 and 198. 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 X.)	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.									
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 Meteoro-logical 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.	
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.

United States of America (Pacific Coast).

(C.W. Issues.)

San Francisco, California, W/T Station, approximate Latitude 38° 06′ N., Longitude 122° 17′ W., call sign **NPG,** broadcasts weather bulletins as follows:—

At 0330 G.M.T., and at 1530 G.M.T., on wavelengths of 7,000 and 2776 metres (C.W.) simultaneously.

The bulletins commence with the letters USWB (U.S. Weather Bureau) and are divided into two parts.

Part I is broadcast in code* and contains observations from the stations in the list below, taken at 0100 G.M.T. for the 0330 G.M.T., bulletin and at 1300 G.M.T., for the 1530 G.M.T., bulletin, except as follows, where the observations do not synchronise:—

St. Paul, Juneau, Kodiak and Dutch Harbour, Alaska, observations are taken at Midnight and Noon G.M.T. Observations at remaining Alaskan stations are taken at 1700 and 0500 G.M.T.

Honolulu observations taken at 0630 and 1830 G.M.T.

Guam, Manila, China and Japan observations taken at 2200 G.M.T.

Midway observations taken at 0630 G.M.T.

First Part.

Indicator Letters and Stations.

Indicator Letters.	Station.	Position (approx.). Latitude.	Longitude.
	Alaska.		
NM	Nome	64° 30′ N.	165° 24′ W.
SPI	St. Paul	57° 15′ N.	170° 10′ W.
DH	Dutch Harbour	53° 55′ N.	166° 30′ W.
TN	Tanana	65° 10′ N.	152° 06′ W.
EA	Eagle	64° 46′ N.	141° 12′ W.
KD	Kodiak	57° 47′ N.	152° 22′ W.
CV	Cordova	60° 32′ N.	145° 42′ W.
JU	Juneau	58° 18′ N.	134° 24′ W.
	Canada.		
ED	Edmonton, Alberta	53° 33′ N.	113° 30′ W.
KA	Kamloops, B.C.	50° 41′ N.	120° 29′ W.
CY	Calgary, Alberta	51° 02′ N.	114° 02′ W.
SC	Swift Current, Sask.	50° 19′ N.	108° 02′ W.
PR	Prince Rupert, B.C	54° 18′ N.	130° 18′ W.
	United States, etc.		
TAT	Tatoosh I, Wash.	48° 23′ N.	124° 44′ W.
SE	Seattle, Wash.	47° 38′ N.	122° 20′ W.
NH	North Head, Wash.	46° 16′ N.	124° 04′ W.
PD	Portland, Oreg.	45° 32′ N.	122° 41′ W.
RO	Roseburg, Oreg.	43° 13′ N.	123° 20′ W.
EUR	Eureka, Calif.	40° 48′ N.	124° 11′ W.
RB	Red Bluff, Calif.	40° 10′ N.	122° 15′ W.
SM	Sacramento, Calif.	38° 35′ N.	121° 30′ W.
SF	San Francisco, Calif.	37° 48′ N.	122° 26′ W.
FN	Fresno Calif.	36° 43′ N.	119° 49′ W.
SPE	San Pedro, Calif	33° 44′ N.	118° 16′ W.
PAR	Point Arguello, Calif.	34° 35′ N.	120° 39′ W.
LA	Los Angeles, Calif.	34° 03′ N.	118° 15′ W.
DI	San Diego, Calif.	32° 43′ N.	117° 10′ W.
SPO	Spokane, Wash.	47° 40′ N.	117° 25′ W.
WW	Walla Walla, Wash.	46° 02′ N.	118° 20′ W.
BA	Baker, Oreg.	44° 46′ N.	117° 50′ W.
HL	Helena, Mont.	46° 34′ N.	112° 04′ W.
BS	Boise, Idaho	43° 37′ N.	116° 13′ W.
LD	Lander, Wyo.	42° 50′ N.	108° 45′ W.
WM	Winnemucca, Nev.	40° 58′ N.	117° 43′ W.
R	Reno, Nev.	39° 32′ N.	119° 49′ W.
SLC	Salt Lake City, Utah	40° 46′ N.	111° 54′ W.
MD	Modena, Utah	37° 48′ N.	113° 54′ W.
DV	Denver, Colo.	39° 45′ N.	105° 00′ W.
GJ	Grand Junction, Colo.	39° 04′ N.	108° 34′ W.
SA	Santa Fe, N. Mex.	35° 41′ N.	105° 57′ W.
PH	Phoenix, Ariz.	33° 28′ N.	112° 00′ W.
YU	Yuma, Ariz.	32° 45′ N.	114° 36′ W.

Indicator Letters and Stations—*cont.*

Indicator Letters.	Station.	Position (approx.). Latitude.	Longitude.
	United States, etc. (continued).		
HO	Honolulu, Hawaii	21° 19′ N.	157° 52′ W.
MDI	Midway Island	28° 12′ N.	177° 22′ W.
FMA	Manila P.I.	14° 35′ N.	120° 59′ E.
FGM	Guam.	13° 27′ N.	144° 53′ E.
	China and Japan, etc.		
FHO	Hong Kong, China	22° 18′ N.	114° 10′ E.
FSH	Shanghai, China	31° 15′ N.	121° 29′ E.
FBI	Bonin Island	27° 05′ N.	142° 11′ E.
FKO	Koshun, Formosa	25° 08′ N.	121° 45′ E.
FNA	Naha, Japan	26° 13′ N.	127° 41′ E.
FKA	Kagoshima, Japan	31° 34′ N.	130° 33′ E.
FTO	Tokio, Japan	35° 41′ N.	139° 45′ E.
FNE	Nemuro, Japan	43° 20′ N.	145° 35′ E.

Weather reports from ships in the North Pacific Ocean follow the reports from the land stations in Part I. Ship's observations taken at Midnight G.M.T. being broadcast in the 0330 G.M.T. bulletin and those taken at Noon G.M.T. being broadcast in the 1530 G.M.T. bulletin. They are broadcast in two five-figure groups* for each ship, preceded by the W/T call sign of the reporting ship.

Part II of the bulletins is in plain language and consists of a summary of general pressure distribution; wind and weather forecasts for the off-shore areas—N. of Cape Blanco; between C. Blanco and Point Conception; and S. of Point Conception, and storm warnings (for particulars see p. 200).

The period covered by the Forecasts in the 0330 G.M.T. bulletin is for 24 hours beginning at 0800 G.M.T, and in the 1530 G.M.T. bulletin for 24 hours beginning at 2000 G.M.T.

San Francisco W/T Station also transmits a report of the weather conditions in the Bonita Channel, every four hours, commencing with 0000 G.M.T. Wavelength, 2,776 metres (I.C.W.).

Hawaiian Islands.

(I.C.W. Issue.)

Honolulu-Pearl Harbour W/T Station, approximate Latitude 21° 12′ N., Longitude 157° 58′ W., call sign **NPM,** broadcasts weather forecasts daily (except Sundays and holidays), for the Hawaiian Islands and neighbouring ocean areas at 0230 and 2230 G.M.T., on a wavelength of 5,552 metres (I.C.W.). The station also broadcasts the barometric reading, wind direction and force and state of weather at Honolulu at 0630, 1830 and 2230 G.M.T. on a wavelength of 5,552 metres (I.C.W.).

Mexico.

(C.W. Issue.)

Chapultepec W/T Station approximate Latitude 19° 25′ N. Longitude 98° 11′ W. call sign **XDA,** broadcasts weather bulletins at 0100 and 1900 G.M.T. after Time Signal on a wavelength of 2,000 metres (C.W.).

The bulletin is in two parts, the 1900 bulletin containing observations of 1300 G.M.T.

* 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.

Part I., in code,* contains observations from the following stations:—

Station.	Position approx. Latitude.	Longitude.
Acapulco	16° 52′ N.	99° 50′ W.
Chihuhua	28° 32′ N.	106° 28′ W.
Frontera	18° 35′ N.	92° 38′ W.
Guaymas	27° 58′ N.	110° 48′ W.
Leon	21° 01′ N.	101° 15′ W.
Lerdo	——	——
Manzanillo	19° 00′ N.	104° 20′ W.
Islas Marias	21° 40′ N.	106° 30′ W.
Matamoros	25° 53′ N.	97° 33′ W.
Mazatlan	23° 10′ N.	106° 22′ W.
Monterrey	25° 34′ N.	100° 20′ W.
Payo Obispo	18° 29′ N.	88° 22′ W.
La Paz	24° 10′ N.	110° 18′ W
Progreso	21° 16′ N.	89° 36′ W
Salina Cruz	16° 17′ N.	95° 15′ W
Tacubaya	19° 24′ N.	99° 12′ W.
Tampico	22° 11′ N.	97° 53′ W
Tapachula	15° 10′ N.	92° 27′ W.
Vera Cruz	19° 12′ N.	96° 10′ W.

Part II. sent *en clair* (Spanish) gives information concerning the general weather situation, position of centres of High or Low pressure areas, and weather forecasts for 24 hours.

WIRELESS STORM WARNINGS.

United States of America. (Pacific Coast.)

(C.W. Issues).

The following W/T Stations broadcast storm warnings at the times stated below. Ships may request any of the stations mentioned to furnish the latest storm warning. The warnings are for a period of 24 hours beginning at the hour indicated in the messages.

W/T Station and position (approx.).	Call Sign.	Wave-length. metres.	Broad-casting Time G.M.T.	Particulars.
Puget Sound Lat. 47° 42′ N. Long. 122° 37′ W.	NPC	2,941 (C.W.)	0100 0400, 1300 1700, 2100	Storm Warnings.
Eureka, Calif. Lat. 40° 42′ N. Long. 124° 16′ W.	NPW	2,776 (C.W.)	2018	Storm Warnings for the coast of California N. of San Francisco and advices concerning storm warnings for the N. Pacific Coast.
„ „	„	„	0018, 0433 0818, 1218 1633, 2018	Storm Warnings.
San Francisco, Calif. Lat. 37° 39′ N.	NPG	7000 (C.W.) 2,776 (C.W.)	0330, 1530	Storm Warnings. In Second part of weather bulletin.
Long. 122° 23′ W.	„	2,776 (C.W.)	0000, 0430 0800, 1200 1630, 2000	Storm Warnings. For N. California coast.
San Diego, Calif. Lat. 32° 42′ N. Long. 117° 15′ W.	NPL	2,941 (C.W.)	0430, 1630 2200	Storm Warnings. Broadcast on receipt and at times stated.

* 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.

III. WIRELESS TIME SIGNALS.

United States of America.

For method of transmission of the undermentioned Time Signals *see* diagram, p. 181, Vol. VIII, No. 92.

United States of America, Pacific Coast.

(C.W. Issues.)

W/T Station.	Call Sign.	Wavelength metres.	Time of Signal being made G.M.T.	—
San Francisco, Calif. Lat. 38° 05′ 55″ N. Long. 122° 16′ 37″ W.	NPG	4,543 (C.W.)	h. m. s. h. m. s. 5 55 00– 6 00 00 19 55 00–20 00 00	Sent daily.

NOTE.—The above time signal is a rebroadcast of Arlington Va. time signal and is normally correct to one tenth of a second.

Hawaiian Islands (C.W. Issue).

Honolulu, Pearl Hbr. Lat. 21° 20′ 45″ N. Long. 157° 57′ 56″ W.	NPM	11,490 (C.W.) and 2,828 (I.C.W.)	h m s h m s 23 55 00–0 00 00	Sent daily.

NOTE.—These time signals are relayed from the standard clock at Pearl Harbour, which is checked periodically by means of the time signals broadcast from San Francisco. They are not so accurate as the San Francisco time signals explained above.

IV. VISUAL STORM WARNINGS.

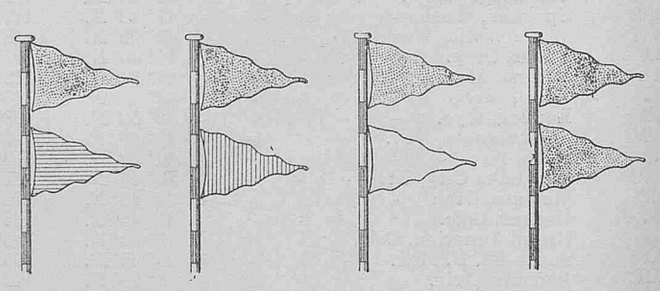
United States of America (Pacific).

The United States system of Visual Small-craft, Storm, and Hurricane Warnings as explained on p. 182 of Vol. VIII, No. 92, is in operation at a number of stations on the Pacific Coast of the United States.

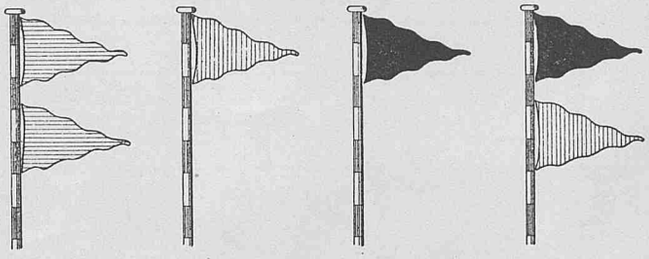
Mexico.

The following system of (1) visual storm and (2) wind signals has been established at ports on the coasts of Mexico.

(1) Storm signals are used to give warning of the existence of cyclonic disturbances whether distant or near, or, of the existence of bad weather outside the port. The storm signals consist of pennants only and their meanings, are as follows:—



Bad weather North of the port. | Bad weather South of the port. | Bad weather East of the port. | Bad weather West of the port.



Northerly gale from Matamoras begun. (Gulf ports only.)

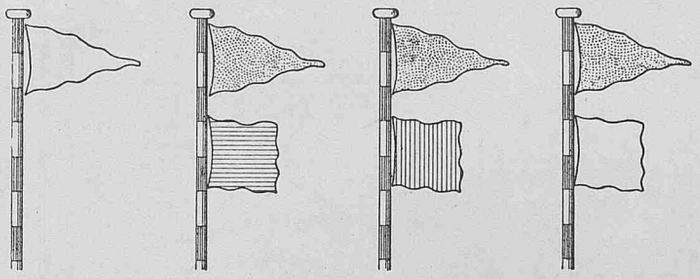
Gulf ports.—Cyclone in Caribbean Sea. Pacific ports.—Distant cyclone.

Gulf ports.—Cyclone in Gulf of Mexico. Pacific ports.—Cyclone close by.

Cyclone at the Port, or will pass close by on that day.

Night Signals.—Two red lights, vertical, are hoisted to indicate that navigation may be dangerous.

(2) The following signals consisting of pennants, denoting the strength, and flags the direction of the wind, are used to indicate its probable strength and direction from the time of hoisting the signal until the following 0600. They will be lowered, if necessary, to hoist a storm signal and in the evening when no longer visible:—

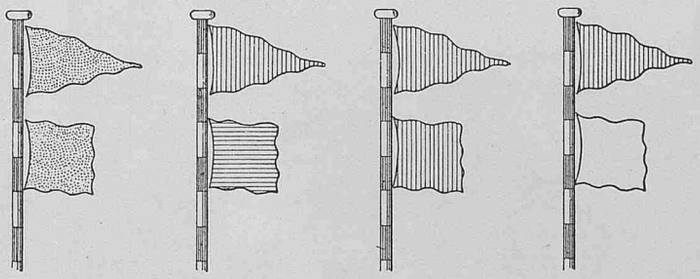


Light or moderate winds.

Moderate or strong Northerly winds.

Moderate or strong Southerly winds

Moderate or strong Easterly winds.

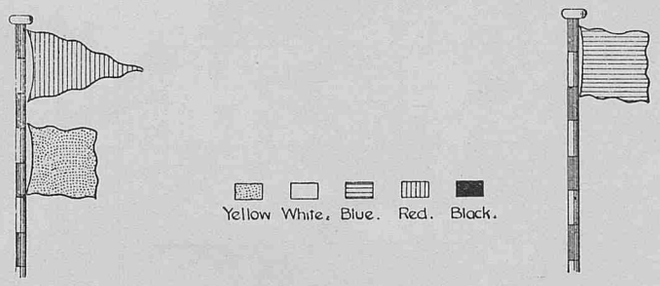


Moderate or strong Westerly winds.

Gale or Hurricane from the North.

Gale or Hurricane from the South.

Gale or Hurricane from the East.



Gale or Hurricane from the West.

Northerly Gale expected the following day. (Gulf Ports only.)

Special Notices regarding Personnel.

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

OBITUARY.

The death of Captain D. Urquhart of S.S. *Ruahine* is noted with regret.

Soon after *Ruahine* sailed from London on 19th April, 1931, Captain Urquhart was taken suddenly ill, and was landed into hospital at Torbay, where he died on 22nd May.

Appointed as Second Officer in the Federal Line in August 1913, he gained his first command, S.S. *Waimate*, on October 22nd, 1920, and subsequently commanded *Piako*, *Hertford* and *Ruahine*.

He was a member of the Corps of Voluntary Marine Observers from 1926, and was one of those commanders who took such a keen interest in the investigation of the currents on the Panama—New Zealand route, and the development of the British "Selected Ships" service.

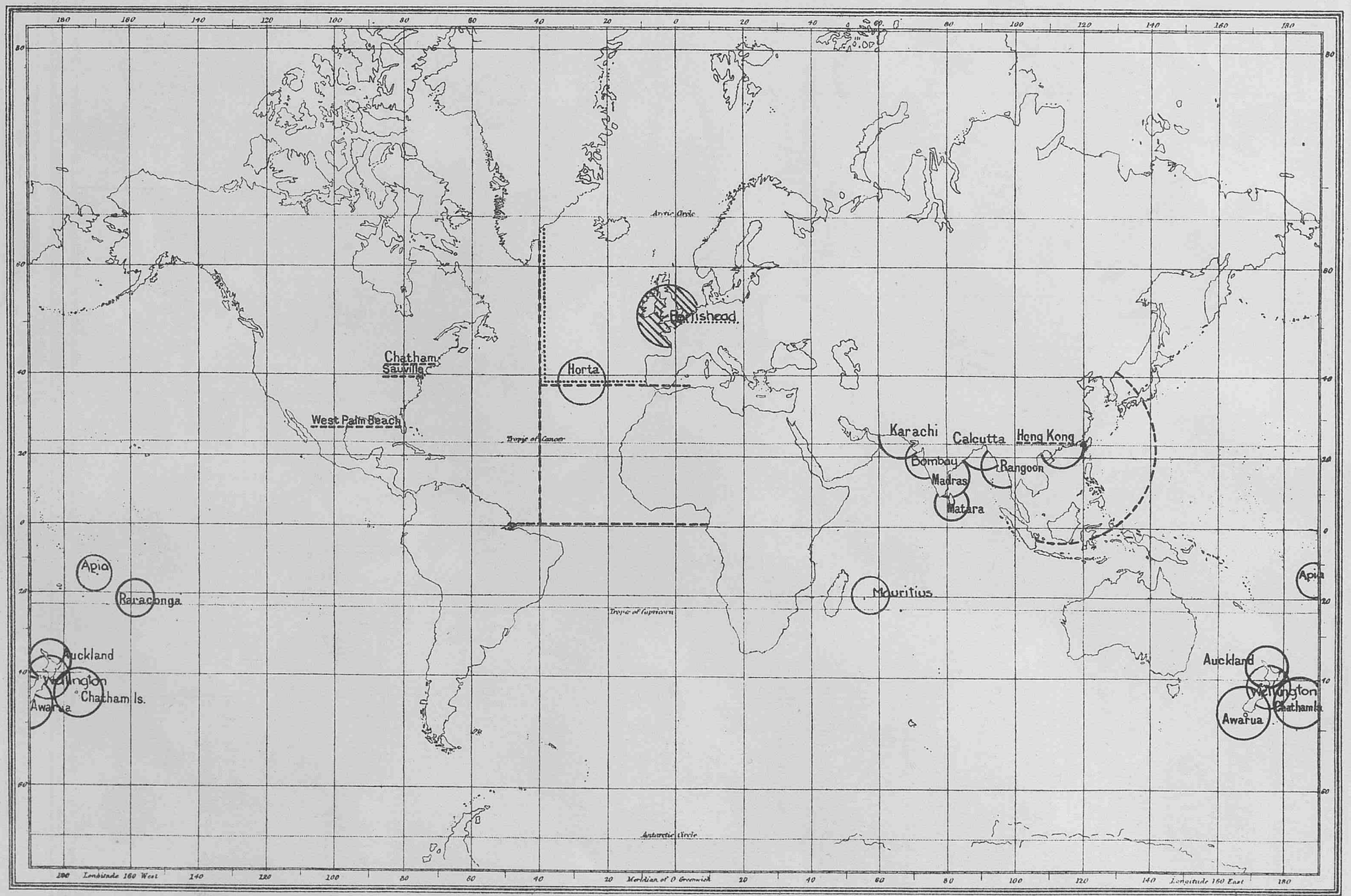
CAPTAIN W. P. CLIFTON MOGG.

Captain W. P. Clifton Mogg, commander of R.M.S. *Tainui* and Commodore of Shaw, Savill, and Albion Company's fleet, has recently been appointed Marine Superintendent in Australia for the White Star and Associated Lines. He will be stationed at Sydney, N.S.W. Captain Clifton Mogg has been a member of our Corps of Voluntary Marine Observers since 1924 and the ships under his command have contributed no less than 15 excellent logs since that date. He has always been a strong advocate of Marine Meteorology as a branch of Seamanship.

Marine Observers will join with the Marine Division in wishing Captain Clifton Mogg every success in his new appointment.

Chart X — 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.

AUGUST SEPTEMBER and OCTOBER.

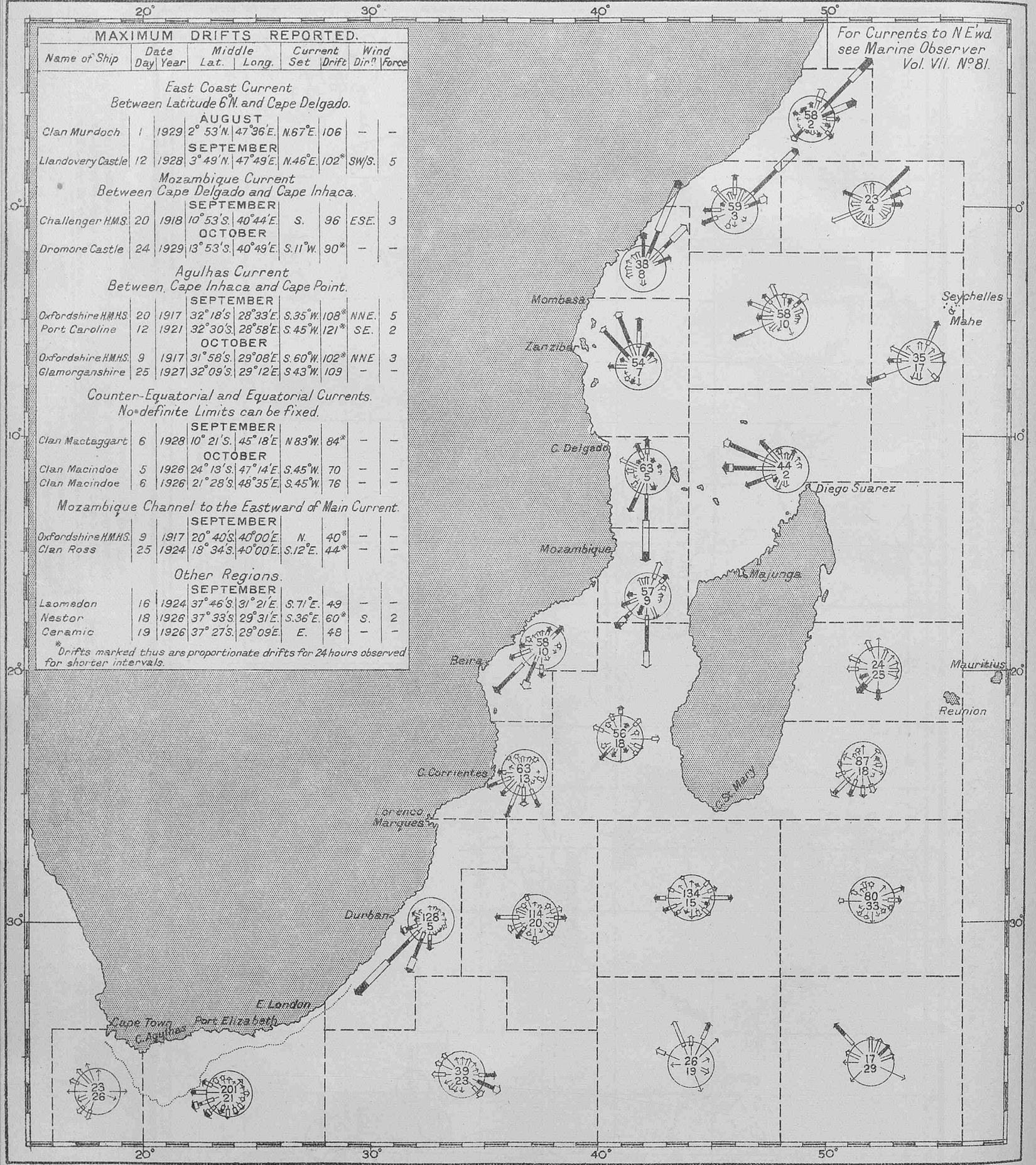
Observations of ships regularly observing for the British Meteorological Office 1910–1930.

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir.n	Wind Force
East Coast Current Between Latitude 6°N. and Cape Delgado.								
			AUGUST					
Clan Murdoch	1	1929	2° 53'N.	47°36'E.	N.67°E.	106	—	—
			SEPTEMBER					
Llandovery Castle	12	1928	3° 49'N.	47°49'E.	N.46°E.	102*	SW/S.	5
Mozambique Current Between Cape Delgado and Cape Inhaca.								
			SEPTEMBER					
Challenger H.M.S.	20	1918	10°53'S.	40°44'E.	S.	96	ESE.	3
			OCTOBER					
Dromore Castle	24	1929	13°53'S.	40°49'E.	S.11°W.	90*	—	—
Agulhas Current Between Cape Inhaca and Cape Point.								
			SEPTEMBER					
Oxfordshire H.M.H.S.	20	1917	32°18'S	28°33'E.	S.35°W.	108*	NNE.	5
Port Caroline	12	1921	32°30'S.	28°58'E.	S.45°W.	121*	SE.	2
			OCTOBER					
Oxfordshire H.M.H.S.	9	1917	31°58'S.	29°08'E.	S.60°W.	102*	NNE	3
Glamorganshire	25	1927	32°09'S.	29°12'E.	S 43°W.	109	—	—
Counter-Equatorial and Equatorial Currents. No definite Limits can be fixed.								
			SEPTEMBER					
Clan Macteggart	6	1928	10° 21'S.	45°18'E	N 83°W.	84*	—	—
			OCTOBER					
Clan Macindoe	5	1926	24°13'S.	47°14'E.	S.45°W.	70	—	—
Clan Macindoe	6	1926	21°28'S.	48°35'E.	S.45°W.	76	—	—
Mozambique Channel to the Eastward of Main Current.								
			SEPTEMBER					
Oxfordshire H.M.H.S.	9	1917	20° 40'S.	40°00'E.	N.	40*	—	—
Clan Ross	25	1924	18° 34'S.	40°00'E.	S.12°E.	44*	—	—
Other Regions.								
			SEPTEMBER					
Laomedon	16	1924	37°46'S.	31°21'E.	S.71°E.	49	—	—
Nestor	18	1926	37°33'S.	29°31'E.	S.36°E.	60*	S.	2
Ceramic	19	1926	37°27'S.	29°09'E.	E.	48	—	—

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

For Currents to N.E'wd. see Marine Observer Vol. VII. No. 81.



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	⟶

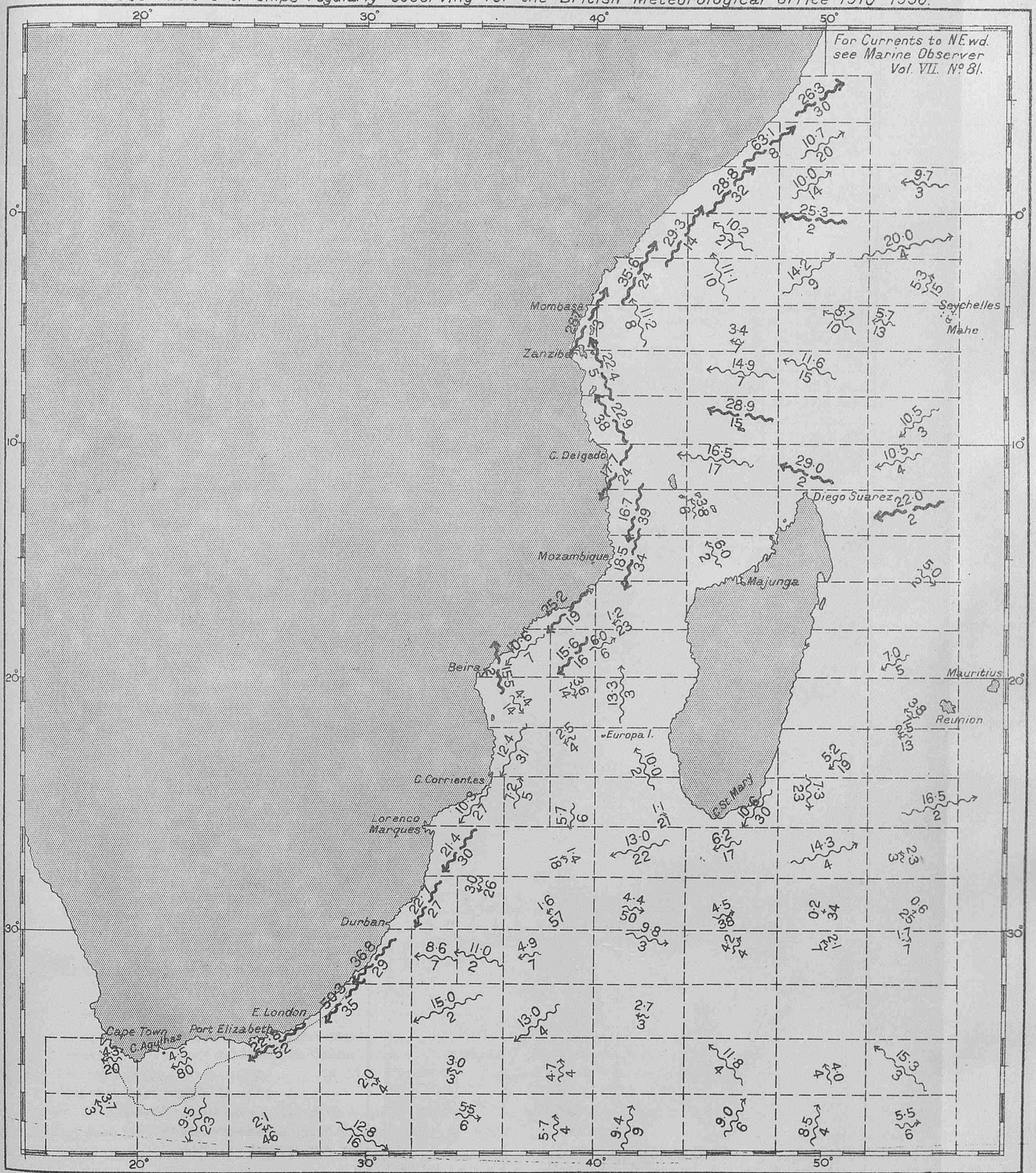
Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%

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.

AUGUST SEPTEMBER and OCTOBER,

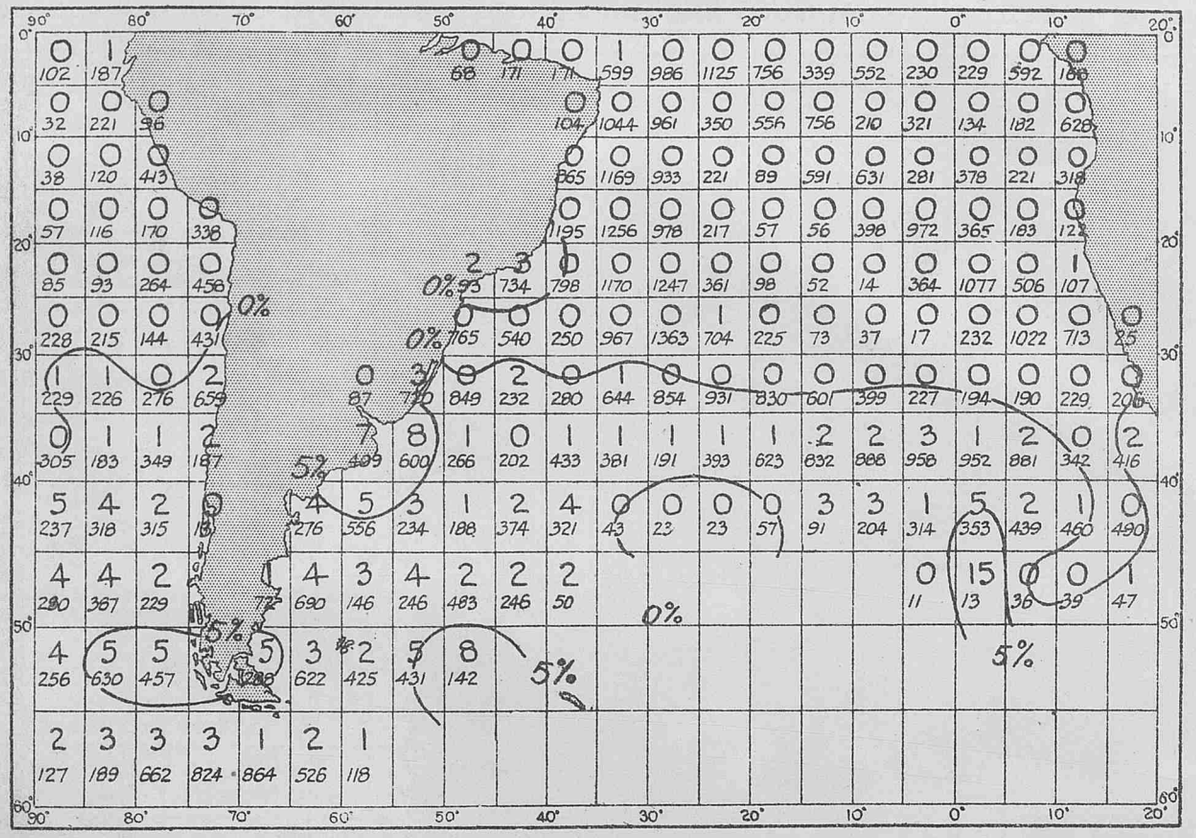
Observations of ships regularly observing for the British Meteorological Office 1910–1930.



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.

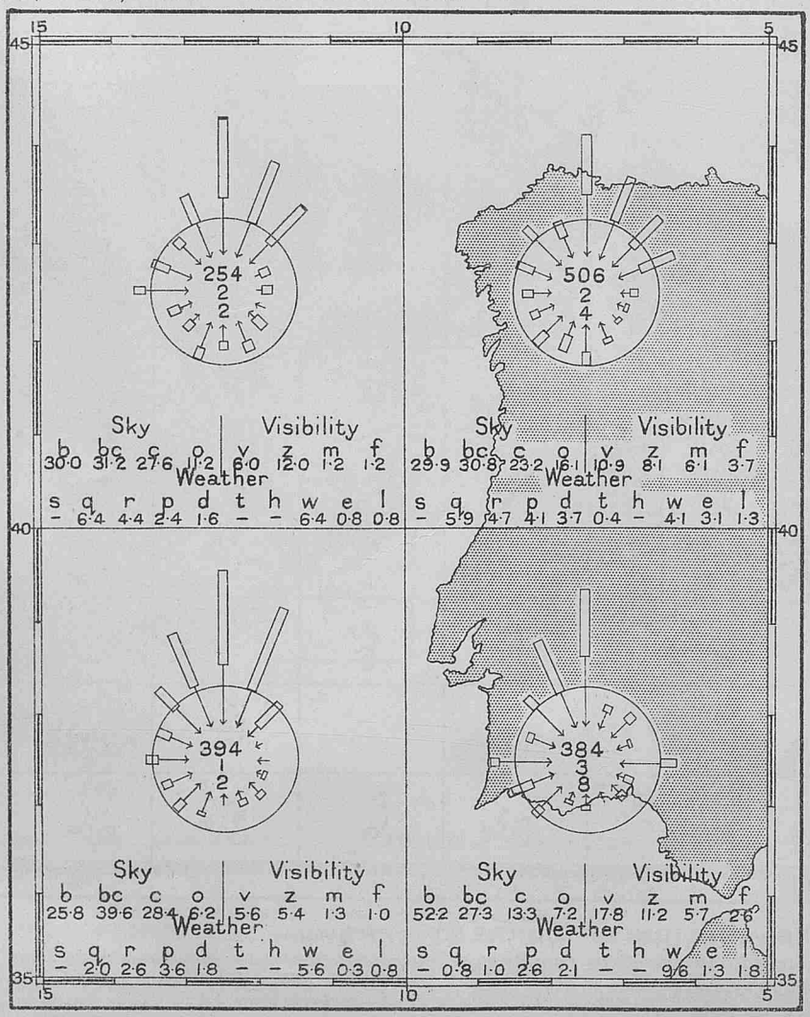
Fog in the South Atlantic and vicinity of west coast of South America Percentage Frequency.



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.

SEPTEMBER

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%

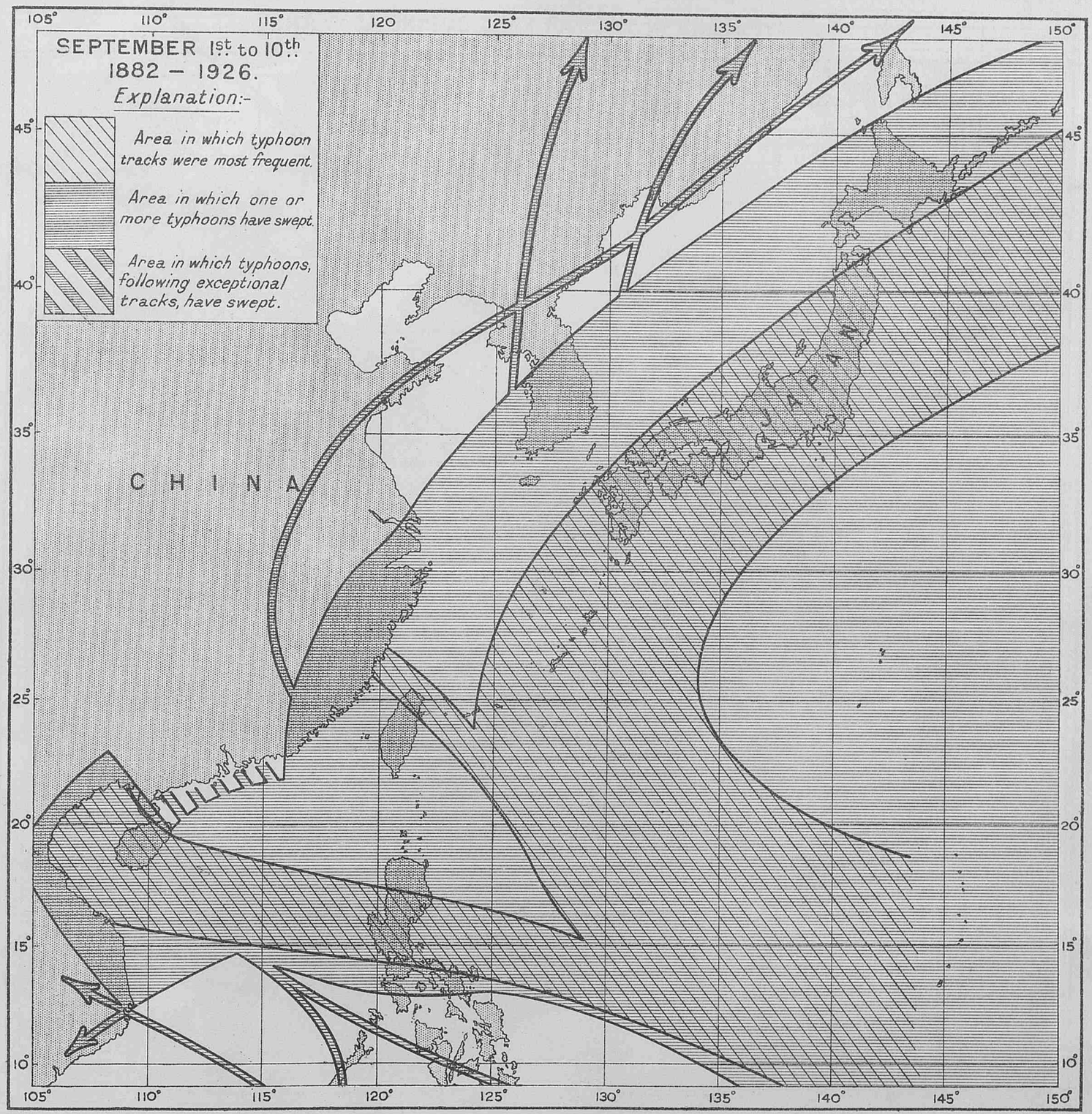
The upper figure in the centre of the rose gives total number of observations, the middle figure the percentage frequency of calms and the lower figure the percentage frequency of variable winds.

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 40° to 45° N. Longitude 10° to 15° W. b was logged 30 times in every 100 observations while z was logged 12 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.



SEPTEMBER – Three charts: *Total observations of Typhoons for month – 133.*

Chart I – September 1st to 10th

The coast of China round Shantung is free. On the other hand in the South the coast of Annam is again within the danger zone. Cochin China and the Vizayas (Calamianes) Islands are still almost immune.

Three principal tracks. *One across the Miyakoshima Islands and the North of Formosa. On reaching the coast of China these typhoons turn N.E. over the Continent and turn speedily towards the Yellow Sea and Sea of Japan. Owing to their great increase in speed when travelling N.E. they are extremely dangerous to ship having sailed at the moment when the typhoon reaches the coast.*

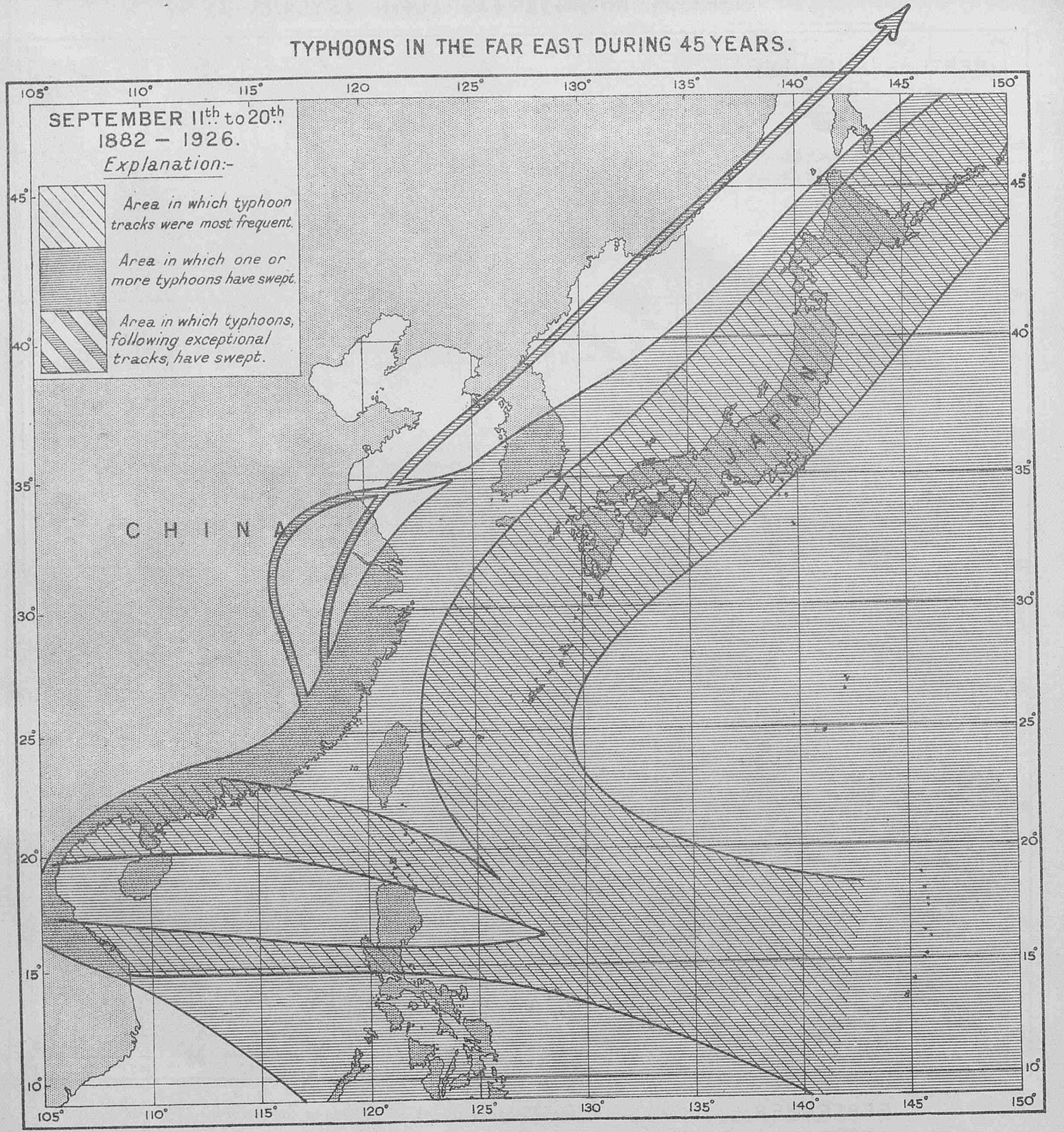
The second track lies, as at the end of August, over the Riu-kiu Islands, covering Japan but it increases in width on both sides. These typhoons turn N.E. near 23° or 25° N. and Long. 125° or 130° E.

The third track, which is fairly frequent, crosses the centre of Luzon in a W.S.W. direction and extends over Hainan and the whole Gulf of Tonking.

A small selection of coast near Hongkong, which was immune from 1893 to 1926 should be noted. W.S.W. & S.W. tracks are fairly frequent at any rate at intervals, in the South. Starting point: from North of Guam to South of Yap.

(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.



SEPTEMBER— Three charts: *Total observations of Typhoons for month – 133.*

Chart II— September 11th to 20th

The coast round Shantung and the South of the Annam coast are free. Safety increases in the North of the Yellow Sea and the Western part of the Sea of Japan.

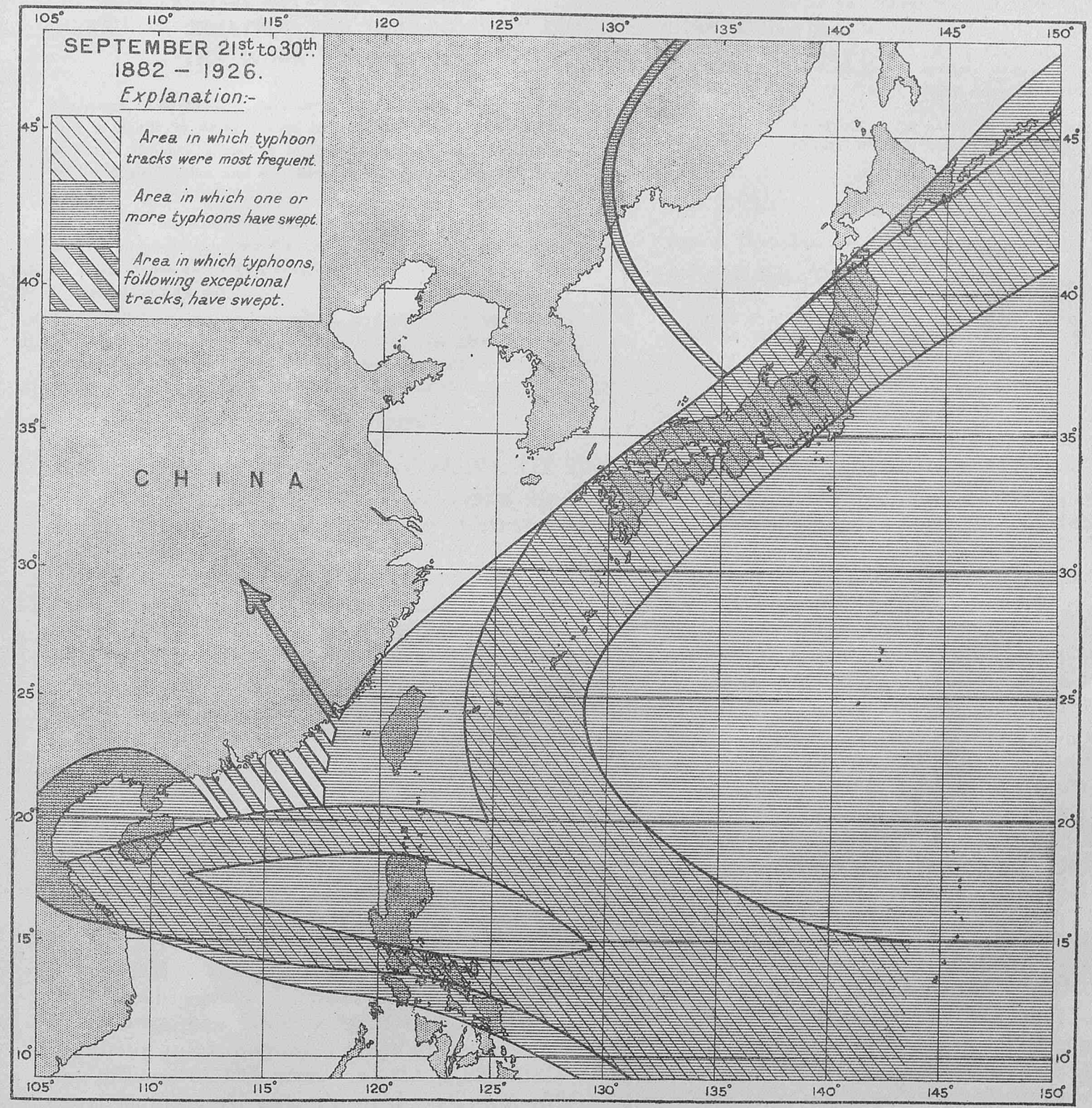
Three tracks. *That over the Riu-Kiu Islands and Japan shrinks and shifts slightly East. The central course lies further South and passes over the Balintang Channel towards the Coast between Swatow and Haifong. The third track moves South and follows along both sides of the parallel 15° across the centre of Luzon, the Macclesfield bank as far as the coast round Tourane.*

A few S.W. tracks over the South China Sea.

Starting point between Yap and the North of Guam.

(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.



SEPTEMBER— Three charts: *Total observations of Typhoons for month — 133.*

Chart III— September 21st to 30th

The free zone increases owing to the high pressure areas from Siberia which extends over the Continent; the coast of China from Wenhow upwards, as well as the whole Sea of Japan become free.

In the South, the section round Hongkong becomes calm as well as the coast of Annam South of Lat. 15°N. The South of the S. Sea of China, Palawan and the Southern Vizayas (Calamianes) Islands are immune.

Three principal tracks. *The Northern track shrinks further and covers the Riu-Kiu Islands and all Japan except Vezo. Point of inflection near Lat. 25°N. and between Long. 125° & 130°E. The central route still passes the Balintang Channel, but inclines S.W. passes near the Pratas Islands and over Hainan to the N. coast of Annam. The Southern track passes over the South of Luzon and Macclesfield & joins the central track North of Tourane.*

Starting point: from Guam and below it as far as the Pelew Islands & even nearer to Mindanao. Typhoons reaching the coast of China West of Formosa hardly invade the mainland, they subside immediately.

(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.

Pa. 327/2284. We. 77. D.21. 6p. 308. 1350. 7/31.

NOTICES.

DESPATCH OF INFORMATION REQUIRED IMMEDIATELY FOR THE CONDUCT OF THE WORK AT SEA.

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

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

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

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.

MONTHLY SUPPLY OF FORMS TO THE VOLUNTARY OBSERVING FLEET.

Forms 911, Ships' Meteorological Record, are posted with the "Marine Observer" monthly to all regular observing ships not keeping the Meteorological Log; as are Forms 138, Wireless Register, to Selected Ships.

A number of ships have found the monthly supply of *three* of the above forms to be insufficient; the allowance has therefore been increased to *four* per month.

These forms are only intended for use on board ships in the voluntary fleet list as designated. They should therefore not be passed on to ships not in the regular Observing Fleet, and if the increased supply is found on board some observing ships to be above requirements, the appropriate Port Meteorological Officer or Agent should be informed, and any surplus stocks returned to him.

Frequently in the past, without first obtaining acceptance on the list of regular voluntary observing ships, Captains and officers of ships have done work and returned forms which were not desired, resulting in disappointment to themselves.

The Meteorological Log and Original Note Book are only supplied to ships through the Port Meteorological Officers and Agents, also outline charts and forms for special observations such as measurements of sea and swell.

Form 912, Ice Report, is sent monthly with the "Marine Observer" to all observing ships traversing regions in which ice may be observed; and this form, and also special Form 905 for reporting observations made in tropical cyclones, may be obtained by any British ship from the Port Meteorological Officers and Agents.

There has been a tendency for the excessive collection of weather observations, resulting in an unwieldy mass of data much of which has not yet been utilised. Therefore, the officers of the merchant navy generally, and the corps of voluntary marine observers in particular, will give the best service to marine meteorology by only returning observations made and recorded carefully according to the plan set out in the Fifth Edition of the Marine Observers' Handbook.

Necessary work well done will achieve its object in time. Unnecessary data returned to the Marine Division delays the attainment of our aims and object.

Ships keeping Forms 911 who have not got reliable thermometers should leave columns 15 and 16 blank.

Ships keeping Forms 911 who have not two officers in a watch are only asked to record observations at the fixed G.M. times which fall in daylight.

Where the nature of service makes abbreviation desirable, ships keeping Forms 911 may omit the observations for which columns 15, 16 and 20 to 24 are ruled.

The recording of set and drift of current is considered most desirable, and this information should be included in the routine W.T. reports of Selected Ships when not addressed to shore stations. When such information is given the supplementary weather groups may often be omitted with advantage.

ICE CHART.

WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

NOTE.—In case of necessity owing to extreme southerly drift of ice, operative dates will be fixed for Track A.

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

(F) From 16th May to Opening of Belle Isle route and to 30th November when not using the Belle Isle route.
Westbound, on approaching Cape Race steer a course to pass 10 miles S. of Cape Race.
Eastbound, steer from position 25 miles S. of Cape Race.

(G) From the opening of the Straits of Belle Isle to 14th November.

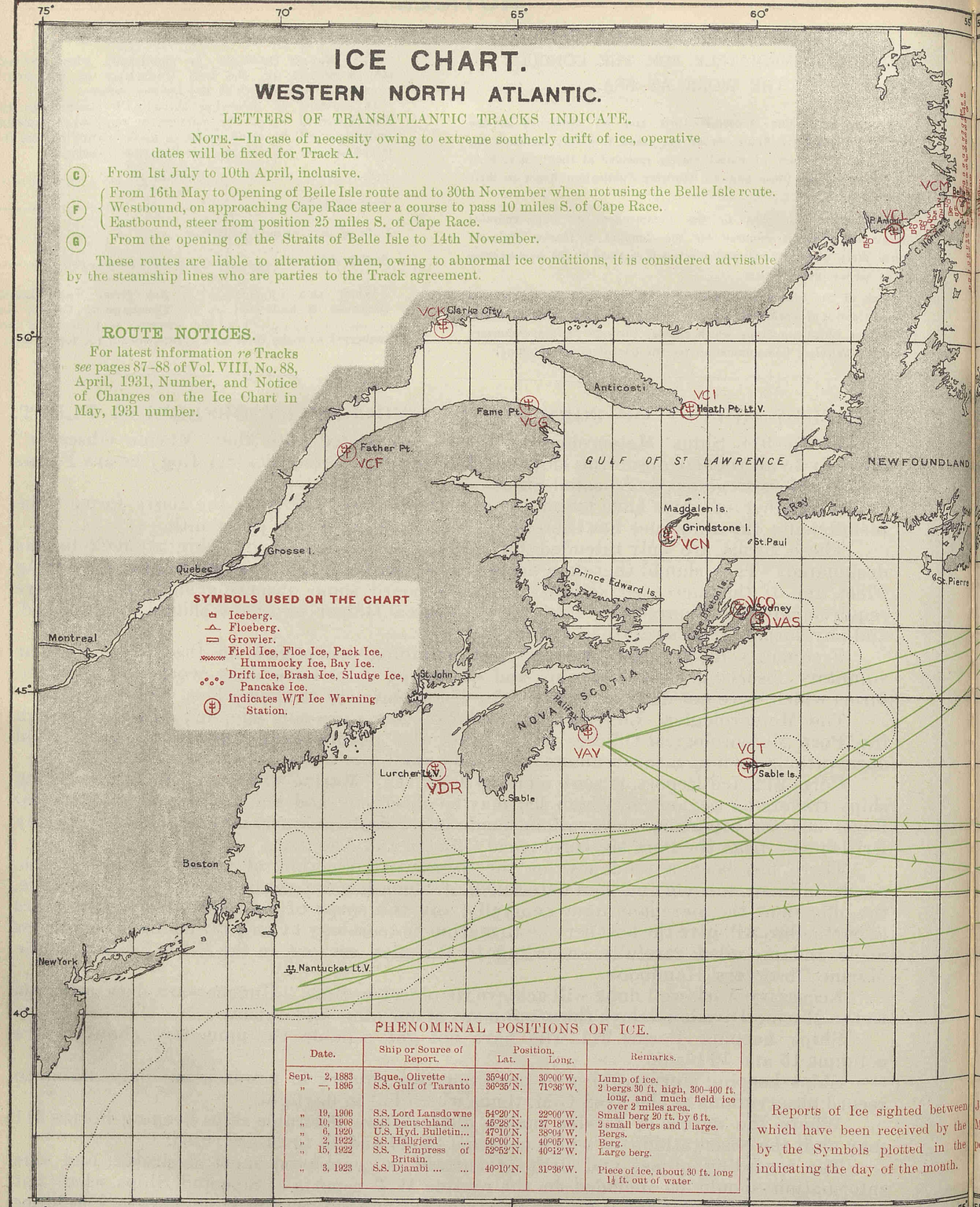
These routes are liable to alteration when, owing to abnormal ice conditions, it is considered advisable by the steamship lines who are parties to the Track agreement.

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.



PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position. Lat.	Position. Long.	Remarks.
Sept. 2, 1883	Bque., Olivette ...	35°40′N.	30°00′W.	Lump of ice.
„ —, 1895	S.S. Gulf of Taranto	36°35′N.	71°36′W.	2 bergs 30 ft. high, 300–400 ft. long, and much field ice over 2 miles area.
„ 19, 1906	S.S. Lord Lansdowne	54°20′N.	22°00′W.	Small berg 20 ft. by 6 ft.
„ 10, 1908	S.S. Deutschland ...	45°28′N.	27°18′W.	2 small bergs and 1 large.
„ 6, 1920	U.S. Hyd. Bulletin...	47°10′N.	38°04′W.	Bergs.
„ 2, 1922	S.S. Hallgjerd ...	50°00′N.	40°05′W.	Berg.
„ 15, 1922	S.S. Empress of Britain.	52°52′N.	40°12′W.	Large berg.
„ 3, 1923	S.S. Djambi	40°10′N.	31°38′W.	Piece of ice, about 30 ft. long 1½ ft. out of water.

Reports of Ice sighted between July 1st and July 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.

ICE IN GREENLAND WATERS.

INFORMATION RECEIVED BY CABLEGRAM FROM DANISH METEOROLOGICAL INSTITUTE, COPENHAGEN.

22nd July.....Compact ice with bergs inside to 40 miles off Cape Farewell.
Julianehaab Bay, ice to 30 miles off shore.

Ps.372/2284. We.774. D.21. Ga.908. 1050. 7/31.

SEPTEMBER M.O., 1931. H.M.S.O. 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 tested 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 of Safety of Life at Sea, 1929, provide the necessary information for the use of all shipping. Thus by shipowners encouraging the specialist work in 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
	BALTIC.		
7.7.31	54°44′N.	10°46′E.	Drifting wreckage.
	NORTH SEA.		
18.7.31	51°51′N.	2°48′E.	Six iron mooring buoys, apparently connected with bottom. Dangerous to navigation.
	ENGLISH CHANNEL.		
5.7.31	50°12′N.	2°38′W.	Submerged obstruction, apparently damaging propeller of *s.s. C. J. Barkdull.*
17.7.31	49°—N.	4°08′W.	Large white whistling light buoy, white fixed light still burning. Very dangerous to navigation.
22.7.31	51°02′N.	1°36′E.	Object resembling conical buoy, with fin at one end.
	IRISH SEA.		
7.7.31	55°12′N.	5°58′W.	Derelict vessel about 100 ft. long, probably a wooden fishing vessel with decks awash, hatch open, mast broken off about 3 ft. above deck.
	BAY OF BISCAY.		
13.7.31	47°19′N.	8°17′W.	Floating spar about 30 ft. long by 4 ft.; danger to navigation.
	MEDITERRANEAN.		
12 7 31	39°29′N,	6°35′E.	Buoy belonging to the cable steamer *Ampère* painted red at the top, surmounted by a flag with vertical white and red stripes. Dangerous to navigation.
14.7.31	36°34′N.	18°03′E.	Mooring buoy, dangerous to navigation.
20.7.31	42°44′N.	5°57′E.	Large iron floating beam (? cylinder) about 80 ft. long, 6 ft. diameter; very dangerous to navigation.
	NORTH ATLANTIC.		
2.7.31	48°32′N.	6°39′W.	Red spherical buoy adrift, marked *LL* over *C.3*, surmounted with a flagstaff flying "*O*" flag of international code, Danger to navigation.
2.7.31	36°10′N.	36°36′W.	Red, conical whistle buoy showing about 10 ft. out of water, heavily covered with barnacles beneath the surface: the whistle was heard for about 3 miles.
3.7.31	47°43′N.	26°50′W.	Large log about 20 ft. long, dangerous to navigation.
7.7.31	33°04′N.	62°13′W.	Raft about 15 ft. long.
9.7.31	50°05′N.	20°56′W.	Large iron spherical buoy, dangerous to navigation.
9.7.31	21°58′N.	74°20′W.	Three trunks projecting about 15 ft. out of water.
10.7.31	44°38′N.	24°41′W.	Big buoy with flat top, about 3 foot over water.
10.7.31	40°12′N.	70°26′W.	White spar projecting about 10 ft. out of water.
12.7.31	55°05′N.	22°52′W.	Spar, 30 ft. in length, dangerous to navigation.
12.7.31	40°35′N.	70°18′W.	Buoy with white skeleton superstructure surmounted by a cage daymark and red flag.
13.7.31	50°10′N.	19°37′W.	Large conical buoy, covered with marine growth dangerous to navigation.
13 7 31	40°10′N.	68°38′W.	Spar projecting 2 ft. out of water.
13.7.31	42°10′N.	43°50′W.	Large white buoy.
16.7.31	49°29′N.	18°48′W.	Large red conical buoy surmounted by crossbars.
17.7.31	49°24′N.	18°13′W.	Big iron buoy with double cross on white foundation, drifting: dangerous to navigation.
17.7.31	43°09′N.	9°25′W.	Large baulk of timber, length about 40 ft.; diameter 3 ft. covered with marine growth—dangerous to navigation.
18.7.31	43°49′N.	12°23′W.	Very large wooden log: dangerous to navigation.
24.7.31	44°08′N.	8°50.W.	Large rusty buoy: dangerous to navigation.
25.7.31	48°20′N.	5°19′W.	White conical buoy, white light, top mark black and white with white flag: buoy marked *Brest No. 1.*
25.7.31	48°13′N.	5°20′W.	Large conical buoy with light operating and 2 white flags flying from staff, marked *Brest No. 3.*
25.7.31	48°16′N.	5°15′W.	Gas buoy marked *Brest No. 2*, light in action.
25.7.31	48°12′N.	5°15′W.	Buoy with staff and diamond attached to a black cylinder.
26.7.31	47°34′N.	5°55′W.	*Cig* red painted conical buoy, dangerous to navigation

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.: B 6421*).

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.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
233 †† *Aba*, M.V.	Lawson, J. H. ...	G. L. Donald, R. A. Cherry	W.T	Elder Dempster ...	Forms 911 & 138 26.3.31 to 28.4.31	30.4.31
121 †† *Abinsi*	Sola, P.	J. J. Smith, G. Baker ...	,,	,, ,, ...	,, ,, 15.4.31 to 22.5.31	27.5.31
122 †† *Accra*, M.V. ...	Shooter, J. C.	R. B. Ellis	W.T.-M.	,, ,, ...	,, ,, 6.5.31 to 8.6.31	10.6.31
155 *† *Achilles*	Cosker, W.	C. Broad, R. E. Agar, J. S. Stratford.	M.L.	A. Holt	Form 915 4.10.30 to 13.2.31 ...	19.2.31
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. ...	J. Boyd, T. A. Langton ...	W.T.-M.	Elder Dempster ...	,, ,, 4.6.31 to 6.7.31	10.7.31
050 †† *Adriatic*	Binks, J. W., R.D., Lt.-Commr., R.N.R.	G. T. Kavanagh, R. S. Walker, O. V. Lucas.	W.T.	White Star	,, ,, 1.6.31 to 20.6.31	23.6.31
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	W.T.	,, ...	,, 5.5.31 to 20.6.31 ...	29.6.31
Aidan	Jackson, T. H.	A. A. Gerrard	No. A.	Booth	,, 2.4.31 to 31.5.31 ...	10.6.31
Alaunia	Prothero, M.	T. O. Ellis	,, A.	Cunard	,, 16.11.30 to 6.12.30 ...	8.12.30
Alban	Evans, L.	J. G. Tippett	M.L.	Booth	,, 1.3.31 to 23.6.31 ...	6.7.31
Albion Star ...	Hall, J. B.	T. Gilchrist	No. M.	Blue Star	... ...	...
310 †† *Alcantara*, M.V. ...	Wakeman, E. C. ...	R. H. Tepper	W.T.	R.M.S.P.	Form 911 21.2.31 to 8.4.31 ...	14.4.31
178 *† *Alipore*	Lyndon, E. P. ...	J. P. McArthur	No. M.	P. & O.	,, 4.5.31 to 8.6.31 ...	29.6.31
175 †† *Almanzora* ...	Hannam, F. S. ...	W. W. Dovell	W.T.	R.M.S.P.	,, 11.4.31 to 26.5.31 ...	28.5.31
012 †† *Almeda Star* ...	Turner Russell, W ...	E. K. Watkins, H. Metcalf, E. Russell.	No. M.	Blue Star	Forms 911 & 138 4.4.31 to 19.5.31	27.5.31
Alondra	Scott, L. S.	G. Hamilton, E. W. Thomas	,, A.	Yeoward	Form 911 7.6.31 to 27.6.31 ...	1.7.31
Alynbank	Robertson, J. ...	G. E. Beaton	,, A.	A. Weir & Co. ...	,, 15.5.31 to 31.5.31 ...	27.6.31
103 †† *Andalucia Star* ...	Vernon, R.	W. Cumming, P. Clarke, H. Heggen.	,, M.	Blue Star	Forms 911 & 138 28.4.31 to 9.6.31	13.6.31
Antilochus ...	Dougall, W. T. ...	... ...	,, A.	A. Holt	,, 7.5.31 to 8.6.31 ...	6.7.31
209 †† *Aorangi*, M.V.	Martin, W. ... ... Crawford, R. ...	J. Watling, D. H. Richards, J. Billingham.	M.L.	Canadian-Australasian	Form 915 21.8.30 to 13.1.31 ...	18.4.31
120 †† *Apapa*, M.V. ...	Beith, A.	J. R. Sergiades, V. Feeney.	W.T.-M.	Elder Dempster ...	Forms 911 & 138 21.5.31 to 20.6.31	25.6.31
129 †† *Appam*	Draper, J. M	W. M. M. Hutchings, C. V. Evans, H. O. Forster.	W.T.	,, ,, ...	,, ,, 13.5.31 to 19.6.31	22.6.31
Araby	Lee, J., D.S.C.	H. Haigh	No. A.	MacIver	Form 911 15.3.31 to 30.5.31 ...	4.6.31
115 †† *Arandora Star* ...	Moulton, E. W. ...	C. O. Worth, T. Graham, H. F. Partridge.	,, M.	Blue Star	Forms 911 & 138 12.6.31 to 11.7.31	13.7.31
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.	J. Hillman, A. Crone, G. Binks.	M.L.	Elders & Fyffes ...	Form 915 28.12.30 to 28.4.30 ...	1.5.31
Ariosto	Biggins, R. L.	N. F. Hewetson, R. W. Holdsworth.	No. A.	Ellerman Wilson ...	Form 911 25.2.31 to 30.5.31 ...	9.6.31
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 9.5.31 to 23.6.31	24.6.31
091 †† *Armadale Castle* ...	Whitfield, G. J. ...	W. Pace, C. Lloyd, A. H. Parry.	M.L.	Union Castle	Form 915 6.12.30 to 26.4.31 ...	29.4.31
296 *† *Arracan*	Thomson, S.	K. Currie, G. Davidson, H. H. Brown.	,,	P. Henderson ...	Form 915 14.11.30 to 15.4.31 ...	18.4.31
Arundel	Shaw, B.	E. Hill	C.C.	Southern Rly. ...	Telegraphic Report 1.7.31	1.7.31
095 †† *Arundel Castle* ...	Morton Betts, W. ...	G. L. Clarke, O Pitts, H. Baty.	M.L.	Union Castle ...	Form 915 10.1.31 to 3.5.31	14.5.31
280 *† *Astronomer* ...	Richards, J.	W. P. Baker	No. M.	Harrison	Form 911 12.1.31 to 24.5.31 ...	17.6.31

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
065 †† *Asturias* M.V. ...	LeBrecht, H. A. ...	H. G. Whittle, S. J. Hill, T. W. Stevens, L. H. Smith.	W.T.	R.M.S.P. Co.	Forms 911 & 138 24.5.31 to 2.7.31	6.7.31
Atreus	Wilcox, J. H.	E. A. H. Gepp	No. A.	A. Holt	Form 911 25.12.30 to 12.4.31 ...	17.4.31
281 *† *Auditor*	Owen, W. T. ...	L. Richardson, A. H. Thompson.	„ M.	Harrison	Forms 911 & 138 15.12.30 to 24.6.31	16.7.31
Ausonia	Carr, L. R., R.D., Commr., R.N.R.	E. R. Taylor, P. G. Britten, A. G. Cuthill.	„ A.	Cunard	Form 911 8.7.31 to 10.7 31 ...	15.7.31
212 *† *Australia*	Parkin, J. W.... ...	H. Falkiner, E. H. Lidstone, A. G. Brooks.	M.L.	British India	Form 915 27.9.30 to 10.2.31 ...	23.2.31
010 †† *Avelona Star* ...	Thomas, R. J. ...	F. N. Johnson	No. M.	Blue Star	Forms 911 & 138 9.5.31 to 25.6.31	6.7.31
124 †† *Avila Star*	Hopper, G.E.... ...	W. J. Stratta, C. Barratt, R. C. Freaker, D. Marshall.	„ M.	„	„ „ 21.3.31 to 6.5.31	11.5.31
179 *† *Balranald*	Short, C. E.	J. A. Stewart	„ M.	P. & O. Branch ...	Form 911 6.6.31 to 14.6.31 ...	24.6.31
051 †† *Baltic*	Davies, E.	F. W. Laws, N. E. Banks, S. Fieldwood.	W.T.	White Star	Forms 911 & 138 8.6.31 to 27.6.31	1.7.31
248 *† *Banffshire*	Page, W. J.	A. Banks, N. Stewart ...	No. M.	Turnbull Martin ...	„ „ 12.3.31 to 17.4.31	30.4.31
180 *† *Baradine*	Elliot Smith, H. ...	C. B. Roche, A. G. Jenkins, L. A Hill, C. F. Halliday, G. L. Farnfield.	M.L.	P. & O. Branch ...	Form 915 21.11.30 to 27.2.31 ...	3.3.31
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, H. ...	M. F. Harvey	„ M.	British India	Forms 911 & 138 27.5.31 to 24.6.31	13.7.31
181 *† *Barrabool*	Sheepwash, J. S. ...	F. N. Mosey, G. Hussey, J. Jones.	„ M.	P. & O. Branch ...	„ „ 17.1.31 to 23.4.31	28.4.31
294 *† *Barranca*	Edwards, A. C. ...	... ...	M.L.	Elders & Fyffes ...	... ...	...
070 †† *Bayano*	Harvey, A. E. ...	L. J. Mott...	W.T.	„ „ ...	Forms 911 & 138 27.5.31 to 27.6.31	1.7.31
Baychimo	Cornwell, S. A. ...	... ...	No. A.	Hudson Bay Co ...	Form 911 8.7.30 to 29.9.30 ...	6.11.30
059 †† *Belgenland* ...	Morehouse, W. A. ...	J. R. Loe, J. H. A. Mackie, W. A. Fletcher.	W.T	Red Star	Forms 911 & 138 14.6.31 to 3.7.31	7.7.31
183 †† *Bendigo*	Wyatt, F. N.	H. Morgan, R. S. Frost, G. C. Forrest, G. du Fosse.	No. M.	P. & O. Branch ...	Forms 911 & 138 26.5.31 to 26.6.31	3.7.31
Bengore Head ...	Milligan J.	C. J. Rea	„ A.	Ulster S.S. Co. ...	Form 911 1.7.31 to 7.7.31 ...	11.7.31
233 *† *Berwickshire* ...	Evens, E. H.	J. O. Woodall, R. Frankish, C. Allister.	W.T.	Turnbull Martin ...	Forms 911 & 138 23.4 31 to 20.6.31	22.6.31
Bhutan	Lawrie, J., D.S.O., D.S.C.	C. J. Williams	No. A.	Hain, S.S. Co ...	Form 911 7.6.31 to 16.6.31 ...	25.6.31
Brenda	Wright, J.	N. Ross	„ A.	Scottish Fishery Brd.	„ 4.6.31 to 30.6.31 ...	6.7.31
057 †† *Britannic*	Summers, F. F., R.D., Commr., R.N.R.	J. W. Peters, B. Harrison, F. E Patchett, A. Thompson.	W.T.	White Star	Forms 911 & 138 24.5.31 to 27.6.31	13.7.31
269 *† *British Consul* ...	Putt, R. O.	C. Galley	No. M.	British Tankers ...	„ „ 6.6.31 to 10.6.31	24.6.31
311 *† *British Dominion*	Taylor, R. J.	J. E. Jones, C. A. James ...	„ M.	„ „ ...	„ „ 2.2.31 to 7.5.31	16.5.31
266 *‡ *British Lantern* ...	Penton, P. M.... ...	T. Snowling	„ M.	„ „ ...	... ...	...
308 *† *Bulysses* M.V. ...	Head, B. P.	G. P. Hansard	„ M.	Anglo-Saxon Petroleum Co.	Forms 911 & 138 2.7.30 to 10.9.30	22.9.30
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.	W. Harvey, J. MacWalters, J. McMillan.	W.T.	Anchor...	Forms 911 & 138 7.6.31 to 1.7.31	3.7.31
156 †† *Calgaric* ...	Jackson, W. ... ... / Frank, F. A., D.S.O., R.D., Commr., R.N.R.	J. W. Paine	„	White Star	Form 911 2.2.31 to 10.3.31 ...	12 3.31
139 †† *California*	Smart, R. W.	E. Stormont, D. Morrison, A. C. Johnston.	„	Anchor...	Forms 911 & 138 16.5.31 to 9.6.31...	12.6.31
Cambria	Copland, C. P. ...	O. W. Ll. Jones	C.C.	L.M. & S. Rly	Telegraphic Report 17.7.31 ...	17.7.31
Cambridge	Williams, R.	T. Farrar...	No. A.	Federal	... ...	...
026 †† *Cameronia*	Munroe, D., R.D., Commr., R.N.R.	D. C. Shedden	W.T.	Anchor	Forms 911 & 138 31.5.31 to 20.6.31	23.6.31
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. ...	... ...	„ A.	Lyle S.S. Co.	Form 911 4.5.31 to 28.5.31 ...	24.6.31
282 †† *Carinthia* ...	Hawkes, W A., R.D., Commr., R.N.R. / Murchie, P. A., R.D., Capt., R.N.R.	J. Chapman, A. B. Fasting, G. S. Hutchinson.	W.T.	Cunard	Forms 911 & 138 25.5.31 to 27.6.31	9.7.31
035 †† *Carmania* ...	Greig, A. C., O.B.E., R..D, Capt., R.N.R.	J. McKie, E. R. B. Freeman, E. Gleave.	„	„	„ „ 24.5.31 to 7.7.31	11.7.31
092 †† *Carnarvon Castle* M.V.	Harvey, H. B. ...	L. H. Farrow, E. Clancy ...	„	Union Castle ...	„ „ 19.4.31 to 31.5.31	17.6.31
273 *† *Carnarvonshire* ...	Gulston, H. S. ...	S. W. Spencer	No. M.	Glen	... ...	...
034 †† *Caronia*	Dolphin, G. R., R.D., Commr., R.N.R.	W.B. Tanner, R. D. McCallum. P. O. Davis.	W T.	Cunard	Forms 911 & 138 20.6.31 to 27.6.31	1.7.31
Casanare	Browne, S.	... ...	No. A.	Elders & Fyffes ...	Form 911 11.2.31 to 13.3.31 ...	23.3.31
184 †† *Cathay*	Niven, J. D.	A. M. Askin	„ M.	P. & O	Forms 911 & 138 16.5.31 to 26.6.31	29.6.31
Cavina	Riseley, A. D. ...	B. R. Coe	„ A.	Elders & Fyffes ...	Form 911 2.6.31 to 6.7.31 ...	8.7.31
052 †† *Cedric*	Freeman, C. P., R.D., Commr., R.N.R.	R. Hawkins, H. R. Wilkinson, A. E. Harvey.	W.T.	White Star	Forms 911 & 138 15.6.31 to 6.7.31	7.7.31
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.	R. H. Shaw, W. F. Denison ...	W.T.	White Star	Forms 911 & 138 10.4.31 to 17.5.31	21.5.31
Cerinthus M.V. ...	Hammond, M. J. ...	E. Allen, C. L. Seaman, V. H. Kirkland.	M.L.	Hadley Shipping ...	Form 915 14.3.31 to 17.6.31 ...	25.6.31
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.	C. R. Roy	„ A.	Henderson	„ 18.1.31 to 1.4.31 ...	8.4.31
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 13.6.31 to 22.6.31	13.7.31
265 *† *City of Baroda* ...	McMillan, J.	H. G. Williams, J. E. Jenkins, R. W. Leese, A. G. Daniells.	M.L.	Ellerman	Form 915 16.3.30 to 2.1.31 ...	3.3.31
City of Benares ...	Wyper, J.	R. W. Kellie	No. A.	„	Form 911 5.8.30 to 15.8.30 ...	1.9.30
City of Cambridge	Wilson, E. G.	H. H. Asher	„ A.	„	„ 15.2.31 to 22.3.31 ...	4.5.31
City of Carlisle ...	Mordue, J. A. ...	... ...	„ A.	„	„ 5.6.31 to 20.6.31 ...	30.6.31
274 *† *City of Harvard* ...	MacMillan, J.... ...	E. Brook-Williams	M.L.	„	„ 11.2.31. to 1.4.31 ...	13.4.31
089 *† *City of Hereford* ...	Ricketts, —.	J. F. Lindell	No. M.	„	... ...	...
City of Hong Kong	Walton, H. L., O.B.E., R.D., Commr., R.N.R	H. Saunders	„ A.	„	Forms 911 & 138 3.3.31 to 3.4.31 ...	9.4.31
271 *† *City of Roubaix* ...	Radcliffe, A. V., R.D., Lt.-Com,, R.N.R.	J. A. Williams, J. L. Robertson, A. N. G. Jones	No. M	„	„ „ 14.10.30 to 3.11.30	15.12.30

	Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
272 *†	*City of Singapore*	Kendall, J. W. ...	F. Wrigley	No. M.	Ellerman	Forms 911 & 138 15.4.31 to 10.5.31	20.5.31
	City of Sydney ...	Mason, E.	H. Griffiths	„ M.	„	... ...	...
	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	„ 5.5.31 to 21.5.31 ...	22.6.31
	Clan Kenneth ...	... ...	T. A. Pearson	„ A.	„	„ 17.12.30 to 22.1.31 ...	2.2.31
	Clan Macalister ...	Stenson, F. J., A.D.C., R.D., Capt., R.N.R	T. M. Rees Davis	„ A.	„	„ 19.4.31 to 27.6.31 ...	13.7.31
	Clan MacBean ...	Boag, J.	L. Thomson	„ A.	„	„ 21.2.31 to 20.5.31 ...	28.5.31
	Clan Macbeth ...	Giles, H. J., R.D., R.N.R.	W. R. Woodriffe, L. W. Gibbins.	„ A.	„	„ 25.4.31 to 18.5.31 ...	13.7.31
	Clan Macfadyen ...	Laird, C.	W. C. Dazell	„ A.	„	„ 9.5.31 to 20.5.31 ...	22.6.31
	Clan Macfarlane ...	Redford, L.F., Lieut.-Commr. R.N.R.	W. H. Simpson, W. Wright, H. F. Town, J. R. Moss.	„ A.	„	20.12.30 to 5.4.31 ...	14.4.31
	Clan Macgillivray	Mackinlay, A. ...	S. R. J. Woods	„ A.	„	„ 1.4.31 to 13.5.31... ...	12.6.31
	Clan Macindoe ...	Scott-Smith, H. E. G	J. C. Dunphy, B. H. Magill.	„ A.	„	„ 8.4.31 to 11.5.31... ...	16.5.31
	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.	„	„	Form 915 19.12.30 to 30.3.31 ...	4.5.31
004 *†	*Clan MacNair* ...	Holman, W. G. ...	F. H. Petheridge A. Woodrow, J. Napier.	W.T.	„	Forms 911 & 138 10.4.31 to 11.6.31	15.6.31
	Clan Macquarrie ...	West, W. F.	J. H. Thorpe	No. A	„	„ 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, J. W. Innes, B. Hind.	„	„	„ 19.12.30 to 21.3.31 ...	10.4.31
	Clan Morrison ...	Porterfield, W. M. Lt.-Commr., R.N.R.	H. W. Petetier, A. G. Beynon. R. K. Phillips.	No. A.	„	Form 911 31.5.31 to 11.6.31 ...	18.6.31
	Clan Murdoch ...	Wynne, R. H.... ...	P. S. Evans, R. B. Linsley ...	„ A.	„	„ 5.4.31 to 21.5.31... ...	30.6.31
	Clan Ranald ...	Hawley, F. J. ...	H. C. Carter	„ A.	„	„ 25.5.31 to 17.6.31 ...	27.6.31
	Clan Ross	Calderwood, W. ...	G. B. Owen	„ A.	„	„ 8.3.31 to 5.6.31	9.6.31
	Clan Sinclair ...	Cater, H.	D. Mc Allister	„ A.	„	„ 27.4.31 to 5.7.31... ...	9.7.31
017 *†	*Colonial*	Baird, W.	W. Moore	„ M.	Harrison	„ 31.5.31 to 1.7.31 ...	6.7.31
298 *†	*Comedian*	Cadogan, A.	... ...	„ M.	„	„ 22.3.31 to 20.5.31 ...	3.7.31
185 ††	*Comorin*	Cartright, C.W., D.S.C.	R. E. Tucker	„ M.	P. & O.	Forms 911 & 138 20.5.31 to 24.6.31...	25.6.31
198 *†	*Contractor*	Harraden, W. E. ...	... ...	„ M.	Harrison	Form 911 10.5.31 to 4.6.31... ...	6.7.31
049 *§	*Coptic*, M.V. ...	Williams, G.	R. E. Nicholson, T. H. Davies, W. Burt.	W.T.	Shaw, Savill & Albion	Forms 911 & 138 4.3.31 to 6.4.31...	9.4.31
040 ††	*Corinthic*	Bowan, H	E. Burt	„	White Star	Form 911 29.3.31 to 24.6.31 ...	16.7.31
	Cornwall	Almond, J. G, ...	W. H. G. Timberlake... ...	No. A.	New Zealand S.S. ...	„ 17.4.31 to 21.5.31 ...	28.5.31
006 ††	*Coronado*	Legge, A. W.	A. Orchard, A. Magill, G. Binks.	W.T.	Elders & Fyffes ...	Forms 911 & 138 10.6.31 to 11.7.31...	16.7.31
214 *†	*Counsellor*	Jackson, J.	G. C. Heaton	No. M.	Harrison	... ...	...
301 *†	*Culebra*	Rathkins, E. C., Commr., R.N.R.	H. D. Hooper, T. Powell, R. J. Finch.	M.L.	R.M.S.P. Co.	Form 915 14.2.31 to 28.4.31 ...	5.5.31
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
	Cyclops	Glossop, S.	R. A. Hanney	„ A.	A. Holt	Form 911 8.12.30 to 5.2.31 ...	13.2.31
	Dakotian	Atkinson, W. H. ...	R. J. S. Pope	„ A.	Leyland	„ 10.11.30 to 17.12.30 ...	24.12.30
	Dardanus	Christie, W.	J. S. Ogilvie	„ A.	A. Holt	„ 26.4.31 to 5.5.31 ...	20.5.31
	Darian	Hannaford, W. ...	W. R. Vaughan	„ A.	Leyland	„ 20.4.31 to 24.6.31 ...	6.7.31
302 ††	*Darro*	Green, J.	J. M. Phillip	W.T.-M.	R.M.S.P. Co.	Forms 911 & 138 4.2.31 to 25.3.31...	18.4.31
	Davisian	Trickey, J.	P. M. Ralston	No. A.	Leyland	Form 911 29.8.30 to 22.10.30 ...	28.10.30
303 ††	*Demerara*	Matthews, G. P. ...	H. H. Treweeks, E. N. Gillet, F. Crankshaw.	W.T.-M.	R.M.S.P. Co.	Forms 911 & 138 27.10.30 to 17.12.30	22.12.30
008 *†	*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 16.7.31 ...	16.7.31
284 *†	*Director*	Worthington, B. ...	M. G. O'Brien, A. M. Hughes, A. E. Rogers.	No. M.	Harrison	Forms 911 & 138 20.10.30 to 12.3.31	25.4.31
080 *†	*Discovery*, Auxy. Barque.	MacKenzie, K. N. ...	W. R Colbeck	M.L.	Douglas Mawson Expedition.	... ...	...
	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.	Form 915 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
251 ††	*Doric*	Jackson, W. J. ...	T. Pratt, D. W. Chamberlain, A. Fisher, A. W. Hare.	W.T.	White Star	Forms 911 & 138 7.6.31 to 27.6.31	1.7.31
307 *†	*Doric Star*	Mills, D. H	— Anderson	No. M.	Blue Star	... ...	...
275 *†	*Dramatist*	Meek, A. J.	I. W. Page, ...	„ M.	Harrison	Form 911 1.5.31 to 24.5.31 ...	3.6.31
	Dromore Castle ...	Heanly, T. W. ...	P. Swan	„ A.	Union Castle	„ 18.1.30 to 3.7.30 ...	9.9.30
142 ††	*Duchess of Atholl* ...	McQueen, D. S. ...	G. Mowatt, C. D. Watt, E. Glennie.	W.T.-M.	Canadian Pacific ...	Forms 911 & 138 13.6.31 to 2.7.31...	8.7.31
152 ††	*Duchess of Bedford*	Sibbons, H.	A. Mawsey, J. Stewart, J. Roche.	„	„ „ „ ...	„ „ 24.5.31 to 6.7.31 ...	9.7.31
151 ††	*Duchess of Richmond.*	Freer, A., Capt., R.N.R.	F. H. Stell	„	„ „ ...	„ „ 7.6.31 to 25.6.31 ...	29.6.31
143 ††	*Duchess of York* ...	Stuart, R. N., V.C., D.S.O., Commr., R.N.R.	N. Scallon, D. Parsons ...	„	„ „ ...	„ „ 30.5.31 to 10.7.31...	17.7.31
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	„ „ 15.5.31 to 3.6.31	23.6.31
	Dunluce Castle ...	Hutchings, A. H. ...	A. C. M. Black	No. A.	„ „	Form 911 16.4.31 to 22.6.31 ...	27.6.31
	Dunrobin	Ramsay, J. D. ...	W. R. Holt, J. R. Butt ...	„ A.	Glen & Co.	„ 28.4.31 to 19.5.31 ...	17.6.31
	Dunster Grange ...	Wilson, G. F.... ...	J. Allerton	„ M.	Houlder	... ...	...
102 *†	*Duquesa*	Williams, W. E. ...	F. D. Jones	„ M.	Furness Withy ...	Forms 911 & 138 3.11.30 to 7.1.31	12.1.31
215 *†	*Durenda*, M.V. ...	Parkes, C. E.... ...	H. Stott	„ M.	British India	„ „ 11.6.31 to 5.7.31	8.7.31
077 ††	*Edinburgh Castle* ...	Gilbert, E. F.... ...	C. Harvey, J. Ferguson, E. F. Day.	W.T.	Union Castle	Form 911 25.4.31 to 14.6.31 ...	18.6.31
	Egori	... ...	R. Mercer	No. A.	Elder Dempster ...	„ 16.9.30 to 3.10.30 ...	6.10.30
107 *†	*El Argentino*, M.V.	Ellis, F., D.S.C. ...	W. Findlay, J. Burch, C. G. Adlard.	„ M	Houlder	Forms 911 & 138 2.3.31 to 22.4.31	12.5.31
009 *†	*Elmworth*, M.V. ...	Wilson, T. P.	J. M. Whyte	„ M.	R. S. Dalgleish ...	„ „ 26.2.31 to 23.3.31...	8.4.31
158 *†	*Elpenor*	Wilson, R. J.	E. Roberts, J. Macfarlane, G. Rowlands.	M.L.	A. Holt	Form 915 14.3.31 to 7.7.31 ...	14.7.31
108 *†	*Elstree Grange* ...	Williams, W. E. ...	P. A. Hawkesworth	No. M.	Houlder	Forms 911 & 138 2.2.31 to 27.4.31	30.4.31
109 *†	*El Paraguayo* ...	Frost, C. R.	G. Fletcher, F. J. G. Rice, R. L. Aldridge.	„ M.	„	„ „ 24.2.31 to 1.5.31 ...	5.5.31
110 *†	*El Uruguayo* ...	McNamara, T. ...	F. E. Hailstone	„ M.	... ...	„ „ 11.4.31 to 10.6.31	16.6.31

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31	Date Received.
027 *† *Elysia*	Henderson, F. M ...	C. Mitchell, J. Herbert, W. A. Beveridge.	M.L.	Anchor	Form 915 19.1.31 to 23.5.31 ...	19.6.31
088 *† *Empire Star* ...	Owen, G., R.D., Lieut.-Commr., R.N.R.	... ...	„	Blue Star	... ...	...
086 †† *Empress of Australia*	Griffiths, E., Lieut.-Commr., R.N.R.	A. Tippett, M. Williams, O. F. Pennington.	W.T.	Canadian Pacific ...	Forms 911 & 138 21.6.31 to 16.6.31	1.7.31
154 †† *Empress of Canada*	Hailey, A. J., Lieut.-Commr., R.N.R.	C. W. G. Patterson, G. M Fawcett, A. M. Barff, G. O. Baugh.	M.L.	„ „ ...	Form 915 27.11.30 to 20.3.31 ...	18.4.31
061 †† *Empress of France*	Turnbull, J., C.B.E., R.D., Capt., R.N.R.	E. Roberts, R. Newson, W. T. Brookes.	W.T.	„ „ ...	Forms 911 & 138 4.6.31 to 19.6.31	23.6.31
153 †† *Empress of Japan*	Robinson, S., C.B.E., R.N.R.	R. Goss, R. Wolfenden, A. Le Maistre.	M.L.	„ „ ...	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 17.2.31 to 8.5.31 ...	14.5.31
Euryades	Ewan, W. B.	D. S. Bruce	„ A.	„	„ 21.1.31 to 26.1.31 ...	17.2.31
Explorer	Allan, J.	A. Stout	„ A.	Scottish Fishery Brd.	„ 4.6.31 to 29.6.31 ..	6.7.31
067 *† *Ferndale*	Beighton, J. N. ...	L. J. Hopkins, H. C. Hone ...	„ M.	Aberdeen Commonwealth.	Forms 911 & 138 18.2.31 to 1.6.31	6.6.31
074 *† *Fordsdale*	Thompson, W. J. ...	M. Harries	„ M.	Aberdeen Commonwealth	„ „ 26.3.31 to 28.4.31	5.5.31
030 †† *Franconia*	Irving, R. B.	W. M. Stewart, J. H. Kenworthy, R. Pollitt.	W.T.	Cunard	„ „ 31.5.31 to 6.6.31	9.6.31
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 2.5.30 to 22.9.30 ...	13.1.31
{	Macphedran					
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
Glenbeg, M.V. ...	Newing, L.	G. A. C. Barnard	No. A.	„	Form 911 20.1.31 to 1.3.31	7.4.31
126 *† *Glengarry*, M.V. ...	Angier, J.	J. Tyler, J. W. Leslie, S. W. Bell.	„ M.	„	Forms 911 & 138 29.3.31 to 10.4.31	14.4.31
Gleniffer	Baker, W. H.	A. H. D. Shaw	„ A.	„	Form 911 16.4.31 to 1.5.31 ...	8.6.31
Glenluce, M.V. ...	Kennett, W. H. ...	J. A. Evans	„ A	„	„ 4.2.31 to 3.6.31	7.7.31
Glenshane	Martin, V. F. ...	S. Merrick	„ A.	„	„ 27.10.30 to 17.2.31 ...	24.2.31
Glentworth ...	Aitchison, D.M. ...	A. Bone	„ A.	R. S. Dalgleish ...	„ 16.5.31 to 28.5.31 ...	4.6.31
Gloucester Castle ...	MacMahon, J., R.D., Commr., R.N.R.	C. Black	„ A.	Union Castle ...	„ 26.2.31 to 3.5.31 ...	20.5.31
085 *† *Governor*	Windsor, G. R. ...	A. Watson, J. Stanhope ..	„ M.	Harrison	Form 911 & 138 28.3.31 to 11.5.31	16.6.31
Halesius	Steel, R.	— Browne, A. S. P. May ...	„ A.	R. P. Houston ...	Form 911 21.4.31 to 17.5.31 ...	8.6.31
111 *† *Hardwicke Grange*	Fowler, W. H. ...	W. L. Baker, A. W. Seybold, W. E. Ellis.	„ M.	Houlder	Forms 911 & 138 27.4.31 to 30.6.31	8.7.31
Harmonides ...	Elwell, F. R. ...	L. Pogson, J. Craig-Robertson, E. McLachlan.	„ A.	R. P. Houston ...	Form 911 27.3.31 to 25.4.31 ...	29.4.31
262 ** *Hauraki*, M.V. ...	Norton, A. T.	D. McLeish, A. W. Rabbitts. R. Kendall,	M.L.	Union S.S. Co., N.Z. ...	Form 915 15.8.29 to 31.10.30 ...	8.1.31
Herminius	Roberts, T. V., R.D. Lieut.-Commr., R.N.R.	F. W. Gilroy	No. A.	Aberdeen Commonwealth.	Form 911 6.3.31 to 12.4.31 ...	18.4.31
Herschel	Watson, W. W. ...	S. Ranson	„ A.	Lamport & Holt ...	„ 9.1.31 to 18.3.31 ...	20.3.31
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 15.5.31 ...	15.5.31
182 †† *Highland Brigade*	Lloyd, H.	W. Stephen, N. Hersee, C. Morgan.	No. M.	Nelson	Forms 911 & 138 22.3.31 to 13.5.31	18.5.31
116 †† *Highland Chieftain*, M.V.	Robinson. R. H. ...	W. J. Presland, W. Irving, J. H. Cables.	„ M.	„	„ „ 7.5.31 to 22.6.31	28.6.31
099 †† *Highland Monarch*, M.V.	Ashby Graves, F. ...	R. Polden	„ M.	„	„ „ 18.4.31 to 10.6.31	13.6.31
250 †† *Highland Princess* M.V.	Collins, D.	I. Shearer	„ M	„	... ...	...
079 *† *Hildebrand* ...	Buck, R. H., R.D., Capt., R.N.R.	W. H. Cross	W.T.	Booth	Forms 911 & 138 17.5.31 to 22.6.31	28.6.31
075 *† *Hobson's Bay* ...	Roberts, T. V., R.D., Lt.-Commr., R.N.R.	J. Worrall, C. C. Good, C. Carroll.	M.L.	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 4.6.31 to 1.7.31 ...	13.7.31
Hubert	Briscoe, W.	T. E. Williams	M.L.	Booth	Form 911 4.2.31 to 1.4.31 ...	14.4.31
261 *† *Huntingdon* ...	Field, H. G. B. ...	M. J. Broadhead, P. S. Calcutt. J. H. Strand Jones, H F. Wilkinson.	W.T.	Federal...	„ & 138 17.11.30 to 3.3.31	14.3.31
200 *† *Huntsman*	Russell, H.	H. Wells	No. M.	Harrison	... ...	...
289 *† *Inanda*	Gibbings, W. H ...	... ...	„ M	„	... ...	...
*† *Ingoma*	Richardson, — ...	S. M. Smith, D. Douglas Kerr, R. Sutcliffe.	„ M.	„	Forms 911 & 138 27.3.31 to 6.5.31	11.5.31
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., Lieut. - Commr., R.N.R.	B. W. Smith, D. T. Sharrock, S. G. Scrutton, R. C. Viguris.	„	Jamaica Direct Fruit	„ 15.1.31 to 30.5.31 ...	6.6.31
072 ** *Jamaica Planter* ...	Towell. W. C.... ...	R. D. Willsdon	W.T.	„ „	Forms 911 & 138 20.5.31 to 19.6.31	24.6.31
Jamaica Producer	Allen, P. D.	H. C. Braine	No. A.	„ „	Form 911 7.5.31 to 2.6.31 ...	12.6.31
Jamaica Settler ...	Rodick, J. M.... ...	H. Davies	„ A	„ „	... ...	...
Javanese Prince, M.V	Smith, J.	C. E. Edney	„ A.	Prince	„ 16.3.31 to 19.5.31 ...	28.5.31
187 *† *Jeypore*	Harris, W. L.... ...	A. G. Edwards	„ M.	P. & O.	Forms 911 & 138 16.5.31 to 4.6.31 ...	29.6.31
188 †† *Kaisar-i-Hind* ...	Headlam, P. C., R.D., Commr. R.N.R.	T. T. Ferguson, H. Flint, S. Hopkins	„ 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.	„	„ „ 6.3.31 to 14.6.31...	17.6.31
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*	Maclean, A.	J. B. Walker, G. P. King ...	No. M.	British India... ...	Forms 911 & 138 9.5.31 to 1.6.31	29.6.31
236 *† *Karmala*	McBride, —.	A. Storr	„ M.	P. & O.	... ...	...
190 *† *Kashgar*	Sudell, F., R.D., Commr., R.N.R.	R. P. Eddy, C. H. Long ...	„ M.	„	Forms 911 & 138 14.12.30 to 8.3.31	24.3.31
191 *† *Kashmir*	Axford, R. G.... ...	T. Webb, F. C. Fairburne ...	„ M.	„	Forms 911 & 138 4.4.31 to 28.5.31	29.6.31
114 †† *Kenya*	Grant, W. E.	W. H. Brown, R. Lord, A. Ralph.	„ M.	British India ...	„ „ 13.3.31 to 23.4.31	26.5.31
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.	R. H. Hand	„ M.	P. & O.	Forms 911 & 138 13.3.31 to 26.5.31	24.6.31
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

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
147 ††	*Laconia*	Townley, J. C., R.D., Capt. R.N.R.	J. D. Archer	W.T.	Cunard...	Forms 911 & 138 15.6.31 to 5.7.31	8.7.31
	Laguna, M.V. ...	Dunn, R.E., O.B.E....	W. Billington	No. A.	Pacific S.N. Co. ...	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 29.3.31 to 20.6.31	24.6.31
	Lalande	Symons, P.	C. Legg	„ A.	Lamport & Holt ...	Form 911 30.1.30 to 24.2.31 ...	4.3.31
036 ††	*Lancastria*	Murchie, P. A., R.D., Capt., R.N.R.	J. S. Glendenning, S. Trooman, N. Kingscote.	W.T.	Cunard	Forms 911 & 138 20.4.31 to 8.5.31	12.5.31
	Laomedon	Davidson, T. W. ...	A. E. Martin	No. A.	A. Holt...	Form 911 31.5.31 to 14.6.31 ...	25.6.31
082 *†	*La Paz*, M.V. ...	Morgan, D. R. ...	R. W. Hanson, J. Sutherland, G. Pattison.	„ M.	Pacific S.N. Co. ...	Forms 911 & 138 15.3.31 to 13.4.31	16.4.31
	Laplace	Hickman, V. G. ...	N. R. Perons	„ A.	Lamport & Holt ...	Form 911 10.2.31 to 4.5.31... ...	11.5.31
134 ††	*Lapland*	Harvey, H.	W. Jenkins, H. Patterson ...	W.T.	Red Star	Forms 911 & 138 31.5.31 to 20.6.31	22.6.31
076 *†	*Largs Bay*	Jermyn, W. M. ...	F. B. Marsden	No. M.	Aberdeen Commonwealth.	„ „ 14.12.30 to 21.2.31	30.4.31
112 *†	*La Rosarina* ...	Webb, C	W. S. Hamblin...	„ M.	Houlder	„ „ 22.3.31 to 14.5.31	22.5.31
	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. Crangle, W. Nicholl.	W.T.	White Star	Forms 911 & 138 23.5.31 to 10.7.31	14.7.31
083 *†	*Lautaro*, M.V. ...	Kite, E.	J. Lloyd Jones	No. M.	Pacific S.N. Co. ...	„ „ 22.5.31 to 10.6.31	20.6.31
254 *†	*Limerick*	Molyneux, P. L. ...	A. M. Dowman, N. A. Thomas	„ M.	Federal...	„ „ 22.2.31 to 3.4.31	8.4.31
093 *†	*Llandaff Castle* ...	Attwood J.	T. E. R. Wilford	W.T.	Union Castle	Form 911 26.3.31 to 30.5.31 ...	3.6.31
097 ††	*Llangibby Castle*, M.V.	Nicholl, D.	H. S. Warren	„	„ „	Forms 911 & 138 25.4.31 to 26.6.31	17.7.31
094 *†	*Llandovery Castle*	Morgan, A. O., R.D., Commr., R.N.R.	L. H. Farrow, T. C. Goldstone, F. R. Pope.	M.L.	„ „	Form 915 20.9.30 to 24.11.30 ...	3.12.30
216 *†	*Llanstephan Castle*	Bickford, C. N. ...	T. Campbell, H. Bunn, I. Duncan.	W.T.	„ „	Form 911 9.3.31 to 7.5.31... ...	14.5.31
084 *†	*Lobos*, M.V. ...	Grant, F. H.	R. W. Gill	No. M.	Pacific S.N. Co. ...	Forms 911 & 138 27.12.30 to 16.2.31	21.2.31
	Lochgoil, M.V. ...	Schlanbusch, O. V....	P. Burrell	„ A.	„ „ ...	... ...	...
	Loch Katrine ...	Cocks, A.	J. E. Pardoe Matthews ...	„ A.	„ „ ...	Form 911 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	„ A.	Furness Withy ...	... ...	...
	London Exchange	Griffiths, J.	C. T. V. Rixham	„ A.	„ „ ...	Form 911 20.5.31 to 24.6.31 ...	27.6.31
	Lord Antrim ...	Jarvis, F. E.	C. A. Milligan	„ A.	Ulster S.S. Co. ...	„ 21.9.30 to 4.10.30 ...	7.10.30
	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 9.6.31 to 26.6.31	16.7.31
194 ††	*Macedonia*	Dickenson, C. C. ...	R. A. B. Kimpton	W.T.-M.	P. & O.	„ „ 16.5.31 to 4.6.31	10.6.31
013 *†	*Macharda*	Hanna, R. G.	C. Lindsay Miller, C. Parry, G. A. Jackson.	No. M.	Brocklebank	„ „ 7.6.31 to 17.6.31	1.7.31
232 *†	*Madura*	Parker, A. A.... ...	A. Usher, D. S. Hutton, F. C. Conolly.	„ M.	British India... ...	„ „ 9.1.31 to 14.3.31	17.3.31
078 *†	*Magician*	Bury, E. R.	W. E Shotton	„ M.	Harrison	... ...	...
141 *†	*Mahia*	Andrews, C. M. ...	G. Sangwin, M. P. Congdon, J. Jackson.	W.T.	Shaw, Savill & Albion	Forms 911 & 138 1.3.31 to 15.6.31	22.6.31
140 *†	*Mahratta*	Williams, E. R ..	T. C. Eddy	No. M.	Brocklebank	... ...	...
014 *†	*Mahronda*	Sharpe, G.	W. Le Brocq	„ M.	„	Forms 911 & 138 16.4.31 to 20.5.31	5.6.31
015 *†	*Mahsud*	Kershaw, R. W. ...	S. Richardson, E. Walker, J. R. Paisley.	„ M.	„	„ „ 10.12.30 to 10.3.31	20.4.31
016 *†	*Maidan*	Ison, W. A	F. Moore, F. L. Attwood, L. E. Jeans.	„ M.	„	„ „ 26.2.31 to 8.5.31	12.5.31
	Maihar	Charlton, W. L. ...	C. Cadwaller, H. Gillespie, A. D. Spring.	„ A.	„	Form 915 6.7.30 to 25.9.30... ...	4.11.30
042 *†	*Maimoa*	Johnson, J. W. ...	A. Winton. E. Sainsbury, D. O. V. Pickersgill.	M.L.	Shaw, Savill & Albion	„ 18.1.31 to 15.5.31 ...	19.5.31
	Maimyo	Smith, G. C.	J. L. Rodgers	No. A.	Brocklebank	Form 911 5.3.31 to 21.4.31 ...	27.4.31
018 *†	*Makalla*	Maughan, J. W. ...	E. Williams	„ M.	„	Forms 911 & 138 4.1.31 to 1.4.31	7.4.31
225 **	*Makura* ... {	Spring Brown, J. F.	A. P. Cousin, S. H. Crawford,	M.L.	Canadian-Australasian	Form 915 24.12.30 to 12.4.31 ...	9.7.31
	{	Martin, W. J.... ...	A. H. Morgan.				
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, H. B. Kelly, M. Mackenzie.	„ M.	„ ...	„ „ 10.1.31 to 10.4.31	15.4.31
219 *†	*Malda*	Denne, G. H. A. ...	... ...	„ M.	British India ...	Form 138 23.2.31 to 18.5.31 ...	3.7.31
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 29.4.31 to 12.6.31	15.6.31
96 ††	*Malwa*	Townshend, W. P., R.D., Capt. R.N.R.	P. G. Lawrence...	„ M.	„	„ „ 26.4.31 to 18.6.31	25.6.31
053 *†	*Manaar*	Thowless, E.	A. L. Harrop, J. Robinson, R. G. Widdon.	„ M.	Brocklebank	Forms 911 & 138 7.5.31 to 28.5.31	24.6.31
	Manchester Brigade	Stott, C. H.	J. H. Round, E. E. Bonnaud, J. Gregory.	M.L.	Manchester Liners ...	Form 915 10.5.30 to 25.11.30 ...	5.12.30
	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
	{	Longhurst, J. H. ...					
146 *†	*Mandasor*	Richardson, T. ...	F. C. Madden, T. S. Cullen, J. Alexander.	„ M.	Brocklebank	„ „ 5.4.31 to 1.5.31	1.6.31
220 *†	*Manela*	Maples, S. H. ...	T. M. Robertson, L. W. Kerton, F. C. Conolly.	„ M.	British India	„ „ 24.4.31 to 29.6.31	6.7.31
022 *†	*Manipur*	Cochran, G. N. ...	L. F. Dodson. R. Penston, A. Hill.	„ M.	Brocklebank	„ „ 26.5.31 to 22.6.31	13.7.31
221 *†	*Manora*	Hudson, H. T., R.D., Commr., R.N.R.	W. Brawn, A. Pyatt, S. A. Richards.	„ M.	British India... ...	„ „ 2.3.31 to 3.4.31	8.4.31
177 *†	*Mantola*	James, D. F.	M. Sharp	„ M.	„ „	... ...	...
197 ††	*Mantua*	Hignett, R.D., Commr. R.N.R.	F. R. N. Greasley, C. Hayward, H. J. Cholerton.	W.T.-M.	P. & O.	Forms 911 & 138 11.3.31 to 8.5.31	18.5.31
299 **	*Marella*	Donaldson, A. ...	M. Pemberton, W. D. Colquhoun, A. G. W. Thomas.	M.L.	Burns Philp	Form 915 2.9.30 to 21.12.30 ...	19.2.31
	{	Aspinall, A. E. ...	H. Bryan, G. W. Revell,	„	Ellerman Wilson ...	„ 21.10.30 to 16.3.31 ...	19.3.31
	Marengo ... {	Bean, A.	W. L. Hepson. F. Brown,				
	{	Sibree, J. S.	C. Newton, J. E. Dobson.				
222 ††	*Margha*	Hemmings, W. H. ...	P. Wright. H. Watkins ...	„	British India... ...	„ 19.4.31 to 12.7.31 ...	14.7.31
104 *†	*Marquesa*	Smiles, R. S.	J. Wetherall	No. M.	Furness Houlder ...	Forms 911 & 138 9.3.31 to 7.5.31	16.5.31
021 *†	*Masula*	Fitt, W. A.	E. B. Cutlack, J. E. Jones, A. L. F. Bell.	„ M.	British India	„ „ 22.3.31 to 10.6.31	20.6.31
	Matakana	Gordon, H.	J G. Allen	„ A.	Shaw, Savill & Albion	... ...	...
044 ††	*Mataroa*	Kershaw, W. A. R....	F. Eadon, H. A. Hill, F. C. Charnley, W. West, K. Owen.	M.L.	„ „ „	Form 915 3.1.31 to 12.4.31 ...	18.4.31
023 *†	*Matheran*	Mulcahy, J. J. ...	S. S. Slade, J. F. Butterworth, W. Cowrie.	No. M.	Brocklebank	Forms 911 & 138 4.5.31 to 4.6.31	8.6.31
223 *†	*Matiana*	Green, F. V.	L. A. Burn, J. W. F. Daly, P. M. Wilson.	„ M.	British India... ...	„ „ 23.5.31 to 16.6.31	14.7.31
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, J. Wiseman, W. L. Cox.	W.T.	Cunard	„ „ 31.5.31 to 2.7.31	6.7.31
287 ††	*Melita*	Stewart, A.	L. N. Outram, S. W. Keay ...	„	Canadian Pacific ...	„ „ 13.6.31 to 4.7.31	7.7.31
	Mercian	Manning, C. H. ...	F. P. Sheerbad	No. A.	Leyland	Form 911 14.3.31 to 26.5.31 ...	29.5.31
	Meriones	Hanney, T. W ...	J. G. Jones. G. H. Oldridge, A. A. Pettigrew.	„ A.	A. Holt...	„ 29.4.31 to 23.5.31 ...	16.6.31

Name of Vessel.	Captain.	Observing Officers	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed Received up to 17.7.31.	Date Received.
312 *† *Minderoo*	Macphedran W. J. ...	A. J. Perry	No. M.	Western Australian S.N. Co.	Forms 911 & 138 12.3.31 to 19.4.31	2.6.31
Minna	Mackenzie, G. G. ...	A. M. Campbell	„ A.	Scottish Fishery Brd.	Form 911 28.5.31 to 13.7.31 ...	15.7.31
283 †† *Minnedosa*	Lancaster, P. A. ...	H. M. Sanders, C. Duggan, D. Ewing.	W.T.	Canadian Pacific ...	Forms 911 & 138 30.5.31 to 25.6.31	27.6.31
068 †† *Minnetonka* ...	Gates, T. F., C.B.E. ...	H. E. D. McCartney, W. S. Harrison, T. W. Pullan.	No. M.	Atlantic Transport ...	„ „ 8.6.31 to 27.6.31	1.7.31
069 †† *Minnewaska* ...	Claret, F. H., C.B.E., Commr., R.N.R.	E. Pengelly, D. Davies, R. Hill.	W.T.-M.	„ „ „ ...	„ „ 25.5.31 to 10.7.31	13.7.31
Mississippi, M.V. ...	Finch, E.	A. C. Clay	No. A.	„ „ ...	Form 911 10.2.31 to 28.3.31 ...	2.4.31
224 *† *Modasa*	Gilchrist, J. W ...	W. Ascroft, H. C. Pearson	„ M.	British India	Forms 911 & 138 18.3.31 to 1.6.31...	6.6.31
199 †† *Mongolia*	Rhodes, H. R. ...	H. Tee, H. C. Stinn, W. S. Joliffe.	„ M.	„ „	„ „ 2.5.31 to 15.5.31	15.6.31
Monowai	Toten, A. T.	... ...	M.L.	Union S.S. of N.Z. ...	... ...	...
148 †† *Montcalm*	Rothwell, A.	T. L. Gillette, A. Mackie	W.T.-M.	Canadian Pacific ...	Forms 911 & 138 21.6.31 to 9.7.31...	13.7.31
149 †† *Montclare*	Carr-Jones, D. J. ...	A. Watt, J. Sharples, J. Soames.	W.T.	„ „ ...	„ „ 31.5.31 to 18.6.31	27.6.31
150 †† *Montrose*	Dott, J. F.	K. Hutchings, E. A. Shergold, L. L. Thornton.	„	„ „ „ ...	„ „ 7.6.31 to 25.6.31 ...	28.6.31
164 †† *Mooltan*	Morton, A. J.	R. M. Richardson, J. C. Ablewhite, H. Fitz. Marshall.	No. M.	P. & O.	Forms 911 & 138 7.2.31 to 14.5.31	19.5.31
226 †† *Mulbera*	Caffyn, F.	G. H. Springger	„ M.	British India	„ „ 29.3.31 to 30.4.31	5.5.31
290 *† *Musician*	Bostock, O.	K. H. Davies	„ M.	Harrison	... ...	...
073 *† *Nagara*	Cocks, A.	R. L. Matheson...	„ M.	R.M.S.P. Co	... ...	...
201 †† *Naldera*	Harrison, R., D.S.O., R.D., Capt. R.N.R.	H. J. Mann, G. D. Copeland, L. J. Brown.	M.L.	P. & O.	Form 915 4.4.31 to 8.7.31 ...	14.7.31
227 *† *Nardana*	Reilly, J. V.	H. Goater, H. Grace, A. Woodward.	„	British India	„ 1.11.30 to 1.3.31 ...	4.3.31
118 ** *Narenta*	Falconer, A. C. ...	G. S. Grant, G. D. Bonner, M. A. Murch.	No. M.	R.M.S.P. Co.	Forms 911 & 138 3.1.31 to 26.3.31	2.4.31
202 †† *Narkunda*	Biggs, J. H., R.D. Commr., R.N.R.	C. H. Moulton, J. C. Davies, P. P. Travis.	„ M.	P. & O.	„ „ 13.5.31 to 4.6.31 ...	14.7.31
305 *† *Nebraska*	Bridges, E. A. ...	A. Frogbrook, W. S. Thomas, P. R. Cocks.	„ M.	R.M.S.P. Co.	„ „ 20.4.31 to 15.5.31 ...	19.5.31
203 †† *Nellore* ... {	Gordon, A. S. ...	L. J. Dixon, J. F. M.	M.L.	E. & A. S.S. Co. ...	Form 915 31.1.31 to 29.4.31 ...	29.6.31
162 *† *Nestor* ... ... {	Diamond, L. S. ... Adcock, F.	Heddle, H. E. Nuzum. 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 ...	„ 18.9.30 to 1.2.31 ...	14.2.31
210 ** *Niagara*	Hill, T. V.	G. H. Kime, D. A. Menlove L. P. Bourke.	„	Canadian-Australasian	„ 13.11.30 to 23.2.31 ...	30.4.31
Ningchow	Beale, H. E.	E. Butler	No. A.	A. Holt...	Form 911 5.1.31 to 16.1.31 ...	23.1.31
256 *† *Norfolk*	Howell-Price, J., D.S.O., D.S.C.	G. C. Hocart, K. M. Lloyd Jones, L. Hanley.	M.L.	Federal	Form 915 1.12.30 to 22.3.31 ...	25.3.31
270 *† *Norman Star* ...	Sinclair, J.	R. J. Wills	No. M.	Blue Star	... ...	...
Norna	Angus, W.	T. R. Ness	„ A.	Scottish Fishery Brd	Form 911 1.6.31 to 18.6.31 ...	27.6.31
100 *† *Norseman*, C.S. ...	Hammond, S. M. ...	R. Moss	„ M.	Western Tel. Co. ...	„ 13.7.30 to 6.8.30 ...	28.8.30
297 *† *Northumberland* ...	Upton, H. L., D.S.C., R.D., Commr., R.N.R	R. S. Miller, H. Rogers, G. B. Cathie.	„ M.	Federal...	Forms 911 & 138 9.11.30 to 16.12.30	22.4.31
267 *† *Novara*	Dene. R. C.	N. W. Leach	„ M.	P. & O.	Form 911 25.5.31 to 5.6.31 ...	6.7.31
Nova Scotia ...	Furneaux, S. J. ...	J. E. Wilson, A. Hender, N. Forsythe.	M.L.	Furness Withy ...	Form 915 8.10.30 to 12.3.31 ...	20.3.31
Novasota	Miles, A. G.	F. G. Dawson	No. A.	R.M.S.P. Co.	... ...	...
230 *† *Nowshera*	Longhurst, J. H. ...	R. Burch, B. H. Bentall	„ 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
Oaklands Grange ...	Phillips, A. G. M. ...	J. C. Thomas	„ A.	Houlder Bros. ...	Form 911 30.5.30 to 18.9.30 ...	4.10.30
243 *† *Opawa*	Robinson, F. W. ...	J. W. Pring	„ M.	New Zealand S.S. Co.	... ...	...
170 †† *Orama*	Staunton, H. G., C.B.E., R.D., Commr., R.N.R.	W. Eliot, K. Morrison, R. W. Roberts.	W.T.	Orient	Forms 911 & 138 2.2.31 to 5.5.31	8.5.31
Oranian	Gittings, R. P. ...	H. O. Quinn	No. A.	Leyland	Form 911 26.11.30 to 17.1.31 ...	29.1.31
309 †† *Orbita*	Kite, E.	D. W. Hutchinson, L. J. Smith	W.T.-M.	Pacific S.N. Co. ...	Forms 911 & 138 3.2.31 to 10.4.31	21.4.31
086 †† *Oreoma*	Benson, E. W. ...	W. J. Rutter, G. H. Pilling.	„	„ „ ...	„ „ 10.3.31 to 18.5.31...	28.5.31
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 †† *Cronsay*	Cameron, E. P., R.D., Commr., R.N.R.	E. M. Mackay, D. Madeley	„	„	„ „ 3.5.31 to 25.5.31	4.6.31
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.	Orient	„ „ 22.12.30 to 24.3.31	8.4.31
237 *† *Otaki*	Maltby, T. L.	A. V. Pearce, N. Baddeley, J. H. Underwood.	M.L.	New Zealand S.S. Co.	Form 915 31.8.30 to 6.2.31 ...	17.2.31
Pacific Enterprise, M.V.	Newman, G. W. A....	C. G. White	No. A.	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.	A. L. Knapp	W.T.	„ „ ...	Forms 911 & 138 13.3.31 to 4.6.31	8.6.31
Pacific Shipper, M.V.	Goodwin, J.	S. Porter	No. A.	„ „	Form 911 24.2.31 to 28.5.31 ...	2.6.31
Pancras	Barlow, F. P. ...	L. A. Sayers, S. Adams ...	M.L.	Booth	Form 915 13.12.30 to 2.2.31 ...	13.2.31
Pareora	Evans, J. O.	C. Parry	No. A.	"P" Steamers, Ltd.	Form 911 15.7.30 to 6.8.30... ...	23.9.30
Paris	Hill, A.	T. Mahoney	C.C.	Southern Rly. ...	Telegraphic Report. 13.7.31 ...	13.7.31
Patia	Sapsworth, S. A. ...	R. O. Laycock, R. S. Howlett.	No. A.	Elders & Fyffes ...	Form 911 4.5.31 to 7.6.31 ...	9.6.31
Patrician	Low, J.	W. E. Williams...	„ M.	Harrison	... ...	...
Peisander	Findlay, J.	C. T. Morgan	„ A.	A. Holt...	„ 3.2.31 to 23.4.31 ...	12.5.31
058 †† *Pennland*	Making, V. L. ...	J. C. Flett	W.T.	Red Star	Forms 911 & 138 11.5.31 to 30.5.31	1.6.31
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 9.3.31 to 22.4.31	1.6.31

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
039 *† *Planter*	Packe, M. G.	W. S. Eustance, J. J. Devereux, W. H. Slaughter	No. M.	Harrison	Forms 911 & 138 26.4.31 to 1.6.31	25.6.31
Polycarp	Furner, F. S.	A. S. Richardson	„ A.	Booth	Form 911 16.2.31 to 26.3.31 ...	13.4.31
255 *† *Port Alma*	Hayter, S. W.... ...	G. Dean	M.L.	Commonwealth & Dominion.	... ...	...
128 *† „ *Auckland* ...	Kippins, T.	R. Forrest, A. Brown, E. Mickleburgh.	No. A.	„ „ „	Form 915 14.1.31 to 16.5.31 ...	27.5 31
268 *† „ *Bowen* ...	Brown, A H.	F. R. Gorman	M.L.	„ „ „	Form 911 3.1.31 to 28.4.31... ...	5.5.31
129 *† „ *Campbell* ...	Gregory, S.	J. C. Goddard, N. M. Muzzell, C. Midwinter.	„	„ „ „	Form 915 7.10.30 to 25.1.31 ...	31.1.31
130 *† „ *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* ...	Lewis, J. G.	K. D. Morgan, W. R. Johnson, A. J. Knell, L. C. Asser.	„	„ „ „	„ 19.10.30 to 22.3.31 ...	1.4.31
132 ** „ *Denison* ...	Hall, G. S.	A. G. Newbury, R. A. Hollo-way, H. Duckling.	„	„ „ „	„ 4.11.30 to 10.3.31 ...	1.4.31
133 *† „ *Dunedin*, M.V.	Mason, W. S., D.S.C.	H. M. Post, C. A. Hodson, R. W. Chamberlain.	„	„ „ „	„ 7.12.30 to 30.3.31 ...	9.4.31
„ *Fairy* ...	Farmar, F.	J. Stannard, W. G. Jones, P. J. Howe.	No. A.	„ „ „	Form 911 20.11.30 to 5.2.31 ...	12.3.31
„ *Fremantle*, M.V.	Gilling, W.	... ...	„ A.	„ „ „	„ 27.2.31 to 5.2.31 ...	18.4.31
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
138 *† „ *Pirie*	Jack, J.	G. W. Horton, H. E. Braine, R. C. H. Webb.	„	„ „ „	„ 6.12.30 to 26.4.31 ...	11.5.31
„ *Wellington* ...	Jones, C. N.	W. B. Hopkins	No. A.	„ „ „	Form 911 24.10.30 to 12.2.31 ...	16.2 31
106 *† *Princesa*	Friend, A. B.	... ...	„ M.	Houlder	Forms 911 & 138 2.6.31 to 18.6.31	2.3.31
163 *† *Protesilaus*	Holden, W. R. F. ...	J. Cooper, J. Holden, H. N. Hardie.	M.L.	A. Holt	Form 915 17.5.30 to 30.11.30 ...	2.2.31
Pyrrhus	Wilkinson, T. G. ...	J. C. Podmore	No. A.	„	Form 911 17.4.31 to 18.5.31 ...	4.6.31
205 †† *Rajputana*	Jask, H. M.	G. A. Wild, D. Buckley, H. V. Williamson.	„ M.	P. & O.	Forms 911 & 138 22.2.31 to 28.5.31	8.6.31
063 *† *Rancher*	Mc.Cullum, J.... ...	G. Harvey, C F. Minshull, A. L. Lewis,	„ M.	Harrison	„ „ 30.4.31 to 3.6.31	6.6.31
228 †† *Ranchi*	Brooks, C., D.S.O., R.D., Capt. R.N.R.	T. A. Sergeant	„ M.	P. & O	„ „ 3.5.31 to 25.6.31	1.7.31
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 17.1.31 to 29.4.31	16.5.31
240 †† *Rangitiki* M.V. ...	Barnett, H.	L. F. Malcouronne, H. K. Cockerill, C. Cruttenden.	„	„ „ „	„ „ 22.11.30 to 3.3.31	14.3.31
207 †† *Ranpura*	Furlong, G. H. S. ...	J. Strike, R. A. Perry, D. S. Charks	No. M.	P. & O.	„ „ 28.2.31 to 9.4.31	13.4.31
071 †† *Rawalpindi* ...	Stringer, O.B.E., R.D., Commr., R.N.R.	H. J. M. Perry, F. G. Davies, D. Wist.	„ M.	„	„ „ 28.5.31 to 7.6.31	30.6 31
247 *† *Recorder*	Egerton, J. J. ...	G. Morrice	„ M.	Harrison	„ „ 24.1.31 to 30.4.31	8.5.31
306 *† *Reina del Pacifico*, M.V.	Roberts, E.	E. C. Hicks	„ M.	Pacific S.N. Co. ...	Form 911 14.4.31 to 3.6.31 ...	11.6.31
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.	C. Anderson	No. A.	A. Holt...	Form 911 4.2.31 to 16.3 31... ...	19.3.31
Rhodesian Trans-port.	Bowen, A. C.	H. S. Butler	„ A.	Houlder Bros. ...	„ 17.10.30 to 1.2.31 ...	17.2.31
Ripley Castle ...	Goodacre, R. W. ...	J. A. Ferguson	„ A.	Union Castle	„ 10.3.31 to 31.3.31 ...	8.4.31
Ross, S.T.	... ...	... ...	„ A.	W. Grant & Sons ...	... ...	...
Rother	Woodhead, T. H. ...	H. Robinson	„ A.	Goole Steam Shipping	Form 911 2.5.31 to 13.5.31 ...	13.6.31
241 *† *Rotorua*	Lamb, C. B.	G. C. Saul, L. W. Fulcher, H. Hill, A. L. Robertson.	M.L.	New Zealand S.S. Co.	Form 915 4.10.30 to 14.2.31 ...	19.2.31
062 *† *Royal Star*	Walsh, W.	A. F. Day, J. Hoggin ...	No. M.	Blue Star	Forms 911 & 138 16.12.30 to 10.3.31	18.3.31
246 *† *Ruahine*	Urquhart, D.	A. Hocken, R. Warren, R. Hamilton.	W.T.	New Zealand S.S. Co.	„ „ 20.12.30 to 6.4.31	9.4.31
300 ** *St. Albans*	Diamond, S. L. ...	F. O. Colvin, C. Stratford, R. Millington.	M.L.	Eastern and Aus-tralian.	Form 915 8.12.30 to 29.3.31 ...	29.5 31
St. Helier	Pitman, R.	J. Goodchild, J. Braye ...	C.C.	G.W. Railway ...	Telegraphic Report 4.7.31 ...	4.7.31
St. Julien	Richardson, L. ...	A. E. Ricketts, H. D. Free-man.	„	„ „ ...	„ „ 16.7.31 ...	16.7.31
St. Minver, S.T. ...	Hatton, A.	... .	No. A.	Crampian Steam Fishing Co.	... ...	...
St. Patrick	... ...	F. E. Martin	C.C.	G. W. Railway ...	Telegraphic Report 10.9.30 ...	10.9.30
038 †† *Samaria*	Malin, R. G., Lieut.-Commr., R.N.R.	A. MacKellar, F. G. Watts, W. C. A. Robson.	W.T.	Cunard	Forms 911 & 138 7.6.31 to 26.6.31...	1.7.31
Sardinian Prince ...	Pearson, F. T. ...	G. E. Harris	No. A.	Prince	„ 5.6.31 to 20.6.31 ...	1.7.31
Saxon	Jackson, C. R. ...	A. H. D. Cambridge	„ A.	Union Castle	„ 10 4.31 to 1.6.31... ...	9.6.31
291 *† *Scholar*	Peterkin, A. G. ...	J. Richardson, A. Robertson	„ M.	Harrison	Forms 911 & 138. 20.3.31 to 24.5.31	2.6.31
Scotia	O'Neill, J.	W. H. Hughes	C.C.	L.M. & S. Railway ...	Telegraphic Report 11.7.31 ...	11.7.31
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 15.6.31 to 7.6.31...	24.6.31
211 *† *Shropshire*, M.V. ...	English, G. L. ...	C. F. Hicks, E. W. Jefferies, D. Hetherington.	M.L.	Bibby	Form 915 18.4.31 to 27.6.31 ...	1.7.31
Silksworth ...	Blacklock, G.... ...	F. J. Mullett	No. A.	R. S. Dalgleish ...	Form 911 4.4.31 to 6.5.31	6.7.31
Somali	Kemp, T. H.	... ...	„ A.	P. & O.	... ...	...
277 *† *Spero*	Montgomery, H. ...	H. W. Vickers, A. Kirk ...	M.L.	Ellerman Wilson ...	Form 915 3.1.31 to 21.3.31... ...	27.3.31
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, — Lock, — MacRillican.	„	Federal...	Form 915 24.11.30 to 7.4.31 ...	15.4.31
Sutherland Grange	Matthews, S.... ...	J. R. Faulkner	No. A.	Houlder Bros. ...	Form 911 26.12.30 to 23.4.31 ...	6.5.31
Sylvafield, M.V.	MacDonald, W. ...	J. Johnson	„ A.	Hunting & Son ...	„ 18.5.31 to 20.6.31 ...	24.6.31
Tacoma City ...	Paul, H.	H. Small	„ A.	Reardon Smith ...	... ...	...
299 *† *Tactician*	Trinick, F.	E. P. Simmons	„ M.	Harrison	... ...	...
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.	... ...	„	„ „ „	... ...	...
234 *† *Talma*	Harley, G. J.	M.H. Vincent, T.G. Hardy, R. Potter.	No. M.	British India	Forms 911 26.12.30 to 3.5.31 ...	8.6.31
046 †† *Tamaroa*	Hartman, W. H. ...	L. R. Bull, R. R. Roseman, F. Lutyen,	W.T.-M.	Shaw, Savill & Albion	Forms 911& 138 18.5.31 to 7.6.31...	13.6.31
264 ** *Tanda*	Pilcher, E. T., Lieut.-Commr., R.N.R.	V. C. Lette, R. Lloyd-Harry, B. M. Dun.	M.L.	E. & A. S.S. Co. ...	Form 915 5.12.30 to 25.2.31 ...	4.5.31
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

	Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 17.7.31.	Date Received.
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 16.5.31 to 10 6.31 ...	30.6.31
	Tasmania	Williams, J. V. ...	R. J. Coffey	„ A.	New Zealand S.S. Co.	„ 2.12.30 to 2.5.31 ...	8.5.31
	Tetresias	Wilkinson, W. H. ...	F. Stott	„ A.	A. Holt & Co.	„ 18.3.31 to 6.6.31 ...	10.6.31
	Telamon	Brown, R.	G. Edge	„ A.	A. Holt	„ 26.10.30 to 23.11.30 ...	10.12.30
	Tetela	Brice, E. H.	G. M. Roberts	„ A.	Elders & Fyffes ...	„ 8.5.31 to 7.6.31 ...	13.6.31
	Teucer	Davies, J.	C. C. L'Estrange	„ A.	A. Holt	„ 15.3.31 to 7.4.31 ...	1.5.31
	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.	F. R. Kent Langdon, F. Haigh, J. W. Walker.	No. M.	British India... ...	Form 911 18.4.31 to 14.6.31 ...	13.7.31
168 *†	*Tinhow*	Chicken, W. E. ...	G. W. Seth, P. Aydon, E. Smith.	„	A. Weir & Co. ...	Forms 911 & 138 26.11.30 to 16.2.31	21.3.31
161 *†	*Titan*	Elford, W. J.	F. B. Smith, A. K. Sanderson, J. Gould.	M.L.	A. Holt	Form 915 27.10.30 to 24.3.31 ...	2.4.31
244 *†	*Tongariro*	Hamilton, F. S. ...	G. Dibley, D. Baldwin, W. M. Glover.	„	New Zealand S.S. Co.	„ 22.2.31 to 17.6.31	24.6.31
025 ††	*Transylvania* ...	Bone, D. W.	A. Middleton J. A. Lefevre, T. Greene.	W.T.	Anchor	Forms 911 & 138 20.6.31 to 10.7.31	13.7.31
288 *†	*Traveller*	Barrow, W. T. C. ...	R. Ledger	No. M.	Harrison	„ „ 15.2.30 to 11.5.31	18 5.31
	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.	„ „	Met. Log. 16.9.29 to 8.3.30... ...	25.3.30
119 *†	*Trojan Star* ...	Griffin, G. A.	A. Emerson, L. S. Hassell ...	No. M.	Blue Star	Forms 911 & 138 18.1.31 to 8.4.31...	4 5.31
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, H. Campsie.	W.T.	Anchor...	„ „ 3.5.31 to 24.5.31	27.5.31
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. ...	P. J. Walker	„ M.	Houlder	Forms 911 & 138 1.5.31 to 20.5.31	26.5.31
292 ††	*Viceroy of India* ...	Thornton, E. J. R.D., Capt., R.N.R.	W. R. B. Hoall, C. S. Cooke	„ M.	P. & O.	„ „ 2.6.31 to 1.7.31...	6.7.31
	Vigilant	Simpson, E. S. S ...	J. Wilson	„ A.	Scottish Fishery Brd.	Form 911 17.6.31 to 28.6.31 ...	6.7.31
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, C. T. Robb, G. M. Coote.	M.L.	„ „	Form 915 4.7.30 to 6.10.30 ...	28.11.30
	Warfield	Steele, R.	J. Gunning	No. A.	„ „	Form 911 23.2.31 to 7.3.31 ...	16.3.31
011 *†	*War Nizam* ...	Hopper, N.	D. P. E. Jones	„ M.	British Tankers ...	... ...	...
005 ††	*Warwick Castle* ...	Owens, G.	... ...	W.T.	Union Castle ...	... ...	...
060 ††	*Westernland* ...	Trant, A. W. V., O.B.E.	W. L. Wood, J. L. McLaren, G. P. Boyle.	„	Red Star	Forms 911 & 138 24.5.31 to 11.7.31	13 7.31
260 *†	*Westmoreland* ...	Reilly, H. E.	J. D. Marks, D Clegg, J. Reeve.	M.L.	Federal...	Form 915 21.9.30 to 30.1.31 ...	6.2.31
	William Scoresby, R.R.S.	Irving, J. J. C., Lieut. Commr., R.N.	W. A. Ellison, L. C. Hill, C. A. Millward.	„	Falkland Islands Government.	„ 17.11.30 to 1.4.31 ...	8.6.31
208 ††	*Winchester Castle* M.V.	Gardner, G. F., O.B.E., Lieut.-Commr. R.N.R.	G. F. Moon, A. G. Parey ...	W.T.	Union Castle	Forms 911 & 138 2.5.31 to 21.6.31	23.6.31
096 ††	*Windsor Castle* ...	Chave, Sir B., K.B.E.	E. H. Dixey, J. L. Goatley, J. Trayner	M.L.	„ „	Form 915 20.9.31 to 15.3.31 ...	30.3.31
	Worthing	Marmery, S.	C. Munton, E. Balcombe ...	C.C.	Southern Railway ...	Telegraphic Report 16.7.31 ...	16.7.31
043 **	*Zealandic*, M.V. ...	Gaskell, J. H., R. D., Lieut. Commr. R.N.R	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 16.6.31 to 14.7.31 ...	17.7.31
	Conway, H.M.S. ...	Richardson, F. A., D.S.C., Commr., R.N.	The Senior Cadets	Cadets' M.L.	... ...	Cadets' Met. Log. 18 1.31 to 28.3.31	2.4.31
	Pangbourne Nautical College	Tracy, A. F. G., Commr., R.N.	„ „	„	... ...	Cadets' Met. Log. 19.1.31 to 24.3.31	2.4.31
	Worcester, H.M.S.	Steele, G. C., V.C., Lieut.-Commr., R.N.	„ „	„	... ...	Cadets' Met. Log. 23.1.31 to 15.4.31	20.4.31
	Abaco	... ...	The Keepers	Lighthouse Register.	... ...	Lighthouse Register 1.7.30 to 31.12.30	22.5.31
	Cay Lobos	... ...	„	„	... ...	Lighthouse Register 24.5.30 to 31 12.30	22.5.31
	Double Headed Shot	... ...	„	„	... ...	Lighthouse Register 1.7.30 to 31.12.30	22.5.31
	Inagua	... ...	„	„	... ...	Lighthouse Register 15.8.30 to 22.2.31	22.5.31
	Sombrero	... ...	„	„	... ...	Lighthouse Register 1.7.30 to 31.12.30	28.1.31
	Watling Island ...	... ...	„	„	... ...	Lighthouse Register 1.7.30 to 31.12.30	22.5.31
	Cape Pembroke ... (Falkland Is.)	... ...	„	„	... ...	Lighthouse Register 1.7.30 to 31.12.30	19.2.31

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

Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., received up to 30.6.31.	Date Received.
Darian	Hannaford, W.	D. G. Longmuir	Leyland	Water Samples	15.4 31
Darro	Green, J.	J. M. Phillips...	R.M.S.P. Co.	„ „	12.6.31
Davisian	Trickey. J.	F. Steventon	Leyland	„ „	30.4.31
Dorelian	Hugan, C.	F. R. Hatton	„	„ „	8.6.31
Hildebrand...	Buck, R. H., R.D., Capt. R.N.R.	W. H. Cross	Booth	„ „	5 5.31
Mercian	Hughan, C.	W. Parry	Leyland	... ...	7.10.30
Nevisian	McCormick, J.	T. J. Jones	„	Water Samples	24.4.31