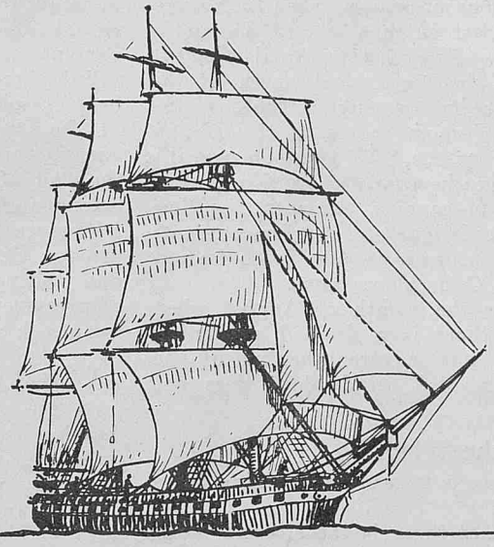


VOL. X. No. 110. THE MARINE OBSERVER. APRIL 1933.

TABLE OF PRINCIPAL CONTENTS.

THE CHARTING AND INVESTIGATION OF OCEAN CURRENTS.

In this number we publish the second quarter's—May to July—charts of currents in the region of the Roaring Forties of the Indian Ocean, also a summary of the general conditions of weather in this region. This summary is not only desirable for the investigation of the current which is mainly composed of drift current set up by wind, but will provide useful information to those about to make the passage from the Cape of Good Hope to Australia or New Zealand. The region being charted this year will fill in another large gap of the new Atlas of Currents of the Indian Ocean which is taking shape, and which it is intended to complete by the end of 1935. The information obtained in charting the currents in this region will be the subject of articles in the July and October numbers.

Meanwhile it may be well to remind all concerned in this investigation of the currents which may seem to take a great deal of time, how fruitful it has been. We commenced re-charting the currents in 1924, twenty-seven years after they were last charted in the Marine Division and the Admiralty published the atlases of 1896-1897.

During the first four years of the investigation 1924-27, the currents on the trade routes of the North and South Atlantic were charted and the variations found. The seasonal variations of the great currents encircling the North Atlantic—Canaries, North East Trade Drift, Guinea, Equatorial, Gulf Stream, North Atlantic drift, etc., were calculated, and in 1930 a new though incomplete atlas of the currents of the North Atlantic was published.

In 1928 a preliminary survey of the currents experienced on the routes across the Pacific between Panama and Australia and New Zealand was made, and from the charts then constructed a great deal of entirely new information was obtained. The monthly variation in the velocity of the South Equatorial current of the Pacific was calculated and compared with that of the same current of the Atlantic, which had never been done before.

Currents of the Indian Ocean.

Since 1929 we have been engaged in the charting and investigation of the currents of the Indian Ocean which is probably the most productive part of the investigation in throwing new light upon this subject of the currents of the Oceans, for the movements of the surface waters in this ocean are greatly affected by the Monsoons.

At the end of 1931 when the charting of the Agulhas, Mozambique and East African Coast currents was completed it was remarkable how apparent was the change of these currents with the prevailing winds.

During the S.W. monsoon season of the North Indian Ocean, May to September, the East African Coast current sets very strong indeed to the Northwards along the coast of Somaliland. At the same time the Agulhas current off the Kaffrarian Coast is comparatively weak. During the N.E. monsoon season, when in November to January the East African Coast current sets to the southward off the Somaliland coast or in February to April when it is comparatively weak and sets to the Northward north of the Equator, the Agulhas current is at its strongest. That is, the movement of the water along the Western shores of the Indian Ocean is with the seasonal winds. When the S.W. monsoon prevails and sweeps the water before it along the coast to the Northward of Cape Delgado, that great dividing cape of currents, the flow of water to the Southward in the Mozambique and Agulhas currents is less than when the N.E. monsoon prevails in the North Indian Ocean, and the South Easter of the Cape blows home.

It is also remarkable that during the month of August when the S.W. monsoon is at its height there is a decided weakening of the East African Coast current *and* a strengthening of the Mozambique and Agulhas current so that wind alone does not account for these seasonal changes.

The Force of the Winds.

The winds of the Indian Ocean have a tremendous driving force and pull upon its surface waters.

In the region of the Roaring Forties there is the steepest mean pressure gradient in any Oceanic region of the world, and consequently these westerly winds have the highest average force throughout the year and they have a nearly clean sweep of ocean right round the globe. During the S.W. monsoon season there is a vast belt of very steady wind stretching from the northward of the Roaring Forties to the coasts of Arabia and India.

In August when the mean barometer of the South Indian Ocean anti-cyclone in Latitude 31° S. is 1026 mb. (30.30 ins.) at the Mekran Coast at the head of the Arabian Sea in Latitude 25 ° N. it is 1000 mb. (29.53 ins.), that is, there is a difference in the mean atmospheric pressure for the month between these latitudes of 26 mb. (.77 ins.). The result is that the S.E. trade is drawn across the Equator and veering with the rotation of the earth continues to blow over the North Indian Ocean as the S.W. monsoon.

Mr. P. H. Gallé, the director of the Dutch Meteorological branch office at Amsterdam, who as an officer in the Royal Netherlands Navy, had experience of navigating the Indian Ocean and of observing its winds and currents, has recently calculated that the mean force of the wind throughout the year in the heart of the S.E. trade is 4.1 of the Beaufort scale, that is a velocity of 14½ knots.

Its lowest mean force for any month is 2.9 in March and its highest mean force of 4.8 occurs in July. During August and September it is nearly as strong as in July.

Many years ago the late Captain Campbell Hepworth calculated that the mean force of the wind throughout the year in the heart of the S.E. trade of the South Atlantic was 3.5 of the Beaufort scale, that is, a velocity of 11½ knots or 3 knots less than that of the Indian Ocean.

He also found that the mean force of the N.E. trade of the North Atlantic was 0.7 of the Beaufort scale less than that of the S.E. Trade.

It has not yet been possible to calculate exactly from a great many observations the mean force of the Trade winds of the Pacific but an examination of the U.S.A. Pilot charts of that ocean makes it clear that the N.E. trade is stronger than the S.E. trade, the reverse to the Atlantic.

After a number of years of working in sail and steam through the trade winds of the Atlantic and many years of steaming through the S.E. trade of the Indian ocean I had often wondered which were the strongest, and hundreds must have made similar speculations, so that these are facts which will be of great interest to many sailormen.

From our investigation of the conditions in the region of Cape Guardafui and Sokotra in the S.W. monsoon we find that during the months of July and August, in the strongest part of the monsoon covering a strip of sea trending to the N.E. from Latitude 7° N., from 100 to 350 miles broad and passing close to the Eastward of Ras Hafun and Sokotra, the average force of the wind is 6.3 of the Beaufort Scale or a velocity of 26 knots. This is the highest mean force of any known trade or monsoon wind at sea.

As we should expect, at times of the year when the barometer is lowest over Asia and highest in the region of Latitude 31° S., and the S.W. monsoon is at its strength, the S.E. trade is also strongest; so that during the northern summer there is a great driving force of wind and the strongest ocean current we have yet found in the course of this investigation exists in the East African Coast current.

But current cannot be accounted for by wind alone. The sun's heat or solar energy is the ultimate power which keeps the waters of the Oceans moving. Wind is the main force which induces current, and the rotation of the earth with the coast lines directs the flow of the water, but apart from wind, atmospheric pressure acting upon the surface of the ocean also has a very slight effect. Differences in temperature of the oceans, differences of specific gravity, defect due to evaporation and excess due to rain, rivers, and melting ice, in different parts of the oceans produce differences of pressure in the sea itself. All these have their effect interplaying upon each other and are agents of the sun's heat impelling current.

A Great Change in the Current Before the Change of Wind.

At the end of 1932 when the charting of the currents in the Arabian Sea and Bay of Bengal was completed we found that—"the seasonal change of the set of the main current occurs before the seasonal change of wind". This, of course, applies to the currents in seas which are in fact both great bays at the northern head of the Indian Ocean, and where the rotation of the earth and the coast line directs any flow of the water set up by whatever may be the motive force for the time being.

The current in the Arabian Sea and Bay of Bengal during the height of the N.E. monsoon, November to January, sets generally counterclockwise along the coasts.

The South-West monsoon wind is not established over the Arabian Sea and Bay of Bengal usually until May or June, but the current changes generally to clockwise along the coasts usually in February when the N.E. monsoon still blows though not so strongly or steadily as in the months of November, December, and January.

As we have already said we should like to be able to give an explanation of this when the charting of the currents of the Indian Ocean is completed with the publication of the new Atlas. Meanwhile Marine Observers are asked to think of this and give us such assistance as they are able in throwing light upon this matter.

The charts of currents made since 1924 are so constructed that they can be amended and added to as observations become available and it is most desirable, even in those regions which have recently been recharted that the recording of reliable observations of set and drift should be steadily continued by all observing ships.

Much may be learnt at sea at the time and on the spot from collective observations of currents, and Selected Ships are urged when convenient to include set and drift experienced in their routine W/T weather reports to all ships.

Accurate measurements of sub-surface current and observations of temperature in the depths would probably assist towards the explanation of changes of current, the causes of which are not at present understood, and such information would materially add to our knowledge of the general circulation of the waters of the oceans.

The measurement of current, below that of half the draft of a ship, which is found in the ordinary course of navigation by observing ships, is usually impossible in merchant ships; but there may be occasions when stopped at sea that this observation may be possible, and the work of *Discovery II* in the Southern Ocean is likely in the future to go some way in providing the desired information for high latitudes from whence the Antarctic water probably spreads along the bottom northwards as far as the coast of Arabia.

In our next number we hope to publish an account by Professor Stanley Gardner of work which it is proposed should be done in the near future in the N.W. portion of the Indian Ocean by a vessel to be specially fitted out with the help of moneys left by the late Sir John Murray of *Challenger* fame.

Marine Superintendent.

London,
January 27th, 1933.

April, May and June.

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

DRIFT OF BOTTLES

In Southern Ocean Drift Current and South Equatorial Current of Indian Ocean.

The following remarks have been received from Captain J. J. Airey, Deputy Director of Navigation, Commonwealth of Australia, at Fremantle; and for many years Merchant Navy agent to the Meteorological Office.

The article in The Marine Observer of November, 1932, dealing with drifts in the Indian and Pacific Oceans has been perused with interest.

Referring to cases of long drifts by bottle papers a remarkable journey that came under my notice was that of the drift bottle picked up about one and a-half miles north of Cape Leeuwin Lighthouse, Western Australia, on 4th December, 1923. This bottle was dropped overboard from the S.S. *Pallas* on April 16th, 1921, when the vessel was off Santa Cruz, Argentina, thus making the journey across the Atlantic, round the Cape of Good Hope, and across the Indian Ocean to Western Australia, in two years eight months.

Another case illustrating the drift across the Indian Ocean in the opposite direction during the latter part of the year 1906, occurred when I was making a search with the Government steamer *Penguin* for the dredger *Walrus* which disappeared on the voyage from South Africa to Melbourne. During the search a bottle was dropped daily giving the ship's position. Of these but one was recovered, namely the one that was dropped on the 9th November, 1906, in Latitude 27° 35′ South, Longitude 110° 09′ East. This was picked up on the beach at Port Durnford, British East Africa, on February 3rd, 1908, thus making the journey across the Indian Ocean in fifteen months.

TIDE RIPS.

Vicinity of Cape Horn.

The following is an extract from the Meteorological Log of S.S. *Cambridge*, Captain R. Williams, New Zealand to London, via Cape Horn, observer Mr. T. M. Devitt, 3rd officer.

28th April, 1932, 9 a.m. to Noon A.T.S. whilst navigating south of Staten Island, Tierra del Fuego, distance approximately 8 miles. Heavy seas were encountered, caused by tide overfalls. Sea was precipitous, confused N.E. and about three wave crests to ship's length (540 feet) causing vessel to plunge heavily and engines to race and vibrate badly. Waves were curling over, as on a bar, and breaking in a S.W.'ly direction. Seas moderating after 11 a.m. Wind at 8 a.m. was N. by E. force 7 decreasing rapidly. 10.30 calm. 11.15 shifted N.W. force 2, 12.20 backing W.S.W. force 4, 12.40 S.W. force 7, 1.00 wind and sea moderating. Barometer 990.4 mb. rising, then rising rapidly during afternoon watch. Sea temperature 47°, specific gravity 1026. Tide was on the first of the ebb at the time, high water being about 9.30 a.m.

Observations were unobtainable until later, but when ascertained, ship's position was found to be 10 miles to the eastward of dead reckoning.

Position of ship from Latitude 55° 00′ S. Longitude 64° 00′ W. to Latitude 54° 50′ S. Longitude 63° 30′ W.

ACCOUNT OF RESCUE WORK FROM THE FRENCH M.V. "GEORGES PHILLIPAR".

North Indian Ocean.

The following report and photographs have been received from the S.S. *Contractor*, Captain W. T. Owen.

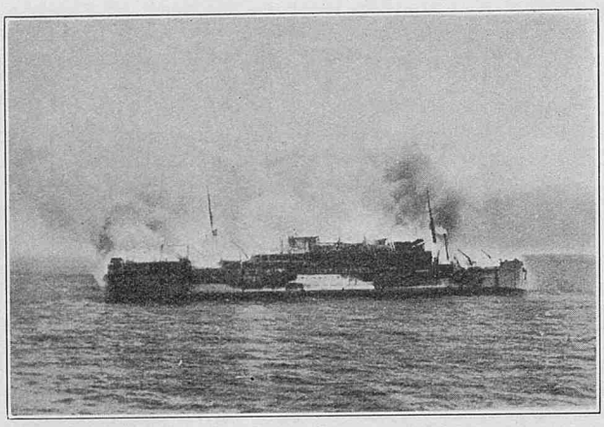
May 16th, 1932, about 2.30 a.m. S.T. and 35 miles East of Cape Guardafui, we observed what looked like a vessel on fire about half a point on the starboard bow, and soon afterwards observed Guardafui Light.

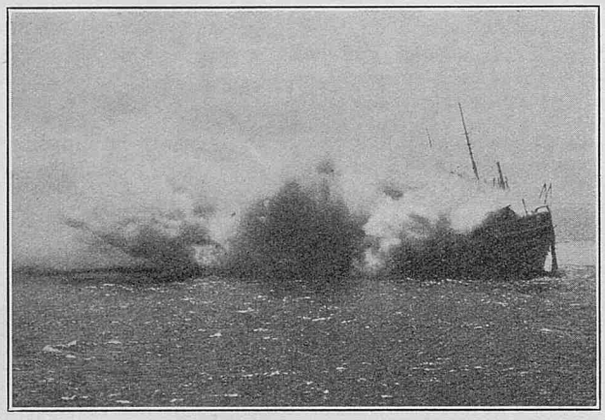
The moon had just set, and it was a remarkably clear night with a moderate S.S.W. wind and smooth sea.

At daybreak we arrived at the burning vessel, and found her to be the French M.V. *Georges Phillipar*, and that she was burning fiercely amidships, with a heavy list, and with people on her forecastle-head and poop. The Soviet Tanker *Sovetskaia Neft* was standing by.

Our boats had been swung out ready, and two were sent away in charge of the second and third officers, and while they were away we steamed round and picked up some of the survivors from the French lifeboats which contained men, women and children, all in their night attire, and some badly burnt.

The second officer returned with 50 survivors from the forecastle head, and after discharging them returned to the burning vessel, and soon afterwards the third officer's boat returned with about 30 of the crew from the poop, and reported that he had been told by the French Commander that there were no more on the poop. When the other boat returned the officer informed me that he had pulled from bow to stern and could see no more survivors on board.





Both officers reported a strong northerly set. We were lying with Guardafui just open, and they found great difficulty in holding boats in position especially at the bow, as the ship's side was very hot, and smoke was issuing from port holes. The survivors from forward came down ropes made of blankets, and aft over the stern on a rope ladder.

The S.S. *Mahsud* arrived just as the last boat had left the burning vessel, and she then proceeded to leeward and picked up several boats which had drifted that way.

We steamed round for about an hour and then proceeded for Aden with 134 survivors on board.

ARCH SQUALL.

West Coast of Africa.

The following is an extract from the Meteorological Record of S.S. *Appam*, Captain J. M. Draper, Liverpool to West Coast of Africa, observer Mr. C. J. Kewley, Chief Officer.

June 19th, 1932, at 6.00 A.T.S. the formation of an exceptionally well-defined arch squall was observed in an otherwise cloudless sky, bearing E. by N. from the ship. When first seen it resembled a dense volume of smoke similar to that emitted from a rick or bush fire. Rising straight up and spreading to a considerable width, it commenced to move very slowly in a northerly direction, eventually extending from horizon to horizon. The sun at an approximate altitude of 10° was entirely obscured during the movement of the squall across the sky. The wind which had been N. by E. force 3 now veered suddenly to E.S.E. and blew with such force that a moderate sea was completely flattened by it. At 6.10 the squall was moving very rapidly and at this period a few drops of rain fell. At 6.15 the wind backed to N.N.E. force 4 and the squall commenced to disappear. At 6.20 the formation had entirely vanished. Weather conditions—wind N. by E. force 3, Barometer 1012 mb., Temperature Air 77.5° F., Sea 76.5° F. Clear sky.

Position of ship—Latitude 17° 14′ N., Longitude 17° 38′ W. Course North, speed 13.5 knots.

ELECTRICAL STORM.

West Indies.

The following is an extract from the Meteorological Record of S.S . *Camito*, Captain D. A. Jack, Swansea to Kingstown, Jamaica. Observer, Mr. G. Binks, 3rd officer.

April 26th, 1932, in the Windward Passage about 30 miles S.W. of Navassa Island, a severe electric storm was encountered. At 0100 G.M.T., Barometer 1012.8 mb., Temperature Air 81°, Sea 81°, Wind N., force 4. Heavy nimbus cloud observed working up from eastward. At 0130 G.M.T. set in with torrential rain accompanied by heavy thunder and vivid lightning, this weather continuing for seven hours. At 0200 G.M.T. wind freshened to force 5 and veered to E.S.E. At 0415 the foremast was struck by lightning, a heavy explosion occurring on deck at the foot of the mast, no material damage being done however. The rain eventually cleared at 1000 off Morant Point, Jamaica. Sky Nimbus, Cumulo-Nimbus, amount 10. Barometer 1012.4 mb., Temperature Air 78°, Sea 78°. At the height of the storm the lightning and thunder were almost continuous. When able to obtain an azimuth it was found compass had been affected and made a difference of 8° in the deviation. Through the whole storm the barometer did not move more than 0.5 mb.

VOLCANIC ERUPTIONS IN CHILE.

Volcanic Dust.

West Coast of South America.

The following is an extract from the Meteorological Record of S.S. *Lobos*, Captain W. J. Good, Liverpool to West Coast of South America. Observer Mr. R. H. Sissons.

During the night of April 10th, 1932, while vessel was alongside the mole at San Antonio, Chile, slight earth tremors were felt. It was at first thought that she was vibrating owing to striking the mole fenders. The following morning information was received from shore that volcanoes about 190 miles distant were active. Houses had also been shaken by earth shocks during the night.

April 11th dawned fine and clear. 8.00 Calm. Barometer 30.02 in. steady. Low mist over land. Cumulus 3/10. 10.00 Wind S. 3. Barometer 30.02 in. steady. $\frac{\text{Cumulus}}{\text{S.2.}}$ 4/10. About 11.00, what appeared to be a heavy bank of stratus was seen to the southward, which had entirely covered the sky by 12.30. This cloud had a well-defined edge and was found to consist of volcanic dust.

The vessel left San Antonio at 14.00, bound Talcahuano. Wind S. 3. Barometer 30.00 in., steady, sky entirely overcast. Visibility at no time greater than two miles. Sunset showed as a dull red glow through the dust. No smell of burning was perceptable. The vessel's masts, rigging and decks were quickly covered with fine whitish dust. It was found to be impossible to measure the fall, as the breeze blew dust out of tin set to catch it. When off Topocalma Point, about 18.30, dust began to thin and visibility to improve, sky gradually clearing from South. At 23.00, sky was cloudless, except for heavy bank of dust over high land in the interior, stars were particularly brilliant, visibility very good. Through, and above, this bank, could be seen brilliant reddish flashes, presumably reflections from crater bursts. An approximate bearing of these flashes placed them in the vicinity of San Fernando or Peteroa volcanoes in the Cordilleras. The flashes seemed to run in groups of three or four with intervals of 20 to 30 minutes between the groups and grew fainter as the night went on, finally ceasing, or becoming invisible about 03.00 April 12th.

River Plate.

The following is an extract from the Meteorological Record of M. V. *El Argentino*, Captain F. Ellis, D.S.C. at Ensenada, Argentina. Observer Mr. J. Burch, 2nd officer.

April 11th, 1932, at Messrs. Armour's Wharf, Gran Dock, Ensenada, at 06.30 S.T. observed that the air was carrying a fine light grey dust, which was settling on the ground, decks, etc., in a thin sheet. Dust was perceptibly gritty to touch, weather

slightly hazy—visibility about 5 miles—with light breeze from W.N.W.

The quantity of dust particles in the air gradually increased until at noon the visibility was only about half a mile and the ground was covered with a light grey sheet having the appearance of a light snowfall.

Dust continued falling in decreasing quantity until nightfall when visibility was about two miles.

Next day 12th instant, dust was still in the air though in greatly diminished quantity. Visibility moderate.

Sky during both days apparently more or less clear of clouds although overspread with dust haze through which the sun shone dimly.

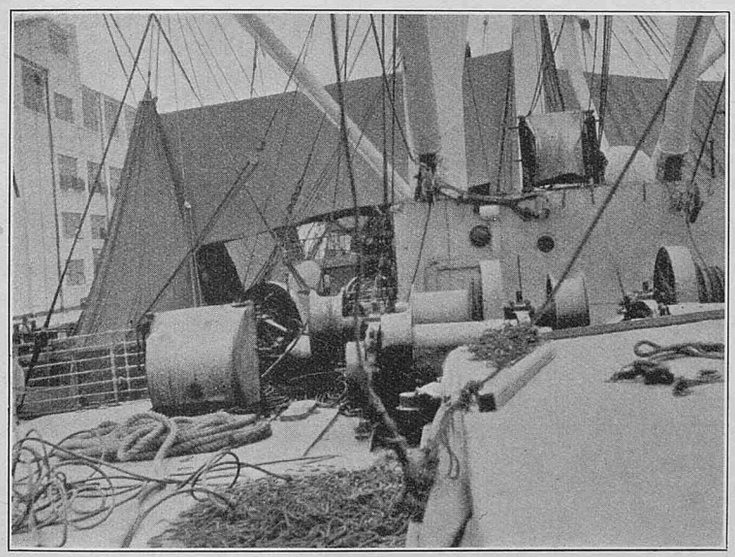
Scene of volcanic erruptions producing this dust situated, according to local newspapers, in the Andes on the Chilean border of the province of Mendoze, some 800 miles distant from Ensenada.

On the vessel's arrival in Montevideo on the following day—13th instant, a similar coating of light grey dust could be seen on the ground, roofs, etc.

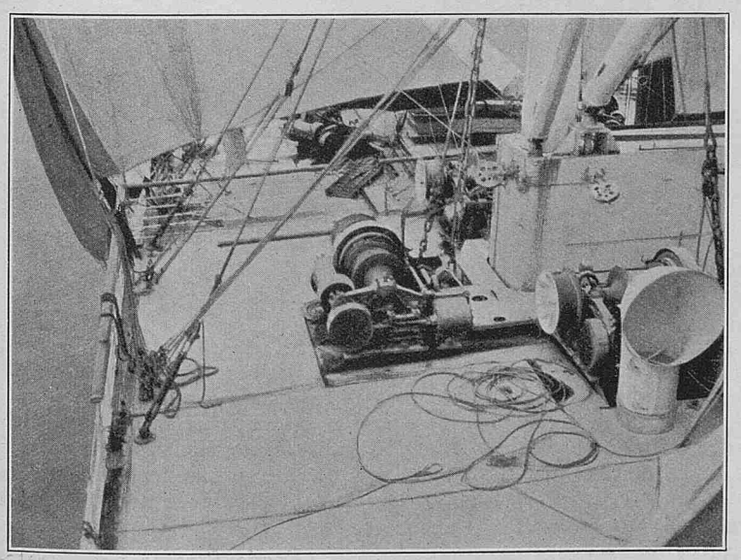
Passing Punta del Este, at entrance to River Plate shortly after noon on the 15th, no sign of dust was observed on grass plots, etc. close to the beach.

The accompanying photographs give some idea of the extent of the fall of volcanic dust experienced aboard this vessel.

The dust can be seen to have coated the winches and beds and pipe casings adjoining, all of which are painted black. Also on cargo gins, derrick chains, etc. The seams in the wooden decking can be traced very faintly in the photograph taken from the bridge **(No. 2)**.



Photograph No. 1.



Photograph No. 2.

On the cargo tent rigged over the hatches the dust is not so conpicuous but the whiteness of the tarpaulin on the right of the photograph **No. 1** is somewhat unusual for a ship on the loading berth.

These photographs were taken about 2 p.m., April 11th, when the visibility was most impaired.

South Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Tongariro*, Captain F. S. HAMILTON, Cape Horn to Dakar. Observer Mr. D. BALDWIN, 3rd officer.

On April 24th, 1932, during forenoon watch on voyage from Cape Horn to Dakar in latitude 43° S. Longitude 50° W., wind W.N.W. force 3, barometer 1000.0 mb. temperature dry bulb 59°, wet bulb 58.5°, sea 59°, and occasional light drizzle, a deposit of fine white dust was observed to be forming on decks, funnel, masts, etc. This deposit increased throughout the afternoon watch and towards dusk the ship presented a very striking appearance with white decks and the whole of the port side of funnel and deck erections covered with this film. An interesting fact is that the nearest land is Cape Corrientes bearing approximately N.W. and distant 450 miles.

Sunset Glows.

South African Waters.

THE following is an extract from the Meteorological Record of S.S. *Tactician*, Captain F. TRINICK, O.B.E., London to Durban. Observer, Mr. E. P. SIMMONS, 3rd officer.

April 30th, 1932, 1630 G.M.T. The whole of the western sky between N.W. and S.W. was brilliantly illuminated with the afterglow of sunset. Predominating colour was deep orange tinged with red and diffused with a light green in places, also intermingled with a few thin strips of Stratus cloud. Extended to an altitude of approximately 70°. The phenomenon presented a most remarkable and very beautiful spectacle, continuing as it did during entire period of twilight with unusual brilliancy. At 45 minutes after sunset the only colour which remained was a deep red and this was visible until the end of twilight 1h. 10m. after sunset. With the exception of a little Stratus in the west the sky was cloudless.

The following morning a brilliant red patch in the eastern sky became visible 1½ hours before sunrise. Position of ship, Latitude 30° 27′ S., Longitude 14° 50′ E.

May 1st. Considerable mirage all day. Great distortion of horizon. Solar observations in error due to it. Much colour in sky at sunset. Red, Orange, Green and Purple, in that order from the sun, Purple being on top, extending to altitude of approximately 35° between S.S.W. and N.N.W. although Purple only between S.W. and W. Quickly faded, not so brilliant as yesterday, leaving a dull red glow till end of twilight. Lights visible at remarkable distances. A steamer's lights were observed at 18 miles and Danger Pt. light at 40 miles which is 18 miles beyond normal range. The latter appeared as 3 lights in vertical line one over the other until within distance of 20 miles from it when it resumed its normal characteristic. Later, Cape Point light observed at 55 miles, which is 30 miles beyond normal range. This is the actual light and not the loom. General weather—Calm and light E'ly airs. Smooth sea, low long S'ly swell. Air 74° to 69°, Sea 69° to 60°. No Clouds.

East Coast of South America.

THE following is an extract from the Meteorological Record of S.S. *Arlanza*, Captain G. F. HUNT, River Plate to Southampton. Observer, Mr. B. A. GAMMON, 2nd officer.

May 12th-13th, 1932, for the last two evenings, when twilight had completely disappeared and, save for the light of the moon, it was completely dark, the western sky in the place where the sun had set 30-40 minutes previously, was diffused with a peculiar and extremely beautiful heliotrope colouring, extending to 7° above horizon. This colouring of many shades, from greenish to violet, lasted for about 15 mins., and then faded suddenly. It is suggested that this may be due to the upper air being laden with volcanic dust from the recent eruptions of Descabaya, etc. Position of ship, 1800 G.M.T., May 12th, Latitude 33° 20′ S., Longitude 51° 55′ W., at 1800 G.M.T., May 13th, Latitude 27° 31′ S., Longitude 48° 00′ W.

May 18th, 1932. A magnificent colour effect of the crimson-purple type, as above, appeared 20 minutes after sunset and lasted for 35 minutes.

Position of ship, Latitude 9° 40′ S., Longitude 35° 20′ W.

EARTHQUAKE SHOCK.

South Pacific Ocean.

THE following is an extract from the Meterological Log of S.S. *Maimoa*, Captain J. W. JOHNSON, Lyttelton to Panama. Observer, Mr. W. A. ROGERS, 2nd officer.

April 18th, 1932, 1426 G.M.T., 2.34 a.m. A.T.S., the vessel experienced an unusual shock, causing a vibration lasting from 1½ to 2 minutes. Rough quarterly sea and heavy swell, but ship neither pitching heavily nor screw racing. Owing to the unusual nature of the movement, the time was noted. Later W/T reports having given news of an earthquake in Santiago, it is suggested that the shock experienced may be due to this cause.

Position of ship, Latitude 40° 34′ S., Longitude 165° 54′ W.

SANDSTORM.

Red Sea.

THE following is an extract from the Meteorological Record of S.S. *Clan Keith*, Captain P. M. MACFARLANE, Aden to Port Said. Observer, Mr. W. N. TUDMAN, 2nd Officer.

11th June, 1932, soon after rounding Perim Is. at 6 a.m. (0308) the weather commenced to become hazy around the horizon and continued to thicken as the vessel approached Hannish Island, so that Mocha lighthouse, which was passed about seven miles distant, was not sighted although usually visible, in clear weather, at a considerable distance. The visibility appeared much better than was actually the case, and the atmosphere was characterised by the metallic blue sheen invariably accompanying these storms, probably caused by the refraction and reflection of the light by the minute particles of sand in the air.

This sand, yellowish-brown in colour, and exceedingly fine, lodged in every crevice and on every surface, and was irritating to the eyes, nose and throat.

The Hannish Islands were visible at a distance of about four miles, and whilst making the passage between the islands the wind, which till then had been light northerly gusts, backed suddenly to N.N.W., freshening to force five, but without making any appreciable difference to the visibility. After clearing the Hannish Islands it backed rapidly to N.W. and decreased to force two, remaining thus until clear of Jebel Tier Is. The sky at this time became overcast with Alto-Cumulus dimly visible through the haze.

Centre Peak and Jebel Tier lights were both sighted about seven miles distant, but the lights of passing ships were only visible about three miles away.

Jebel Tier was passed at 1.28 a.m. 12th, and at 2.15 a.m. (2325) the wind suddenly increased to force five, the weather immediately clearing to visibility 7.

It will be noted that the sand haze apparently preceded the wind, although S.S. *Machaon*, which passed just south of Centre Peak Is. signalled that they had experienced thick sand haze for the last thirty hours.

VISIBILITY.

West Indies.

THE following is an extract from the Meteorological Record of S.S. *Inanda*, Captain W. GIBBINGS, London to West Indies. Observer, Mr. D. C. BROWN, 3rd Officer.

1st June, 1932, 1350 G.M.T., off Harrison Point, Barbados, distant two miles. Unusual visibility was experienced when distant two miles east of this point. The weather had been overcast and rain with fresh S.E. wind and rough sea and swell. Almost continuous rain had been falling when making the land, visibility about 6, when at 1350 G.M.T., during a break in a rain squall, the island of St. Vincent, distant 89 miles, was observed standing out bold and distinct. At 1400 G.M.T. rain commenced again and island was lost to view. The pilot, a local man, who boarded some twenty minutes later, upon being told about it remarked that he had neither seen nor heard of such a thing happening before. Next day was fine and clear weather, yet, when making St. Vincent itself, the land was not visible till twenty miles from it.

Wind S.E., force 5. Barometer 20.15 in. rising slowly.

Temperature Dry bulb 78°. Wet bulb 76°, Sea, 81°. Nimbus 7/10.

Alto-Cumulus 1/10. Rough sea and intermittent moderate rain.

Course S. 7° W. Speed 14 knots.

ICE VISIBILITY.

Belle Isle Strait.

THE following is an extract from the Meteorological Log of S.S. *Beaverburn*, Captain E. LANDY, Montreal to London, observers Messrs. W. J. P. ROBERTS, 2nd officer, and L. L. THORNTON, 3rd officer.

On the night of June 26th to 27th, 1932, whilst in the Strait of Belle Isle between Cape Norman and Belle Isle South Point the following conditions of ice visibility were observed.

At about 2330 Atlantic Standard Time the sky was heavily overcast with stratus cloud except for a slowly increasing strip to the northward. The wind was W.S.W. force 3 with a slight sea and no swell.

Three average sized bergs of orthodox shape were sighted (by the bridge) about this time. Two were to the northward of track and were not sighted by the stem head lookout until almost abeam and silhouetted against the strip of light sky already mentioned. The third berg was to the southward and was not reported (by the lookout-man) at all. Each of these bergs was passed at a distance of about half-a-mile when abeam.

With the aid of glasses they were sighted from the bridge at a distance of about one mile, but our unaided vision was about the same as that of the lookout's (half-mile).

At 1.00 a.m. the sky now being clear and illuminated by a moderate auroral arch roughly 15° above the northern horizon, a further berg was sighted to the southward of track. This berg, though small, was observed by unaided vision at a calculated distance of one and one-half miles.

Course 078°. Visibility 8 (checked by shore lights). Temperature Air, Dry bulb, 48°, Wet bulb 47°.

AURORA AUSTRALIS.

THE following are extracts from the Meteorological Log of R.R.S. *Discovery II*, Commander W. M. CAREY, R.N., observer Mr. R. A. B. ARDLEY, 2nd officer.

Simonstown to Fremantle via far South.

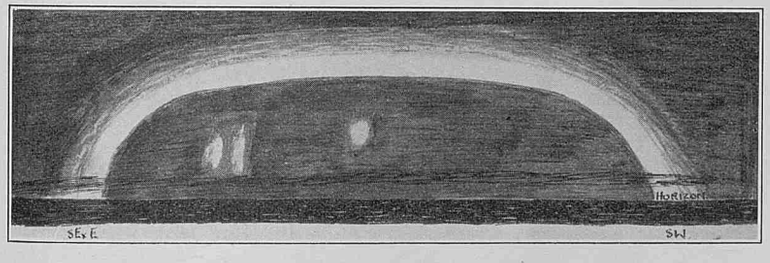
April 27th, 1932, 0245 A.T.S., a patch of clear sky was observed to the southward, above a low bank of stratus cloud, extending to about 6° above the horizon. In this patch appeared several bands of white light in vertical beams, the upper extremities of which faded out at an altitude of about 50°. The beams flickered irregularly to and fro, changing through all the colours of the spectrum. Five minutes later, at 0250, the sky became overcast again and the lights were no more seen.

Wind W. force 4, weather overcast, clouds Stratus and Strato-Cumulus. Position of ship: Latitude 57° 42′ S., Longitude 74° 48′ E.

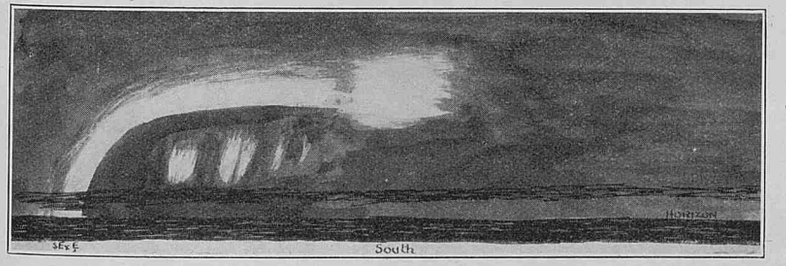
April 27th, 1932, 2315 A.T.S. In a large patch of clear sky to the south and south-eastward, small irregular patches of light were observed, flickering and moving about but generally radiating from a point about S.S.E. (true). The light was white, sometimes, with a faint greenish tinge, and was at no time very bright. The phenomenon was confined to a section of the sky between 20° and 45° of altitude and laterally about 15° either side of the S.S.E. point. After 10 minutes, at 2325, the moon broke through a bank of Strato-Cumulus and the lights were no longer visible.

Wind W.S.W. force 5, weather b.c. clouds Cumulus, Strato-Cumulus, Alto-Cumulus and flecks of Cirrus. Position of ship: Latitude 56° 29′ S., Longitude 79° 18′ E.

May 22nd, 1932, 2258 Ship's time. A band of pale green light suddenly appeared in the southern sky, in a flattened arch extending from S.E. by E. to S.W. The greatest altitude of this arch was 20° and the band was about 3° in breadth. Its lower edge was perfectly definite and clean cut, but its outside edge faded gradually into the sky. Two minutes later the western half of the arch quickly faded, and its centre portion broadened out into an irregular patch of bright green light. At the same time, small streaks and patches of light came into view and faded, at intervals, under the eastern segment. At 2304, the lights disappeared. At 2310, the arch again appeared though it was very much fainter and less definite than before, and rapidly faded. At 2315, a bright smaller arch appeared, extending from S.S.E. to S. by W., with a maximum altitude of 8°. Two minutes later this suddenly faded, but a fairly bright greenish glow, over a low bank of Stratus cloud on the southern horizon, persisted till 2335. After this, faint irregular streaks and flickers appeared spasmodically at various points in the sky between S.E. and S.S.W., till 2342, when a confused cloud of light, rather of the appearance of thick, twisted Cirrus whirls, formed just above the horizon in S.S.W. Following this, the higher arch again came into view, and three minutes later, the whole faded, though occasional faint, indefinite flickers were observed. Position of ship, Latitude 49° 54′ S., Longitude 120° 29′ E. May 23rd, 1932, at 0100 A.T.S. The arch again appeared, this time reaching an altitude of 45°; after which a very bright hanging curtain of white light, in the form of an irregular scroll with the ends folded downwards, appeared above the arch at an altitude of 60°. The centre of this curtain was bearing due south, and its lateral length was about 20°. This display continued for five minutes, when the light curtain rapidly faded, followed by the arch, and the lights were no more seen. Position of ship: Latitude 50° 06′ S., Longitude 120° 34′ E.



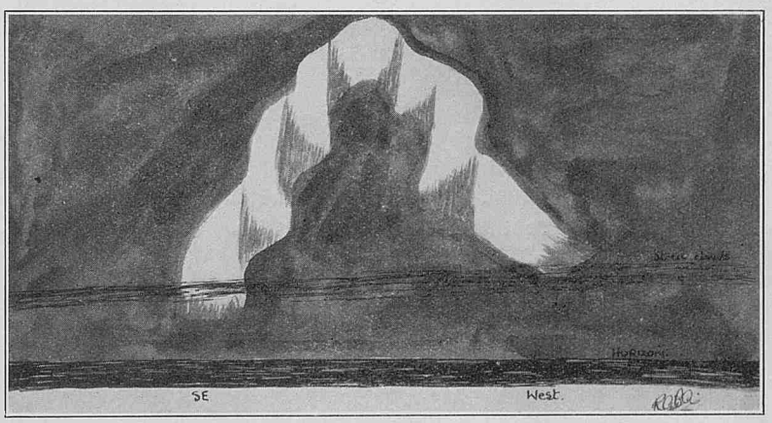
May 22nd. 2258. Arch at first appearance.



May 22nd. 2300. Arch two minutes later.

May 25th, 1932, 1823 Ship's Time. A fine display of Aurora Australis was observed. The lights, which were bright and pale green took the form of vertical beams radiating from about S.E. by E. Three beams formed at first, and they much resembled searchlight beams. They were very bright to an altitude of about 60°, then faded until past the zenith, where they disappeared. After two minutes, the beams broke and lost their regularity, becoming waving, ragged ribbons of light moving all about the southern sky and brightening and fading at irregular intervals. At 1830, they had lost this form and a few indiscriminate patches of light remained. Later the sky clouded over and though the lights continued dimly, as could be seen through rifts in the clouds, the character of the display could not be made out, though the lights appeared to be in a more diffuse form. Weather b.c. Position of ship: Latitude 58° 35′ S., Longitude 125° 43′ E.

May 26th, 1932, 0150 Ship's Time. The sky, which had been covered with ragged clouds, Stratus and Fracto-Cumulus, suddenly cleared from the zenith to 30° above the horizon all round, and the lights were observed in streamers extending from S.E. to W. and from S. to N., passing directly overhead and taking the form of hanging curtains of light. The lights faded and brightened and shifted spasmodically and irregularly. After 5 minutes they faded, and the sky became overcast again. Position of ship: Latitude 59° 37′ S., Longitude 126° 36′ E.



May 26th. 0150. Curtain with apex near the zenith.

May 30th, 1932, 0615-0730. The sky, which had been covered with low, thin misty Stratus, cleared, and a very fine auroral display was witnessed. At times, the entire sky was involved, and the lights at no time had any definite focal point. They took the forms of curtains, rays, wreaths and long moving draperies, shifting and changing in an indescribable manner. One fine system was centred on a very bright cloud of light, in the form of a wreath about 15° in extent, which revolved like a smoke ring round the zenith, while from it, hundreds of shimmering rays radiated, terminating in a bright apron about 20° above the horizon. The lights were much more colourful than usual, changing irregularly between white and pale green and bright pink. Position of ship: Latitude 57° 57′ S., Longitude 134° 00′ E.

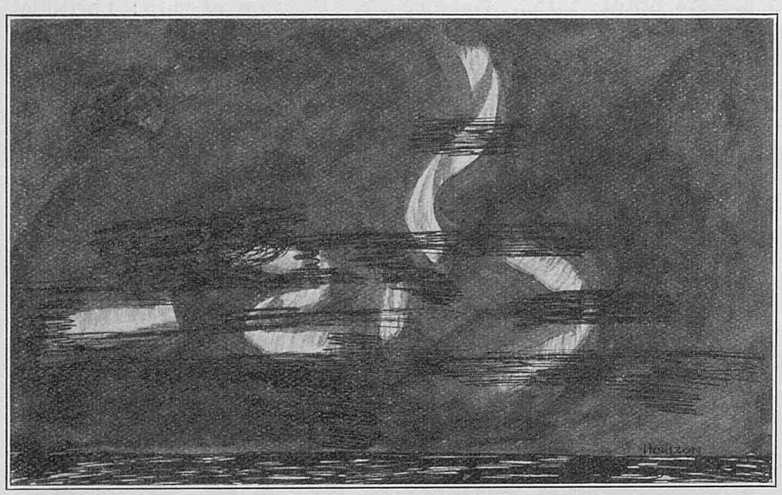
May 30th, 1932, 2330. Thin mist at sea-level and low in the sky, otherwise cloudless. The sky became circled with what appeared at first to be fibrous Cirrus clouds. These became very bright, having a bluish tinge, and gradually formed into three distinct beams, the ends of which tapered away in a N.N.W. and S.S.E. direction. In a few minutes the beams commenced to approach one another, then intertwined till the whole formed an indistinct mass, which gradually spread and assumed the form of a broad curtain. At 2340, the whole formation commenced fading and finally disappeared in the same curious Cirrus form. Position of ship: Latitude 56° 03′ S. Longitude 135° 11′ E.

Port Melbourne to Auckland via Far South.

20th June, 1932, 2100 at ship a faint band of greenish light appeared, stretching across the sky from S.W. to E.N.E. and reaching an altitude of 70°. At 2130, the band widened and became brighter, and its extremities broke into moving, shimmering curtains. At 2210 (same Latitude and Longitude) a remarkable display of moving curtains was observed to the S.E. The phenomenon was partly obscured by clouds, but there were several curtains in the process of forming and dissolution at the same time, though they were arranged in no definite system.

The light was very bright and changed in colour from very pale green to yellow and pink, the pink being always confined to the lower edges of the curtains. At 2225, this bright display abruptly ceased, though faint bands and patches and generally diffused areas of light were observed at intervals till 0700 on the 21st.

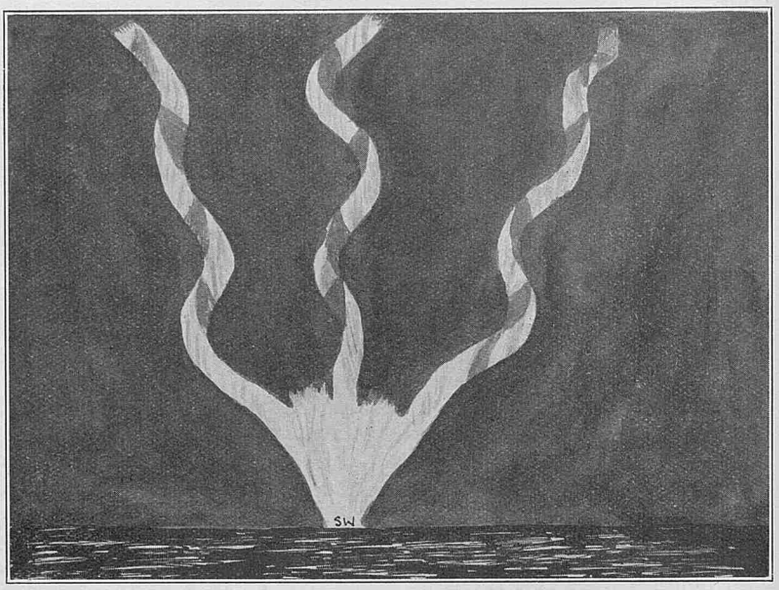
Position of ship, Latitude 56° 13′ S., Longitude 152° 13′ E.



June 20th. 2210 at ship. General appearance of part cloudy sky to Southeast. Detached curtains.

25th June, 1932, 0005 at ship. Aurora appeared to the S.W. in a wavy ribbon of light, narrow at the horizon and broadening into a very bright patch at an altitude of 30°. It remained waving from its base, till 0023, when it extended right across the sky and formed a flickering hanging curtain. At 0030, it faded out. At 0032, the lights reappeared, this time in a form resembling a flambeau. From a triangular patch of light on the horizon (apex downwards), curtains of light radiated towards and reaching the zenith. At 0035, the phenomenon faded, only a few faint beams of light from horizon to zenith persisting till 0040. Rays of light, low in the sky, continued to emanate from the S.W'n horizon at intervals. At 0105, the phenomenon of 0032 was repeated, with one very bright beam reaching right across the zenith, shimmering and changing colour. At 0108, the form broke up, resolving into detached hanging curtains of light, finally disappearing at 0112.

Position of ship, Latitude 60° 19′ S., Longitude 158° 53′ E.



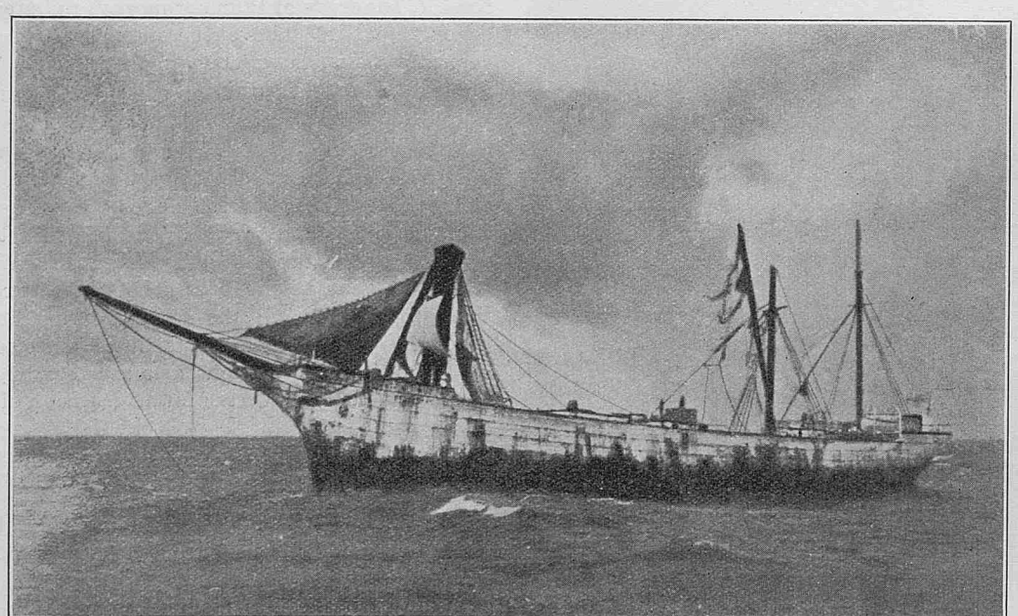
June 25th. 0032 at ship. "Flambeau" aurora.

"HOUGOMONT" UNDER JURY RIG.

As the Finnish four masted barque *Hougomont* was mentioned in the October number of THE MARINE OBSERVER, this photograph of her taken after she was dismasted off South Australia in April, 1932, may be of interest to readers, many of whom no doubt remember the ship when she was under the British flag.

A very heavy squall was the cause of the accident, bringing down the foremast and mainmast. Four hands were aloft at the time, but all very luckily escaped unhurt. Later heavy rolling brought down the mizzen topmast and part of the jigger topmast. She was nineteen days under this jury rig before making Adelaide anchorage, which was managed without any assistance, making a passage of 129 days from London.

C.H.W.



CAPTAIN WILLIAM DAMPIER.

1651—1715.

Prepared by Commander M. Cresswell, R.N.R.

In compiling " Notes on the History and Development of the Law of Storms ", in The Marine Observer for 1932, the writer included Dampier's description and experience of a Typhoon. It was in fact the preparation of the article on " Law of Storms " which suggested the present biography, and the writer was fortunate in being able to prepare some of his notes direct from one of the now rare second editions of Dampier's " Voyages and Descriptions", published in 1700. The direct seamanlike manner in which Dampier wrote renders his work most interesting and instructive to read and take notes from. In the present instance we are, of course, mainly concerned with Dampier for the great extent to which he added to, and developed our knowledge of Winds, Weather, Ocean Currents and other information of direct use to navigation; but we must needs describe events in his most interesting life, although we may not be so much concerned with his many thrilling adventures, or the descriptions of people, places and items of natural history, with which the pages of his books are so painstakingly filled.

In Part II of Volume II of Dampier's " Voyages and Descriptions ", he gives us the story of his early life at Sea, and in the account which follows frequent extracts of his quaintly phrased remarks are included.

Three times circumnavigator of the Globe in circumstances of great hardship, at a time when the knowledge of geography was most imperfect; weathering the storms of little known seas, braving the perils of shoals, rocks and strange coasts in ill-found vessels, far less seaworthy and the size only of a present-day topsail schooner. Throughout all, observing and recording most carefully in his journal, all he saw, often when both he and his companions were in positions of extreme danger. Well may Captain William Dampier be called the Father of Marine Observing.

William Dampier was the son of a Farmer at East Coker, near Yeovil, in Somersetshire. Born in 1651, he was first sent to a Classical School, but to quote his own words regarding his early days, he says: " My Friends did not originally design me for the Sea, but bred me at School till I came to Years fit for a Trade. But upon the Death of my Father and Mother, they who had the disposal of me, took other measures; and having removed me from the Latine School to learn Writing and Arithmetick, they soon after plac'd me with a Master of a Ship at Weymouth, complying with the Inclinations I had very early of seeing the World ".

Young Dampier sailed to France and to Newfoundland, being now, he tells us, " about eighteen Years of Age ", his parents had been dead for years and he was well able to fend for himself. The voyage to Newfoundland lasted the whole of one summer and the rigour of that cold climate came near to cooling his ardour for travel altogether. He returned Home to his brother at East Coker fully intending to stay there, but the sea was in his blood, and early in 1671 he sailed for the Dutch Spice Islands (East Indies). Regarding his voyage to Java, he mentions: " For hearing of an outward-bound East India Man, the *John and Martha* of London, Captain Earning Commander, I entred my self aboard, and was employed before the Mast, for which my two former voyages had some way qualified me."

He thus embarked upon what he termed " a warm Voyage and a long one too, both which I always desired ". During this time in the *John and Martha*, young Dampier tells us he gained more experience in Navigation, but to his regret kept no journal; an omission which he more than made up for during the remainder of his life, both at sea and on shore.

Dampier's early voyages were followed by service in the Royal Navy during the second Dutch War: " But growing weary of staying ashore, I listed my self on board the *Royal Prince*, Commanded by Sir Edward Sprague, and served under him in the year 1673, being the last of the Dutch War. We had three Engagements that Summer; I was in two of them, but falling very sick, I was put a board an Hospital Ship a day or two before the third Engagement, seeing it at a distance only; and in this Sir Edward Sprague was kill'd. Soon after I was sent to Harwich, with the rest of the Sick and wounded; and having languished a great while, I went home to my Brother to recover my health. By this time the War with the Dutch was concluded; and with my health I recovered my old Inclination for the Sea ".

Our young Navigator's next employment when only twenty-two years of age was as manager of a plantation in Jamaica " for which place I set out with Capt. Kent in the *Content* of London ". Life ashore in Jamaica was however not much relished by Dampier's adventurous spirit and soon we find him sailing around the Islands in a sloop " and by those coasting voyages I came acquainted with all the Ports and Bays about Jamaica; as also with the Benefit of the Land and Sea-Winds ". The word " Benefit " used here is significant and shows that he was now turning his observations of natural phenomena to practical use, and all his subsequent work shows that he aways kept that end in view, and not only derived great benefit himself therefrom, but added very greatly to the then scanty store of human knowledge and experience, especially of winds, weather and storms, as we shall later see.

Dampier's next venture was to the Bay of Campeachy in the logwood trade, and after a few voyages to and from Port Royal, he finally settled ashore again with a company of Logwood Cutters " to follow the Employment with them ".

Logwood had been discovered in the Bay of Campeachy some years before, but its use as a dyewood had been prohibited in England by an Act of Parliament passed during the reign of Queen Elizabeth. This Act had however been repealed in 1661, it being stated " that the ingenious industry of these times hath taught the dyers of England the art of fixing colours made of logwood ". The consequence of the removal of the injunction was that logwood was eagerly sought after, and a peace being at that time established with Spain, many of the Buccaneers who had hitherto lived upon plundering the Spaniards settled in this remote part of Yucatan, to fell and export logwood; " it being then worth 90, 100 or 110 £ per Tun ".

These then were the companions which Dampier now became associated with, for as he tells us " they had not forgot their old Drinking-bouts, and would still spend 30 or 40 £ at a Sitting aboard the Ships that came hither from Jamaica; carousing and firing off Guns 3 or 4 days together ".

Dampier however gives us a long description of the coast, rivers and country bordering on the Bay of Campeachy, with its natural products by land and sea, followed by an account of the visits of the Spanish West Indian Squadrons, which notwithstanding the peace " If they meet any English or Dutch Trading-Sloops, they chase and take them, if they are not too nimble for them ".

The logwood settlement which Dampier joined was however for the time being doomed to failure, as in June, 1676, a great storm, described by him as a " South ', but being actually a hurricane, uprooted trees and caused the whole region to be flooded. He tells us that: " Two days before the storm began, the Wind whiffled about to the South, and back again to the East, and blew very faintly. The Weather also was very fair, and the Men-of-War Birds came hovering over the Land in great numbers; which is very unusual for them to do . . . . But that which I did most admire was, to see the Water keep ebbing for two Days together, without any flood, till the Creek, where we lived, was almost dry. There was commonly at low Water 7 or 8 foot Water; but now not above 3 even in the middle of the Creek. About 4 a Clock the 2d day after this unusual Ebb, the Sky looked very black, & the Wind sprung up fresh at S.E. and increasing. In less than 2 hours time it blew down all our Huts, but one; . . . . In it we huddled altogether till the storm ceased. It rained very hard the greatest part of the storm, and about two hours after the Wind first sprang up, the Waters flowed very fast in. The next Morning it was as high as the Banks of the Creek: which was higher than I had ever seen it before ".

" The Flood still increased, and run faster up the Creek than ever I saw it do in the greatest Spring Tide; which was somewhat strange, because the Wind was at South, which is right off the shore on this Coast. Neither did the Rain any thing abate, and by 10 a Clock in the Morning the Banks of the Creek were all overflown . . . . So that there was no walking through the Woods because of the Water. Besides, the Trees were torn up by the Roots, and tumbled down so strangely a-cross each other, that it was almost impossible to pass through them. The Storm continued all this Day and the Night, following till 10 a Clock: then it began to abate, and by 2 in the Morning it was quite calm ".

DAMPIER then goes on to describe the damage sustained by ships anchored in the Bay, which he says " felt the fury of it to their sorrow ". All were driven away from their anchors, the majority being blown ashore into the woods beyond high water mark, and two driven out to sea, one of which foundered. " Yet this Storm did not reach 30 Leagues to Wind-ward of Trist, for Captain VALLY of Jamaica, went hence but 3 days before the storm began, and was not passed 30 leagues off when we had it so fierce, yet he felt none of it: But only saw very black dismal Clouds to the Westward, as he reported at his return from Jamaica to Trist 4 Months after ".

The region being thus rendered so unhabitable " I with many more in my circumstances, was forced to range about to seek a subsistence in Company of some Privateers then in the Bay ".

In the light of what follows in DAMPIER'S life it is as well to give here a brief explanation of conditions at sea and ashore in the West Indies and the then discovered parts of the Continent of America, especially with regard to the attitude of other Europeans towards the Spaniards.

After the discoveries made by Columbus, Spain had been granted by the Pope the exclusive right to the trade and colonisation of America and the West Indies. The Spaniards, however, practised a ruthless severity upon the natives and made every effort to prevent foreigners from sharing in the highly lucrative trade, which they regarded entirely as their own. But, unfortunately for them they were, generally speaking, poor fighters, their ships being crowded with priests, seasick women and merchants, who increased the confusion by their lamentations and wild invocations of all the saints in their calendar, on the appearance of a privateeer. To determined men like DAMPIER and his companions, Spanish merchantmen were easy victims, and ever since the defeat of the Armada by DRAKE, the Spaniards had feared the English, regarding them as devils incarnate. Upon Jamaica falling to the English in 1655, the island became a base for " privateers," who existed entirely upon plunder from Spain. By DAMPIER'S time these had become a large and well-organised band, who in addition to looting the ships of Spain, plundered and sacked the towns, settlements and forts held by the Spaniards. It mattered not if England and Spain were nominally at peace, as beyond " the line drawn by the Pope " there was no peace at all. Every ship went armed and prepared to fight, and Europeans, not Spaniards, even though their nations might be at loggerheads, united together as " Brethren of the Coast," and waged a ceaseless war of reprisal against Spain their common enemy—often with a possibility of reaping a golden harvest!

With these men DAMPIER sailed, as he himself says, " more to indulge my curiosity than to get wealth." Adventures were to be had in plenty, and the description of one showing the superior seamanship and handling of the English ships, will serve as a good example. After describing the taking of the fort of Alvarado, DAMPIER tells us that, " having had a westerly wind all the morning, with Rain, 7 Armadilloes that were sent from La Vera Cruz appeared in sight, within a Mile of the Bars, coming in with full sail; but they could scarce stem the Current of the River; which was very well for us; for we were not a little surprised. Yet we got under sail, in order to meet them; and clearing our Decks by heaving all the Lumber over-board, we drove out over the Bar before they reached it: But they being to Wind-ward, forced us to exchange a few shot with them. Their Admiral was called the Toro. She had 10 Guns and 100 Men; another had 4 Guns and 80 Men; the rest having no great guns, had only 60 or 70 Men a-piece, armed with Muskets, and the Vessels barricadoed round with Bull-hides Breast high. We had not above 50 Men in both Ships, 6 Guns in one and two in the other. As soon as we were over the Bar, we got our Larboard Tacks aboard and stood to the Eastward, as nigh the Wind as we could lye. The Spaniards came away quartering on us: and our Ship being the Head-most, the Toro came directly towards, designing to board us. We kept firing at her in hopes to have lamed either Mast or Yard; but failing just as she was shearing aboard, we gave her a good volley, and presently clapp'd the Helm a Weather, wore our Ship, and got our Starboard Tacks aboard, and stood to the Westward: and so left the Toro, but were saluted by all the small Craft as we past by them, who stood to the Eastward, after the Toro, that was now in pursuit and close by our Consort. We stood to the Westward till we were against the River's Mouth; then we tackt and by the help of the Current that came out of the River, we were near a Mile to Windward of them all: Then we made sail to assist our Consort, who was hard put to it; but on our approach the Toro edged away towards the Shore, as did all the rest, and stood away for Alvarado; And we, glad of the Deliverance, went away to the Eastward, and visited all the Rivers in our return again to Trist."

But Privateering would seem not to have been such a profitable occupation as the logwood trade, for later we find that " the Effects of the late Storm being almost forgot, the Lagune Men settled again to their employments." DAMPIER, however, returned to England, reaching London in August, 1678, but his stay at home was only a brief one. Before sailing again he married a lady from the household of the Duke of Grafton, her Christian name being Judith. This appears to be all the record of his marriage which remains, and apparently he left no descendants.

His next voyage was to Jamaica, early in 1679, and he sailed as a passenger in the *Loyal Merchant* of London, with a stock of goods for trading, and a final intention of returning to the Bay of Campeachy. As it turned out this was not to be realized, as after remaining in Jamaica all that year, he accompanied one, Mr. HOBBY on a trading voyage to the country of the Moskito Indians. Soon after our setting out we came to an anchor again in Negril Bay, at the West end of Jamaica; but finding there Captain COXON, SAWKINS, SHARP, and other Privateers, Mr. HOBBY'S men all left him to go with them upon an Expedition they had contrived, leaving not one with him besides myself; and being thus left alone, after 3 or 4 days stay with Mr. HOBBY, I was the more easily persuaded to go with them too."

Thus it came about that DAMPIER rejoined the Privateers, and his voyage commencing from London in 1679 proved to be a Voyage round the World extending over a period of twelve years, as he did not finally return to England until 1691.

During the two years which followed DAMPIER took part in various expeditions in company with the Privateers, mostly against the Spanish Settlements of Central America, Peru and Chili. The Isthmus of Darien was twice marched across and the Island of Juan Fernandez was also visited. Throughout all of which time DAMPIER continued to write his journal, though often finding it most difficult to preserve his manuscripts, and on one occasion he tells us that he did so by placing them in a hollow bamboo sealed at both ends with wax, which he pushed in front of him when swimming a swollen river. It seems amazing when we remember that his writing must have been done in the intervals between sacking a town, looting a ship, during perilous canoe voyages, or when upon an arduous march across trackless country. Writing on board a privateer, amid the drunkenness and noise of his shipmates could only have been a difficult undertaking, and he must have often gone without sleep in order to take a survey or make a drawing of the coast. Ashore, too, instead of spending his time in wild carousals with his fellows, we find him jotting down every detail that met his observant eye, regarding the country, natives, birds, beasts, trees, and in fact everything which was strange to him.

In a small captured Spanish barque DAMPIER eventually arrived at the English Colony of Virginia in July, 1682, and it was in August, 1683, that his voyage round the World proper really commenced, as he sailed from Virginia with a Captain COOK in the *Revenge*, another " Privateer without commission," upon an expedition round Cape Horn to the coasts of Chile and Peru, with the object of plundering Spanish settlements and shipping in the " South Seas."

They sailed across the Atlantic with the idea of searching on the African coast for a vessel more suited for their long voyage, and during this passage a storm was encountered which " drencht us like so many rats ", and DAMPIER'S description of " A very uncommon way of wearing a Ship in a North " which follows affords

an excellent example of his style when illustrating a point of seamanship, and also shows that he did not fail to give credit when due to his shipmates.

" We scudded before the Wind and Sea some time, with only our bare Poles; and the ship by the mistake of him that con'd, broched too, and lay in the Trough of the Sea; which then went so high that every Wave threatened to overwhelm us. And indeed if any one of them had broke in upon our Deck, it might have foundred us. The Master whose fault this was, rav'd like a mad Man, and called for an Axe to cut the Mizan Shrouds, and turn the Mizan Mast over Board: which indeed might have been an Expedient to bring her to her course again. Capt. DAVIS was then Quarter-master and a more experienced Seaman than the Master. He bid him hold his hand a little, in hopes to bring her some other way to her course: The Captain also was of his Mind. Now our Main-yard and Fore-yard were lowered down a Port last, as we call it, that is down pretty nigh the Deck, and the Wind blew so fierce that we did not dare to loose any Head-sail, for they must have blown away if we had, neither could all the Men in the ship have furled them again; therefore we had no hopes of doing it that way. I was at this time on the Deck with some others of our Men; and among the rest one Mr. John Smallbone, who was the main instrument at that time of saving us all. Come! said he to me, let us go a little way up the Fore-shrouds, it may be that may make the Ship wear; for I have been doing it before now. He never tarried for an Answer, but ran forward presently, and I followed him. We went up the Shrouds Half-mast up, and there we spread abroad the Flaps of our Coats, and presently the Ship wore ".

Having made the best of their way to the mainland of Africa, near Sierra Leone, they boarded and captured a new Danish ship of forty guns, which they named *Bachelor's Delight*, and after making preparations sailed South-West, back across the Atlantic, rounding Cape Horn on the 14th February, 1684, St Valentine's Day. Mr. COWLEY, pilot of the *Revenge* who also kept a journal says that on this day they " were choosing Valentines, and discoursing on the Intrigues of Women, when there arose a prodigious Storm, so that we concluded the discoursing of Women at sea was very unlucky ". A typical example of common superstition among sailormen in DAMPIER'S day.

DAMPIER was at this time " vexed " in that he saw so little of the sun that he could not take his usual observations, however at the end of March they made Juan Fernandez in company with the *Nicholas* of London, Captain EATON, with whom they had fallen in on the passage up from the Horn. After recuperating their men and completing with water and provisions the ships sailed for the coast of Peru, where several prizes were taken, after which they proceeded to the Galapagos Islands, and later to Mexico, where in July Captain COOK died, being succeeded by DAVIS, the Quarter-Master before mentioned.

The " Privateers " as DAMPIER persists in politely calling them, had now been joined by other ships and manned prizes and now numbered some ten sail, with nearly a thousand men. This fleet scoured the coast of South America for upwards of a year, but in general did not meet with much success, as the Spaniards were apparently too well prepared for them.

In August 1685 DAMPIER transferred to the *Cygnet*, Captain SWAN, as Pilot, and this ship separated from the Fleet in order to sail across the Pacific to the East Indies, there to intercept a Spanish Galleon or " Manila Ship ", and so triumphantly home, ladened with booty. It was a project says DAMPIER " very agreeable to my inclinations ", but most of the crew in their ignorance evidently thought that SWAN would carry them over the edge of the World.

At this part of his narrative, DAMPIER offers some remarks on the North-West passage, which display such acuteness that they deserve to be here quoted. It will be observed that in what he suggests he seems to have anticipated by nearly a century the intention of the last voyage of that famous Navigator, Captain JAMES COOK.

" I know there have been divers attempts made about a North West Passage, and all unsuccessful: yet I am of opinion, that such a Passage may be found. All our Countrymen that have gone to discover the N.W. Passage, have endeavoured to pass to the Westward, beginning their search along Davis's or Hudson's Bay. But if I was to go on this Discovery, I would go first into the South Seas, bend my course from thence along by California, and that way seek a Passage back into the West Seas. For as others have spent the Summer, in first searching on this more known side nearer home, and so before they got through, the time of the year obliged them to give over their search, and provide for a long Course back again, for fear of being left in the Winter; on the Contrary, I would search first on the less known Coast of the South Sea-side, and then as the Year past away, I should need no retreat for I should come farther into my knowledge, if I succeeded in my attempt, and should be without that dread and fear which the others must have in passing from the known to the unknown: Who, for ought I know gave over their search just as they were on the point of accomplishing their desires ".

As is well known the practicability of this passage has long been regarded as settled decidedly in the negative, for although after many attempts, the honour of the final discovery by way of Baffin Bay fell to Sir JOHN FRANKLIN'S *Erebus* and *Terror* Expedition in 1847, it resulted in the total loss of both ships and men, one of the greatest tragedies of British Marine Exploration.

On March 31st, 1686 the *Cygnet* sailed from the Mexican Coast near Cape Corrientes. The lonely voyage to the westward had commenced, across an ocean then practically unknown to Englishmen. The fact emerges that no one on board knew the exact distance to Guam, in the Ladrones, their first port of call. Spanish charts of the day made the distance from Cape Corrientes something between 2300 and 2400 leagues, whereas the English made less than two thousand. Only sixty days provisions were carried, and that only calculated at the rate of half a pint of maize daily for each man. What really put heart into the " Rabble " as DAMPIER bluntly terms the crew, was the Captain's promise to cruise among the Philippines in an attempt to intercept the valuable " Manila Ship " from Acapulco.

Of the passage DAMPIER writes: " After the 31st Day of March we made great runs every Day, having very fine clear Weather, and a fresh Trade-wind, which we made use of with all our Sails, and we made many good Observations of the Sun." Meaning of course for Latitude only, as there were then no Chronometers for use in calculating Longitude. The forerunner of the modern sextant, known as the Astrolabe, invented in 1485, had displaced the rough and ready Cross-staff with experienced navigators at this time, and Latitude could be obtained with reasonable accuracy, but Longitude entirely depended upon the reckoning kept, and it was the practice of Masters first to sail to the Latitude of the place they wished to reach, and then East or West along the parallel, until they arrived at it.

During this voyage across the Pacific great privations were endured through shortage of provisions, and " One of our Men midst of these harships was found guilty of theft, and condemned for the same, to have 3 blows from each man in the Ship, with a 2 inch and a half rope on his bare back. Captain SWAN began first, and struck with a good will: whose example was followed by all of us " —an instance of the rigorous discipline carried out in the Buccaneer Ships of DAMPIER'S day.

To continue: " After we had run the 1,900 Leagues by our reckoning, which made the English account to Guam, the Men began to murmur against Captain SWAN, for persuading them to come this voyage; but he gave them fair words, and told them that the Spanish account might probably be the truest, and seeing the Gale was likely to continue, a short time longer would end our troubles."

Guam was reached safely on May 20th, after a smart passage of fifty days, with only three days' provisions remaining, as the men had insisted upon an increase of rations during the latter part of the voyage. It was just as well that they made the land, for DAMPIER observes " as I was afterwards informed, the Men had contrived, first to kill Captain SWAN and eat him when the Victuals was gone, and after him all of us who were accessory in promoting the undertaking this Voyage. This made Captain SWAN say to me after our arrival at Guam, 'Ah! DAMPIER, you would have made them but a poor Meal'; for I was as lean as the Captain was lusty and fleshy."

DAMPIER then gives a complete log of the voyage across the Pacific, with courses and daily distances from Noon to Noon, resolved into Northing or Southing and Westing, Latitude and Winds. He would have added the " Variation of the Needle," but mentions that " Captain SWAN who had the Instruments in his Cabin, did not seem much to regard it."

It seems surprising to read that friendly relations were established with the Spanish Governor at Guam, but the enfeebled condition of the *Cygnet's* crew perhaps accounted for this unusual proceeding.

It must have been galling to them to find out afterwards that whilst they were carrying out a brisk trade with the shore, the much desired galleon, ladened with " Quick-silver, Cacao, and Pieces of Eight " actually hove in sight of the Island, but the wily Governor sent out a native craft to warn her of the *Cygnet's* presence, and accordingly she stood on without the Buccaneers being aware of her proximity.

After a stay of twelve days at Guam, a departure was made for Mindanao, the southernmost island of the Philippine group. Here they were soon on excellent terms with the natives, who tried to persuade them to settle in the island. DAMPIER evidently regretted that they did not do so, for he observed, and rightly, that a Colony in the Spice Islands would be of great benefit to England, especially as among the *Cygnet's* crew were carpenters, bricklayers, shoemakers, tailors and men of many other useful trades. However, after a six months' sojourn the crew became mutinous, and under the leadership of one, John READ, seized the ship and proceeded to sea, leaving Captain SWAN and a small party of men behind at Mindanao. DAMPIER was unacquainted with their design, and being on board at the time, he was obliged to remain there.

After cruising unsuccessfully in the Gulf of Siam, they sailed north to the Pescadores Islands, between Formosa and the mainland of China. From there to " Bashee Island," which the crew characteristically named after a kind of beer which the inhabitants made (the island bears the name to this day). Sailing southward down the eastern side of the Philippines they again reached Mindanao, and whilst READ and some others were ashore, DAMPIER made an eloquent appeal to the remainder of the crew, and got them to agree to sail round the island to Mindanao Town, and take SWAN off. But one man slipped away and warned READ, who returned on board and " presently dissuaded the men from any such design." DAMPIER seems not have been borne any ill-will for his action, but he had evidently made up his mind to leave " this mad crew " at the first opportunity.

The Mutineers, after cruising off Manila and capturing two prizes, proceeded from port to port, and island to island, sometimes rioting in luxury but more often reduced to virtual starvation. Eventually they headed southward past the Celebes, encountering numerous Waterspouts of which in his journal DAMPIER writes his usual detailed description: " A Spout is a small Ragged piece or part of a Cloud hanging down about a Yard, seemingly from the blackest part thereof. Commonly it hangs down sloping from thence or sometimes appearing with a small bending, or elbow in the middle. I never saw any hang perpendicularly down. It is small at the lower end, seeming no bigger than one's Arm, but 'tis fuller towards the Cloud, from whence it proceeds. When the surface of the Sea begins to work, you shall see the Water, for about 100 paces in circumference, foam and move gently round till the whirling motion increases: and then it flies upward in a Pillar, about 100 Paces in compass at the bottom, but lessening gradually upwards to the smallness of the Spout it self, there where it reacheth the lower end of the Spout, through which the rising Sea-water seems to be conveyed into the Clouds. This visibly appears by the Clouds increasing in bulk and blackness. Then you shall presently see the Cloud drive along, although before it seemed to be without motion; the Spout also keeping the Same course with the Cloud, and still sucking up the Water as it goes along, and they make a Wind as they go. Thus it continues for the space of half an Hour, more or less, until the sucking is spent, and then breaking off, all the Water which was below the Spout, or Pendulous Piece of Cloud, falls down again into the Sea, making a great noise with its fall and clashing motion in the Sea. It is very dangerous for a Ship to be under a Spout when it breaks, therefore we always endeavoured to shun it, by keeping at a distance, if possibly we can. But for want of Wind to carry us away, we are often in great fear and danger, for it is usually calm when Spouts are at work, except only just where they are. Therefore Men at Sea, when they see a Spout coming, and know not how to avoid it, do sometimes fire Shot out of their great Guns into it, to give it air or vent, that it may break; but I did never hear that it proved to be of any benefit."

Sailing southward by way of Timor it was decided to make for " New Holland " or, as we now know it, Western Australia, which had already been discovered by Dutch navigators. This decision was made " to see what that Country would afford us ". Rather a vague reason unless, fired by the success of the Spaniards in America, our Englishmen hoped to discover another " El Dorado " in the Continent of Australia.

DAMPIER here observes " New Holland is a very large Tract of Land. It is not yet determined whether it is an Island or a main Continent; but I am certain that it joyns neither to Asia, Africa nor America ".

On the 14th January, 1688, a landfall was made in the latitude of 16° 50′ S., somewhere in the neighbourhood of what is now called " Dampier Land ", and the " Buccaneer Archipelago ". As usual DAMPIER meticulously kept his journal all this time, and faithfully described the new country and its people, of whom he wrote: " The Inhabitants of this Country are the miserablest People in the world. The Hodmadods (Hottentots) though a nasty People, yet for Wealth are Gentlemen to these ".

But no fortunes were to be made on the unhospitable shores of Western Australia, so after heaving their ship ashore into a sandy cove and cleaning her bottom, they prepared to depart. DAMPIER was still scheming to detach himself from READ, and " while we lay here, I did endeavour to persuade our Men to go to some English Factory; but was threatened to be turned ashore, and left here for it. This made me desist, and patiently wait for some more convenient place and opportunity to leave them, than here ".

The *Cygnet* sailed from Australia on March 12th, 1688, and arrived at the Nicobar Islands on May 5th. Here DAMPIER and seven other men with all their effects were left ashore, at their own request, and on May 6th, the ship sailed and left them to their fate. Captain READ thought that it was impossible for anyone to leave the island, but the castaways obtained a small canoe from the natives. She must have been about the size of a wherry, with a matting sail, and outriggers to prevent her from capsizing, and was so light that when empty four men could carry her. They victualled this frail craft with bread-fruit, and water carried in cocoa-nut shells and bamboos, and on May 15th set sail for Sumatra, a distance of about 180 miles, with no better appliances than DAMPIER'S pocket compass and some notes he had taken from the *Cygnet's* chart of the East Indies.

Sometimes they rowed and sometimes sailed, making poor progress on account of a strong contrary current, then on the 18th of May, the appearance of the sky was alarming. About noon, the sun, which before had shone out with great clearness and brilliancy, became obscured with a large circle, five or six times its diameter, round it. On this prognostication of bad weather, DAMPIER observes, " We do commonly take great notice of these that are about the Sun, observing if there be any Breach in the Circle, and in what Quarter the Breach is; for from thence we commonly find the greatest stress of the Wind will come ". He was alarmed at the appearance of this circle, and in a short time his apprehensions were verified, as a " Sumatra ", one of the violent local South-westerly gales, was rapidly approaching.

In the description which followed it will be noted that DAMPIER reveals his thoughts and feelings in no uncertain manner, as without doubt he had little hope that his frail canoe would escape destruction in this gale. " The Winds therefore bearing very hard, we rolled up the Foot of our Sail on a Pole fastned to it, and settled our Yard within three Foot of the Canoa sides, so that we had now but a small Sail; yet it was still too big, considering the Wind; for the Wind being on our broad side, prest her down very much, tho' supported by her Outlagers; insomuch that the Poles of the Outlagers going from the side of their Vessel, bent as if they would break; and should they have broken, our overturning and perishing had been inevitable. Besides, the Sea increasing, would soon have filled the Vessel this way. Yet thus we made a shift to bear up with the side of the Vessel against the Wind for a while; But the Wind still increasing, about one a Clock in the Afternoon, we put away right before Wind and Sea, continuing to run thus all the Afternoon, and part of Night ensuing. The Wind continued increasing all the Afternoon, and the Sea still swelled higher, and often broke, but did us no damage; for the ends of the Vessel being very narrow, he that steered received and broke the Sea on his back, and so kept it from coming in so much as to endanger the Vessel: though much Water would come in, which we were forced to keep heaving out continually. And by this time we saw it was well that we had altered our Course, every Wave would else have fill'd and sunk us, taking the side of the Vessel; And though our Outlagers were well lash'd down to the Canoas bottom with Rattans, yet they must probably have yielded to such a Sea as this; when even before they plunged under Water, and bent like twigs ".

" The Evening of this 18th day was very dismal. The Sky look'd very black, being covered with dark Clouds, the Wind blew hard, and the Seas ran high. The Sea was already roaring in a White Foam about us; a dark Night coming on, and no Land in sight to shelter us, and our little Ark in danger to be swallowed by every Wave; and what was worst of all, none of us thought our selves prepared for another World. The Reader may better guess than I can express, the Confusion that we were all in. I had been in many eminent Dangers before now, some of which I have already related, but the worst of them all was but a Play-game in comparison with this. I must confess that I was in great Conflicts of Mind at this time. Other dangers came not upon me with such a leisurely and dreadful Solemnity. A sudden Skirmish or Engagement, or so, when ones Blood was up, and push'd forwards with eager Expectations. But here I had a lingring view of approaching Death, and little or no hopes of escaping it; and I must confess that my Courage, which I had hitherto kept up, failed me here; and I made very sad Reflections on my former Life, and look'd back with Horror and Destestation, on Actions which before I disliked, but now I trembled at the remembrance of. I had long before this repented me of that roving course of Life, but never with such concern as now. I did also call to mind the many miraculous Acts of GOD'S Providence towards me in the whole course of my Life, of which kind I believe few men have met with the like. For all these I returned Thanks in a peculiar Manner, and this once more desired GOD'S Assistance, and composed my Mind, as well as I could, in the hopes of it, and as the Event shewed, I was not disappointed of my hopes ".

" Submitting our selves therefore to GOD'S good Providence, and taking all the Care we could to preserve our Lives, Mr. HALL and I took turns to steer, and the rest took turns to heave out the Water, and thus we provided to spend the most doleful Night I ever was in. About 10 a Clock it began to Thunder, Lighten, and Rain; but the Rain was very welcome to us, having drunk up all the Water we brought from the Island ".

" The Wind at first blew harder than before, but within half an hour it abated, and became more moderate; and the Sea also asswaged of its fury; and then by a lighted Match, of which we kept a piece burning on purpose, we looked on our Compass to see how we steered, and found our Course to be still East. We had no occasion to look on the Compass before, for we steered right before the Wind, which if it shifted, we had been obliged to have altered our Course accordingly. But now it being abated, we found our Vessel lively enough with that small Sail which was then aboard, to hail to our former Course, S.S.E. which accordingly we did, being now in hopes again to get to the Island Sumatra ".

" But about 2 a Clock in the Morning of the 19th day, we had another Gust of Wind, with much Thunder, Lightning and Rain, which lasted till Day, and obliged us to put before the Wind again, steering thus for several Hours. It was very dark, and the hard Rain soaked us so thoroughly, that we had not one dry Thread about us. The Rain chill'd us extreamely; for any fresh Water is much colder than that of the Sea. For even in the coldest Climates the Sea is warm, and in the hottest Climates the Rain is cold and unwholsome for Man's Body. In this wet starveling plight we spent the tedious Night. Never did poor Mariners on a Lee-shore more ernestly long for the dawning Light then we did now. At length the Day appeared; but with such dark black Clouds near the Horizon, that the first glimpse of the Dawn appeared 30 or 40 degrees high; which was dreadful enough; for it is a common Saying among Seamen, and true, as I have experienced, that a high Dawn will have high Winds and a low Dawn, small Winds ".

However, thanks to DAMPIER'S seamanship, his little company came safely through their terrible ordeal, and Sumatra was reached after a passage lasting five days. Stricken by fever they were too weak to stand upright on landing, and two of his companions later died from the fatigues and distress of the voyage. DAMPIER himself nearly succumbed, but friendly natives cared for him, and finally he reached Achin, where he fell in with a Captain WELDON, with whom he voyaged to Tonquin, and for a time left his ship and wandered about the country acquiring information for his precious journal; a remarkable feat when we remember that he was ignorant of the language and must often have been in considerable danger from the natives.

Early in February, 1689, DAMPIER sailed out of the Bay of Tonquin, and in March went again to Sumatra. Later he commanded a Dutch Merchant Sloop on voyages to Malacca and Madras, until arriving at Bencoolen, in Sumatra, where there was an English Factory, he accepted the post of Chief Gunner at the Fort, with the duty of advising on the rebuilding of the fortifications. DAMPIER soon seems to have tired of Bencoolen, and especially of the Governor " whose humours were brutish and barbarous ". Also " I began to long after my native country, after so tedious a ramble from it ".

The Governor of Bencoolen being loth to part with his Gunner, DAMPIER in the end had to escape through a loop-hole in the Fort, leaving behind all his " books, drafts and instruments, cloths and bedding and wages "—but tucked about his person he had the faded, sea-stained sheets of his journal, which he had preserved throughout all his wanderings. He managed to board a homeward-bound ship, the *Defence*, which sailed on January 25th, 1691, and finally arrived at the Downs on September 16th after a most unpleasant voyage, during which thirty of the ship's company died before the Cape of Good Hope was reached.

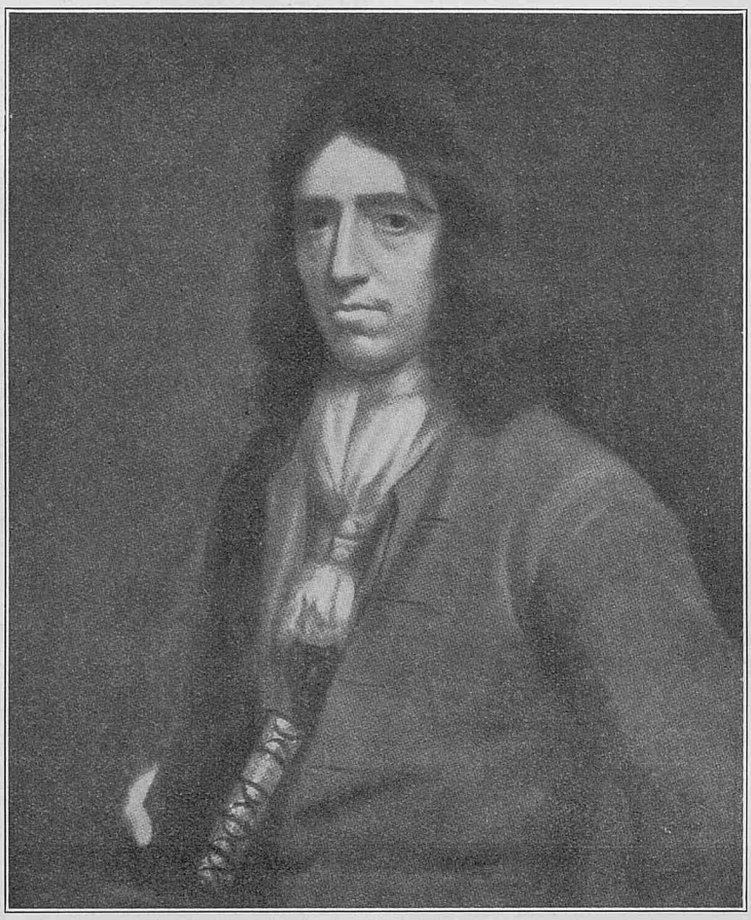
Thus in his first circumnavigation DAMPIER had spent twelve years since leaving England in 1679. He landed almost penniless, and no doubt returned to his people in the West Country, but nothing is known of his movements during the next five years, until in 1697 he published the account of his voyage round the World, dedicating the volume to CHARLES MONTAGUE, Esquire, who was at that time President of the Royal Society and one of the most influential politicians of his time. The book had a great vogue, running into three or four editions in a few months. Other leading men in the scientific world soon became DAMPIER'S friends, among them being Sir ROBERT SOUTHWELL, also a President of the Royal Society, and Sir HANS SLOANE, founder of the British Museum, who ordered the now famous explorer's portrait to be painted by Sir THOMAS MURRAY; which portrait now hangs in the National Portrait Gallery, London.

Thus fame had at last come to DAMPIER through the medium of the journal he had so conscientiously kept and preserved throughout his voyages and wanderings, and he now reaped some reward for his labours.

In August, 1697, DAMPIER was appointed to a post in the Customs Service at a salary we are told of £8 15s. a quarter, a sum not altogether contemptible in those days, especially as it apparently continued during his subsequent long absences from England. His advice was also sought after in official circles with reference to such diverse subjects as making settlements in Central America, sending a squadron against the pirates to the East of the Cape of Good Hope, and on the compilation of sailing directions on the then known trade routes of the World.

Encouraged by the reception of his first book, he produced a second volume in 1698, which contained his notable " Discourse on Winds ", without doubt one of the most valuable early contributions to what has now become the science of Meteorology. This second volume was dedicated to EDWARD, EARL OF OXFORD, then First Lord of the Admiralty, who was so impressed by it that he requested DAMPIER to draw up a proposal for a voyage of research and exploration. DAMPIER'S expert knowledge was thus brought to official use, and although the ship to which he was appointed was small and in bad condition, we nevertheless have here the first attempt at a voyage planned for the deliberate purpose of research, the proginator of the voyages of COOK, of the *Beagle*, of the *Rattlesnake*, and of the *Challenger*.

DAMPIER suggested the survey and exploration of the coasts of New Holland (Australia), " as a country moreover likely to contain gold ". It will be recalled that he had already briefly visited those regions in the *Cygnet*, but evidently he was not to be deterred by his previous experience when he found it " barren and desolate ". He says " In coasting round it I could not but hope to meet with some fruitful lands, continents or islands, or both, productive of any of the rich fruits, drugs or spices (perhaps minerals also) that there are in other parts of the torrid zone. I meant also to make as diligent a survey as I could of the several smaller islands, shores, capes, bays, creeks and harbours, fit as well for shelter or defence . . . and of rocks and shoals, the soundings, tides and currents, winds and weather, variation; whatever might be beneficial for navigation, trade and settlement ".



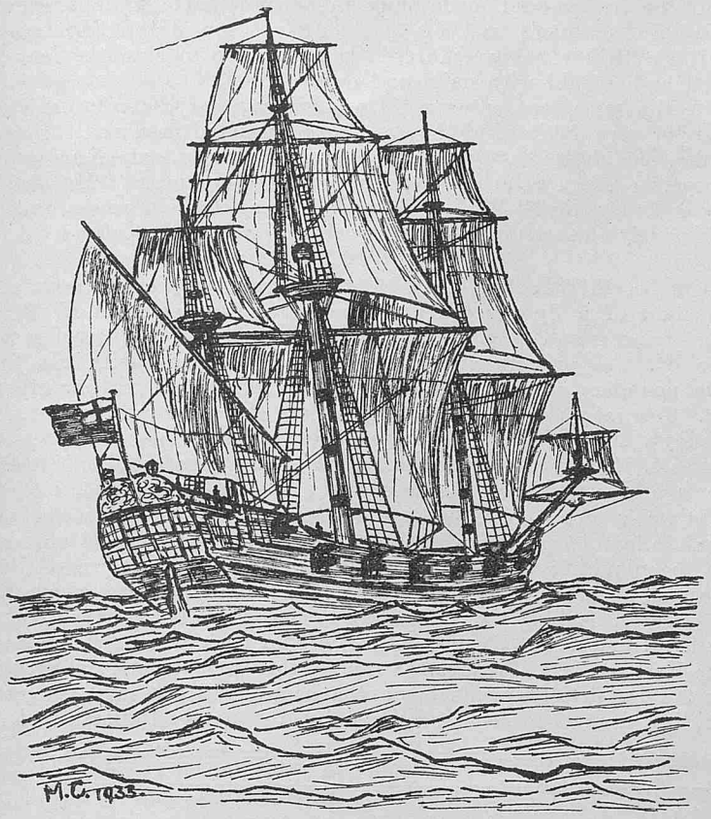
From a portrait in the National Gallery by Thomas Murray.

CAPTAIN WILLIAM DAMPIER.

1651–1715.

Reproduced from "William Dampier", by C. Wilkinson, by kind permission of the publishers, John Lane, The Bodley Head, Ltd.

DAMPIER we are told dined with SAMUEL PEPYS, whilst his ship was fitting out, and among the company present was JOHN EVELYN, the diarist, who wrote under date August 6th, 1698, that he thought DAMPIER to be " a more modest man than one would imagine by the relation of the crew he had assorted with. He brought a map of his observations of the course of the Winds in the South Seas, and assured us that the maps hitherto extant were all false as to the Pacific Sea."



H.M.S. Roebuck, 292 tons.

Built at Wapping in 1690.

In January, 1699, DAMPIER sailed from the Downs in command of H.M.S. *Roebuck*, a fifth rate of 292 tons, carrying twelve guns, stored for a twenty months voyage, and manned by a crew of 50 unseasoned men and boys, of which only two had previously crossed the line. The passage out was by way of the Canaries, Cape Verde Islands and Brazil. The vessel does not appear to have been at all fit for such a long and perilous voyage, and DAMPIER evidently experienced great difficulty with his crew who were inclined to be mutinous, and he must have found it hard to proceed. Most of his men were of the opinion that the scheme of voyaging to New Holland was impracticable and that their Captain was conducting them to certain destruction. DAMPIER tells us that his crew were " small almost heartless in the pursuit of the voyage " and in his journal he mentions being forced to " keep myself all the way upon my guard, and to lie with my Officers, such as I could trust with small arms upon me, on the quarter-deck; it scarce being safe for me to lie in my cabin, by reason of the discontents among the men."

On the 23rd April a departure was made from Bahia for New Holland direct, and during the run to the Cape of Good Hope DAMPIER spent much time pondering the problem of the variation of the compass, and compiled an elaborate table of variations, with dates. This appears to have been one of his favourite studies, and the occasion of some of his best and most useful work as a writer on navigation, and he was among the first to lead the way to the investigation of local magnetic attraction in ships. At this time he found the variation near the Cape of Good Hope to be more than it was thirty leagues East of it, whereas it should have been less, and wrote: " These things, I confess, did puzzle me, indeed were most shocking to me. Neither was I fully satisfied as to the exactness of the taking of the Variation at Sea."

On the 4th June the *Roebuck* was off the Cape of Good Hope, and DAMPIER set his course for New Holland. On the evening of the 5th June " the Sun set in a black cloud, which appeared just like Land; and the Clouds above it were gilded of a dark red Colour. And on the Tuesday, as the Sun drew near the Horizon, the Clouds were gilded very prettily to the Eye, tho' at the same time my Mind dreaded the Consequences of it. When the Sun was now not above 2 deg. high, it entered into a dark Smoaky-coloured Cloud that lay parallel with the Horizon, from whence presently seem'd to issue many dusky blackish Beams. The Sky was at this time covered with small hard Clouds very thick one by another. . . . And this being Winter here, and the time for bad Weather, I expected and provided for a violent blast of Wind, by riffing our Topsails, and giving a strict charge to my Officers to hand them or take them in, if the Wind should grow stronger. The Wind was now at W.N.W., a very brisk Gale. About 12 a Clock at night we had a pale whitish glare in the N.W. which was another sign, and intimated the Storm to be near at hand; and the Wind increasing upon it, we presently handed our Top-sails, furled the Main-sail, and went away with only our Fore-sail. Before 2 in the Morning it came on very fierce, and we kept right before Wind and Sea, the Wind still increasing: But the ship was very governable, and steered incomparably well. At 8 in the Morning we settled our Fore-yard, lowering it 4 or 5 Foot, and we ran very swiftly; especially when the squalls of Rain or Hail, from a black Cloud, came over Head, for then it blew excessive hard. These, tho' they did not last long, yet came very thick and fast one after another. The Sea also ran very high; But we running so violently before Wind and Sea, we ship'd little or no Water. The Wind blew extraordinary hard all Wednesday, the 7th June, but abated of its fierceness before night; Yet it continued a brisk Gale till about the 16th, and still a moderate one till the 19th Day; by which time we had run about 600 Leagues."

On the 1st August, 1699, DAMPIER made the West Coast of Australia, in about latitude 26° S., having sailed directly over from Brazil. He coasted along looking for a sheltered bay, and on August 6th anchored in an opening which he named " Sharks Bay," on account of the number of sharks seen there. No fresh water could, however, be found, but sharks were caught in plenty and eaten " very savourably," together with turtles, sea-fowl and what DAMPIER calls " Raccoons." Then followed a search to the Northward, not for the quested gold and spices but for fresh water, as scurvy was making itself manifest among his discontented crew. On the 21st they found themselves among a group of islands, which must have been those now called the " Dampier Archipelago." The sun blazed down upon them with " fine clear weather " and " the rocks looked of a rusty yellow colour and I despaired of getting water on any of them."

The exploration of New Holland had perforce to be thus given up, but Roebuck Bay, a range of hills called Roebuck Downs, both in the district of Dampier in Western Australia still bear names in commemoration of the explorer and his vessel. On September 1st, DAMPIER sailed for the island of Timor, where there were Dutch and Portuguese Settlements, in order to obtain fresh water and provisions for his scurvy stricken crew, and also to careen his ship. On the 12th December, 1699, having accomplished these objects, the *Roebuck* sailed for New Guinea, where in spite of great hostility from the natives most valuable survey work was carried out. DAMPIER named Little Providence, New Britain (Nova Britannia), and several other islands, but his most important discovery was what is now known as Dampier Strait, which divides New Britain from New Guinea.

The morale of the crew at this time appears to have been much better than previously, DAMPIER by his leadership having undoubtedly at last gained their confidence; but the Monsoon Season was approaching and his ship was in no fit state to continue a voyage of research, so he sailed for Batavia, refitted, watered, provisioned and on the 17th October, 1700, a departure was made for England. Soon the ship could hardly be kept afloat, and DAMPIER in his brief description of the passage omits his usual full descriptions and accounts—an eloquent testimony of his state of mind. Calls were made at the Cape of Good Hope and St. Helena, and " On the 21st February we made the Island of Ascension,

and stood in towards it. The 22d between 8 and 9 a Clock, we sprung a leak, which increased so that the Chain-pump could not keep the Ship free."

With all hands at the hand pump, helped by " some drams to comfort them " they finally closed the land, made a raft and were able to get safely ashore before the *Roebuck* sank, carrying with her many of DAMPIER'S books and documents. Three English men-of-war and the *Canterbury* East Indiaman, arrived at the Island soon afterwards and DAMPIER with some of his officers eventually proceeded to England in the last mentioned vessel.

Soon after his arrival home he published a third volume of his Voyages, containing the " Voyage to New Holland." This volume he dedicated to the EARL OF PEMBROKE, who was then Lord President, but who, during a part of King William's Reign, had been First Lord of the Admiralty. In this dedication he complained that the world is apt to judge of everything by the success achieved, and that he had suffered extremely in his reputation by the loss of the *Roebuck* through no fault of his own.

DAMPIER had however actually enhanced his reputation as a navigator, explorer and hydrographer, and had achieved much in carrying out such a voyage in little known and dangerous waters. He was now in his fiftieth year, and in the Gazette of the 18th April, 1703, we read that " Captain WILLIAM DAMPIER, being prepared to depart on another voyage to the West Indies, had the honour to kiss Her Majesty's hand on Friday last, being introduced by his Royal Highness the Lord High Admiral ".

This was evidently upon the occasion of his sailing in command of two privateers, the *St. George* of 26 Guns and 120 men, and the *Cinque Ports* a galley of 16 Guns, fitted out to cruise in the Pacific; as in 1702 war had again broken out with France and Spain.

No account written by DAMPIER exists of this voyage, but a description of it survives written by one FUNNEL, described in the crew list as a steward. After beating round the Horn, a base was made to refit at Juan Fernandez. Here a dispute took place between Captain STRADLING of the *Cinque Ports*, and his sailing master, ALEXANDER SELKIRK, with the result that SELKIRK was marooned on the Island when the ships sailed—but of this more hereafter.

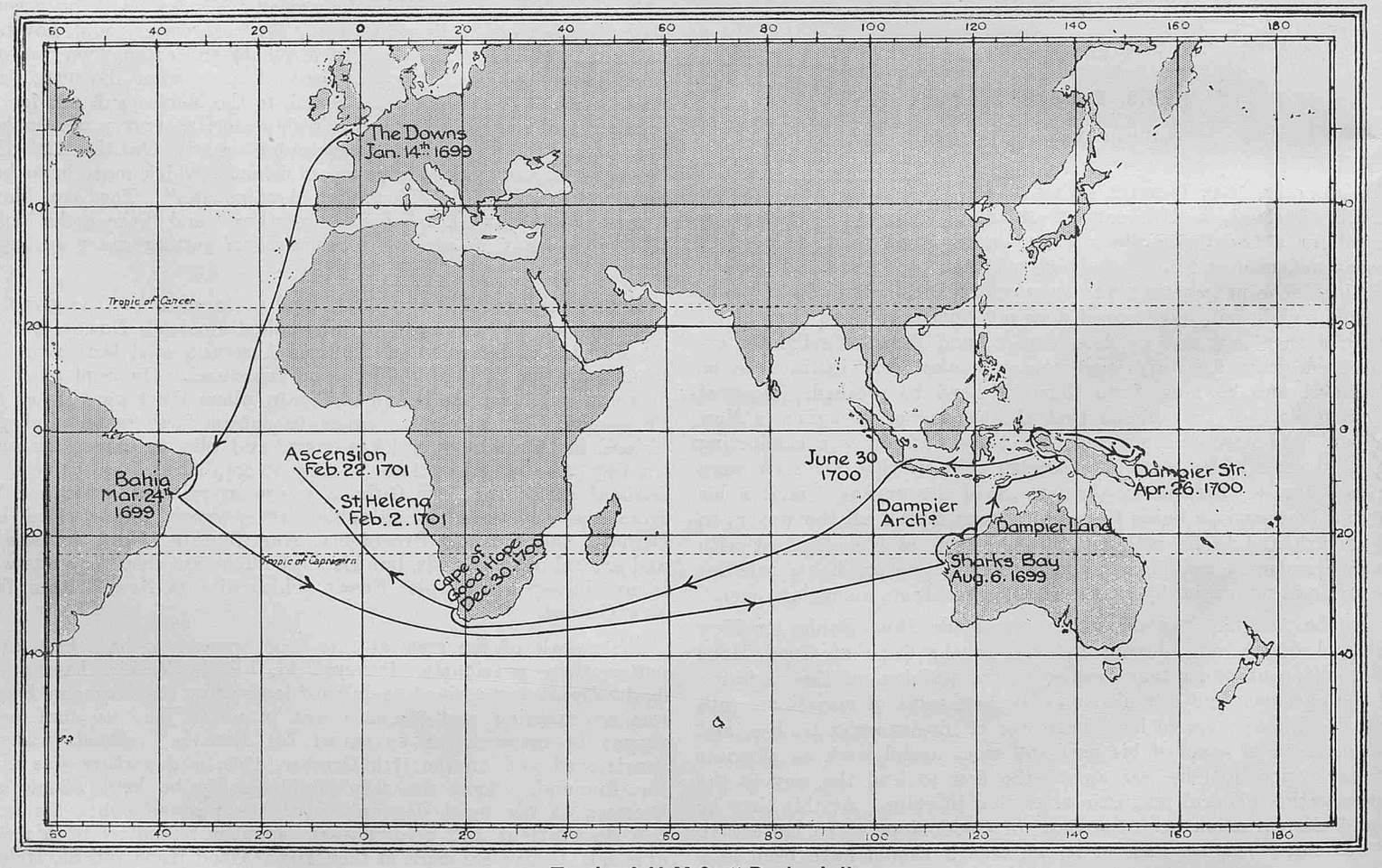
At Tobago, which they next visited, DAMPIER and STRADLING decided to part company, and the *St. George* proceeded to the coast of Peru, where a few small prizes were captured. The *Cinque Ports* it may be mentioned was eventually lost on the coast of Peru and her crew all taken by the Spaniards.

DAMPIER now found it necessary to careen and repair his ship, whose bottom we are told " was in many places eaten like a honeycomb, insomuch that the firm planks was no thicker than an old sixpence ". She was therefore run in among the islands of the Gulf of Nicoya and made snug in a comfortable little anchorage " within a stone's cast of the shore all round ". Shortage of suitable timber however forced the carpenter to stop the leaks as well as he could with nails and oakum.

Whilst these repairs were in progress some of the crew mistrusting the seaworthiness of the *St. George* deserted in a small Spanish prize, but DAMPIER with the remainder finally sailed in a last desperate effort to achieve the success of the venture. He decided to seek for the " Manila Ship ", one of those elusive galleons previously mentioned, and unsuccessfully sought after by the *Cygnet*.

On the 6th December, 1704, when off Acapulco they actually came in sight of a Spaniard from Manila, and closed her. With her big eighteen and twenty-four pounders she could have easily sunk the *St. George* with one broadside, but DAMPIER with his little five pounders attacked her without hesitation. Unfortunately the *St. George* was quickly damaged between wind and water, the enemy's shots driving in huge pieces of her adversary's rotten timbers. The galleon escaped, as DAMPIER was forced to haul off to save his ship from sinking.

It was a bitter blow, but DAMPIER still managed to keep his leaky craft afloat by plugging the shot holes with tallow and charcoal, as the planking was too rotton to take nails. The town of Puna was next plundered and a small prize captured, into which they transferred leaving the *St. George* to founder. Then away DAMPIER sailed from the coast of Mexico once again across the Pacific to the East Indies. Little is known of this voyage, but on arriving at the Dutch settlements the authorities seized the ship and crew, holding them as prisoners, for most unfortunately DAMPIER had lost



Track of H.M.S. " Roebuck."

his documents and commission during the attack on Puna. Eventually released DAMPIER found his way back to England towards the end of 1707.

Although he had returned without his ships, his great reputation as a navigator and hydrographer was unimpaired. His friends welcomed him and he was called to London and presented to the Queen, whose hand he again kissed, and to whom he gave " some account of the dangers he had been through ". It must be remembered that Englishmen who had twice circumnavigated the Globe were rare in those days. DAMPIER was now fifty-six years of age, a man with a great and well-established reputation, the lifelong associate of desperate adventurers, and the valued friend of the leading scientists and politicians of his day—also he had written the best books on voyaging and travel since HAKLUYT. During his absence in the ill-fated *St. George* his admirable " Discourse on Winds " had been widely read and it must have been appreciated that no other man living was then capable of producing such a detailed account of conditions that explorers might expect in so many different parts of the World. On the other hand his name and reputation as a fighting man had become formidable in the West Indies and Pacific Ocean, and in the account of his next voyage (which was not written by himself) we find again and again evidence of the fear which his name inspired all along the Spanish Main.

DAMPIER was not many months ashore before he again embarked, this time to make his last voyage round the world. In 1708, the *Duke* and *Duchess*, privateers were fitted out by a company of Bristol Merchants, under the command of Captain WOODES ROGERS, the prime object being once again the capture of " Manila Ships ". In 1712 WOODES ROGERS published an account of the voyage, which actually turned out to be a most successful one from the point of view of booty (£170,000 being the total amount available for distribution). Captain DAMPIER was appointed Pilot for the South Seas, and a member of the Council to direct the affairs of the two ships.

The expedition finally sailed from Cork on August 28th, 1708, and after capturing a few prizes in the Atlantic, stood on round Cape Horn, arriving at Juan Fernandez on February 1st, 1709. Here sending a boat ashore, it returned and " brought abundance of crayfish, and a man clothed in goat skins, who looked wilder than the first owners of them ". It was ALEXANDER SELKIRK, who had lived alone on the island ever since being marooned by STRADLING over four years previously. Everyone has read "Robinson Crusoe ", and there is no doubt that SELKIRK was the principal source of inspiration of DEFOE'S immortal story, and long after in 1868 a tablet was put up on the island at a point on the hill road known as " Selkirk's Look-out. ".

The privateers sailed on after refitting and recuperating their crews after the strenuous voyage around the Horn, SELKIRK being appointed Mate of the *Duke*, and later given command of one of the prizes. Much plunder was obtained from the town of Guayaquil and the numerous prizes captured until in December when cruising off the Gulf of California near Cape St. Lucas, one of the " Manila Ships " was at last sighted. This time she did not escape but after a brisk action was taken with her cargo of rich merchandise, also gold and silver to the value of £12,000. From the prisoners they heard of a great vessel of 900 tons not far astern, and soon sighting her promptly gave chase and attacked. To quote from the narrative of the action: " one ship alone fired above 300 great shot, about 50 cross-bars and 2 great chests of steel bars besides abundance of partridge small shot and above 9 barrels of powder, but we might have as well fought a castle of fifty guns as this prodigious strong ship ". All to no avail, the privateers after two days fighting had at last to bear away with the galleon they had already captured. As it transpired afterwards there was a special crew of 600 men on board the Spaniard hurriedly recruited when it was learned that DAMPIER was again in those seas.

But the voyage had even so been brilliantly successful and WOODES ROGERS now directed DAMPIER to pilot his little fleet across the Pacific to Batavia, which was reached on June 17th, 1710. Leaving for the Cape in October they later proceeded home in a large convoy (no doubt very necessary considering the wealth they had on board), finally arriving in the Downs on October 14th, 1711, after an absence of more than three years; thus completing one of the most lucrative voyages ever undertaken by English adventurers.

Unfortunately DAMPIER was not to enjoy the fruits of his labours for the prize money was not distributed until 1719, and on March 15th, 1715, in his sixty-fourth year, he died in London.

Thus passed one of our greatest Marine Observers, for DAMPIER was above all a keen observer, and allowed nothing of interest to escape him. His works survive and many famous Seamen, including COOK, HOWE and NELSON, have written praising his " Discourse on Winds ", and notes on hydrography, recommending them to the attention of young Officers.

To give some idea of DAMPIER'S scope and thoroughness, the heading of Chapter I, Part III of Volume II of his " Voyages and Descriptions, being a discourse on Winds, Breezes, Storms, Tides and Currents ", may be quoted as a typical example:

" Of the General Trade Wind at Sea. Of the best time of the Year to cross the Equinoctial. The Winds near the Line commonly uncertain and attended with Calms and Tornadoes. A reason of the Winds blowing South near the Line, in the Atlantick Sea. How Ships homeward-bound from the Bite of Guinea, should cross the Line. Of the Trade-Wind in the South Sea; and in the East Indian Ocean ".

His knowledge of Tides and Currents was remarkable, as the following remarks illustrate: " And by the way Note. That, By Tides I mean Flowings and Ebbings of the Sea, on or off from any Coast. Which Property of the Sea seems to be universal; though not regularly alike on all Coasts, neither as to Time nor the Height of the Water. By Currents I mean another Motion of the Sea, which is different from Tides in several respects; both as to its duration, and also as to its Course.

" Tides may be compared to the Sea and Land-Breezes, in respect of their keeping near the Shore; tho' indeed they alternately flow and ebb twice in 24 hours. Contrarily the Sea-Breezes blow on the Shore by Day, and the Land-Winds off from it in the Night; yet they keep this Course as duly in a manner as the Tides do. Neither are the Tides nor those Breezes far from the Land.

" Currents may be compar'd to the Coasting Trade-Winds, as keeping at some farther Distance from the Shore, as the Trade-Winds do; and 'tis probable they are much influenced by them.

" Tis a general Belief, especially among Seamen, That the Tides are governed by the Moon: That their Increase and Decrease, as well as their diurnal Motions, are influenced by that Planet; tho' sometimes accidental Causes in the Winds may hinder the true Regularity thereof ".

From the foregoing it can be clearly perceived that DAMPIER by his keen power of observation had noted the relationship and effect of Wind upon Currents and Tides. He was, of course, writing upon conditions within the Tropics, for he goes on to say: " But my subject being to speak of the Tides within or near the Tropick, I leave those in places nearer England, to be discoursed on by Coasters, who are the only knowing Men on this Mystery: *They having by experience gained more knowledge in it than others; and that is always the best Master* ".

A fitting conclusion to this short biography may well be given in DAMPIER'S own words, from the closing paragraph of his " Discourse ".

" And thus have I finished what my own Experience, or Relations from my Friends, have furnished me with on this useful Subject of Winds, Tides, Currents, etc., which I humbly offer, not as a compleat and perfect Account, but as a rude and imperfect Beginning or Specimen of what may better be done by abler Hands hereafter. And I hope this may be useful so far as to give a few Hints to direct the more accurate Observation of others ".

" He builded perhaps better than he knew."

ICE CONDITIONS WESTERN NORTH ATLANTIC, 1932.

Prepared in the Marine Division by Commander J. Hennessy, R.D., R.N.R.

The following monthly summary of ice conditions in the Western North Atlantic during 1932 is compiled from Ice reports returned by those ships of the Voluntary Observing Fleet traversing the Trans North Atlantic routes and engaged in the Arctic Fisheries, from bulletins issued by the International Ice Patrol Service and from other sources.

January.—At the beginning and towards the end of the month, large ice fields and numerous bergs were reported off the south west coast of Greenland between Cape Desolation and a point 200 miles S.E. of Cape Farewell.

No ice of any description was reported on or in the vicinity of the Grand Banks during the month.

February.—During the month large fields of ice were reported over the Grand Banks, north of the 46th parallel between the 47th meridian and the east coast of Newfoundland, but in no instance was the ice so heavy or so closely packed as to impede navigation. A few small bergs and growlers were observed in the ice fields. Towards the end of the month broken fields of slob ice were reported over the Banquereau Banks, north of Sable Island between the 58th meridian and the east coast of Nova Scotia.

March.—A number of bergs were reported during the month off the S.W. coast of Greenland between Godthaab and Cape Farewell. A prevalence of strong N.W.'ly winds carrying drift ice from the east coast of Greenland, beset vessels navigating off the north coast of Iceland and temporarily suspended navigation in those waters during the early part of the month.

The United States Coast Guard Cutter *General Greene* sailed from Boston on March 4th for the Grand Banks to commence Ice Patrol duties provided for by the International Convention for the Safety of Life at Sea. Throughout the month field ice was observed on and in the vicinity of Grand Banks. Some of the fields were large in extent and consisted of heavy close packed ice enclosing many bergs and growlers.

Towards the end of the month many bergs were observed to the eastward of the Grand Banks between the 41st and 48th meridians and the 45th and 49th parallels. On March 29th the S.S. *Bergensfjord* sighted 25 bergs and numerous growlers between Latitude 46° 12′ N. and 46° 40′ N. and Longitude 46° 09′ W. and 47° 26′ W. The southernmost ice reported during the month was heavy field ice observed on March 20th in Latitude 42° 25′ N., Longitude 50° 20′ W.

April.—The Danish Meteorological Institute reported on April 18th: "Between Cape Farewell and Arsuk, about 50 bergs sighted but no storis." April 19th Off Fredrikshaab ship turned 8 miles off shore. Between Fredrikshaab and Cape Farewell, ship passed principally through lanes of open storis but occasionally had to penetrate belts of minor resistance. No open water between ice edge and shore. Edge consists of open ice with bergs inside."

On the 12th within the Gulf of St. Lawrence the following ice conditions were observed. From Montreal to Quebec, heavy closed packed ice inshore. Eastward to Murray Bay, light open ice inshore. Eastward to east end of Anticosta Island no ice in sight. Magdalen Island, Cabot Strait and Northumberland Strait, heavy open ice everywhere and heavy closed packed ice at some points. Belle Isle Strait, heavy closed packed ice everywhere. Navigation on the St. Lawrence was opened for the season with the arrival at Montreal on the 14th of the S.S. *Silvia* from St. Johns, Newfoundland.

On and in the vicinity of the Grand Banks, north of the 45th parallel, extensive fields of heavy compact ice and numerous bergs were reported throughout the month. On April 6th, a steamer was reported ice bound N. 85° E. 200 miles from Cape Race. On April 13th the S.S. *Manchester Producer* bound for Montreal observed 52 bergs and 33 growlers between Latitude 46° 44′ N., Longitude 48° 19′ W., and Latitude 45° 52′ N., Longitude 50° 10′ W. The southernmost ice reported in this month was a berg observed on the 5th in Latitude 44° 01′ N., Longitude 49° 25′ W.

May.—The Danish Meteorological Institute reported on May 12th: "Free of ice 200 miles off Cape Farewell. Julianehabb Bay ice edge 30 miles off shore."

No ice was reported within the Gulf of St. Lawrence during the month other than in the Belle Isle Strait, where, on the 12th heavy close packed and open ice with numerous bergs and growlers were reported.

In the Western North Atlantic an extensive field of light ice with numerous bergs and growlers was reported on the 21st between Latitude 50° N. and 51° N. and Longitude 51° W. and 54° W. On and in the vicinity of the southern and eastern edges of the Grand Banks, bergs were numerous throughout the month especially in that area to the north of the 45th parallel. The southernmost ice reported during the month was a berg sighted on the 28th in Latitude 41° 56′ N., Longitude 50° 28′ W.

June.—The Danish Meteorological Institute reported on the 9th: "Ice edge 50 miles off Cape Farewell."

June 15th: "Ice edge 80 miles off Cape Farewell. The edge consists of open ice."

Ships bound up the Gulf of St. Lawrence commenced navigating the Belle Isle Straits early in the month and from then on to the end of the month numerous bergs and growlers were reported within the Straits and eastward on both sides of the tracks to Longitude 51° E.

On and in the vicinity of the Grand Banks north of Virgin Rocks, bergs and growlers were reported throughout the month between Longitude 46° W. and the east coast of Newfoundland. South of the Virgin Rocks no ice was observed after June 6th. The southernmost ice reported during the month was a berg sighted on June 4th in Latitude 41° 30′ N., Longitude 47° 35′ W.

July.—The Danish Meteorological Institute reported on 24th July: "Free of Ice 10 miles off Cape Farewell. Bergs met with in Longitude 42° W."

On the East coast of Labrador between Belle Isle and Cape Hamilton large numbers of bergs and growlers were observed during the first half of the month. Several bergs were observed to be aground between Bulldog Island and the mainland.

Ships navigating the Belle Isle route throughout the month reported bergs and growlers within the Straits and on the tracks eastward to Longitude 50° E.

In the region of the Grand Banks a few bergs were reported early in the month between Latitude 48° N. and 49° N. and Longitude 46° E and 51° E. No ice of any description was reported south of the 48th parallel during the month.

August.—Off the south west coast of Greenland between Latitude 59° 51′ N., Longitude 46° 00′ W., and Latitude 59° 15′ N., Longitude 43° 40′ W. on August 10th, 200 bergs and growlers were observed. During the month numerous bergs and growlers were observed off the Labrador coast between Belle Isle and Latitude 56° 41′ N. The bergs were especially thick in the vicinity of the Hen and Chicken Islets (Latitude 56° 30′ N.) decreasing steadily in numbers as southing was made. Within the Belle Isle Strait and on the tracks eastward to Longitude 52° W. a few bergs and growlers were reported throughout the month. No ice was reported during the month south of the 51st parallel.

September.—A small number of bergs were sighted off the East coast of Labrador, during the month between Latitude 56° 30′ N. and Belle Isle.

During the first half of the month a few bergs were reported within the Straits of Belle Isle and on the tracks, eastward to the 51st meridian. No other reports of ice were received.

October, November, December.—Other than an occasional berg reported off the Greenland coast in the vicinity of Cape Farewell no ice was reported during the months of October, November and December.

The Chart shows the monthly limits within which reports of ice have been received by the Meteorological Office during the year 1932: also the monthly limits reached by ice over the period 1901-1932.

North Atlantic Tracks.

The suggestion that all ships engaged in the Trans-North Atlantic Trade should follow separate routes when east bound to those used when west bound, was first made by Commander F. M. MAURY, U.S.N., in 1855, but it was not until 1875 that his suggestion was adopted. The Cunard Steamship Company then laid down specified routes which all their ships were ordered to follow. On the recommendation of the United States Hydrographic Office these routes were amended in 1891 and seven years later the Trans-North Atlantic Track Conference was formed.

The Conference consists of the principal International Shipping Companies engaged in the Trans-North Atlantic trade, and they, working in conjunction with the United States Coast Guard who operates the International Ice Patrol Service, revise the tracks from time to time as ice conditions necessitate during the different seasons of the year.

The Tracks are shown on Admiralty Route Charts published in two sections.

Chart No. 2058*b*, *showing Lane routes South of Ireland and English Channel.*

Chart No. 2058*c*, *showing Lane routes North of Ireland.*

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

The Tracks were revised in March, 1931, full particulars of which are as follows:—

North Atlantic Lane Routes.

United States.

Track " A " (Extra Southern).

Westbound.

Will only be brought into operation when necessity arises.

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

Eastbound.

Will only be brought into operation when necessity arises.

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

Track " B " (Southern).

Westbound.

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

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

Eastbound.

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

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

Track " C " (Northern).

Westbound.

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

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

Eastbound.

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

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

General Instructions.

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

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

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

When courses are changed at the intersections of meridians any time before or after noon, Commanders must note in their Logs both distances to and from the meridians that the ship has sailed from noon to noon, and not the distance from the position at noon the day before to the position at noon the day after the meridian is crossed.

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

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

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

Canada.

Track " D ".

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

Westbound.

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

Eastbound.

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

Track " E ".

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

Westbound.

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

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

Eastbound.

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

Track "F".

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

Westbound.

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

Eastbound.

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

Track "G".

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

Westbound.

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

Eastbound.

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

General Instructions.

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

On Tracks "E" and "F" vessels passing 40 miles South of Sable Island westbound thence to position South of Nantucket and Eastbound from position 40° 10′ North in 70° 00′ West to position 60 miles South of Sable Island.

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

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

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

GENERAL METEOROLOGICAL CONDITIONS IN THE SOUTH INDIAN OCEAN IN THE REGION NOW BEING CHARTED FOR CURRENTS.

Prepared in the Marine Division by E. W. Barlow, B.Sc.

Introduction.—The region covered by the charts of the currents on the Trade Routes of the Southern Indian Ocean extends from Longitude 20° E. to Longitude 108° E., the southern limit being Latitude 50° S. The northern limit of the region being charted varies in different longitudes and extends as far north as Latitude 20° S. between Longitudes 56° E. and 80° E. It therefore includes two distinct meteorological regions, the permanent anticyclone of the South Indian Ocean, centred to the north of Latitude 40° S., and the region of predominant westerly winds, the Roaring Forties, between Latitudes 40° S. and 50° S. Where the charts extend to Latitude 20° S., a third meteorological region, that of the S.E. Trade Winds, is also included. The southern limit of the S.E. Trade Wind, in Longitude 70° E., varies from Latitude 26° S. to Latitude 29° S. during most of the year, but reaches Latitude 30° S. to 31° S. in February and March and retreats northward to about Latitude 21° S. in December. In the present article we shall consider the general meteorological conditions of the Roaring Forties and of the high-pressure area.

General Characteristics of the Roaring Forties.—This is the well-known region of predominating westerly winds all the year round where depressions travel from west to east in nearly unbroken succession. The westerly winds of the Roaring Forties are much more constant than those of the temperate latitudes of the northern hemisphere and therefore the actual conditions at any time in the Roaring Forties approximate much more closely to the average conditions than is the case in the northern hemisphere. There is, however, sufficient variability in the winds experienced to make it difficult to define the northern limit of the Roaring Forties, particularly as this limit varies somewhat in different longitudes. It must also be remembered that we are not considering a limit to westerly winds but merely to the region of predominant westerly wind. It has been found possible, from a study of the wind-roses published in the "Meteorological Charts of the Southern Ocean between the Cape of Good Hope and New Zealand," to make an approximate estimate of the northern limit of the Roaring Forties in each month of the year and these are given in **Table 1.**

These figures show a small but definite seasonal change, the belt of the Roaring Forties lying 6° more to the southward in the southern summer than in the southern winter. It is well known that the regions of the Trade Winds and Doldrums show a similar seasonal motion in latitude. In the article on the Trade Winds of the Atlantic, Pacific and Indian Oceans, published in Marine Observer, Volume V, May, 1928, it was stated that the average annual range of movement for all oceans is about 4° of latitude, but there is a tendency for the poleward range to exceed the equatorial range with a consequent slight periodical widening of the Trade Wind belts. The range of movement of the Roaring Forties derived above from the monthly wind-roses is therefore in excellent agreement with the previous work on the Trade Winds, remembering that the Roaring Forties lie on the poleward side of the belt of S.E. Trade Winds.

Table 1.

Approximate Northern Limits of the Roaring Forties.

Month.	South Latitude.	Month.	South Latitude.
January	38°	July	32°
February	38°	August	33°
March	38°	September	35°
April	38°	October	35°
May	35°	November	36°
June	32°	December	36°

In the winds of the Roaring Forties, sailing ships made some wonderful passages running the easting down from the Cape of Good Hope to Australia. The best day's run on this passage was 430 miles by the *Lightning*, Black Ball Liner, on March 19th, 1857, when bound to Melbourne. Her position on March 18th was Latitude 42° 34′ S., Longitude 17° 04′ W. and on March 19th was Latitude 43° 00′ S., Longitude 7° 17′ W. These positions show the ship to have been a little westward of the region covered by this year's charts. What is believed to be the world record for a sailing ship passage from Cape Town to Sydney is 29 days made by the ship *Siren*, Captain Malcolm Maclean, in November, 1895. The best day's run on this passage was 355 miles. A succession of gales was experienced.

Pressure Distribution in the Roaring Forties.—In the region south of Latitude 38° S. the mean isobars run approximately parallel to

the circles of latitude, not only in the South Indian Ocean, but also right round the globe. The isobars thus appear to represent the northerly or outer part of a great cyclonic circulation centred in the neighbourhood of the South Pole. It is, however, known that the mean pressure rises again further south and that the wind circulation round the Antarctic continent is anticyclonic, with easterly winds which may be as strong and persistent as the westerly winds to the northward of the region of lowest pressure. A chart of probable mean surface pressure in Antarctic regions was published in MARINE OBSERVER, Volume VI, October, 1929, page 225. This was reproduced from Dr. SIMPSON'S discussion of Antarctic Meteorology, "British Antarctic Expedition, 1910-1913: Meteorology, Vol. I." The chart shows that for most longitudes the mean pressure begins to rise in the neighbourhood of the Antarctic Circle, the region of lowest pressure lying mainly between Latitudes 60° S. and 65° S. The low-pressure area of the southern hemisphere therefore constitutes a belt round the entire globe with higher pressure both to the northward and to the southward. This pressure distribution, the simplicity of which is due to the great extent of open ocean around the Antarctic Continent, gives rise to predominant westerly winds all the year round between Latitudes 40° S. and 60° S. Generally speaking, the mean pressure gradient between these latitudes is the steepest one existing in any oceanic region in the world, hence the high average strength and persistence of the westerly winds there experienced.

Depressions and Winds of the Roaring Forties.—The winds of the Roaring Forties are violent and frequently of gale strength, with high rough seas maintained for days at a time. Nearer the low-pressure area, in the parallels of the fifties and the sixties, south of the region covered by this year's charts, the conditions are considerably worse. The passage of depressions is in general more continuous than in the temperate latitudes of the northern hemisphere and is therefore less broken by intervals of settled fine weather. After the Discovery expedition in 1901 to 1904 a series of synoptic charts was drawn, as a result of international co-operation, for the period October, 1901, to March, 1904. They covered the whole region from Latitude 30° S. to the Antarctic Continent. Investigation of the charts showed the average path of the centres of depressions during this period to have been about Latitude 52° S., the tracks being most variable in latitude during the autumn and winter months. The material on which these charts were based was naturally scanty, particularly in high southern latitudes, and it is probable that the average path of the centres of the depressions really lies further south, in the neighbourhood of Latitude 60° S., since presumably the region of lowest mean pressure is the region most frequently traversed by the centres of depression. It has been suggested that the average path of depressions may vary from year to year in accordance with the considerable variation in the extent and distribution of pack ice which is known to occur.

In any case the centres of the majority of depressions will pass to the south of the region covered by this year's charts, so that ships whose tracks lie to the northward of Latitude 50° S. usually experience the sequence of wind and weather associated with a position to the north of the centre of the depression. The wind experienced will therefore be from a north-wasterly direction before the trough of the depression has passed and from a south-westerly direction after it has passed. The average rate of travel of those depressions which could be traced for several successive days on the synoptic charts above referred to was found to be 300 miles a day.

By inspection of the wind roses in the Meteorological Charts of the Southern Ocean the average force of the winds throughout the year experienced between Latitudes 45° S. and 50° S. is estimated to be Beaufort 6 (24 knots). Between the parallels of 39° S. and 45° S. it is slightly less. In P. H. GALLÉ'S "Klimatologie van den Indischen Oceaan", published in 1924, there are wind tables for the region of Latitude 35° S. to 45° S., Longitude 70° E. to 80° E., derived from the collected observations of Dutch and other ships. This region therefore includes only the northerly half of the belt of the Roaring Forties together with part of the high-pressure area to the Northward. The average strength of the winds observed throughout the year was Beaufort 5.4 (21 knots). For the winter months, June to September, the average was Beaufort 6.0 (24 knots) and for the summer months, December to March, Beaufort 4.7 (17½ knots).

The figures in **Table 2** are extracted from Gallé's work and show the mean resultant wind force and direction for each month, for the same region. As the Beaufort Force given for each month is the resultant force of winds of all directions during the month it is naturally considerably less than the strength given above as the average strength of wind experienced.

Table 2.

Wind, Mean Resultant Force and Direction, Latitude 35° S. to 45° S., Longitude 70° E. to 80° E.

—	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Beaufort Force ...	1·5	1·3	1·6	1·9	2·9	2·9	3·6	3·3	3·5	3·2	2·8	2·6
Direction in degrees	331	311	294	304	285	281	288	285	283	286	294	308

The resultant direction is practically constant, at W. by N., from May to October, during which period the mean resultant wind force is greatest. Both these facts mean that during the southern winter the wind is less variable and blows more continually from westerly directions. The table should not be taken to imply that in July, for example, when the mean resultant force is 3.6, the average strength of winds experienced is more than twice as strong, on the Beaufort scale, as those of January, when the mean resultant force is 1.5. This information may be obtained from **Table 3**, which has been computed from Gallé's figures and shows the variation in the strength of winds experienced in different months.

Table 3.

Percentage Frequency of winds of Different Strengths, Latitude 35° S. to 45° S., Longitude 70° E. to 80° E.

Beaufort Force	0	1 and 2	3 to 5	6 and 7	8 and above
January	1	14	60	2	4
February	2	14	54	24	6
March	2	8	53	28	9
April	1	12	50	25	12
May	1	5	43	33	18
June	1	4	37	33	25
July	1	3	31	36	29
August	1	5	38	36	20
September	1	5	32	36	26
October	1	5	40	37	17
November	1	8	47	31	13
December	1	7	56	28	8
Year	1	7	45	31	16

This table shows clearly how the stronger winds increase in frequency during the southern winter. Winds of force 3-5 decrease steadily from a maximum of 60 per cent. in January to a winter minimum of 31 per cent. in July and the percentage of winds of forces 1 and 2 also decreases. The stronger winds steadily increase in frequency from January onwards, winds of forces 6 and 7 being most frequent in July to October and winds of force 8 and above most frequent in July and September. The highest frequency of gales is 29 per cent. in July, the midwinter month. The frequency of winds of force 10, not shown separately in the table, is as high as 8 per cent. of all wind observations in July. It must again be emphasised that the winds between Latitudes 45° S. and 50° S. are stronger, generally speaking, than those in the region to which Gallé's figures refer.

A few further facts may be derived from the Meteorological Charts of the Southern Ocean. The wind roses on these charts are computed for areas of 3° of latitude by 10° of longitude. The frequency of gales experienced between Latitudes 48° S. and 51° S. increases very much from April to July inclusive so that in these winter months the winds are markedly stronger south of Latitude 48° S. than those experienced north of this parallel. During the rest of the year, generally speaking, the winds between Latitudes 48° S. and

51° S. are similar in strength to those between Latitudes 45° S. and 48° S. During the winter months, between Latitudes 48° S. and 51° S. the predominant wind directions vary according to longitude. Thus in the month of strongest wind, July, the predominant wind direction is N.W. between Longitudes 50° E. and 60° E., W. between Longitudes 60° E. and 80° E., S.W. between Longitudes 80° E. and 100° E. and N.W. east of Longitude 100° E.

In some months there is an increase of strength of the wind in small areas immediately to the south of the centre of the high-pressure system. This is most marked in February, in Latitude 39° S. to 42° S., Longitudes 80° E. to 110° E., where the predominant wind direction is southerly. Between Longitudes 90° E. and 110° E. the proportion of southerly gales is higher than that of gales from all directions elsewhere between the same parallels of latitude.

Calms are infrequent and their number decreases, generally speaking, with increase of latitude. In a few restricted areas in summer the mean frequency of calms is as much as 5 per cent., but the value of 1 per cent. given in Table 3 is a better average for the Roaring Forties as a whole.

The frequency of north-easterly winds increases during the winter in parts of the Roaring Forties, when some of the depressions take a more northerly track.

Air and Sea Temperatures, Roaring Forties.—The isotherms of both air and sea temperatures run approximately with the parallels of latitude in the South Indian Ocean. Broadly summarised, in midsummer the mean air temperature decreases from about 60° F. in Latitude 40° S. to about 40° F. in Latitude 50° S. In midwinter the mean air temperature decreases from about 50° F. to about 35° F. between these parallels. The mean sea temperature is generally speaking approximately the same as the mean air temperature but in winter in parts of the Roaring Forties it is slightly higher.

Cloud and Fog, Roaring Forties.—The mean cloudiness of the region is about six-tenths in Latitude 40° S. and seven-tenths in Latitude 50° S. in all months, so that cloudy skies are the rule. Rain, hail and snow are of frequent occurrence.

Fog may be experienced in the greater part of the belt of the Roaring Forties in all months of the year. It is less frequent during the winter months, generally speaking. The mean frequency of fog is less than 10 per cent. of all weather observations over most of the region and in winter does not usually exceed 2 or 3 per cent., in many areas being 1 per cent. or less. There is, however, a region where fog frequency does exceed 10 per cent. This is variable in extent from month to month; it usually includes the neighbourhood of the Crozet Islands and Prince Edward Islands and frequently also that of Kerguelen. In February, March and May this area reaches as far as Longitude 100° E. or 110° E. but is there confined to latitudes south of 46° S. Fog is most prevalent about the longitude of the Crozet Isles from December to February and from May to July with mean frequencies of 10 to 35 per cent.

Ice in the Roaring Forties.—Ice may be encountered in the Roaring Forties during any month of the year but is more prevalent during the summer half-year, October to March, than in the winter half-year, April to September. The limits of ice observed vary somewhat from month to month and may be seen from the quarterly Ice Chart of the Southern Hemisphere, published in THE MARINE OBSERVER. East of Longitude 70° E., ice is not met with north of Latitude 45° S. in the months of April, May and June.

The High-Pressure Region.—The region of the permanent anticyclone of the South Indian Ocean moves a few degrees in latitude during the year, corresponding to the movement of the belt of the Roaring Forties. The anticyclone is most intense in August when the mean pressure reaches 1026 mb. over an area centred in Latitude 31° S., Longitude 67° E. The high-pressure area is furthest south in January to March. From October to March inclusive it has two separate central areas of high pressure. In February these are centred in about Latitude 36° S., Longitude 63° E. and Latitude 37° S., Longitude 100° E., the mean pressure of both being 1020 mb.

FINDLAY in his Directory of the Indian Ocean wrote as follows:—

"In a careful review of the winds and phenomena met with by some of the vessels of the French fleet, which went out to China during the war there in 1859-60, and returned in 1862, by Captain S. BOURGOIS, of the *Duperre*, the deduction is made that the S.E. trade-wind is immediately and directly derived from the westerly anti-trades to the southward. The westerly winds, which vary between S.W. and N.W., gradually assume a S.W., then South, and at last S.E. direction, without much diminution in force, and that, therefore, the notion that there is a belt to be named the Calms of Capricorn, in which the different belts of opposing winds are interchanged by a process of upper and lower strata drifting in opposite directions, as has been argued of late, is fallacious; and that this belt (equivalent to the 'horse latitudes' of the North Atlantic) is distinguished by changeable gyratory winds, and sometimes very boisterous weather."

The Meteorological Charts of the Southern Ocean show that there are no extensive regions of calms in the high-pressure area. Winds are variable in direction and the majority are between Beaufort 4 and 7 in strength throughout the year (14 to 30 knots). Light winds and occasional gales may be experienced in any month. Calms do not on the average exceed 5 per cent. of observations in the summer and 4 per cent. in the winter.

During the summer months, December to February, tropical cyclones may after recurvature move in any direction between south and east and pass into the temperate region of the westerly winds, continuing to move eastward as ordinary extra-tropical depressions. The average latitude of recurvature of tropical cyclones according to Koppen is 22° 12′ S. in January and February and 20° 48′ S. in March. These latitudes are within the region covered by the current charts being published this year.

SOUTHERN ICE REPORT.
During the Year 1932.
April.

Year.	Day.	Position. Latitude.	Position. Longitude.	Description.	Remarks.	Name of Ship reporting.
1932	15	52° 04′ S.	32° 57′ E.	2 Growlers	About 20 feet long; awash	R.R.S. *Discovery II.*
	15	52° 06′ S.	33° 00′ E.	3 Growlers	Similar	do.
	15	52° 19′ S.	33° 12′ E.	Growler	Small. Awash	do.
	15	52° 20′ S.	33° 16′ E.	Berg	150 feet high and 500 feet long; weathered, with two peaks.	do.
	15	52° 29′ S.	33° 23′ E.	Growler	Small	do.
	16	54° 48′ S.	35° 27′ E.	Berg	160 feet high, 400 feet long, and pinnacled	do.
	16	54° 51′ S.	35° 43′ E.	Berg	20 feet high and 120 feet long; awash in centre, three peaks.	do.
	16	56° 21′ S.	37° 21′ E.	Berg	Of moderate size. Not clearly visible in darkness	do.
	17	57° 08′ S.	38° 10′ E.	Bergy bit	10 feet high and 40 feet long; awash, with three large hummocks.	do.
	17	57° 20′ S.	38° 23′ E.	Berg	Small and pinnacled	do.
	17	57° 33′ S.	38° 42′ E.	Berg	Small and weathered	do.
	17	57° 55′ S.	39° 11′ E.	Berg	40 feet high and 100 feet long; pyramidal in shape	do.
	17	58° 09′ S.	39° 23′ E.	Berg	Small and weathered	do.
	18	59° 02′ S.	40° 37′ E.	Berg	50 feet high and 150 feet long; weathered	do.
	18	59° 26′ S.	40° 43′ E.	Berg	160 feet high, 700 feet long, irregular. Very jagged top	do.
	18	59° 59′ S.	41° 50′ E.	Growler	Awash	do.
	18	60° 08′ S.	42° 02′ E.	2 Growlers	And several pieces of brash, within 5 miles of position	do.
	18	60° 16′ S.	42° 19′ E.	Berg	Of moderate size and weathered	do.
	19	61° 20′ S.	43° 40′ E.	2 Bergs	Small and weathered; both about 100 feet long	do.
	19	61° 41′ S.	44° 02′ E.	2 Bergs	One small and pinnacled; one moderate sized irregular	do.
	19	61° 55′ S.	44° 22′ E.	Bergs	Small and weathered	do.
	19	62° 01′ S.	44° 38′ E.	Berg	80 feet high and 800 feet long; wall-sided with slightly undulating top surface.	do.

Year.	Day.	Position. Latitude.	Position. Longitude.	Description.	Remarks.	Name of Ship reporting.
1932	19	62° 24′ S.	44° 58′ E.	Berg	25 feet high and 100 feet long; Centre awash; three pinnacles.	R.R.S. *Discovery II.*
	19	62° 28′ S.	45° 08′ E.	Berg	30 feet high and 90 feet long; Conical	do.
	20	65° 09′ S.	48° 36′ E.	Drift ice	Met streams and patches of loose, light drift ice. Young ice about one to two feet in thickness, in small floes none of which was more than 10 feet across, small fragments, and pans of new ice. The sea was littered with small brash and fragments.	do.
	20	65° 15′ S.	48° 41′ E.	Pack Ice	Met the ragged edge of a body of light, loose pack-ice. It appeared to be continuous to the south eastward, but to the south and west was very straggling and showed a fair amount of open water. The floes composing this pack were of young ice, about two feet thick and unpressured, except where their edges were turned up in rubbing together.	do.
	20	From 65° 15′ S. to 65° 08′ S.	48° 44′ E. 48° 44′ E.	Drift ice	Between positions, streams and patches of drift ice were passed. After this, no more sea-ice seen to the northward.	do.
	21	63° 30′ S.	49° 26′ E.	Berg	80 feet high and 300 feet long; low in centre, two peaks. Much weathered.	do.
	22	62° 36′ S.	50° 09′ E.	Berg	80 feet high and 100 feet long; Irregular and seaworn ...	do.
	22	61° 58′ S.	52° 08′ E.	Berg	80 feet high and 100 feet long; Conical	do.
	23	60° 56′ S.	56° 02′ E.	Berg	100 feet high and 300 feet long. Pinnacled. Much weathered.	do.
	24	60° 43′ S.	61° 13′ E.	Berg	Of moderate size and weathered. Distant	do.
	25	59° 40′ S.	68° 15′ E.	Berg	Of moderate size and roughly tabular. Distant	do.
	26	58° 11′ S.	73° 09′ E.	Berg	25 feet high and 120 feet long; centre awash; two hummocks. Sea to leeward littered with brash.	do.
	29	54° 50′ S.	86° 08′ E.	Berg	30 feet high; small and pinnacled	do.
	7	47° 00′ S.	33° 30′ W.	Several icebergs	... ...	S.S. *Salvestria.*

Reports of Ice previous to April, 1932, will be found in the Marine Observer, Vol. IX, No. 100, p. 82.

May.

Year.	Day.	Position. Latitude.	Position. Longitude.	Description.	Remarks.	Name of Ship reporting.
1932	23	44° 52′ S.	53° 25′ E.	Berg	500 feet long; 100 feet high (estimated)	M.V. *Karamea.*
	25	58° 27′ S.	125° 35′ E.	Growler	Large; awash	R.R.S. *Discovery II.*
	26	60° 48′ S.	127° 19′ E.	Berg	120 feet high and 500 feet long; irregular. Pinnacled and weathered.	do.
	27	61° 28′ S.	128° 09′ E.	Berg	Of moderate size and irregular	do.
	27	63° 26′ S.	129° 50′ E	Brash ice	Met streams and patches of small light brash ice and fragments of floes.	do.
	27	63° 35′ S.	129° 56′ E.	Drift-ice	Met drift ice, in streams and patches, consisting of small pans of young ice about 6 inches thick with a few heavier floes interspersed among the streams.	do.
	27	63° 41′ S.	130° 07′ E.	Drift-ice and pack	Drift ice became heavier and more compact. Floes nearly all of young ice, one or two feet thick, with smaller pancake ice in the streams. Darkness prohibited the possibility of determining its extent, but the ice appeared to be denser to the southward.	do.
	28	From 63° 39′ S. to 63° 25′ S.	130° 16′ E. 130° 25′ E.	Drift ice	Between positions, traversed numerous streams and patches of drift ice. Then met open water, and no more ice was encountered to the northward.	do.
	28	49° 55′ S.	47° 52′ W.	Iceberg	... ...	Barque *Olivebank.*
	28	49° 06′ S.	46° 06′ W.	Iceberg	... ...	do.

Reports of Ice previous to May, 1932, will be found in the Marine Observer, Vol. IX, No. 101, p. 100.

June.

Year.	Day.	Position. Latitude.	Position. Longitude.	Description.	Remarks.	Name of Ship reporting.
1932	22	61° 18′ S. onwards.	154° 20′ E.	Brash ice and freezing sea	Met the scattered, very small brash, and patches of smooth water where the sea was freezing. At first these freezing areas were sparse and generally arranged in long lanes along the direction of the wind. Two miles further south, however, frozen surface preponderated over unfrozen, and in 61° 26′ S., 154° 27′ E., the whole water surface visible from the ship was covered with a thickening mushy skin of new ice. At this time, the brash was becoming heavier, and thence, to the south-eastward, the vessel was worked through drift ice, of small floes perhaps two feet thick, interspersed with pancake ice of varying thickness.	R.R.S. *Discovery II.*
				Light drift ice and pancake ice	In 61° 31′ S., 154° 31′ E., the floes were packed more solidly, and were becoming heavier, and the vessel stood out on the same course. It was noted, on coming out, that fairly clear patches of sea which an hour earlier had been merely filmed with a thick mushy skin of newly forming ice, were now covered with pancake ice, in tiny plates averaging 18 inches across and about ¾ of an inch thick. Throughout this time, a moderate E.N.E.'ly swell was causing considerable motion in the ice. In 61° 25′ S., 154° 26′ E., the ship was stopped, among the new young pancake ice.	do.
	23	From 61° 25′ S. to 61° 18′ S.	154° 02′ E. 155° 37′ E.	Pancake ice and light drift	Between these positions, the vessel maintained various courses. Throughout the day, the sea in every direction was covered with pancake ice in small pans about two feet in diameter and about an inch thick. In 61° 29′ S., 154° 17′ E., on a south-easterly course, heavier ice was met, in scattered floes and streams. This was young, unpressured ice between one and two feet thick, and the floes were sometimes 12 feet in diameter. This heavier ice was more solidly disposed to the southward, and an easterly course, along the edge of the more closely packed ice, until in 61° 26′ S., 155° 19′ E., when, on a north-easterly course, an almost ice-free sea was met, though occasional remains of older, heavier floes than any examined hitherto, were encountered. All day, the sea surface, among the pans, was filmed with sludgy new-ice.	do.
	24	From 61° 00′ S. to 60° 54′ S.	156° 41′ E. 158° 30′ E.	Pancake ice and young drift-ice	In 61° 00′ S., 156° 41′ E., a stream of fairly heavy drift ice was crossed. The floes composing this appeared to be heavier and older than any met previously. Then an ice-free sea was traversed to 60° 56′ S., 158° 22′ E., where the ship entered scattered drift ice, in floes several feet in diameter and about two feet thick, with a scattering of young pancake ice. In 61° 02′ S., 158° 27′ E., the floes were more compactly disposed, and they and the pancake ice each occupied about half the sea surface area visible. Several older, heavier floes were among this ice. The pancake ice was heavier than yesterday's, and about three inches thick. In 60° 54′ S., 158° 30′ E., on a northerly course, the last drift ice was left, and no more ice was encountered to the northward.	do.

Reports of Ice previous to June, 1932, will be found in the Marine Observer, Vol. IX, No. 102, p. 119.

WIRELESS WEATHER SIGNALS.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

A full description of the system of communication for British "Selected Ships" with instructions was given on pp. 28–38 of the January number of this volume of THE MARINE OBSERVER.

The list which follows contains the latest information of stations to which "A Selected Ships" should report in accordance with those instructions, and stations detailed to intercept reports from "B Selected Ships" also in accordance with those instructions.

To decode these reports, and for ships other than "Selected Ships" to have information of the system of communication of "Selected Ships", all concerned are referred to the PAMPHLET, M.O. 329, concerning which special notice to the masters of British ships will be found on p. 39 of the January 1933 number of THE MARINE OBSERVER and in Board of Trade Notices to Mariners dated January 1st, 1933.

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 28 OF VOL. X, NO. 109, 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 III.)	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 London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m. Radio Horta—call sign of ships to report through CTH at schedule times on 2400 m.
	Chatham Mass.,	Lat. 41° 42′ N. Long. 70° 00′ W.	WCC.						
	Sayville N.Y.	Lat. 40° 45′ N. Long. 73° 06′ W.	WSL.						
	Rockland.	Lat. 44° 09′ N. Long. 69° 13′ W.	WAG.		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.
	West Palm Beach.	Lat. 26° 42′ N. Long. 80° 02′ W.	WMR.						
	Palm Beach.	Lat. 26° 42′ N. Long. 80° 02′ W.	WOE.						
	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	CTH.	125 kc/s. (2400 metres).	125 kc/s. (2400 metres).	"A Selected Ships" indicated by roll call made through Portishead to report to Horta—E'n. N. Atlantic. east of long. 40° W. and N. of lat. 38° N. "A Selected Ships" S. of lat. 38° N.—N. Atlantic from lat. 10° to 38° N. eastward of long. 40° W.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"A Selected Ships" in the E'n. N. Atlantic, N. of lat. 38° N., chosen to report to Horta will be indicated by a special roll call made through Portishead daily at 2230, 0330 and 1030 G.M.T. immediately following the roll call of selected ships chosen to report to Weather London. These ships should report to CTH in the order indicated in accordance with schedule and on 2400 m. S. of 38° N., 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.	Slangkop (Cape Town)	Lat. 34° 08′ 46″ S. Long. 18° 19′ 18″E.	ZSC	—	143 kc/s. (2100 metres).	South Atlantic Westward of 25°E. and within a range of about 2 000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	No control. Only 0600 G.M.T. observation required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 51″ S. Long. 30° 58′ 38″E.	ZSD	—	143 kc/s. (2100 metres).	Indian Ocean S. of 20°S. and Eastward of 25°E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	No control. Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″ E.	VWB	—	143 kc/s. (2100 metres).	Arabian Sea N. of line C. Comorin to Ras Fartak.	Weather.	Weather only. No. 6 Supplementary groups.	All British "A Selected Ships" are requested, when convenient, to report 0000 G.M.T. observations commencing at 0018 G.M.T. in addition to schedule times.
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″ E.	VWM	—	143 kc/s. (2100 metres).	Bay of Bengal N. of line C. Comorin to Achin Head.	Weather.	Weather only. No. 6 Supplementary groups.	All British "A Selected Ships" are requested when convenient, to report 1200 G.M.T. observations commencing at 1218 G.M.T. in addition to schedule times.
	Colombo.	Lat. 6° 55′ 14″ N. Long. 79° 52′ 46″E.	VPB	130 kc/s. (2300 metres).	143 kc/s. (2100 metres).	Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1500 miles.	Obs.	Weather only. No. 6 Supplementary groups preferred.	No control — all British "A Selected Ships" within area should report in accordance with Schedule.
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 51″ E.	VPQ	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 20° S. when westward of the Colombo area.	Weather Nairobi.	Weather only. No. 6 Supplementary groups.	No control — all British "A Selected Ships' within area should report 0600 G.M.T. observations.
	Perth.	Lat. 32° 01′ 51″ S. Long. 115°49′31″E.	VIP	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Indian Ocean and Southern Ocean between Long. 105° and 135° E.; but not within 100 miles of the coast.	Weather.	Weather only. No. 6 Supplementary groups.	No control — all British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart I., p. 30, Vol. X. No. 109 (January).
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″N. Long. 114°15′11″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.	Sydney.	Lat. 33° 46′ 00″ S. Long. 151°03′09″E.	VIS	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	S. Pacific, Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast.	Weather.	Weather only. No. 6 Supplementary groups.	No control — all British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart I., p. 30, Vol. X No 109 (January).

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

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	CTH.	Radio Horta	Weather only, up to 7 groups, preferably No. 3 Supplementary Groups.	
South Atlantic.	Salinas	Lat. 0° 35′ 00″ S. Long. 47° 18′ 45″ W.	PPL.	Meteoro Rio.	Weather only, including supplementary groups.	
	S. Luiz	Lat. 2° 31′ 48″ S. Long. 44° 16′ 51″ W.	PXM.			
	Fortaleza	Lat. 3° 46′ 21″ S. Long. 38° 32′ 26″ W.	PPC.			
	Natal	Lat. 5° 46′ 41″ S. Long. 35° 18′ 24″ W.	PXN.			
	F. Noronha	Lat. 3° 50′ 24″ S. Long. 32° 24′ 48″ W.	PXF.			
	Olinda	Lat. 8° 00′ 35″ S. Long. 34° 51′ 00″ W.	PPO.			
	Amaralina	Lat. 13° 00′ 12″ S. Long. 38° 30′ 45″ W.	PPA.			
	Abrolhos	Lat. 17° 57′ 30″ S. Long. 38° 41′ 05″ W.	PXH.			
	Victoria	Lat. 20° 10′ 00″ S. Long. 40° 17′ 46″ W.	PPT.			
	Rio	Lat. 22° 53′ 42″ S. Long. 43° 13′ 24″ W.	PPR.			
	Santos	Lat. 23° 56′ 27″ S. Long. 46° 19′ 28″ W.	PPS.			
	Floriano-polis.	Lat. 27° 36′ 00″ S. Long. 48° 30′ 18″ W.	PPF.			
	Juncçao	Lat. 32° 04′ 00″ S. Long. 52° 07′ 00″ W.	PPJ.			
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 51″ S. Long. 30° 58′ 38″ E.	ZSD	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	
	Algoa Bay (Port Elizabeth).	Lat. 33° 57′ 16″ S. Long. 25° 35′ 30″ E.	ZSQ	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	
	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.			
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 51″ E.	VPQ	Weather Nairobi.		
	Dar-es-Salaam.	Lat. 6° 50′ 38″ S. Long. 39° 17′ 24″ E.	ZBZ	Weather Nairobi.		
	Mauritius.	Lat. 20° 23′ S. Long. 57° 35′ E.	VRS.	Observatory Mauritius.	Weather 4 universal groups and first of No. 6 Supplementary Groups.	
	Geraldton.	Lat. 28° 47′ 15″ S. Long. 114°36′24″E.	VIN	Weather.	Weather only, including No. 6 Supplementary Groups.	
	Esperance.	Lat. 32° 01′ 51″ S. Long. 121°53′34″E.	VIE			

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

(Continued.)

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships.

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′11″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.	
	Wellington.	Lat. 41° 16′ 26″ S. Long. 174°45′55″E.	ZLW.			
	Awarua.	Lat. 46° 30′ 27″ S. Long. 168°22′21″E.	ZLB.			
	Chatham Island.	Lat. 43° 57′ 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.			
	Thursday I.	Lat. 10° 35′ 14″ S. Long.142°12′43″E.	VII	Weather	Weather only, including No. 6 Supplementary Groups.	
	Townsville	Lat. 19° 16′ 09″ S. Long.146°49′47″E.	VIT			
	Brisbane	Lat. 27° 25′ 34″ S. Long.153°07′19″E.	VIB			
	Melbourne	Lat. 37° 46′ 56″ S. Long.144°52′09″E.	VIM			
	Adelaide	Lat. 34° 51′ 14″ S. Long.138°31′55″E.	VIA			
	Talcahuano	Lat. 36° 41′ 27″S. Long. 73° 06′ 19″W.	CCT	Meteo, Santiago.	Weather only, including supplementary groups.	
	Llanquihue	Lat. 41° 08′ 00″S. Long. 73° 02′ 00″W.	CCW			
	Juan Fernandez.	Lat. 33° 38′ 09″S. Long. 78° 47′ 50″W.	CCJ			
	Magallanes	Lat. 53° 10′ 00″S. Long. 70° 54′ 00″W.	CCN			

II.—WIRELESS WEATHER SIGNALS.

Bulletins.

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

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

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

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

GREAT BRITAIN AND IRELAND.

"WEATHER SHIPPING" BULLETIN.

C.W. Issues.

W/T Station, **Rugby.** Latitude 52° 22′ 10″ N. Longitude 1° 11′ 15″ W. Call Sign **G.B.R.**

Wave length 18,740 metres C.W. (16 kc/s.).

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

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

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

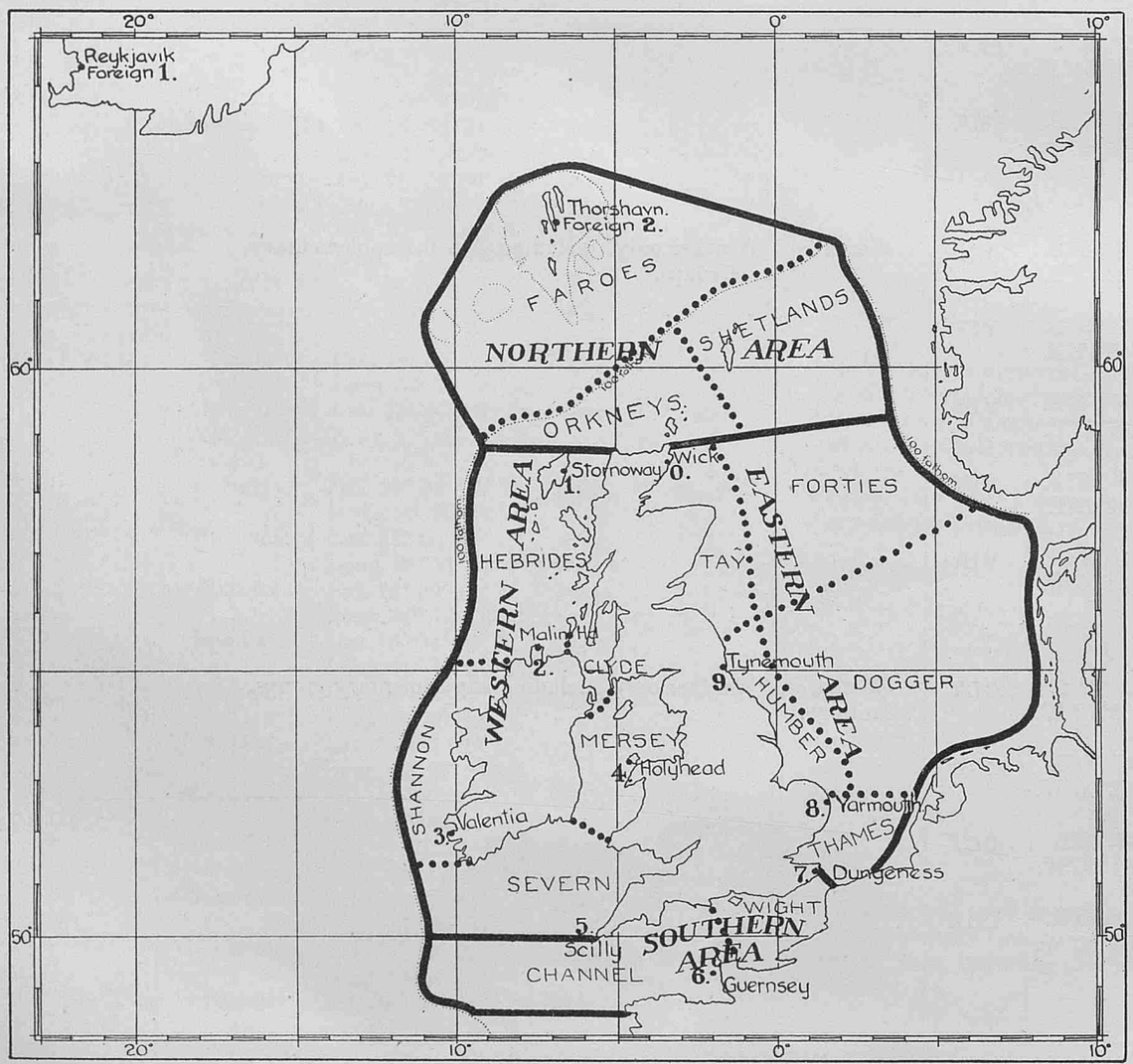
These messages are preceded by the words "Weather Shipping" and consist of seven parts. Part II is in code, the remaining parts in plain language.

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

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

For full information for decoding see next page, also the Pamphlet, M.O. 329, "Decode for use with the International Code for Wireless Weather Messages from Ships", obtainable from H.M. Stationery Office, price 3d.

Chartlet showing Stations, Forecast Areas and Districts.



WESTERN AREA.

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

DISTRICTS.

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

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

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

MERSEY—The Irish Sea and approaches.

CLYDE — The North Channel and approaches to Clyde.

SOUTHERN AREA.

The English Channel from S. Foreland to the 100 fathom line.

DISTRICTS.

CHANNEL—West of St. Albans.

WIGHT—East of St. Albans.

EASTERN AREA.

The North Sea southward of line Ducansby Head to Utsire to the Straits of Dover.

DISTRICTS.

THAMES — Thames estuary and its approaches.

HUMBER—East coast from Haisborough to Longstone.

TAY—East coast of Scotland, including Moray Firth.

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

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

NORTHERN AREA.

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

DISTRICTS.

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

SHETLANDS — Shetlands and eastward to the 100 fathom line.

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

Parts III, IV, V and VI are forecasts of wind and visibility for the 12 hours following the time of shore observations for the areas shown upon the Chartlet on p. 68.

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

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

Explanation of Chartlet.

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

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

These areas are sub-divided into districts, named after islands, rivers or banks within them, so that they may be readily memorised.

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

The boundaries of these districts should only be taken as an approximate indication of their extent.

These districts are for the purpose of giving information of different weather within an area, without unduly lengthening the wording of a message. When similar weather is expected all over an area, these district names will not be used.

DESCRIPTION OF STATION REPORTS GIVEN IN PART II OF THE BULLETIN, AND INSTRUCTIONS FOR DECODING.

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

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

Instructions for Decoding.

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

To decode these stations' reports the tables given in M.O. 329 are required (DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS, obtainable from H.M. Stationery Office, price 3d.).

The Key Letters of the International Ships Wireless Weather Telegraphy Code are fully described on page 35 of the January, 1933, number and in M.O. 329.

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

First Group of Pair:—I_N ABBV meaning:—

I_N = Station. British stations from 1 to 9 and 0, and foreign stations 1 and 2, prefixed by the word " foreign " (see Chartlet), also page 18 of M.O. 329.

A = Barometric tendency.

BB = Barometric pressure.

V = Visibility.

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

D D F w w

meaning:—

DD = Wind Direction.

F = Wind force.

ww = Weather.

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

Sample Message.

(28th December, 1930).

Call Sign:—*CQ CQ CQ GBR GBR GBR (repeated twice).*

Weather Shipping.

General Statement.—Deep depression north of Faroes moving slowly northeast stop Intense depression north-west of Ireland will probably move east-north-east.

Station Reports.

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

Forecast.

Western Area. Hebrides wind moderate to strong south easterly or variable visibility moderate to good Shannon wind south westerly veering fresh to strong visibility good Clyde Mersey Severn southerly gale visibility moderate to good.

Southern Area. Southerly gale whole gale at times visibility moderate to good.

Eastern Area. Visibility moderate to good stop Forties wind southwest strong to gale backing and moderating then increasing remainder Eastern Area wind southerly increasing to gale whole gale in places.

Northern Area. Visibility moderate to good stop Faroes Orkneys wind southwest to west strong to gale then moderating and veering northwest Shetlands wind southwest strong to gale probably backing and moderating then increasing.

Outlook strong winds or gales.

I.C.W. and Spark Issues.

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

For the Western Area.

Valentia. Lat. 51° 56′ N., Long. 10° 21′ W. (approx.), call sign **G.C.K.**, wavelength 600 metres spark. At 0948 G.M.T. and 2048 G.M.T.

Seaforth. Lat. 53° 28′ N., Long. 3° 01′ W. (approx.), call sign **G.L.V.**, wavelength 600 metres I.C.W. At 0930 G.M.T. and at 2030 G.M.T.

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

For the Southern Area.

Niton. Lat. 50° 35′ N., Long. 1° 17′ W. (approx.), call sign **G.N.I.**, wavelength 600 metres I.C.W. At 0930 G.M.T. and at 2030 G.M.T.

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

For the Eastern Area.

Cullercoats. Lat. 55° 02′ N., Long. 1° 26′ W. (approx.), call sign **G.C.C.,** wavelength 600 metres I.C.W. At 0948 G.M.T. and at 2048 G.M.T.

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

Wireless Telephony (R/T) Issues.

Certain portions of the "Weather Shipping" Bulletin are broadcast from the British Broadcasting Corporation's Station at Daventry by word of mouth as follows:—

Daventry (National). Latitude 52° 15′ N., Longitude 1° 08′ W. (approx.), wavelength 1554.4 metres (R/T.) At 1030 and 2300 G.M.T. on weekdays and 1030 and 2100 G.M.T. on Sundays.

This station broadcasts **Parts I, III, IV, V, VI and VII,** of the "Weather Shipping" Bulletin.

When British Summer time is in operation these issues are made one hour earlier by G.M.T. so that the hours and minutes given by B.S.T. remain the same as in winter when G.M.T. is used.

As changes in the time of these issues through the British Broadcasting Corporation's Station at Daventry are occasionally necessary at short notice, mariners are referred to the "Radio Times", the official organ of the British Broadcasting Corporation which is published weekly, for notice of the exact times of issue of this message; these are also given in the daily press.

It should be noted that the times given in the "Radio Times" are G.M.T. only when summer time is not in operation, while all times for Wireless Weather Telegraphy in The Marine Observer are G.M.T.

The masters and officers of merchant ships and skippers of fishing craft, who when in port in the British Isles, desire information of the probability of weather expected over the land, and particularly rainfall, for the purpose of making arrangements for working cargo etc., should listen in for the forecasts for land areas, which are made by word of mouth through this station. For times, see "Radio Times" or daily newspapers.

WIRELESS GALE WARNINGS.

I.C.W. and spark issues.

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

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

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

Warnings are preceded by the W/T safety signal — — — **(TTT)** repeated at short intervals ten times on full power. The warning is broadcast one minute later.

Example—"*Gale Warning Thursday* 1230 *G.M.T. Easterly Gale south of line Spurn head to Galway and in Dogger district.*"

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

Wireless Telephony (R/T) Issues.

Gale warnings will be broadcast as necessary by Radio Telephony, by the British Broadcasting Corporation's station at **Daventry (National),** on the wavelength of 1554.4 metres as follows:—

Weekdays.		**Sundays.**
1030 G.M.T.	at the end of the "Weather Shipping" Bulletin	1030 G.M.T.
1300 G.M.T. } 1645 G.M.T. }	immediately after the Time Signal...	1615 G.M.T.
1800 G.M.T. } 2100*G.M.T. }	preceding the general (land) Weather Forecast.	
2300 G.M.T.	at the end of the "Weather Shipping" Bulletin	2100 G.M.T.

Whenever the Meteorological Office telegraphs that gale warning signals should be hoisted on any coast, a notification is broadcast at the next of the above-mentioned times. A statement is appended to the morning and evening "Weather Shipping" Bulletin stating what gale warnings are then in operation.

*This time is subject to slight alteration from time to time. Notice of any changes will be broadcast with both the "Weather Shipping" Bulletins of the previous day and with the morning "Weather Shipping" Bulletin of the day on which any alteration is necessary.

When British Summer Time is in operation these issues are made one hour earlier by G.M.T. so that the hours and minutes given by B.S.T. remain the same as in winter when G.M.T. is used.

The warnings will be made in the following manner by word of mouth:—

"*The Meteorological Office issued the following gale warning to shipping at* 1430 *G.M.T. to-day:—'Secondary depression off S.W. Ireland moving North-eastward, Southerly gales expected South of line from Exmouth to Spurn Head.'*"

These R/T gale warnings are simply a repetition of the W/T gale warnings at fixed times convenient to the B.B.C.

III.—WIRELESS TIME SIGNALS.

C.W. Issues.

Rugby W/T station, Lat. 52° 21′ 59″ N., Long. 1° 11′ 12″ W., call sign **GBR,** broadcasts Time Signals on a wavelength of 18,740 metres (C.W.) at 1000 and 1800 G.M.T.:—

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

In each series, Signals Nos. 1, 62, 123, 184, 245 and 306 are single dashes (−) of 0·4 sec. duration and commence at the exact minute. Each dash is followed by 60 dots (·) of 0·1 sec. duration.

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

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

This type of time signal will enable chronometer comparisons of extreme accuracy to be obtained, the method employed being to count the number of intervals from the first dash (—) until coincidence occurs between one of the rhythmic signals and the beat of the chronometer. (There being two such coincidences, 29½ or 30½ seconds apart, every minute.)

It is not necessary to count the signals.

Write down:—

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

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

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

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

Wireless Telephony (R/T) Issues.

The Time Signals broadcast by the BRITISH BROADCASTING CORPORATION through their Station at **Daventry (National)**, latitude 52° 15′ N., longitude 1° 08′ W., wavelength 1554.4 metres, are useful for rating chronometers at sea in ships which are fitted for R/T reception but have not Wireless Telegraphy on board.

These Time Signals are made at the following times:—

Weekdays.	Sundays.
1030 G.M.T.	1030 G.M.T.
1300 ,,	1615 ,,
1645 ,,	2100 ,,
1800 ,,	
2100 ,,	
2330 ,,	

When British Summer Time is in operation these issues are made one hour earlier by G.M.T., so that the hours and minutes given by B.S.T. remain the same as in Winter when G.M.T. is used.

The time Signals consist of the automatic transmission by the Standard Clock at Greenwich Observatory, of six dots, representing successive seconds. The final dot is the Time Signal. The amount of lag is less than 0.01 seconds.

The Time Signal will, when necessary, be superimposed on programmes, but the Signals will be loud enough to be easily discernible.

As changes in the times of the BRITISH BROADCASTING CORPORATION issues may be made at shorter notice than can be given by THE MARINE OBSERVER, Mariners are therefore referred to "The Radio Times," the official organ of the BRITISH BROADCASTING CORPORATION, published weekly, for exact times of issue.

SPECIAL SERVICE BY PAYMENT.

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

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

Weather Forecasts.

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

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

Charge.—7s. 6d.

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

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

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

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

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

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

Weather Reports.

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

Aberdeen.	Hoylake.	Southend.
*Bangor, Co. Down.	Inchkeith.	Spurn Head.
Barry Island.	Kildonan.	†St. Ann's Head.
Beachy Head.	Lizard.	St. Catherines Point.
*Broughness.	*Mumbles.	*Stornoway.
Cape Wrath.	Needles.	*Torr Head.
†Dover Pier.	*Rame Head.	†Tynemouth.
Dunnet Head.	†Portpatrick.	†Wick.
*Holyhead.	Prawle Point.	

* These stations cannot give information about barometric pressure.
† Reports from these stations include information as to the state of the sea.

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

Charge.—7s. 6d.

GERMANY.

II.—WEATHER SHIPPING BULLETIN.

North Sea.

I.C.W. Issues.

Norddeich W/T station approximate Latitude 53° 36′ N., Longitude 7° 09′ E.

Call sign—**DAN.**

Wavelength—750 m. I.C.W.

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

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

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

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

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

The two foreign stations' observations are preceded by the word "Ausland" (Foreign). The Key and Code used is exactly the same as that used for the British "Weather Shipping" Bulletin see page 69.

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

Western Baltic.

I.C.W. Issues.

Kiel W/T station, approximate Latitude 54° 24′ N., Longitude 10° 11′ E.

Call sign **DBK.**

Wavelength—680 m. I.C.W.

Times of transmission 1120 and 2200 G.M.T., based on 0700 and 1800 G.M.T. observations respectively.

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

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

Station No.	German Station.	Position.	Station No.	Foreign Station.	Position.
4	Bulk	54° 27′ N., 10° 12′ E.	2	Skagen	57° 42′ N., 10° 33′ E.
5	Fehmarnbelt Lt.-V.	54° 36′ N. 11° 09′ E.	3	Memel	55° 42′ N., 21° 10′ E.
6	Adlergrund Lt.-V.	54° 50′ N., 14° 22′ E.	4	Visby...	57° 39′ N., 18° 18′ E.
7	Arkona	54° 41′ N., 13° 26′ E.			

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

The Key and Code as above.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German covering the area from Flensburg to Warnemunde.

Middle Baltic.

I.C.W. Issues.

Rügen W/T station, approximate Latitude 54° 35′ N., Longitude 13° 37′ E.

Call sign—**DAS.**

Wavelength—715 m. I.C.W.

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

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

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

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

Station No.	German Station.	Position.	Station No.	Foreign Station.	Position.
5	Fehmarnbelt Lt.-V.	54° 36′ N. 11° 09′ E.	2	Skagen	54° 42′ N., 10° 33′ E.
6	Adlergrund Lt.-V....	54° 50′ N., 14° 22′ E.	3	Memel	55° 42′ N., 21° 10′ E.
7	Arkona	54° 41′ N., 13° 26′ E.	4	Visby	57° 39′ N., 18° 18′ E.
8	Leba	54° 46′ N., 17° 33′ E.			

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

Key and Code as above.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German, covering the area from Warnemunde to Leba.

Eastern Baltic.

I.C.W. Issue.

Pillau W/T station, approximate Latitude 54° 39′ N., Longitude 19° 56′ E.

Call sign—**DBP.**

Wavelength—740 m. I.C.W.

Time of transmission—1130 G.M.T. based on 0700 G.M.T. observations.

The message is preceded by the words "Seewetter Pillau" and consists of two parts.

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

Station No.	German Station.	Position.	Station No.	Foreign Station.	Position.
7	Arkona	54° 41′ N., 13° 26′ E.	3	Memel	54° 42′ N., 21° 10′ E
8	Leba	54° 46′ N., 17° 33′ E.	4	Visby...	57° 39′ N., 18° 18′ E
9	Brusterort	54° 58′ N., 19° 59′ E.			

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

Key and Code as above.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German, covering the area from Danzig Bay to Memel.

WIRELESS GALE WARNINGS.

I.C.W. Issues.

Gale Warnings are broadcast in German, preceded by the word "Funksturm", giving the nature of the atmospheric distribution with direction and force of wind for the regions specified by the stations indicated below.

W/T Station.	Call Sign.	Position. Latitude N.	Position. Longitude E.	Wavelength.	Time of Transmission.	Region.
Norddeich ...	**DAN**	53°36′	7°09′	600 m. I.C.W. 750 m. I.C.W.	On receipt 0515, 1020* 1630, 2130*	North Sea.
Kiel	**DBK**	54°24′	10°11′	600 m. I.C.W. 680 m. I.C.W.	On receipt 0540, 1120* 1700, 2210*	Western Baltic.
Rügen ...	**DAS**	54°35′	13°37′	600 m. I.C.W. 1100 m. I.C.W.	On receipt 0530, 1030* 1650, 2150*	Western & Central Baltic—Flensburgh to Leba.
Pillau ...	**DBP**	54°39′	19°56′	600 m. I.C.W. 740 m. I.C.W.	On receipt 0550, 1130* 1710, 2210	Eastern Baltic.

* After Weather Bulletin.

IV.—WIRELESS ICE WARNINGS.

C.W. Issue.

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

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

SWEDEN.

II.—WEATHER SHIPPING BULLETIN.

North Sea and Baltic.

C.W. Issues.

Karlsburg W/T Station, approximate Latitude 58° 39′ N., Longitude 14° 39′ E.

Call sign—**SAJ.**

Wavelength—4267m. C.W.

Times of transmission—1050 and 2200 G.M.T.

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

The message issued at 2200 is based on 1800 G.M.T. observations.

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

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

List of Observation Stations.

Index Number.	*Station.*	*Position (approx.)* *Latitude N.*	*Longitude E.*
1	Kalmar	56°39′	16°22′
2	Bjurö klubb	64°28′	21°34′
3	Holmögadd	63°35′	20°45′
4	Bremö	62°13′	17°44′
5	Orskär	60°31′	18°22′
6	Sandhamn	59°17′	18°55′
7	Visby	57°39′	18°18′
8	Skanör	55°24′	12°49′
9	Kullen	56°18′	12°27′
0	Vinga	57°38′	11°36′
1	Hammershus	55°19′	14°47′
2	Hanstholm	57°07′	8°36′
3	Utsire	59°18′	4°53′
4	Kinn	61°34′	4°47′

The key and code used is exactly the same as that used for the British " Weather Shipping " Bulletin, see page 69.

Part II, en clair (English).

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

Part III, en clair (English).

Weather forecasts for 12 hours for the following areas:—

1 Eastern part of the North Sea (E. of Longitude 5° E.).

2 Sweden, West Coast (Skagerrak, Kattegat and the Sound).

3 Baltic (Southern Baltic; South Skane, Bleking and Oland; Northern Baltic; East Gotaland, Svealand and Gotland).

4 Gulf of Bothnia (Bothnia Sea; Bothnia Bay).

Part IV, en clair (English).

Gale warnings for areas, 1, 2, 3 and 4 (above) for particulars, see below.

WIRELESS GALE WARNINGS.

Baltic.

C.W. Issues.

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

The warnings commence with the words " Gale Warnings " and are valid for the ensuing 24 hours. They form Part IV of the weather bulletins broadcast by **Karlsborg W/T** at 1050 and 2200 G.M.T., explained above.

IV.—WIRELESS ICE WARNINGS.

Swedish Ice Breaker.

I.C.W. and R/T Issues.

The Swedish Government ice breaker, call sign **SBLN** broadcasts information in **English** on a wavelength of 600 metres (I.C.W.), giving her position, proposed area for ice breaking and rendering assistance during the ensuing 12 hours. Important local information for mariners will also be broadcast.

The message is broadcast daily, during the time the vessel is employed on ice-breaking service, at 0800 and 1045 G.M.T. on weekdays and at 0800 and 1210 G.M.T. on Sundays.

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

NORWAY.

II.—WIRELESS GALE WARNINGS.

I.C.W. and R/T Issues.

The following stations broadcast gale warnings for the coast of Norway:—

Station.	Call Sign.	Position. Latitude N.	Position. Longitude E.	Wavelength.	Times of transmission G.M.T.	Region.
Utsire ...	**LGK**	59°18′	4°55′	600m. I.C.W.	1600, 2100	Lindesnes to Sognefjord.
Röst ...	**LGR**	67°30′	12°05′	600m. R/T	1200, 2030	Lofoten, Helgeland, Salten.
Tromsöy ...	**TUT**	69°39′	18°58′	1200m. C.W. 1200m. R/T	1025, 1545, 2015	Northern Norway.
Vardöy ... **(1st Oct. to 30th April.)**	**LGV**	70°22′	31°07′	510m. R/T	1200, 1800	Finnmark.

DENMARK.

IV.—WIRELESS ICE WARNINGS.

Danish Waterways.

I.C.W. Issues.

The following W/T stations broadcast a summary of ice conditions in Danish waterways, *en clair* (English). Wavelength 600 metres, I.C.W.

Blaavand W/T station, approximate Latitude 55° 33′ N., Longitude 8° 05′ E., call sign **OXB,** at 0100 and 1300 G.M.T.

Copenhagen W/T station, approximate Latitude 55° 41′ N., Longitude 12° 37′ E., call sign **OXA** at 1100 and 2300 G.M.T.

LATVIA.

IV.—WIRELESS ICE WARNINGS.

Wireless Telephony (R/T Issues).

The broadcasting station at Riga, Latitude 56° 57′ N., Longitude 24° 07′ E., call sign **YLZ**, broadcasts in winter, on a wavelength of 524.6 metres R/T, ice reports at 0650, 1035 and 2000 G.M.T. The reports contain information concerning ice and navigation conditions for the Latvian coast. They are broadcast in the Latvian, ENGLISH and German languages.

ESTONIA.

IV.—WIRELESS ICE WARNINGS.

C.W. Issue.

Tallinn W/T Station, approximate Latitude 58° 56′ N., Longitude 23° 32′ E., call sign **ESA** broadcasts, on the first appearance of ice, information of ice conditions in Estonian waters in a local code.

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

FINLAND.

II.—WIRELESS GALE WARNINGS.

I.C.W. and R/T Issues.

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

Station.	Call Sign.	Position. Latitude N.	Position. Longitude E.	Wavelength.	Times of Transmission G.M.T.
Viborg ...	**OHP**	60°43′	28°45′	600m. I.C.W. 750m. R/T	1230 and 2030 1235 and 2035
Hango ...	**OHD** **OFK**	59°50′ „	22°57′ „	600m. I.C.W. 750m. R/T	1210 and 1755 1205 and 1750
Vaasa ...	**OHX**	63°07′	21°37′	600m. I.C.W. 750m. R/T	1225 and 1810 1220 and 1755

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

IV.—WIRELESS ICE WARNINGS.

C.W. Issues.

Helsingfors W/T Station approximate Latitude 60° 08′ N., Longitude 25° 03′ E., call sign **OHA** broadcasts, when necessary, information of ice conditions for the coasts of Finland in a local code.

The messages are transmitted at 1030 and 1420 G.M.T. on a wavelength of 3750m. C.W.

HOLLAND.

II.—WIRELESS GALE WARNINGS.

North Sea.

I.C.W. Issues.

Scheveningen W/T station, Latitude 52° 06′ N., Longitude 4° 16′ E. (approx.), call sign **PCH**, makes gale warnings on receipt and following the end of the next compulsory 3 minutes silent period, both in Dutch and English, and also at 1230 and 2030 G.M.T. Wavelength used is 600 metres (I.C.W.).

IV.—WIRELESS ICE WARNINGS.

I.C.W. Issues.

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

at 1230 and 2030 G.M.T. after the Storm Warning (if issued). Wavelength 600 metres (I.C.W.).

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

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

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

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

FRANCE.

II.—WIRELESS GALE WARNINGS.

Spark Issues.

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

Cherbourg - Rouges Terres ... ... Approximate Latitude 49° 37′ N., Longitude 1° 36′ W., call sign **FUC.**

Brest-Mengam ... Approximate Latitude 48° 21′ N., Longitude 4° 35′ W., call sign **FUE.**

Lorient-Pen-Mané Approximate Latitude 47° 44′ N., Longitude 3° 21′ W., call sign **FUN.**

Rochefort-Soubise Approximate Latitude 45° 56′ N., Longitude 0° 59′ W., call sign **FES.**

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

Porquerolles ... Approximate Latitude 42° 59′ N., Longitude 6° 12′ E., call sign **FUQ.**

Ajaccio-Aspretto ... Approximate Latitude 41° 56′ N., Longitude 8° 46′ E., call sign **FUI.**

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

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

C.W. Issues.

Eiffel Tower W/T Station, call sign **FLE,** broadcasts wireless gale warnings on a wavelength of 7,200 m. C.W.

The warnings are broadcast if the forecasts indicate that the wind force is likely to exceed force 7 on the Beaufort scale.

The signals refer to the following French coastal areas:—

Manche, Bretagne, Océan, Gascogne, Roussillon, Rhône, Provence, Corse.

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

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

Form of Message.

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

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

Example.

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

Explanation.

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

PORTUGAL.

II.—WIRELESS WEATHER BULLETINS.

Containing meteorological conditions at Madeira and Azores.

Spark and R/T Issues.

Monsanto W/T Station, approximate Latitude 38° 44′ N., Longitude 9° 11′ W., call sign **CTV,** broadcasts a meteorological report *en clair,* in Portuguese and English, at 1130 and 2300 G.M.T. on a wavelength of 1,000 metres (Spark) and at 1155 and 2325 G.M.T. on a wavelength of 600 metres (R/T), giving:—

Observations of wind and swell, also a forecast for the next 24 hours of wind and swell for the coast of Portugal. The coast is divided as follows:—

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

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

MOROCCO.

II.—WIRELESS GALE WARNINGS.

Spark Issues.

Casablanca — Chetaba W/T Station, approximate Latitude 33° 37′ N., Longitude 7° 37′ W., call sign **CNP,** broadcasts gale warnings when necessary on 600 m. spark. They are broadcast *en clair* in French and repeated at the commencement of the following watch for single operators. The area affected is given in the message.

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

AZORES.

II.—WIRELESS WEATHER BULLETIN.

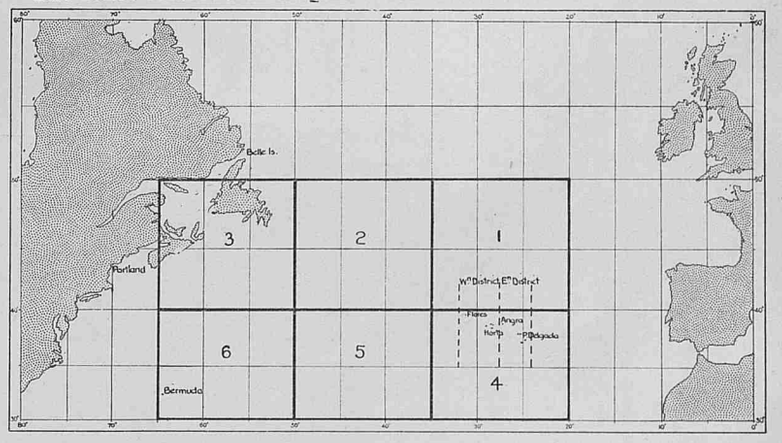
C.W. and Spark Issues.

Horta W/T Station, Latitude 38° 32′ N., Longitude 28° 38′ W. (approx.), call sign **CTH**—

Wavelength 600 m. spark.	Time of transmission 2000 G.M.T.
Wavelength 2400 m. C.W.	Time of transmission 2030 G.M.T.

This weather bulletin is sent *en clair* in Portuguese and repeated in English, the time of observation upon which the forecasts are based being stated in the message.

The zones referred to are indicated in the chart below.



PERSONNEL.

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

OBITUARY.

The death of Captain DUNCAN FORBES which took place at Southampton on January 30th in his eighty-fourth year is noted with regret.

He commenced his seafaring career in 1863. Serving his apprenticeship in the iron ship *Thomas Hamlin*. He later served in several sailing ships including the *Titania*, *Norfolk*, *Sir Harry Parks*, and *Madura*.

In 1879 he opened the Forbes Nautical School at Southampton which he personally conducted for 50 years, coaching some thousands of young officers for their Board of Trade certificates, among whom are some of the leading commanders of the present day.

In March, 1888, Captain FORBES was appointed agent at Southampton to the Marine Division, and with the exception of the years 1914-1921 (when the work was taken over by Board of Trade Examiners and Nautical Surveyors) held the appointment up to September, 1930. During the 35 years that he held the Agency he performed much devoted work on behalf of the Marine Division of the Meteorological Office, showing marine observers how to carry out Marine Meteorological work both to the advantage of their own service and to that of the State.

The death of Captain W. A. R. KERSHAW, Marine Superintendent at Wellington of the Shaw, Savill and Albion Company, on February 6th, 1933, in New Zealand is noted with regret.

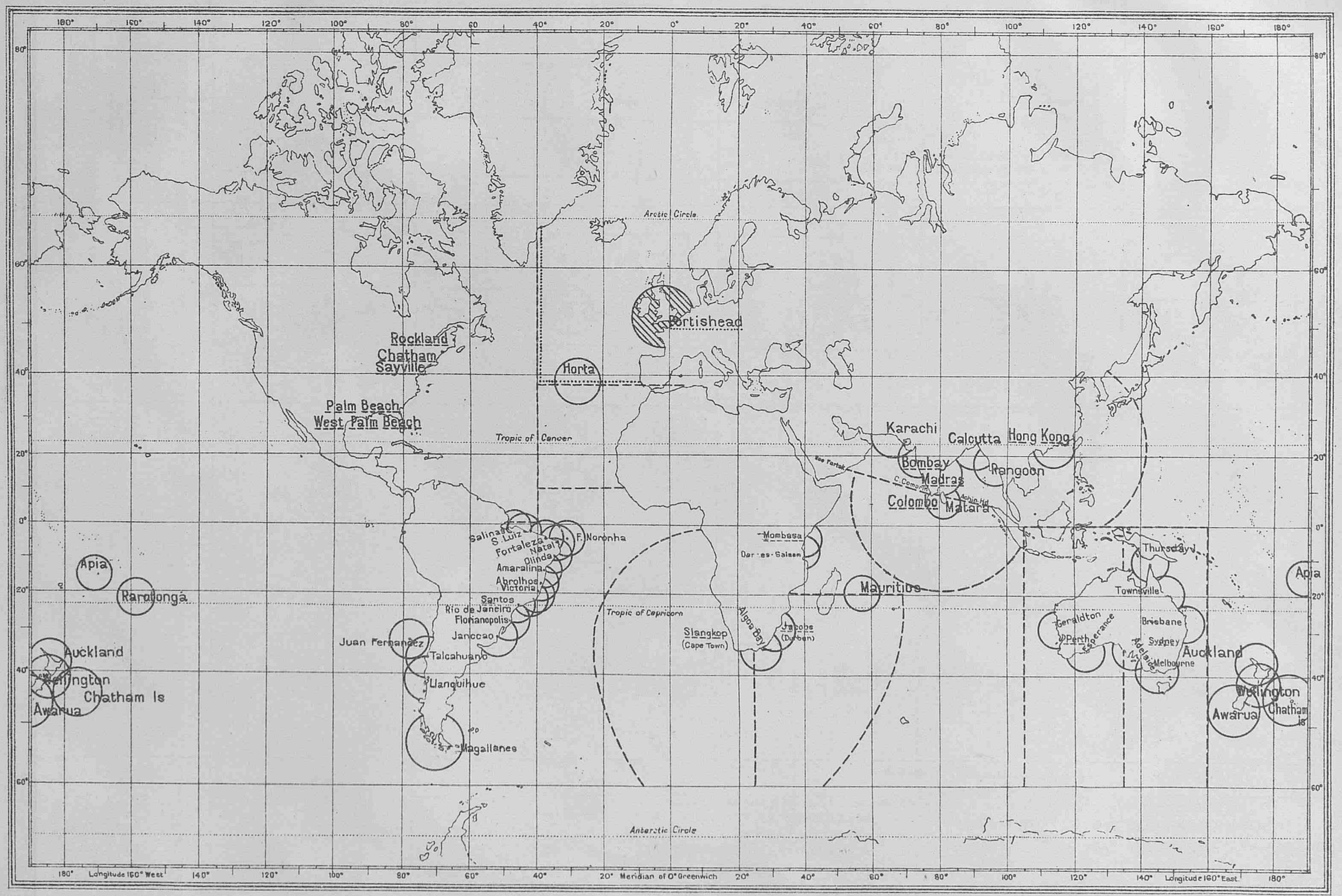
Born in 1875 he served his apprenticeship in the sailing ships of G. M. Stevens & Co. of Liverpool, and after service as 3rd and 2nd mate in the steamers of Harris and Dixon, Bigland & Co. and Houlder Brothers obtained his master's certificate in September, 1907.

On November 21st, 1907, he joined the service of the Shaw, Savill & Albion Company as 2nd officer of S.S. *Kia Ora*, was promoted to chief officer in July, 1911, and to commander in October, 1916.

Captain KERSHAW commanded *Karamea*, *Waimana*, *Matatua*, *Mahana* and *Mataroa* and was appointed Marine Superintendent at Wellington, New Zealand, in June, 1931. A member of the corps of Marine Observers, continually from 1921 to 1931, his name has appeared several times in the list of Excellent awards. He took an active and leading part in the work of establishing the present system of routine W/T weather reporting by " Selected Ships " and brought to notice in the Dominions the advantages of a uniform system of simple and suitable Wireless Weather Bulletins for shipping.

Chart III– 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

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 underlined with a pecked line

The small shaded areas round stations detailed to receive reports from "A Selected Ships" indicate where these ships should not report on account of congestion.

The full circles indicate the areas round islands and coast stations which are detailed to intercept "B Selected Ships" reports made to CQ on 600 metres.

CURRENTS ON THE TRADE ROUTES IN THE SOUTHERN INDIAN OCEAN.

MAY JUNE. and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910–1932.

MAXIMUM DRIFTS REPORTED.									
Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir^n	Wind Force
Between Longitude 56°E. and Longitude 108°E.								
MAY								
Berrima	23	1924	40°35'S.	57°54'E.	S.86°E.	45	—	—
JUNE								
Ascanius	19	1927	39°49'S.	62°32'E.	N.31°E.	46*	—	—

MAXIMUM DRIFTS REPORTED.								
Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir^n	Wind Force
JULY								
Waimate	16	1915	46°03'S.	59°42'E.	E.	42	Var.	2
Clan Morrison	23	1925	23°03'S.	61°36'E.	N.63°W.	42	—	—

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

For Currents to Northward see Marine Observer Vol. VII. No. 77.

For Currents to Eastward see Marine Observer Vol. VI. No. 66.

Mauritius

Reunion

St. Paul I.

Kerguelen I.

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 miles per day ⟹, 25-48 " " " ⟹, 49-72 " " " ⟹, 73 miles per day and above ⟹.

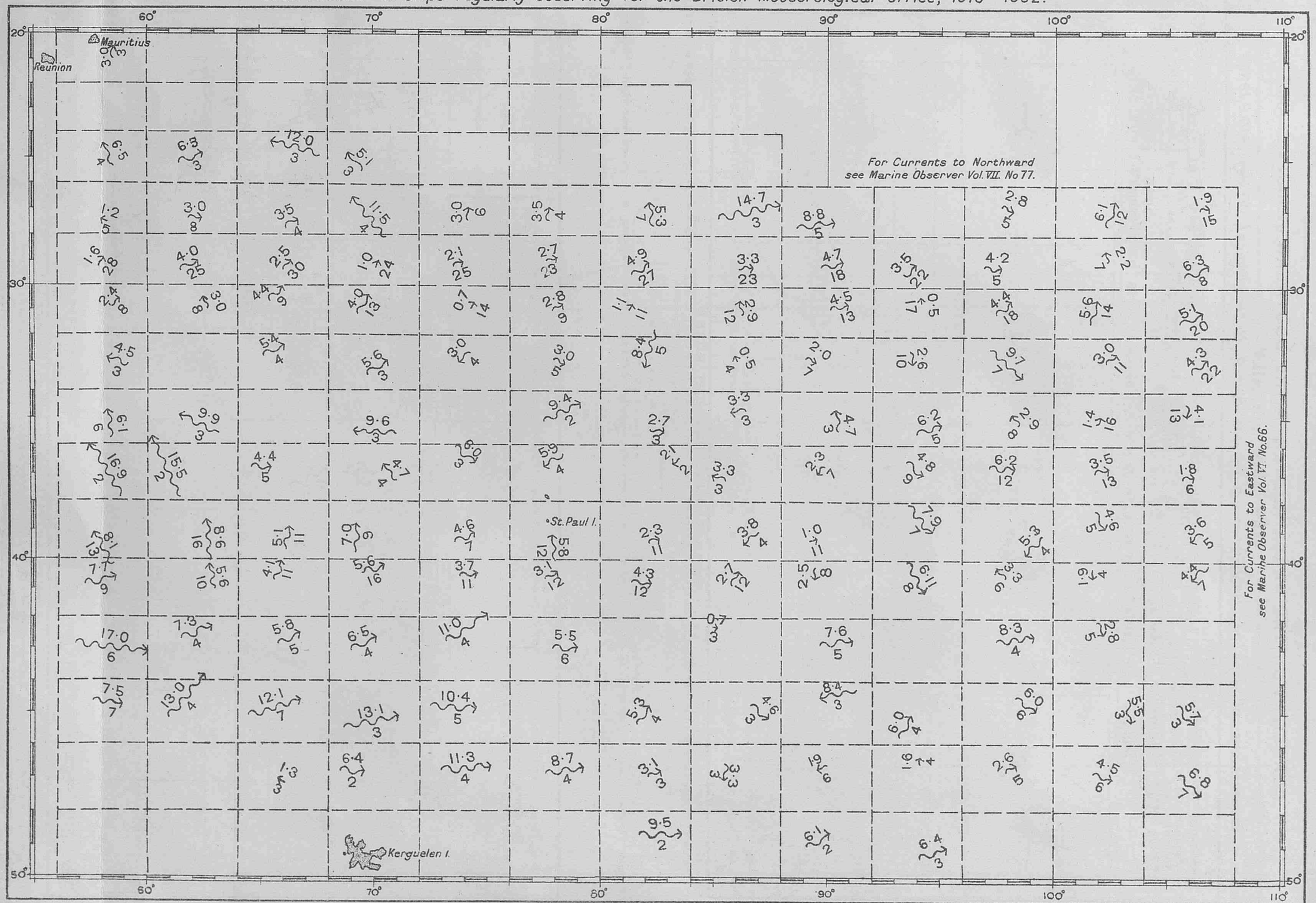
Distance from tail of arrow to circle represents 5%. Scale 0 1p 2p 3p 4p 50%.

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 IN THE SOUTHERN INDIAN OCEAN.

MAY JUNE. and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910—1932.



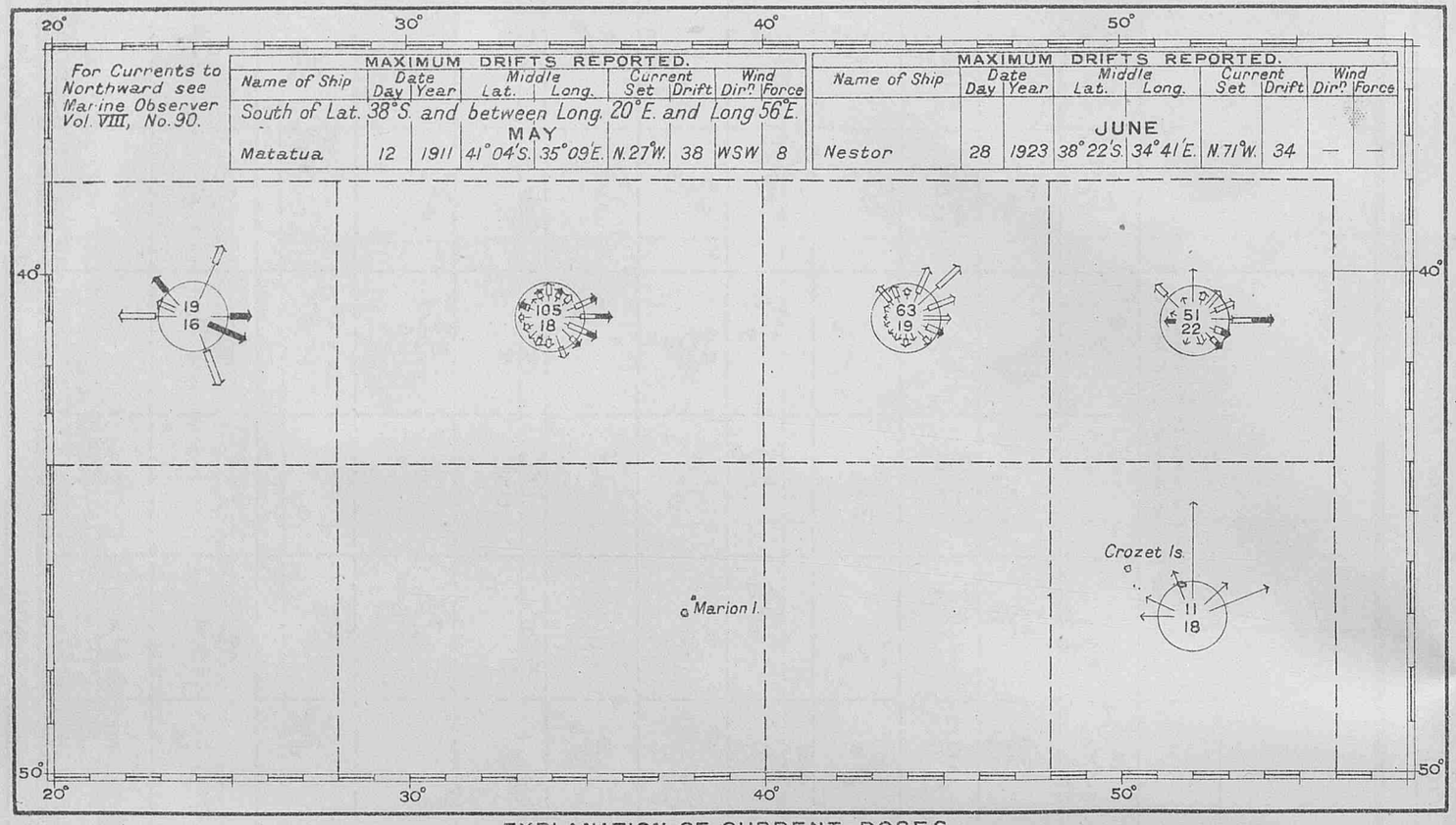
EXPLANATION OF CURRENT ARROWS.

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.

CURRENTS ON THE TRADE ROUTES IN THE SOUTHERN INDIAN OCEAN.

MAY JUNE. and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910–1932.



For Currents to Northward see Marine Observer Vol. VIII, No. 90.

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir?	Wind Force
South of Lat. 38°S. and between Long. 20°E. and Long 56°E.								
			MAY					
Matatua	12	1911	41°04'S.	35°09'E.	N.27°W.	38	WSW	8

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir?	Wind Force
			JUNE					
Nestor	28	1923	38°22'S.	34°41'E.	N.71°W.	34	—	—

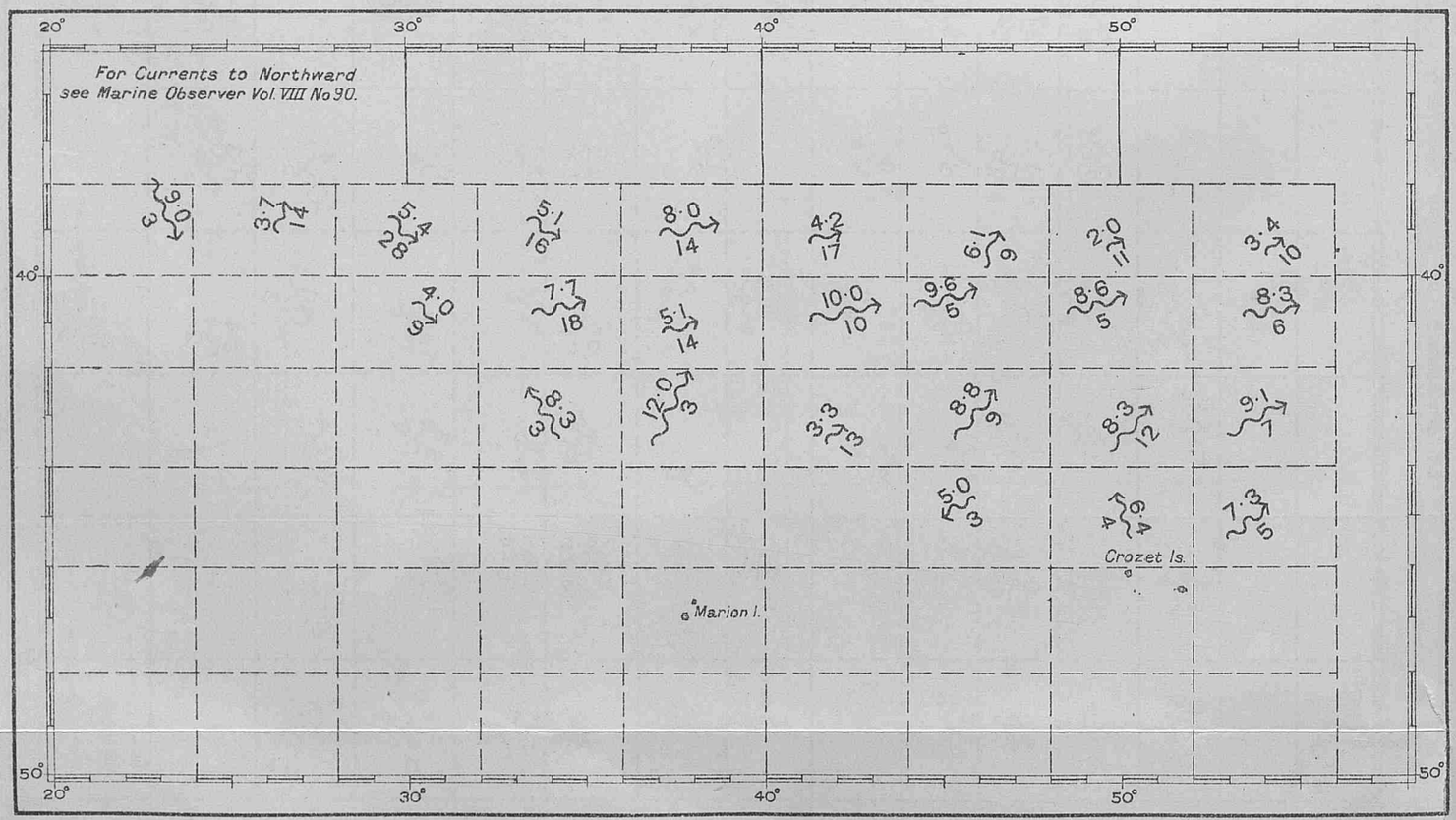
EXPLANATION OF CURRENT ROSES.

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 miles per day ⟹,
25–48 " " " , ⟹, 49–72 " " " ⟹,
73 miles per day 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.



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.

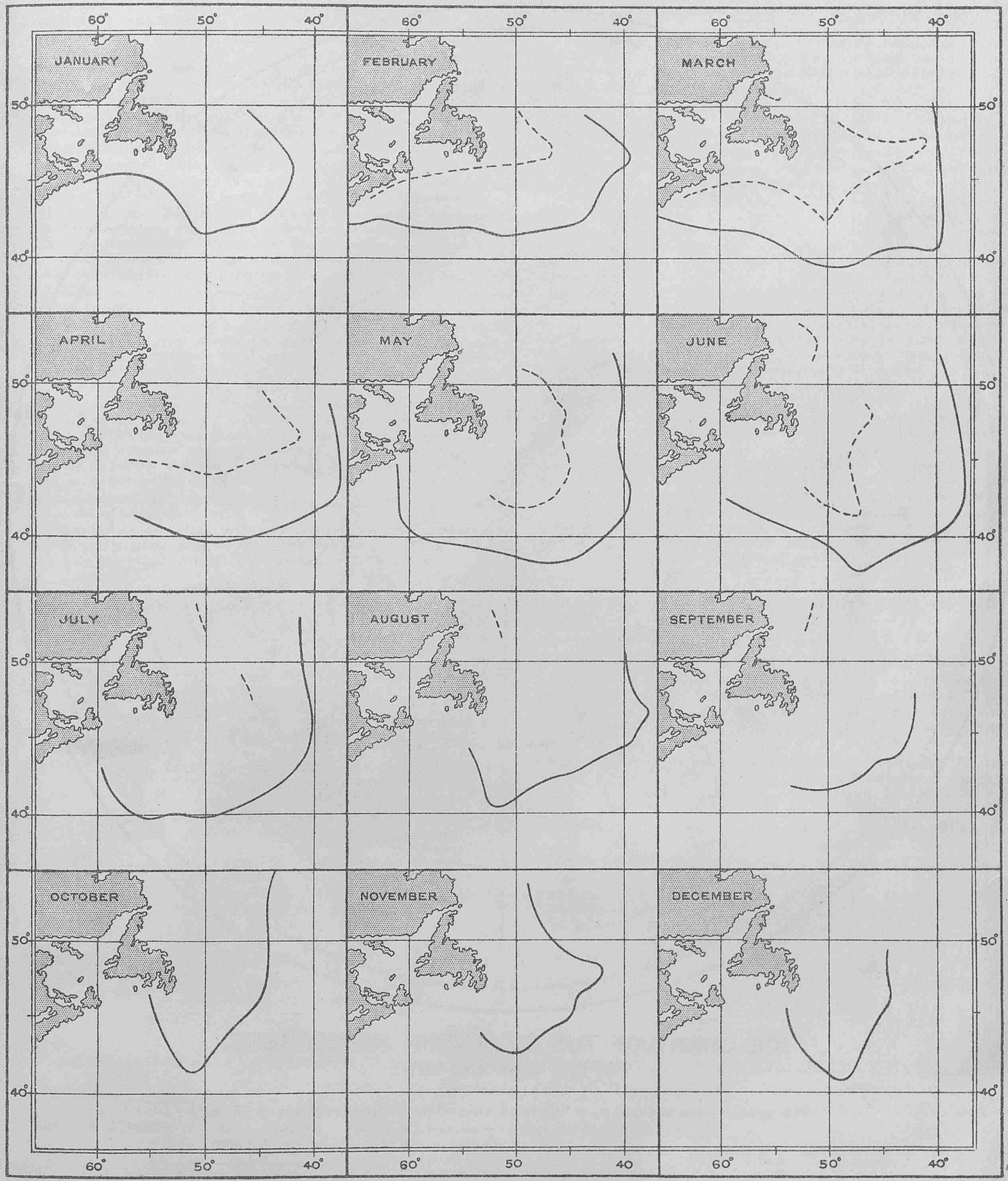
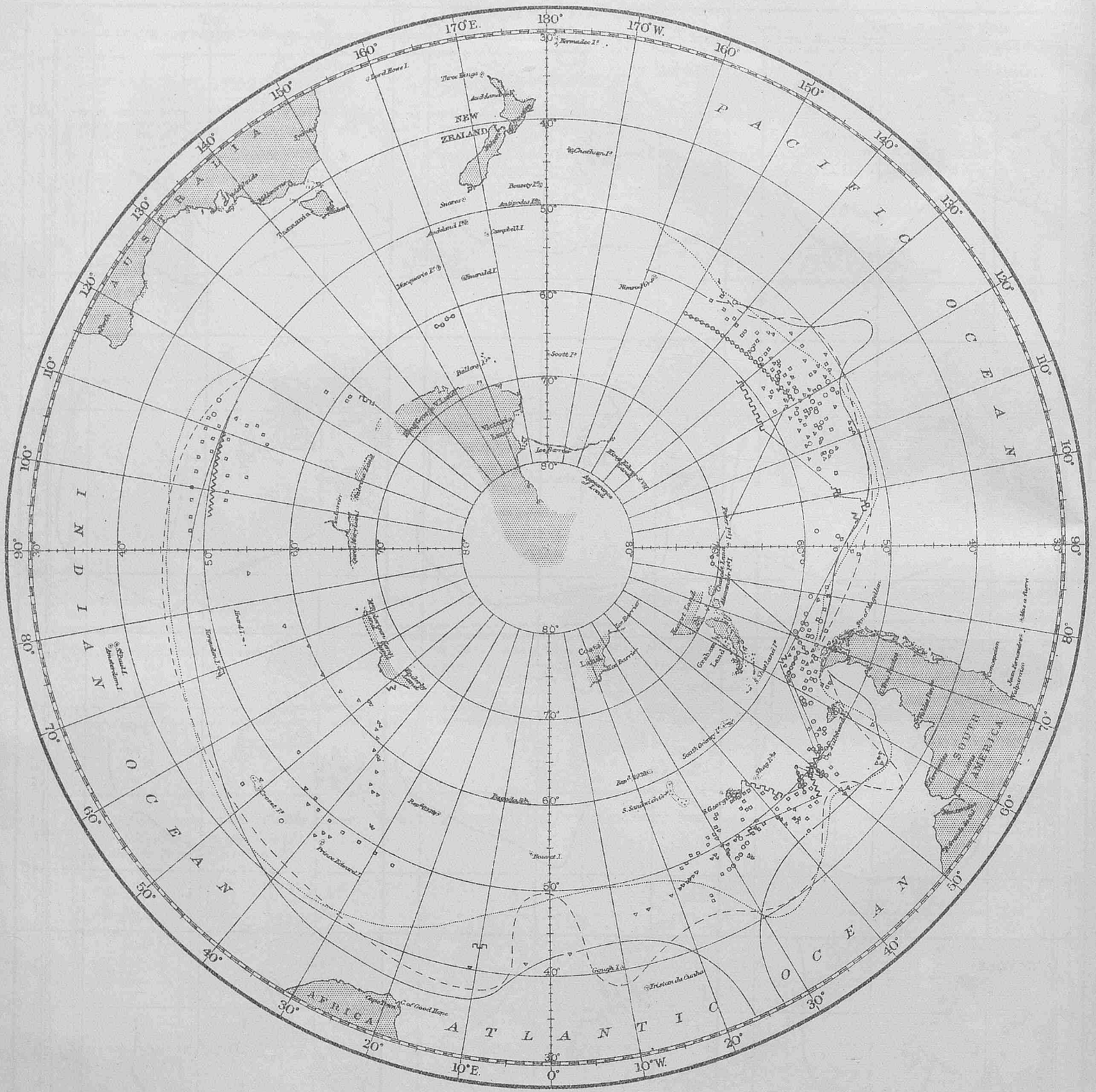


Chart of Limits of Ice, Western North Atlantic.

Limit from 1901 to 1932 shown thus ————————

Limit for 1932 shown thus - - - - - - - - - - - -



ICE CHART OF THE SOUTHERN HEMISPHERE,

APRIL. MAY and JUNE.

EXPLANATION.

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

	Bergs, 1902-1932.	Position of northernmost pack ice actually observed 1885-1932.	Extreme limit of all ice, 1772-1932.
April	△	~~~~~~~~~~~~~~~~	————————
May	□	⊓⊓⊓⊓⊓⊓⊓⊓⊓⊓⊓⊓	— — — — — — — —
June	○	-○-○-○-○-○-○-○-	.....

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

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

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

Pc.611/2552.Wt.76.4.0.29.Gp.908 1250 3/33

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

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

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

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

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

At present the observing fleet is limited to a number not exceeding 366 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

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

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 is supplied to all observing ships, and may also be obtained from H.M. Stationery Office, direct, or through any bookseller, price 2s. 6d.

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

Ships keeping the Meteorological Log, Form 915, are lent a complete set of official tested instruments.

"Selected Ships," other than meteorological log keeping ships, keep the Ships' Meteorological Record, Form 911. All "Selected Ships" also keep the Ships' Wireless Weather Register, Form 138.

No observing ship is detailed as a "Selected Ship" unless she has on board a reliable mercurial barometer.

Official tested instruments are lent to "Selected Ships" when necessary.

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

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

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

The Port Meteorological Officers and Merchant Navy Agents inspect official instruments in Meteorological log ships half-yearly, and in "Selected Ships" quarterly, when possible; and they will replace defective gear. These officers will also check the accuracy of barometers in observing ships, but marine observers should themselves frequently check by comparison.

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

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

All ships fitted with W/T are advised to procure the DECODE for use with the International Code for Wireless Weather Messages from Ships, M.O. Pubn. 329, which can be obtained from H.M. Stationery Office, price 3d. This gives a description of the system of communication of "Selected Ships," as well as the DECODE.

For guidance in the practical use of wireless weather intelligence, WIRELESS AND WEATHER AN AID TO NAVIGATION may be obtained from H.M. Stationery Office, through any bookseller, price 5s.

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 324, Adastral House, Kingsway, W.C.2.
(Telephone No.: Holborn 3434 Extension 421).
Nearest station Temple, District Railway.

THAMES ... ... Lieut. Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16.
(Telephone No.: Albert Dock 2659. Telegraphic Address: Barometric Aldock, London).

MERSEY ... ... Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool.
(Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool).

Agents.

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

Agents *(contd.)*.

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

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

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).*

SOUTHAMPTON Captain Sir BENJAMIN CHAVE, K.B.E. Room 35 Royal Mail Buildings.

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

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

DERELICTS AND FLOATING WRECKAGE.

Date.	Position. Latitude.	Position. Longitude.	Description.
ENGLISH CHANNEL.			
11.3.33	49°17′N.	6°03′W.	Abandoned ship's lifeboat, name *DOLIUS*, Liverpool, in waterlogged condition; dangerous.
17.3.33	50°04′N.	2°16′W.	Floating spar, 2 feet above water.
19.3.33	49°53′N.	2°11′W.	Red conical buoy adrift.
NORTH ATLANTIC.			
1.3.33	33°53′N.	52°07′W.	Log about 36 feet long, 2 feet diameter.
5.3.33	36°10′N.	72°35′W.	Two pontoons with a section of pipe line attached.
6.3.33	33°N.	78°24′W.	Large tree trunk floating vertically with heavy roots projecting 3 feet out of water.
9.3.33	30°N.	48°25′W.	Large black buoy with staff, probably cable buoy adrift.
North Atlantic—*contd.*			
11.3.33	52°35′N.	16°03′W.	Framework light buoy, extinguished.
12.3.33	41°56′N.	67°34′W.	Piece of wreckage about 50 feet long, apparently piece of old vessel showing stamps of old masts.
GULF OF MEXICO			
4.3.33	28°25′N.	92°05′W.	Mast about 1½ feet diameter projecting about 3 feet out of water, apparently attached to submerged wreckage.
6.3.33	28°12′N.	92°35′W.	Tree trunk about 20 feet long, 3 feet diameter and limbs projecting 6 feet out of water.
NORTH PACIFIC.			
5.3.33	5·3 miles from Pigeon Point, Calif.		Log.

CHART OF THE WESTERN NORTH ATLANTIC.

Showing the North Atlantic Lane Routes in force during APRIL as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 59 and 60 of this number.

The periodic boundary within which ice has been observed is shown and a list of phenomenal positions of ice observed in the North Atlantic during APRIL is given. Ice sighted between MARCH 1st and 23rd, 1933 is indicated by symbol in the position reported, the figure giving the day of the month in March. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol (Ψ)

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

LANE ROUTES IN FORCE DURING APRIL.

- (B) From 11th April, 1933 to 30th June, 1933, inclusive.
- (C) From 1st July, 1932 to 10th April, 1933, inclusive.
- (D) From 15th February, 1933 to 10th April, 1933, inclusive.
- (E) From 11th April, 1933 to 15th May, 1933, or until Cape Race route clear of ice.

PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position. Lat.	Long.	Remarks.
April 6, 1909	S.S. Trafalgar ...	35°54′N.	31°47′W.	2 pieces 18 in. in diameter.
„ 11, 1914	S.S. Erodiade ...	32°55′N.	62°11′W.	Apparently river ice about the size of a lifeboat.
„ 24, 1916	S.S. Communipaw ...	40°05′N.	36°48′W.	4 ft. high 50 ft. wide, and 100 ft. long.
„ 4, 1921	S.S. Hollandia ...	43°35′N.	35°57′W.	Large berg.
„ 16, 1926	Trawler Orizaba ...	61°03′N.	10°30′W.	Floating ice, about 40ft. long, and 3 ft. high.
„ 7, 1930	S.S. La Cresenta ...	42°24′N.	34°22′W.	Small berg, about 20 ft. diameter.

Boundary within which Ice has been reported to the Meteorological Office APRIL 1901 to 1932.

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

APRIL M.O., 1933.

Ps.611/2552. Wt.764. D.29. G.908. 950. 3/33.

NOTICES TO MARINE OBSERVERS.

THOMAS GRAY MEMORIAL TRUST

PRIZES OFFERED IN 1933
FOR THE IMPROVEMENT AND ENCOURAGEMENT OF NAVIGATION.

The Council now offer the following Prizes:

I.—PRIZE FOR AN INVENTION.

A Prize of £100 to any person who may bring to their notice a valuable improvement in the Science or Practice of Navigation proposed or invented by himself in the years 1932 and 1933.

In the event of more than one such improvement being approved, the Council reserve the right of dividing the amount into two or more prizes at their discretion. Competitors must forward their proofs of claim on or before December 31st, 1933, to the Secretary, Royal Society of Arts, John Street, Adelphi, W.C.2.

II.—PRIZE FOR AN ESSAY.

A Prize of £100 for an essay on the following subject:

"Fire at sea, in port or in a builder's yard (*a*) in a modern passenger vessel (*b*) in a modern cargo vessel. Possible causes, preventive measures, and means of detection. How to deal with fire when once started. Reasons and suggestions for changes in decorative, furnishing, lighting and ventilating schemes usually found in large and luxurious liners."

Competitors must send in their essays not later than December 31st, 1933, to the Secretary, Royal Society of Arts. at the above address.

The essays must be typed in English. They must be sent in under a motto, accompanied by a sealed envelope enclosing the author's name, which must on no account be written on the essay. A breach of this regulation will result in disqualification.

Both competitions are open to persons of any nationality, but, in the case of the Essay Competition only, competitors must be past or present members of the seafaring profession.

The Judges will be appointed by the Council.

The Council reserve the right of withholding a Prize or of awarding a smaller Prize or Prizes, if, in the opinion of the Judges, no suitable invention or essay is submitted.

The Council also reserve an option on the copyright of the successful essay or essays, but do not claim any rights in respect of any invention to which a prize may be awarded.

G. K. MENZIES,
Secretary

MARCH, 1933.

POSTAL ARRANGEMENTS.

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

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

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

Port of Call.....

Date of Homeward Departure .....

Postal Address .....

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

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

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

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

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

ICE REPORTS (FORM 912).

Ice Report Forms are supplied with the MARINE OBSERVER or Supplement each month to all regular observing ships employed in the Trans North Atlantic and Southern Ocean trades. They may also be obtained by any British ship on application to the Port Meteorological Officers or Agents, addresses of whom are given on the first page of this ice chart.

Commanders of ships in these trades are asked to have this form completed and returned without delay at the end of each passage. A nil return is desired should no ice be sighted.

Selected Ships on the Trade Routes of the Southern Ocean are requested to add to their routine Wireless Weather reports information of floating ice seen or reported within the last 24 hours so that this information may be disseminated to the utmost advantage of all concerned.

LATE NOTICES

VOLUNTARY OBSERVING SHIPS' FLEET LIST.

The following is a complete list of British observing ships regularly carrying out voluntary services of marine meteorology with the guidance of the Marine Division of the Meteorological Office.

The names of the Captains and observing officers of observing ships, and the Senior Wireless Operators of Selected Ships are given, as ascertained from the last written return received.

Meteorological Logs, Records, and W/T Weather Registers received between the dates specified at the head of the seventh column are acknowledged by Form number, with commencing and ending dates of period covered by the returns; the date when the last return was received being given in the eighth column.

The Captains of observing ships are requested to take this acknowledgment in cordial thanks and grateful recognition to them and their observing officers and wireless operators for the returns made and the voluntary service rendered in all parts of the world.

The classification of meteorological logs and Selected Ships' records and registers will be notified to the Captains by post card Form 1343. Only in exceptional cases will individual letters be sent to the Captains of observing ships.

The Port Meteorological Officers and Merchant Navy Agents at the ports are advised as necessary, and they will, as necessary, communicate such advice verbally by personal call upon the Captain.

Excellent Awards will be made at the end of the financial year. The names of the Captains and Principal Observing officers gaining these awards will be published in a special list in the Marine Observer.

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

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

The number of voluntary observing ships is limited to a maximum total of 366.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 299.

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

Explanation of Abbreviations.

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

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

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

** indicates fitted with wireless telegraphic apparatus for transmission and reception: but not fitted for long range, long wave, continuous wave transmission or reception.

M.V. = Motor Vessel.

S.T. = Steam Trawler.

Ships having no such letters after their names are steamships.

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

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

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

A. = Ships' own aneroid.

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received.
122 †† *Accra*, M.V. ...	Shooter, J. C.	R. B. Ellis	G. Arrowsmith...	M.-S.	Elder Dempster	Fms. 911 & 138 16.11.32 to 19.2.33	24.2.33
055 *† *Actor*	Chapman, T.	G. Penston, E. Pearce, P. Vaughan.	P. Smythe ...	M.	Harrison ...	,, ,, 5.12.32 to 18.2.33	27.2.33
123 †† *Adda*, M.V. ...	Lawson, J. H.	E. Moore, S. Baker	A. J. L. Edwards	M.-S.	Elder Dempster	,, ,, 1.12.32 to 7.1.33	11.1.33
273 *† *Adrastus* ...	Lloyd, R.	S. R. Evans, J. P. Makepeace, F. E. Jackson.	J. H. Nightingale	M.L.	A. Holt	Fm. 915 12.5.32 to 15.9.32	9.11.32
072 †† *Adriatic*	Freeman, C. P., R.D., Commr., R.N.R.	R. M. Cherry, W. S. Finlayson, R. S. Walker.	... ...	S.	White Star ...	Fms. 911 & 138 30.1.33 to 19.2.33	22.2.33
090 *† *Aeneas*	Wallace, W. K ...	G. H. Smith, W. Williams, R. A. Hanney.	T. C. Burninghem	,,	A. Holt	,, ,, 17.10.32 to 28.12.32	31.12.32
166 *† *Agamemnon* ...	Beswick, W., D.S.C., Commr., R.N.R.	W. K. Hole, W. G. Harrison, O. Thomas.	A. C. Nevin ...	,,	,,	,, ,, 3.11.32 to 7.2.33	13.2.33
Aidan	Barlow, F. P.	... ...	... ...	M.L.	Booth	... ...	...
065 †† *Alcaroa*	Hartman, W. H. ...	... ...	... ...	,,	Shaw Savill ...	... ...	...
Alban	Evans, L.	R. Parry, L. A. Sayers, F. M. Lyons.	... ...	,,	Booth	Fm. 915 2.7.32 to 4.1.13	5.1.33
127 *† *Albion Star* ...	Walsh, W.	R. White, R. E Winnal, H. Tempest.	J. Booth ...	M.	Blue Star ...	Fms. 911 & 138 28.8.32 to 19.11.32	15.12.32
019 †† *Alcantara* ...	Clarke, E., R.D. Commr., R.N.R.	... ...	... ...	S.	Royal Mail ...	... ...	...
178 *† *Alipore* ...	Carter, E. A. J. W., R.D., Commr., R.N.R.	J. A. Hunter, C. Hucq, H. P. Hair.	R. Stone ...	M.	P. & O.	Fms. 911 & 138 4.11.32 to 7.2.33	6.3.33
175 †† *Almanzora* ...	Buret, T. J. C. ...	F. J. Brett, H. E. Sang, A. R. Osbourne.	W Smith ...	S.	Royal Mail ...	,, ,, 20.11.32 to 3.1.33	4.1.33

	Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received.
012 ††	*Almeda Star* ...	Turner Russell, W. ...	L. S. Hassell, D. Rassell, J. Mortimer.	R. N. Austin ...	M.	Blue Star ...	Fms. 911 & 138 6.11.32 to 28.2.33	7.3.33
	Alynbank ...	Gillies, —.	... ...	... ...	M.L.	A. Weir	... ...	...
103 ††	*Andalucia Star*	Vernon, R.	R. H. K. Bartley, A. Malcouronne, E. Gudgin.	F. E. Ash ...	M.	Blue Star ...	Fms. 911 & 138 23.10.32 to 7.2.33	13.2.33
209 ††	*Aorangi*, M.V. ...	Martin, W.	R. N. Turner, D. H. Richards, S. H. Crawford.	G. M. Power ...	M.L.	Canadian-Australasian.	Fm. 915 23.6.32 to 6.10.32	8.12.32
120 ††	*Apapa*, M.V. ...	Beith, A.	C. E. Evans, R. Mercer ...	J. Rea	M.-S.	Elder Dempster	Fms. 911 & 138 14.12.32 to 22.1.33	26.1.33
029 ††	*Appam*	Draper, J. M.	W. M. M. Hutchings, R. K. Palmer, B. C. Haigh.	R. J. Dowling ...	S.	,, ,,	,, ,, 2.11.32 to 6.2.33	8.2.33
017 ††	*Aquitania* ...	Irving, R. B., O.B.E., R.D., Capt., R.N.R.	G. Jeffries, L. R. Sharp, E. A. Divers.	A. H. Farman ...	,,	Cunard	,, ,, 6.1.33 to 9.2.33	13.2.33
115 ††	*Arandora Star* ...	Moulton, E. W. ...	R. Freaker, H. F. Partridge, K. T. Hales.	C. W. Herbert	M.-S.	Blue Star ...	,, ,, 20.12.32 to 6.1.33	9.1.33
	Architect ...	Mowat, I.	G. Dewar	... ...	M.	Harrison ...	Fm. 911 9.5.31 to 16.9.32	30.9.32
293 *†	*Ariguani* ...	Scudamore, J. H. H., D.S.C., R.D., Commr, R.N.R.	G. M. Roberts, A. Sandham, C. R Hodder.	H. Jardine ...	S.	Elders & Fyffes	Fms. 911 & 138 14.12.32 to 25.2.33	1.3.33
144 ††	*Arlanza* ...	Huff, G. F.	A. E. Randle, H. V. Todd, —. Morton.	G. Hunt ...	,,	Royal Mail ...	,, ,, 18.12.32 to 30.1.33	6.2.33
091 ††	*Armadale Castle*	Harvey, H. B. ...	C. Lloyd, L. G. May, J. W. J. Brooks.	E. Haslan ...	,,	Union Castle ...	,, ,, 26.11.32 to 15.1.33	17.1.33
296 *†	*Arracan*... ...	Thomson, S.	J. A. C. MacCall, M. M. Ramsay, J. J. Allen.	F. Fox	,,	P. Henderson ...	,, ,, 17.8.32 to 13.11.32	18.11.32
	Arundel ...	Munton, C. G. G. ...	E. Balcombe, T. Mahoney ...	D. Smith ...	,,	Southern Rly. ...	Telegraphic Report 7.3.33 ...	7.3.33
095 ††	*Arundel Castle*	Whitfield, G. J. ...	G. L. Clarke	... ...	,,	Union Castle ...	Fm. 911 24.1.32 to 12.3.32	19.3.32
280 *†	*Astronomer* ...	Richards, J.	W. P. Baker, R. Williams, E. B. Stephens.	... ...	M.	Harrison ...	Fms. 911 & 138 18.4.32 to 7.7.32	20.7.32
062 ††	*Asturias* ...	Shillitoe, B., R.D., Commr., R.N.R.	... ...	... ...	S.	Royal Mail ...	... ...	...
281 *†	*Auditor* ...	Windsor, G. R. ...	L. Richardson	... ...	M.	Harrison	Fms. 911 & 138 1.8.32 to 9.11.32	16.1.33
212 *†	*Australia* ...	Scutt, W.	E. H. Lidstone, L. Smith, F. M. Jenvey.	C. Cunningham	,,	British India ...	Fm. 915 29.3.32 to 16.8.32	1.9.32
124 ††	*Avila Star* ...	Thomas, R. J. ...	F. N. Johnson, W. Hall, E. Lowndes	B. King... ...	,,	Blue Star ...	Fms. 911 & 138 2.10.32 to 16.11.32	22.11.32
068 ††	*Balmoral Castle*	Attwood, J.	A. C. G. Price, G. F. Oakley, H. Bunn.	J. Sharp ...	S.	Union Castle ...	Fms. 911 & 138 29.10.32 to 19.2.33	21.2.33
179 *†	*Balranald* ...	Short, C. E.	E. R. Physick, F. M. Pearce, H. P. Mallett.	J. F. Arthurs ...	M.	P. & O. Branch	,, ,, 4.11.32 to 9.1.33	20.1.33
248 *†	*Banffshire* ...	Gibb, A. W. P. ...	R. F. Buckley, A. Hunter, J. O. H. Kirkwood.	A. Ewing ...	,,	Turnbull Martin	,, ,, 6.12.32 to 16.1.33	20.2.33
180 *†	*Baradine* ...	Dene, R. C.	G. W. Wood, G. E. Owen, A. E. Clay.	J. S. Skinner ...	,,	P. & O. Branch ...	,, ,, 28.11.32 to 21.2.33	4.3.33
037 *†	*Baronesa* ...	Compton, R. H. ...	J. R. Faulkner, F. W. Kent, J. J. Freeman.	F. Amott ...	,,	Houlder	,, ,, 21.8.32 to 19.10.32	24.10.32
213 *†	*Barpeta* ...	Davies, A. D.	J. Patterson, R. W. Davis. ...	C. Hobby ...	,,	British India ...	,, ,, 19.10.32 to 22.12.32	9.1.33
181 *†	*Barrabool* ...	Sheepwash, J. S. ...	W. Elvy, A. Gething, H. Boyd.	R. Rowley ...	,,	P. & O. Branch ...	,, ,, 20.9.32 to 30.10.32	10.1.33
070 ††	*Bayano* ...	Legge, A. W. ...	R. H. Hackney, W. J. Maxwell, W. Simms.	R. E. Blizzard ...	S.	Elders & Fyffes	,, ,, 29.11.32 to 1.1.33	9.1.33
059 ††	*Belgenland* ...	Morehouse, W. A. ...	F. Good, J. Mackie, J. R. Loe	... ...	,,	Red Star ...	,, ,, 3.11.31 to 21.11.31	24.11.31
183 ††	*Bendigo* ...	Wyatt, F. N. ...	H. T. Rigden, T. Hopkins ...	F. W. Rose ...	M.-S.	P. & O. Branch ...	,, ,, 30.10.32 to 2.2.33	6.2.33
237 ††	*Berengaria* ...	Britten, E. T., R.D., Capt., R.N.R.	W. A. Robson, G. Duguid. E. R. Taylor.	S. N. Cragg ...	S.	Cunard	,, ,, 8.12.32 to 21.2.33	23.2.33
145 *†	*Berwickshire* ...	Evens, E. H.	E. Coulthart, J. C. Robertson, S. R. J. Wood.	H. Southgate ...	,,	Turnbull Martin...	,, ,, 3.1.33 to 22.1.33	14.2.33
	Birchbank ...	Skelly, E. H.	... ...	... ...	M.L.	A. Weir	... ...	...
	Bradfyne ...	O'Neil, J.	... ...	... ...	S.	Reardon Smith	... ...	...
057 ††	*Britannic* M.V....	Vaughan, P. R., D.S.C., R.D., Commr., R.N.R.	A. J. Fisher, G. N. Jones O. V. Lucas.	J. B. Stone ...	,,	White Star ...	Fms. 911 & 138 5.12.32 to 20.1.33	23.1.33
269 *†	*British Admiral*	Taylor, F. I.	H. J. Were, C. Finch ...	G. Hughes ...	M.	British Tankers	,, ,, 19.11.32 to 17.2.33	2.3.33
249 *†	*Buteshire* ...	Westropp, T. G. ...	P. McMillan, S. W. Brown, J. D. Elvish.	T. Prenton ...	S.	Turnbull Martin	,, ,, 11.10.32 to 22.11.32	31.12.32
031 ††	*Caledonia* ...	Collie, A.	J. J. Walmsley, J. K. McMillan, R. Blake.	W. Stewart ...	S.	Anchor	Fms. 911 & 138 12.12.32 to 15.1.33	23.1.33
139 ††	*California* ...	Smart, R. W.	D. Morrison, J. F. Adams, R. L. Robertson.	D. Thompson ...	,,	,, ...	,, ,, 20.10.32 to 25.11.32	1.12.32
	Cambria ...	Copland, C. P. ...	O. W. Ll. Jones	... ...	,,	L.M. & S. Rly. ...	Telegraphic Report 4.3.33 ...	4.3.33
190 *†	*Cambridge* ...	Williams, R.	H. Fryer, R. Belfield, T. M. Devitt.	... ...	M.L.	Federal ...	Fm. 915 8.2.32 to 24.5.32	4.6.32
266 ††	*Cameronia* ...	Rome, W.	D. Blair, E. Stormont, D. Bone.	J. Fleming ...	S.	Anchor	Fms. 911 & 138 3.12.32 to 19.2.33	21.2.33
295 ††	*Camito*	Jack, D. A.	A. S. Hardy, H. Hargreaves, J. McIntyre.	L. Fudge ...	,,	Elders & Fyffes ...	,, ,, 10.11.32 to 4.2.33	7.2.33
	Canonesa ...	Brodie, W. H.	E. J. L. Stone	... ...	M.	Houlder ...	Fm. 911 21.12.32 to 4.1.33	20.1.33
	Cape of Good Hope	Jacobson, T. A. ...	J. Adam	... ...	S.	Lyle S.S. Co. ...	,, 5.10.32 to 17.2.33	27.2.33
282 ††	*Carinthia* ...	Murchie, P. A., O.B.E., R.D., Capt. R.N.R.	G. S. Hutchinson, J. A. Myles, H. Hudson.	J. Doyle ...	,,	Cunard	Fms. 911 & 138 16.12.32 to 22.12.32	12.1.33
092 ††	*Carnarvon Castle* M.V.	Kerbey, J. H. ...	E. Clancy. H. L. Shaw, D. D. Mackenzie.	J. Hodgson ...	,,	Union Castle ...	,, ,, 6.11.32 to 25.2.33	28.2.33
155 ††	*Carthage* ...	Jack, H. M.	C. T. O. Richardson, D. Buckley, G. Sparks.	A. Macbeth ...	M.-S.	P. & O.	,, ,, 27.11.32 to 2.3.33	7.3.33
184 ††	*Cathay*	Elliot Smith, H., R.D., Lt.-Commr., R.N.R.	A. J. McHattie, H. C Forsyth, E. Cowell.	S. W. Sharpe	,,	,, ...	,, ,, 18.12.32 to 22.1.33	3.3.33
011 ††	*Ceramic* ...	Cole, N....	R. Conway, F. H. Leigh, R. H. Morris.	W. M. Ross ...	S.	White Star ...	,, ,, 3.11.32 to 14.12.32	19.12.32
191 *†	*Chindwin* ...	Paterson, G.	D. M. Wilkie, J. G. Aitkin, D. Sinclair.	A. C. Headley ...	,,	Henderson ...	,, ,, 20.11.32 to 30.1.33	1.2.33
067 *†	*Chinese Prince*	Irvine, W.	I. P. Ellis, J. W. Taylor, J. H. C. Torr.	M. Edwards ...	M.L.	Furness Withy ...	Fm. 915 20.5.32 to 25.10.32	29.12.32
192 ††	*Chitral*	Siggers, O.	W. Allen	... ...	M.-S.	P. & O.	Fms. 911 & 138 4.11.32 to 27.1.33	29.1.33
265 *†	*City of Baroda*	Percival, H.	J. L. Robertson, H. G. Williams, F. Hofmeyer.	W. R. Bain ...	S.	Ellerman... ...	,, ,, 21.1.33 to 13.2.33	7.3.33
	City of Cairo ...	Hoppins, E. G. ...	L. Herman	... ...	M.	,, ...	Fm. 911 18.12.32 to 8.2.33	20.2.33
013 *†	*City of Cambridge*	Melville, A. G. ...	J. T. Keith	... ...	S.	,, ...	,, 5.12.32 to 10.2.33	24.2.33
	City of Canton ...	Lloyd, H.	A. J. Potter	.. ..	M.	,, ...	... ...	...

	Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received.
157 *†	*City of Delhi* ...	Wyper, J.	A. Travis	C. V. Colyer ...	S.	Ellerman... ...	Fm. 911 19.11.32 to 24.12.32	3.1.33
	City of Dieppe	Cartwright, H ...	... ...	... ...	M.L.	,, ...	... ...	...
	City of Evansville	O'Halloran, G. P. M. ...	F. W. Woods	... ...	M.	,, ...	Fm. 911 29.11.32 to 17.2.33	20.2.33
220 ††	*City of Exeter* ...	Bremner, D. M. ...	J. W. Wotherspoon	... ...	S.	,, ...	... ...	...
274 *†	*City of Harvard*	MacMillan, J.	F. Deighton, E. Brook-Williams, S. W. Dutton.	C. V. Robson ...	,,	,, ...	Fms. 911 & 138 7.11.32 to 21.12.32	24.12.32
089 *†	*City of Hereford*	Baker, J.	J. S. Mackie, J. H. T. Vizer ...	R. W. Sherwood	M.	,, ...	,, ,, 9.11.32 to 8.12.32	28.12.32
	City of Lincoln	Readwin, E.	... ...	... ...	,,	,, ...	... ...	...
028 ††	*City of London* ...	Brown, J. G.	B. E. Hooper...	... ...	S.	,, ...	... ...	...
203 ††	*City of Nagpur*	McNeil, N., O.B.E. ...	J. Campbell, E. A. Davidson, W. Gibb.	J. Jones ...	,,	,, ...	Fms. 911 & 138 3.10.32 to 9.11.32	2.1.33
271 *†	*City of Roubaix*	Phillip, A. J.	B. S. Roberts, C. Colland, W. H. Dalton.	R. W. Garnham	M.	,, ...	,, ,, 11.1.33 to 31.1.33	20.2.33
272 *†	*City of Singapore*	Gardner, A.	D. R. Pufford, D. G. Lister ...	J. D. Carroll ...	,,	,, ...	,, ,, 17.10.32 to 22.2.33	27.2.33
035 *†	*City of Sydney* ...	Booth, H. G.	W. A. Rogerson, L. H. Edmunds H. G. Griffith.	E. E. Wykes ...	,,	,, ...	,, ,, 23.11.32 to 10.2.33	15.2.33
	City of Tokio ...	Spurring, R. R. ...	... ...	... ...	M.L.	,, ...	... ...	...
187 *†	*City of Valencia*	Nicoll, L.	A. Hamilton, M. McGregor, T. Lovell.	W. Stevenson ...	S.	,, ...	,, ,, 25.11.32 to 26.1.33	27.1.33
125 *†	*City of Windsor*	Hammersley, E. G. ...	A. E. King, T. S. Dennis, R. W. A. Johns.	W. M. R. Aspin	,,	,, ...	,, ,, 21.11.32 to 29.1.33	7.3.33
050 *†	*Clan Macalister*	Stenson, F. J., R.D., A.D.C., Capt., R.N.R.	G. Drake, R. Harris, L. Thomson.	E. Harry ...	,,	Clan	Fm. 911 27.11.32 to 18.1.33	6.3.33
241 *†	*Clan Macbeth*	Andrews, H.	W. R. Woodriffe, J. C. Scott, P. N. Colepeper.	R. E. Tritton ...	,,	,, ...	Fms. 911 & 138 1.11.32 to 18.2.33	23.2.33
	Clan Macdougall	Forrett, F.	G. L. Roe	... ...	,,	,, ...	Form 911 9.1.33 to 28.1.33	21.2.33
287 *†	*Clan Macfarlane*	Redford, L. F., Lt.-Commr, R.N.R.	W. W. Simpson	... ...	,,	,, ...	,, 1.1.33 to 23.1.33	21.2.33
118 *†	*Clan Macindoe*	Scott-Smith, H. E. G., O.B.E., R.D., Lt.-Commr., R.N.R.	J. C. Dunphy, D. W. Gibbon	D. Todd ...	,,	,, ...	Fms. 911 & 138 5.11.32 to 1.2.33	20.2.33
233 *†	*Clan Mackellar*...	Haynes, N. J.	J. J. Stormont, E. E. Arthur, W. C. Dazell.	E. Woolhouse ...	,,	,, ...	,, ,, 18.9.32 to 28.9.32	21.11.32
	Clan Macnair...	Holman, W. G. ...	J. Hall, A. Woodrow, J. F. Vooght.	R. F. Kirk ...	,,	,, ...	,, ,, 6.11.32 to 29.12.32	27.2.33
	Clan Macneil ...	Low, A....	B. H. Magill	... ...	,,	,, ...	Fm. 911 15.1.33 to 4.1.33	27.2.33
001 *†	*Clan Macphee* ...	Giles, H. J., R.D., Capt., R.N.R.	R. G. Bagnall, J. L. Jones, S. W. Easterbrook.	L. Gledhill ...	,,	,, ...	Fms. 911 & 138 3.11.32 to 30.1.33	7.2.33
168 *†	*Clan Mactaggart*	West, W. F.	F. H. Houghton, H. R. Crosscombe.	W. T. Ash ...	,,	,, ...	,, ,, 31.10.32 to 24.1.33	31.1.33
002 *†	*Clan Macwhirter*	O'Bryne, C. E.... ...	M. J. Lewis, B. Hardinge, K. Simpson.	W. Scott ...	,,	,, ...	,, ,, 4.9.32 to 19.10.32	21.11.32
003 *†	*Clan Malcolm* ...	George, L. S.	K. Banks, N. N. Birtley, F. Hawkins.	W. B. Caldwell	,,	,, ...	,, ,, 11.10.32 to 10.1.33	16.1.33
283 *†	*Clan Morrison*...	Porterfield, W. M., Lt. Commr., R.N.R.	A. Hambley, E. Croucher, A. G. Beynon.	J. D. Dempster	,,	,, ...	,, ,, 29.6.32 to 15.2.33	6.3.33
259 *†	*Clan Sinclair* ...	Cater, H.	R. R. Baxter, D. McAllister	E. E. Webster ...	,,	,, ...	,, ,, 7.11.32 to 25.1.33	2.2.33
	Clan Urquhart ...	Young, G.	N. M. Graham	... ...	M.	,, ...	Fm. 911 26.1.33 to 12.2.33	7.3.33
	Colonial... ...	Harraden, W. E. ...	W. Moore, A. P. Brown, A. Smart.	... ...	,,	Harrison ...	,, 4.12.32 to 25.2.33	28.2.33
298 *†	*Comedian* ...	Bostock, O.	T. Winstanley, E. Whitehouse	... ...	,,	,, ...	Fms. 911 & 138 16.11.32 to 30.1.33	3.2.33
	Comliebank, M.V.	Currie, —	... ...	... ...	S.	A. Weir	... ...	...
185 ††	*Comorin* ...	Cartwright, C. W.,D.S.C.	R. E. Tucker, D. Meikle, D. S. Charles.	W. Stevenson ...	M.-S.	P. & O.	Fms. 911 & 138 26.10.32 to 4.1.33	5.1.33
198 *†	*Contractor* ...	Owen, W. T.	N. F. O'Neill, L. Siddon, R. Myles.	... ...	M.	Harrison ...	,, ,, 24.10.32 to 3.1.33	20.1.33
049 **	*Coptic*, M.V. ...	Christie, D.	P. Saville, W. Burt, G. A. Harvey.	P. M. Edwards	S.	Shaw, Savill & Albion.	,, ,, 3.9.32 to 3.12.32	21.12.32
258 ††	*Corfu*	French, F. E., R.D., Captain, R.N.R.	R. E. Baldwin-Wiseman, D. Fitzgerald Lombard, S. C. Cooke.	A. Macfarlane ...	M.-S.	P. & O.	,, ,, 20.10.32 to 3.2.33	27.2.33
100 *†	*Cornwall* ...	Reilly, H. E.	R. S. Miller, C. Saul, G. V. Harrison.	... ...	M.L.	Federal	Fm. 915 1.2.32 to 26.5.32	1.7.32
006 ††	*Coronado* ...	Thorburn, R. A., R.D., Commr., R.N.R.	H. J. Parrett, H. F. Leach, G. H. Binks.	R. A. Oakley ...	S.	Elders & Fyffes ...	Fms. 911 & 138 15.11.32 to 19.2.33	22.2.33
214 *†	*Counsellor* ...	Jackson, J.	A. A. Heaton, J. Davidson, E. B. Simmons.	J. Cunningham...	M.	Harrison ...	,, ,, 10.8.32 to 19.11.32	23.11.32
036 *†	*Cumberland* ...	Maltby, T. L.	D. Chadwick, W. Evans, J. McCulloch.	T. C. Bryant ...	S.	Federal ...	,, ,, 8.7.32 to 31.10.32	15.11.32
285 *†	*Custodian* ...	O'Connor, T.	W. H. Slaughter, J. L. Williams.	T. H. Martin ...	M.	Harrison ...	,, ,, 30.11.32 to 15.2.33	22.2.33
169 *†	*Dalgoma* ...	Beeching, P. H. ...	C. F. Okill	— Seaward ...	M.	British India ...	,, ,, 9.11.32 to 27.12.32	12.1.33
016 ††	*Darro*	Schlanbusch, O. V. ...	R. G. Owen	P. Cummins ...	M.-S.	Royal Mail ...	,, ,, 21.11.32 to 11.1.33	16.1.33
	Deebank ...	Robertson, J.	... ...	... ...	M.L.	A. Weir	... ...	...
260 *†	*Defender* ...	Kinloch, R.	A. M. Dewar	... ...	M.	Harrison ...	Fm. 911 4.9.32 to 28.11.32	6.12.32
	Delphic	Starr, W. B., R.D., Commr., R.N.R.	R. Conway	... ...	,,	White Star ...	... ...	...
	Designer ...	Hansen, W. A.... ...	D. Wolstenholm	... ...	,,	Harrison ...	Fm. 911 6.11.32 to 31.1.33	10.2.33
117 ††	*Desna*	Turner, E. A.	F. G. Dawson...	W. Davey ...	M.-S.	Royal Mail ...	Fms. 911 & 138 22.12.32 to 9.2.33	15.2.33
252 *†	*Devon*	Clarke, P. B., D.S.C.	G. Chaplin, J. D. Marks, R. Coen.	J. J. McCarthy...	M.	Federal	,, ,, 6.11.32 to 10.12.32	20.12.32
	Dieppe	Shaw, B.	E. Hill. A. K. Dewdney ...	A. Jones ...	S.	Southern Railway	Telegraphic Report 8.3.33	8.3.33
	Diplomat ...	Brown, H. L.	J. H. Roberts	... ...	M.	Harrison ...	Fm. 911 2.12.32 to 2.1.33	4.1.33
284 *†	*Director* ...	Worthington, B. ...	A. E. Rogers, H. W. Jones, W. H. Hunt	E. Allin... ...	,,	,, ...	Fms. 911 & 138 6.11.32 to 19.1.33	31.1.33
	Discoverer ...	Rowberry, W.		... ...	,,	,, ...	Fm. 911 11.10.32 to 25.12.32	30.12.32
138 *†	*Discovery II.*, R.R.S.	Carey, W. M., Commr., R.N.	R. A. B. Ardley, A. L. Nelson, F. E. C. Davies.	F. Brewer ...	M.L.	Falkland Is. Govt.	Fm. 915 15.8.32 to 14.12.32	18.2.33
136 *†	*Doric Star* ...	Capon, S. N.	A. F. Day, E. T. Blaxland, G. McIntyre.	H. Glover ...	M.	Blue Star ...	Fms. 911 & 138 2.11.32 to 21.1.33	13.2.33
275 *†	*Dramatist* ...	Meek, A. J.	R. L. Bryde, W H. Howard, C. W. Watts.	S. Lindsey ...	,,	Harrison ...	,, ,, 25.12.32 to 13.1.33	3.2.33
142 ††	*Duchess of Atholl*	McQueen, D. S. ...	A. E. Shergold, C. E. Duggan, E. V. Glennie.	E. Murphy ...	M.-S.	Canadian Pacific	,, ,, 4.12.32 to 21.1.33	23.1.33
152 ††	*Duchess of Bedford.*	Sibbons, H.	L. Outram, F. Stell	C. H. Sinclair ...	,,	,, ,, ,,	,, ,, 30.12.32 to 6.1.33	3.3.33
							Fm. 912 28.12.32 to 7.1.33	3.3.33
151 ††	*Duchess of Richmond.*	Freer, A., R.D., Capt., R.N.R.	J. B. Hewson, N. C. H. Scallon.	— Yorstan ...	,,	,, ,,	Fms. 911 & 138 28.11.32 to 14.12.32	17.12.32
143 ††	*Duchess of York*	Stuart, R. N., V.C., D.S.O., R.D.,Commr., R.N.R.	D. Parsons, S. W. Keary, J. B. Dobson.	J. Potts ...	,,	,, ,,	,, ,, 17.11.32 to 24.2.33	27.2.33
098 ††	*Dunbar Castle*, M.V.	Vincent, E. S., R.D., Commr., R.N.R.	M. H. Williams, J. A. Ferguson, A. E. Payne.	P. P. Williams...	S.	Union Castle ...	,, ,, 6.1.33 to 25.1.33	14.2.33

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.32.		Date Last Return Received.
052 *† *Dunster Grange*...	Wilson, G. F.	J. Allerton, E. G. Raynor, D. Murray.	E. Simmons ...	M.	Houlder	Fms. 911 & 138	21.11.32 to 7.2.33	13.2.33
102 *† *Duquesa* ...	Frost, C. R.	A. McEwan, F. D. Jones, R. F. Martin.	H. Francis ...	,,	Furness Withy ...	,, ,,	2.10.32 to 9.12.32	14.12.32
215 *† *Durenda*, M.V....	Blencowe, J.	T. M. Robertson, J. L. Harsland, R. Rippon.	W. Arnold ...	,,	British India ...	,, ,,	21.11.32 to 2.2.33	7.2.33
077 †† *Edinburgh Castle*	Barron, A.	W. Close	A. Blow ...	S.	Union Castle ...	,, ,,	12.11.32 to 5.3.33	7.3.33
107 *† *El Argentino*, M.V.	Ellis, F., D.S.C. ...	W. Findlay, J. Burch, C. G. Adlard.	E. Lovelock ...	M.	Houlder	,, ,,	10.10.32 to 13.12.32	4.1.33
009 *† *Elmworth*, M.V.	Dick, J.	R. Newlands	A. A. Alington...	,,	R. S. Dalgleish ...	,, ,,	7.1.33 to 4.2.33	27.2.33
158 *† *Elpenor* ...	Wilson, R. J.	F. Stott, A. J. Peard, W Stanger.	D. T. Perks ...	S.	A. Holt	,, ,,	3.9.32 to 22.12.32	29.12.32
108 *† *Elstree Grange*...	Williams, W. E. ...	P. A. Hawkesworth	R. Tilzey ...	M.	Houlder	,, ,,	20.9.32 to 15.12.32	13.2.33
109 *† *El Paraguayo* ...	Owen, R.	G. Fletcher, F. Rice, R. L. Aldridge.	A. W. Brackston	,,	,, ...	,, ,,	1.11.32 to 26.12.32	31.12.32
110 *† *El Uruguayo* ...	McNamara, T.... ...	F. E. Hailstone	N. Mackay ...	,,	,, ...	,, ,,	26.12.32 to 23.2.33	8.3.33
088 *† *Empire Star* ...	Owen, G., R.D., Lt.-Commr., R.N.R.	R. Thorne, R. McIlraith, P. H. Hunt.	C. Castle ...	S.	Blue Star ...	,, ,,	3.12.32 to 28.2.33	3.3.33
066 †† *Empress of Australia*.	Griffith, E., Lt.-Commr., R.N.R.	D. F. Pennington, E. Roberts, A. H. Pigott.	J. B. Butler ...	,,	Canadian Pacific	,, ,,	24.9.32 to 14.10.32	17.10.32
034 †† *Empress of Britain*.	Latta, R. G.	W. P. Phillips, J. H. Tudor, N. W. Duck.	L. B. Cleary ...	,,	,, ,,	,, ,,	24.11.32 to 7.1.33	23.2.33
154 †† *Empress of Canada*.	Hailey, A. J., Lt.-Commr., R.N.R.	C. F. Altree, G. W. R. Graves, W. C. Halliday.	W. O. Thomas...	M.L.	,, ,,	Fm. 915	3.6.32 to 20.9.32	9.11.32
153 †† *Empress of Japan*	Douglas, L. D., R.D., Lt.-Commr., R.N.R.	R. Wolfenden	... ...	,,	,, ,,	,,	1.7.32 to 10.12.32	6.2.33
022 *† *Esperance Bay*	McKenzie, R.	C. Jennings	... ...	M.	Aberdeen Commonwealth.	... ...	... ...	...
Explorer ...	Allan, J.	A. Stout, F. O. Sheeley ...	... ...	M.L.	Scottish Fishery Brd.	Fm. 915	1.6.32to 16.11.32	6.12.32
074 *† *Fordsdale* ...	Avern, J., Commr., R.N.R.	W. Thompson, S. Reeve, R. H. Jones.	T. Holder ...	M.	Aberdeen Commonwealth.	Fms. 911 & 138	10.7.32 to 3.11.32	23.11.32
030 †† *Franconia* ...	Gibbons, G., R.D., A.D.C., Capt., R.N.R.	P. G. Britten, J. Ashcroft, W. B. Tanner.	J. Harvey ...	S.	Cunard	,, ,,	16.1.33 to 22.1.33	1.2.33
159 *† *Fresno City* ...	Davies, D.	F.W. P. Davies, B. E. Duffield, R. E. Shilstone.	E. Torr ...	M..L	Reardon Smith ...	Fm. 915	22.8.32 to 18.11.32	24.11.32
186 †† *Georgic* ...	Summers, F. F., R.D., Commr., R.N.R.	J. H. Walker, S. V. Boden, J. Law.	H. S. Reid ...	S.	White Star ...	Fms. 911 & 138	21.11.32 to 8.2.33	22.2.33
234 *† *Glaucus* ...	Beale, H. E.	P. S. Atkins	G. T. B. Pearce	M.L.	A. Holt	Fm. 915	1.2.32 to 25.8.32	9.11.32
126 *† *Glengarry*, M.V.	Angier, J.	R. W. Brooks, P. G. Neill, S. W. Bell.	W. Harris ...	M.	Glen	Fms. 911 & 138	10.10.32 to 20.1.33	24.1.33
085 *† *Governor* ...	Flynn, D.	A. Watson, J. Stanhope ...	G. Shaw ...	,,	Harrison ...	,, ,,	4.12.32 to 17.1.33	27.1.33
111 *† *Hardwicke Grange*	Fowler, W. H. ...	W. L. Baker, A. O. Seyvold, W. E. Ellis.	... ...	M.	Houlder ...	,, ,,	8.11.31 to 27.7.32	2.8.32
294 *† *Harmonides* ...	Elwell, F. R.	E. E. Avery, H. G. McPherson, T. G. Mitchell.	F. McCarthy ...	S.	R. P. Houston	Fm. 911	8.11.32 to 25.1.33	10.2.33
262 ** *Hauraki*, M.V.	Norton, A. T.	J. Warwick, J. Thompson, E. R. Pate.	S. Stafford ...	M.L.	Union S.S. Co., N.Z.	Fm. 915	4.2.32 to 25.7.32	3.10.32
253 *† *Hertford* ...	Burton Davies, J. ...	P Shakespeare, W. H. Timberlake, P. Block.	P. Maroney ...	,,	Federal ...	,,	24.3.32 to 29.7.32	8.8.32
Hibernia ...	Williams, E. R. ...	R. Woodall	... ...	S.	L.M. & S. Railway	Telegraphic Report 17.2.33 ...		17.2.33
182 †† *Highland Brigade*	Miles, F. R., R.D. Capt., R.N.R.	W. Williams	G. Grieve ...	M.	Royal Mail ...	Fms. 911 & 138	12.12.32 to 1.2.33	6.2.33
116 †† *Highland Chieftain* M.V.	Simmonds, P. C. ...	H. Chamberlain, J. James ...	J. C. Evans ...	M.-S.	,, ...	,, ,,	14.11.32 to 1.1.33	12.1.33
099 †† *Highland Monarch* M.V.	Clayton, R. G., D.S.C., R.D., Commr., R.N.R.	R. N. Fletcher, E. V. Scullard, R. E. Slinn.	E. J. Atkin ...	,,	,, ...	,, ,,	31.10.32 to 28.2.33	8.3.33
230 †† *Highland Patriot*	Robinson, R. H. ...	F. W. Collinson, G. E. Leech	A. S. Hylton ...	,,	,, ...	,, ,,	29.12.32 to 12.2.33	20.2.33
250 †† *Highland Princess* M.V.	Collings, D.	C. E. Leech, J. H. Fitton, D. Seabrook.	N. H. Aldesley	,,	,, ...	,, ,,	13.7.32 to 28.8.32	5.9.32
075 *† *Hobson's Bay* ...	Roberts, T. V., R.D., Commr, R.N.R.	F. L. Grose	— Porter ...	M.	Aberdeen Commonwealth.	,, ,,	24.7.32 to 19.10.32	2.11.32
026 †† *Homeric* ...	Frank, F. A., D.S.O., R.D., Commr., R.N.R.	B. Harrison, A. Dyer, J. Waltaire.	... ...	S.	White Star ...	Fm. 911	22.12.32 to 22.2.33	24.2.33
261 *† *Huntingdon* ...	Field, H. G. B. ...	C. W. Roberts, T. K. Macdonald, A. R. Rae.	A. Mugridge ...	,,	Federal ...	Fms. 911 & 138	15.10.32 to 29.1.33	10.2.33
200 *† *Huntsman* ...	Russell, H. ...	J. Richardson	J. Young ...	M.	Harrison ...	,, ,,	30.5.32 to 5.10.32	8.10.32
235 *† *Hurunui* ...	Pretty, F. C., D.S.C. ...	R. Dunning, T. Farrar, J. C. Cordran.	C. Beadell ...	S.	New Zealand Shipping.	,, ,,	19.6.32 to 14.11.32	17.11.32
289 *† *Inanda* ...	Gibbings, W. H. ...	D. C. Brown, R. L. Williams, J. Haycocks.	E. J Cook ...	M.	Harrison ...	,, ,,	5.11.32 to 15.2.33	27.2.33
Ingoma	Richardson, R. ...	D. D. Kerr	... ...	,,	,, ...	Fm. 911	4.12.32 to 14.1.33	23.1.33
160 *† *Ixion* ...	Davis, A. L.	F. C. Oppen, F. Gray, W. D. Smith.	A. E. Morgan ...	M.L.	A. Holt	Fm. 915	10.3.32 to 16.8.32	20.10.32
226 *† *Javanese Prince*, M.V.	Smith, J.	W. M. Henry, V. C. Palmer, E. S. Oberdorf.	F. Compton ...	M.L.	Prince	,,	9.5.32 to 6.10.32	28.11.32
188 †† *Kaisar-i-Hind* ...	Cotching, W. A. ...	J. Travis, G. B. Roche, J. K. Wright.	R. V. McCreath	M.	P. & O.	Fms. 911 & 138	30.10.32 to 2.2.33	6.2.33
041 *† *Karamea*, M.V.	Dawson, W.	H. A. Hill, N. S. Milne, C. W. Senoall.	T. Cheevers ...	S.	Shaw, Savill & Albion.	Fm. 915	23.9.32 to 19.1.33	23.1.33
217 *† *Karapara* ...	White, R. W.	C. Jackman, H. Pearson, W. H. Williams.	L. C. Cox ...	M.	British India ...	Fms. 911 & 138	29.10.32 to 19.12.32	9.1.33
Kemmendine ...	Plage, W. C. C. ...	J. H. Wilson	... ...	,,	Henderson ...	Fm. 911	3.12.32 to 15.2.33	3.3.33
114 *† *Kenya* ...	Fitzherbert, D. C. ...	G. E. Stephenson, P. Lusher, D. MacAllum.	E. Howard ...	,,	British India ...	Fms. 911 & 138	6.10.32 to 12.1.33	6.2.33
218 *† *Khandalla* ...	Hobday, H.	H. F. Stott, P. G. Sims, T. E. Evans.	J. Tynan ...	,,	,, ,, ...	,, ,,	15.10.32 to 5.12.32	30.1.33
147 †† *Laconia* ...	Hawkes, W. A., R.D., Capt., R.N.R.	J. D. Archer, M. Boston, G. Noonan.	W. McArdie ...	S.	Cunard	,, ,,	13.12.32 to 1.1.33	9.1.33
193 *† *Lahore*	Hollow, J. H.	J. G. K. Gregory, F. Hull, W. H. Prentice.	L. Arnold ...	M.	P. & O.	,, ,,	27.11.32 to 18.2.33	21.2.33

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received
167 †† *Lancastria* ...	Dolphin, G. R., R.D., Commr., R.N.R.	D. M. Maclean, J. C. Dawsons, J. Crosbie.	R. M. Shore ...	S.	Cunard	Fms. 911 & 138 25.12.32 to 14.1.33	17.1.33
082 *† *La Paz*, M.V. ...	Hough, R. J. ...	G. Pattison, R. Roberts, S. E. Ayland.	A. B. Carr ...	M.	Pacific S.N. Co.	,, ,, 1.11.32 to 21.2.33	1.3.33
134 †† *Lapland* ...	Harvey. H, ...	F. Good, —. Wood, W. A. Fletcher.	... ...	S.	Red Star ...	,, ,, 1.5.32 to 26.6.32	25.6.32
076 *† *Largs Bay* ...	Jermyn, W. M. ...	H. M. Howe, C. W. Tombs ...	S. P. Lewis ...	M.	Aberdeen Commonwealth.	,, ,, 14.10.32 to 15.1.33	7.2.33
112 *† *La Rosarina* ...	Webb, C.	W. S. Hamblin, T. C. Townsend, S. W. Howell.	J. Hunt ...	,,	Houlder	,, ,, 27.11.32 to 2.2.33	7.2.33
267 *† *Lassell*	Leicester, F. S. ...	A. N. Blundell, — Sweeney. — Christie.	... ...	S.	Lamport & Holt	,, ,, 3.5.32 to 28.7.32	3.8.32
064 †† *Laurentic* ...	Hume, R.	J. Dray, A. Thompson, R. Hawkins.	W. Davies ...	,,	White Star ...	,, ,, 16.1.33 to 4.3.33	8.3.33
083 *† *Lautaro*, M.V. ...	Kirkwood, J. H. ...	J. Williams, G. B. Wardale	D. Irwin ...	M.	Pacific S.N. Co....	,, ,, 30.12.32 to 17.1.33	9.2.33
254 *† *Limerick* ...	Molyneux, P. L. ...	J. Trotter, N. A. Thomas ...	E. K. Roberts ...	,,	Federal	,, ,, 8.10.32 to 13.11.32	28.11.32
093 *† *Llandaff Castle*...	Le Brocq, C.	J. E. R. Wilford	G. S. Lewis ...	S.	Union Castle ...	,, ,, 3.11.32 to 8.1.33	12.1.33
097 †† *Llangibby Castle*, M.V.	Linklater, H.	G. W. Lloyd	T. Gilbert ...	,,	,, ,, ...	,, ,, 3.12.32 to 3.2.33	6.2.33
094 *† *Llandovery Castle*	Morgan, A. O., R.D., Commr., R.N.R.	T. C. Goldstone, R. D. Cambridge.	A. E. Hunter ...	,,	,, ,, ...	,, ,, 11.10.32 to 4.3.33	7.3.33
216 *† *Llanstephan Castle*	Bickford, C. N. ...	S. Smith, W. F. Smuts ...	A. Sutton ...	,,	,, ,, ...	,, ,, 13.11.32 to 12.1.33	20.1.33
084 *† *Lobos*, M.V. ...	Good, W. T.	E. F. Pottes, E. C. Hicks ...	R. W. Currie ...	M.	Pacific S.N. Co....	,, ,, 27.11.32 to 15.12.32	3.1.33
137 *† *Logician* ...	Herschel, R. J. ...	E. L. Stockley, J. Wallis, W. R. Mackenzie.	W. T. Sharpe ...	,,	Harrison ...	,, ,, 14.11.32 to 8.2.33	10.2.33
008 *† *Losada*, M.V. ...	Ridyard, A.	L. W. Hutchinson	G. McArthur ...	,,	Pacific S.N. Co....	,, ,, 3.10.32 to 20.1.33	24.1.33
232 *† *Madura* ...	Wright, J. A.	A. Usher, W. Bain L. G. Tolfree.	E. Habicht ...	M.	British India ...	Fms. 911 & 138 23.10.32 to 12.1.33	17.1.33
078 *† *Magician* ...	Bury, E. R.	W. E. Shotton, R. F. Hart ...	J. Whitfield ...	,,	Harrison ...	,, ,, 12.2.33 to 1.3.33	6.3.33
141 *† *Mahia*	Andrews, C. M. ...	C. C. Good, M. P. Congdon, J. Jackson.	C. A. Wight ...	S.	Shaw, Savill & Albion.	,, ,, 21.5.32 to 10.9.32	15.10.32
140 *† *Mahratta* ...	Colombine, T. F. ...	T. C. Eddy, H. F. Scoins, W. J. Wilson.	H. Henshaw ...	M.	Brocklebank ...	,, ,, 28.12.32 to 21.1.33	20.2.33
014 *† *Mahronda* ...	Hanna, R. G.	W. Le Brocq, M. Melville, H. Willington.	W. Pitch ...	,,	,, ...	,, ,, 25.11.32 to 12.1.33	7.2.33
242 *† *Mahseer* ...	Tyson, T. A.	J. W. Robertson, R. Humble, J. Henshaw.	... ...	,,	,, ...	,, ,, 26.11.32 to 13.2.33	22.2.33
015 *† *Mahsud* ...	Kershaw, R. W. ...	H. Gillespie, J. R. Paisley, C. A. Jackson.	G. D. Plank ...	,,	,, ...	,, ,, 16.8.32 to 5.11.32	14.11.32
042 *† *Maimoa* ...	Thurston, H. P. ...	A. D. Masters, W. A. Rogers, J. A. McNab.	C. Barrett ...	S.	Shaw, Savill & Albion.	Fm. 915 18.7.32 to 24.11.32	1.12.32
054 †† *Majestic* ...	Trant, E. L., R.D., Commr., R.N.R.	R. B. O'Brien, E. A. Stuart, T. Thompson.	J. R. Thomson...	,,	White Star ...	Fms. 911 & 138 2.12.32 to 3.3.33	6.3.33
018 *† *Makalla* ...	Maughan, J. W. ...	A. C. Hocking, J. Richardson	B. J. Smith ...	M.	Brocklebank ...	,, ,, 14.12.32 to 23.12.32	29.12.32
225 ** *Makura* ...	MacDonald, D. ...	A. P. Cousin, L. P. Bourke, T. W. Germein.	E. J. Gough ...	M.L.	Canadian-Australasian	Fm. 915 7.7.32 to 22.10.32	15.12.32
236 ** *Malayan Prince*	Holloway, J.	R. M. Dennis, G. P. Freeman, C. H. Dunford.	F. W. Williams...	,,	Prince	,, 28.6.32 to 4.12.32	23.1.33
219 *† *Malda*	Maples, S. H.	D. Macfadyen, P. Morley, L. A. Wintle.	L. Hugo ...	M.	British India ...	Fms. 911 & 138 24.9.32 to 15.12.32	22.12.32
195 †† *Maloja*	Browning, J. B., R.D., Commr., R.N.R.	J. D. Green, G. R. Peters, D. Buckle.	P. T. Darby ...	M.-S.	P. & O.	,, ,, 24.9.32 to 28.12.32	2.1.33
146 *† *Mandasor* ...	Ison, W. A.	F. C. Madden, J. B. Leigh, C. L. Miller.	R. H. Jones ...	M.	Brocklebank ...	,, ,, 23.10.32 to 28.12.32	2.1.33
Manela	Gilchrist, J. W. ...	W. B. James	... ...	,,	British India ...	... ...	...
177 *† *Mantola* ...	James, D. F.	W. R. Day, S. Henderson, C. R. B. Mumford.	J. A. Vallance ...	,,	,, ,, ...	Fms. 911 & 138 31.8.32 to 20.11.32	28.11.32
197 †† *Mantua* ...	Cochrane, C. H. ...	J. L. Dunkley, T. G. Wilde, G. du Fosse.	E. L. Docker ...	M.-S.	P. & O.	,, ,, 4.12.32 to 22.12.32	16.1.33
222 †† *Margha* ...	Kitson, G. A.	J. Small, P. Wright, P. Vaughan.	C. Harris ...	S.	British India ...	,, ,, 13.12.32 to 29.2.32	3.3.33
104 *† *Marquesa* ...	Smiles, R. S.	J. Wetherell	J. Cleary ...	M.	Furness Houlder	,, ,, 14.11.32 to 24.1.33	27.1.33
Mashobra ...	Beytagh, J.	... ...	... ...	M.-S.	British India ...	... ...	...
021 *† *Masula*	Fitt, W. A.	N. W. West, B. A. Rogers, T. Mather.	... ...	M.	,, ,, ...	Fms. 911 & 138 1.11.32 to 11.1.33	20.1.33
251 *† *Matakana* ...	West, W. G.	A. G. Collins, H. Thompson, A. Warren.	H. Bond ...	S.	Shaw, Savill & Albion	,, ,, 8.8.32 to 16.11.32	28.11.32
221 †† *Mataroa* ...	Gaskell, J. H., R.D., Lt. Commr., R.N.R.	D. N. MacGregor, L. R. Bull, W. Hill.	G. H. Tuck ...	M.L.	,, ,, ,,	Fm. 915 7.10.32 to 16.1.33	20.1.33
023 *† *Matheran* ...	Fulcher, H. D.... ...	H. E. MacGregor, H. G. Allan, E. W. Lewis.	T. J. Williams ...	M.	Brocklebank ...	Fms. 911 & 138 12.12.32 to 16.2.33	20.2.33
223 *† *Matiana* ...	Green, F. V.	J. S. Thomson, W. F. Solly, J. Wills.	T. Todd ...	,,	British India ...	,, ,, 20.11.32 to 9.2.33	15.2.33
024 *† *Matra*	Cornish, N. P.	G. Shaw, W. Robertson, G. Henshaw.	H. Parsons ...	,,	Brocklebank ...	,, ,, 20.6.32 to 25.10.32	8.11.32
032 †† *Mauretania* ...	Peel, R. V., R.D., Capt., R.N.R.	R. H. C. Crawford, E. W. Connell, L. R. Sharpe.	A. H. Farman ...	S.	Cunard	,, ,, 4.9.32 to 9.10.32	11.10.32
278 *† *Middlesex* ...	Almond, J. G.	S. Butler, G. C. Hocart, J. R. Ricketts.	E. Lawrence ...	,,	Federal	,, ,, 18.6.32 to 15.10.32	21.10.32
194 †† *Moldavia* ...	Allin, C. H. C.	J. K. Crone, E. J. Kerridge, W. H. Wood-Roe.	K. G. Barber ...	M.-S.	P. & O.	,, ,, 4.12.32 to 10.2.33	6.3.33
199 †† *Mongolia* ...	Rhodes, H. R. ...	H. Tee, H. C. Slinn, H. K. King.	A. Morris ...	,,	,, ...	,, ,, 27.10.32 to 12.1.33	25.1.33
148 †† *Montcalm* ...	Rothwell, A.	W. P. Haines, T. L. Gillette, J. Shearer.	J. Biggins ...	,,	Canadian Pacific	,, ,, 27.11.32 to 10.2.33	20.2.33
						Fm. 912 1.12.32 to 14.12.32	20.12.32
149 †† *Montclare* ...	Turnbull, J., C.B.E., R.D., Capt., R.N.R.	J. Soames, D. Dunn, W. E. Bacon.	A. G. Hill ...	,,	,, ,,	Fms. 911 & 138 18.12.32 to 4.3.33	7.3.33
150 †† *Montrose* ...	Dott, J. F.	P. L. S. Blaxendale, A. C. Harrison, K. Hutchings.	S. Hewitt ...	,,	,, ,,	,, ,, 11.12.32 to 18.2.33	21.2.33
164 †† *Mooltan*... ...	Morton, A. J.	J. M. Sinclair, A. Denis, N. Thompson.	J. E. Marsh ...	,,	P. & O.	,, ,, 11.9.32 to 23.11.32	28.11.32

	Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received.
196 ††	*Mulbera*	Parkin, J. W.	P. M. Wilson	... ...	M.-S.	British India ...	Fm. 911 5.1.33 to 15.2.33	22.2.33
290 *†	*Musician* ...	Cadogan, A.	K. H. Davies, H. Philpott, W. Rennie.	P. Dillon ...	M.	Harrison ...	Fms. 911 & 138 10.12.32 to 4.2.33	9.2.33
073 *†	*Nagara*	Falconer, A. C. ...	F. B. Collinson	W. Guthrie ...	M.	Royal Mail ...	Fms. 911 & 138 14.7.32 to 8.9.32	12.9.32
201 ††	*Naldera* ...	Harrison, R., D.S.O., R.D., A.D.C., Capt. R.N.R.	E. J. R. North, R. D. W. Mackay, E. V. Lewis.	R. T. Soans ...	S.	P. & O.	,, ,, 18.12.32 to 30.12.32	23.1.33
	Nankin	Skinner, M. B.... ...	... ...	... ...	M.L.	Eastern and Australian.	... ...	...
286 *†	*Natia*	Weller, S.	C. C. Prosser, F. A. C. Thacker, G. H. Gammon.	G. W. Durrant...	M.	Royal Mail ...	Fms. 911 & 138 11.11.32 to 19.1.33	23.1.33
227 *†	*Nardana* ...	Reilly, J. V.	T. Warland, H. Goater, A. Woodward.	R. Rawcliffe ...	,,	British India ...	,, ,, 9.5.31 to 7.11.32	17.11.32
202 ††	*Narkunda* ...	Sudell, F., R.D., Commr., R.N.R.	J. O. V. Young, G. Randall, G. Copeland.	W. Banbery ...	M.-S.	P. & O.	,, ,, 19.11.32 to 23.2.33	27.2.33
027 *†	*Nebraska* ...	Davies, B. J.	C. K. Brown, P. R. Cocks, G. B. Medlycott.	H. Ormiston ...	M.	Royal Mail ...	,, ,, 2.10.32 to 23.12.32	29.12.32
	Nellore	Bright, H. A.	... ...	... ...	M.L.	Eastern and Australian.	... ...	...
	Nerbudda ...	Parker, A. A.	F. D. Copeland	... ...	M	British India ...	... ...	...
162 *†	*Nestor*	Adcock, F.	A. V. Potter, P. Elder, W. Pearse.	C. F. Townsend	S.	A. Holt	Fms. 911 & 138 28.10.32 to 9.12.32	14.12.32
210 **	*Niagara*... ...	Hill, T. V.	G. H. Kime, D. A. Menlove, J. W. S. Madden.	C. F. G. Taylor	M.L.	Canadian-Australasian.	Fm. 915 31.3.32 to 16.7.32	8.9.32
256 *†	*Norfolk*	McNish, R. L. H., D.S.O., Lt.-Commr., R.N.R.	E. A. Quick, G. D. Lyver, G. E. Mason.	B. G. Wheeler ...	,,	Federal	Fm. 915 20.8.32 to 10.1.33 Fm. 912 7.12.32 to 9.12.32	14.1.33 14.1.33
297 *†	*Northumberland*	Upton, H. L., D.S.C., R.D., Commr., R.N.R.	H. S. Cashmore, G. B. Cathie, H. I. Phillips.	M. Savage ...	,,	,, ...	Fms. 911 & 138 7.6.32 to 2.10.32	6.10.32
231 *†	*Nuddea* ...	Cockburn, M.	D. A. Jones, T. Hodgkinson, B. Emmerson.	A. Aspain ...	M.	British India ...	,, ,, 13.11.32 to 21.11.32	19.12.32
	Observer ...	Lowe, J.	J. Hamden, W. J. Wearing, G. Greaves.	... ...	M.	Harrison ...	Fm. 911 14.11.32 to 8.2.33	16.2.33
004 ††	*Olympic* ...	Binks, J. W., R.D., Lt.-Commr., R.N.R.	... ...	... ...	S.	White Star ...	... ...	...
243 *†	*Opawa*, M.V. ...	Robinson, F. W. ...	H. D. Horwood, H. P. Williamson, R. H. Chapman.	F. W. Fowler ...	M.	New Zealand Shipping.	Fm. 915 29.8.32 to 6.12.32 Fm. 912 29.8.32 to 6.12.32	17.12.32 17.12.32
170 ††	*Orama*	Thorne, G. G., R.D., Commr., R.N.R.	B. W. Gordon, C. H. Denton, L. Sly.	J. Willson ...	S.	Orient	Fms. 911 & 138 14.11.32 to 31.1.33	10.2.33
080 *†	*Orari*	Ashworth, F. ...	M. Johnson, J. H. Underwood, C. R. Brown.	W. E. Fordham	M.	New Zealand Shipping.	,, ,, 6.8.32 to 14.12.32	24.1.33
086 ††	*Orcoma*	Roberts, E.	D. I. Jones, P. H. Hockey, M. Armstrong.	J. J. Moore ...	M.-S.	Pacific S.N. Co.	,, ,, 20.12.32 to 24.2.33	3.3.33
087 ††	*Orduna*	Galloway, M.	R. Eckford, P. Roy	A. Alton ...	,,	,, ,,	,, ,, 9.10.32 to 19.12.32	24.12.32
171 ††	*Orford*	Owens, A. L., R.D., Capt. R.N.R.	R. T. Galpin, K. M. Morrison, R. Sargent.	H. Cheese ...	,,	Orient	Fm. 911 2.10.32 to 3.1.33	13.1.33
174 ††	*Ormonde* ...	James, L. V., D.S.C.	T. L. Shurrock, N. Smith, C. Blake.	... ...	S.	,, ...	Fms. 911 & 138 6.3.32 to 7.6.32	16.6.32
172 ††	*Oronsay* ...	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	C. W. Pinckney, O. C. Davies, E. M. Mackay.	B. Baxter ...	,,	,, ...	,, ,, 13.11.32 to 15.2.33	23.2.33
173 ††	*Orontes* ...	O'Sullevan, F. R. ...	F. S. Gray, J. M. Swanson, W. L. Mackay.	S. G. Boons ...	M.-S.	,, ...	,, ,, 19.9.32 to 20.12.32	23.12.32
105 ††	*Orsova* ...	Sarson, M. J.	J. L. Skilling, J. D. Birch, E. V. Bilger.	R. Knights ...	S.	,, ...	,, ,, 17.10.32 to 17.1.33	2.2.33
206 *†	*Otira*	Johnson, J. W. ...	A. J. Turnbull, K. Miller, D. Campbell.	G. Walters ...	M.	Shaw, Savill & Albion.	,, ,, 9.7.32 to 4.11.32	21.11.32
156 ††	*Otranto* ...	Staunton, H. G., C.B.E., R.D., Commr., R.N.R	A. E. Coles, A. Addison, C. R. Grandage.	J. Curry ...	M.-S.	Orient	,, ,, 27.11.32 to 7.12.32	9.12.32
051 *†	*Pacific Enterprise*	Newman, G. W. A. ...	S. C. White, A. C Bailey ...	W. Evans ...	S.	Furness Withy ...	Fm. 915 7.10.32 to 27.12.32	26.1.33
279 *†	*Pacific Exporter*	Holland, C. E., R.D., Commr., R.N.R.	W. Edmonds	C. North ...	,,	,, ,, ...	Fms. 911 & 138 5.11.32 to 25.1.33	1.3.33
	Paris	Lidbetter, W.	E. A. Biles	A. S. Wood ...	,,	Southern Rly. ...	Telegraphic Report. 7.3.33 ...	7.3.33
	Patrician ...	Lowe, J.	J. H. Diamond, W. E. Williams.	... ...	M.	Harrison ...	Fm. 911 24.7.32 to 17.9.32	28.9.32
058 ††	*Pennland* ...	Making, L. V.	C. H. Otterson, J. R. Rowe, R. Fairnie.	R. Hammond ...	S.	Red Star ...	Fms. 911 & 138 20.11.32 to 5.3.33	7.3.33
204 *†	*Peshawur* ...	Biggs, J. H.	R. A. B. Kempton, G. V. Legassick.	S. J. Evans ...	M.	P. & O.	,, ,, 9.10.32 to 26.1.33	3.2.33
	Phemius ...	Dodds, R.	... ...	... ...	M.L.	A. Holt	... ...	...
238 *†	*Piako*	Aslin, E. P. C. ...	A. E. Williams, C. A. Cremin, J. F. Clement.	L. H. Leggett	M.	New Zealand Shipping.	Fms. 911 & 138 14.7.32 to 16.11.32 Fm. 912 14.7.32 to 16.11.32	28.11.32 28.11.32
039 *†	*Planter* ...	Ling, J. T.	W. S. Eustance, J. J. Devereux, J. C. Sinclair ...	S. J. Twigg ...	,,	Harrison ...	Fms. 911 & 138 12.9.32 to 14.12.32	20.12.32
040 *†	*Port Adelaide* ...	Williams, R.	D. F. Morgan, N. Muzzell, A. Watson.	G. H. Beckett ...	S.	Commonwealth & Dominion.	,, ,, 7.9.32 to 21.12.32	9.1.33
255 *†	*Port Alma* ...	Hayter, S. W.	E. E. Roswell, E. Wheeler, H. B. Walker.	G. J. Price ...	,,	,, ,, ,,	,, ,, 3.11.32 to 7.12.32	9.1.33
128 *†	*Port Auckland* ...	Robinson, C. A. ...	G. C. Langford, A. Brown, W. Henderson.	E. Wrightson ...	,,	,, ,, ,,	Fm. 915 28.8.32 to 18.12.32	10.1.33
268 *†	*Port Bowen* ...	Needham, R. ...	F. R. Gorman, T. L. Kidwell, P. R. Bradnee.	C. Holmes ...	,,	,, ,, ,,	Fms. 911 & 138 5.5.32 to 2.9.32	27.9.32
130 *†	*Port Caroline* ...	Hearn, G. W.	E. W. R. Young, J. G. Thorn, V. N. Ford.	G. F. Price ...	,,	,, ,, ,,	Fm. 915 21.4.32 to 4.8.32	20.8.32
131 *†	*Port Darwin* ...	Hudson, J. J.	K. D. Morgan, G. W. Horton, L. B. Philpotts.	C. A. Wells ...	,,	,, ,, ,,	Fms. 911 & 138 5.9.32 to 29.12.32	23.1.33
	Port Denison ...	Hale, G. S.	... ...	... ...	M.L.	,, ,, ,,	... ...	...
133 *†	*Port Dunedin*, M.V.	Mason, W. S., D.S.C. ...	G. Lovegrove, W. Eastoe, H. Duckling.	O. B. Read ...	,,	,, ,, ,, ,,	Fm. 915 19.9.32 to 5.1.33 Fm. 912 4.12.32 to 9.12.32	11.1.33 11.1.33

	Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.		Date Last Return Received.
010 *†	*Port Fremantle*, M.V.	Gilling, W.	H. M. Post, G. F. Parnett, C. J. Gorley.	H. West ...	M.L.	Commonwealth and Dominion	Fm. 915	30.9.32 to 19.1.33	25.1.32
176 *†	*Port Gisborne*, M.V.	Higgs, W. G.	R. B. Linklater, L. J. Skailes, C. E. Midwinter.	H. Olding ...	,,	,, ,, ,,	,,	9.9.32 to 10.12.32	5.1.33
135 *†	*Port Hunter* ...	Durham, R. S., D.S.C.	G. T. C. Harris, C. R. Townshend, P. A. Mundy.	W. A. Bassom	,,	,, ,, ,,	Fm. 915 Fm. 912	15.10.32 to 22.2.33 22.1.33	28.2.32 1.3.33
129 *†	*Port Wellington*	Jones, C. N.	W. B. Hopkins	... ...	S.	,, ,, ,,	Fm. 911	12.7.32 to 17.8.32	19.9.32
106 *†	*Princesa* ...	Friend, A. B.	E. Longheed, O. S. Sheard, F. Poulson.	J. Heath ...	M.	Houlder	Fms. 911 & 138	18.12.32 to 22.2.33	1.3.33
163 *†	*Protesilaus* ...	Williams, J. P. ...	W. Dods, A. Anderson, A. S. Brotherton.	F. C. Wall ...	M.L.	A. Holt	Fm. 915	5.5.32 to 11.10.32	3.12.32
205 ††	*Rajputana* ...	Headlam, P. C., R.D., Commr., R.N.R.	G. Aspinall, H.C. F. Wright, W. C. Swabey.	A. F. Edwards...	M.-S.	P. & O.	Fms. 911 & 138	4.9.32 to 8.12.32	16.12.32
063 *†	*Rancher*... ...	McCullum, J.	G. Harvey, C. F. Minshull, A. O. Lewis.	... ...	M.	Harrison ...	,, ,,	29.2.32 to 12.5.32	17.5.32
228 ††	*Ranchi*	Hignett, A. H., R.D., Commr., R.N.R.	J. Paice, J. P. McArthur, C. B. Holmes.	H. S. Hoyn ...	M.-S.	P. & O.	,, ,,	19.11.32 to 16.2.33	20.2.33
224 ††	*Rangitane* ...	Mackellar, A. W., R.D., Capt., R.N.R.	R. C. Aldridge, C. J. Guille, S. R. Leggett.	W. Smith ...	,,	New Zealand Shipping	... ...	3.11.32 to 23.1.33	27.1.33
257 ††	*Rangitata*, M.V.	Hunter, J. L. B. ...	L. Griffiths, J. Clarke, S. Leggett.	C. E. Terry ...	,,	,, ,, ,,	Fms. 911 & 138	2.7.32 to 6.10.32	17.10.32
240 ††	*Rangitiki*, M.V.	Barnett, H.	L. F. Malcouronne, T. E. Davies, F. S. Marchinston.	L. V. Horn ...	,,	,, ,, ,,	,, ,,	24.9.32 to 26.12.32	9.1.33
207 ††	*Ranpura* ...	Furlong, G. H. S., R.D., Capt. R.N.R.	G. Maclean, G. F. O'Bryen.	G. W. Bailey ...	,,	P. & O.	,, ,,	16.10.32 to 19.1.33	25.1.33
071 ††	*Rawalpindi* ...	Stringer, R. H., O.B.E., R.D., Commr.,R.N.R.	E. C. White, D. West, W. A. Stockglen.	J. D. Roll ...	,,	,, ...	,, ,,	2.10.32 to 16.11.32	25.11.32
247 *†	*Recorder* ...	Egerton, J. J.	A. S. Milne, H. C. Blyth, A. Robertson.	P. N. Fisher ...	M.	Harrison ...	,, ,,	25.9.32 to 3.12.32	6.12.32
132 *†	*Reina del Pacifico*, M.V.	Ross, J....	W. A. Hearle, R. Bridson, J. K. Campbell.	S. Hewitt ...	,,	Pacific S.N. Co....	,, ,,	16.11.32 to 4.1.33	10.1.33
239 *†	*Remuera* ...	Wilde, H. J.	F. Cooke, A. J. Angell, A. D. Wilson.	H. Dedman ...	M.L.	New Zealand Shipping	Fm. 915	26.8.32 to 2.12.32	13.12.32
	Rhexenor ...	Holden. W. R. F. ...	G. Edge	... ...	A.	A. Holt	Fm. 911	7.8.32 to 8.10.32	9.10.32
189 *†	*Rother*	Woodhead, T. H. ...	H. Robertson, A. Hiley ...	P. Hornby ...	S.	Goole Steam Shipping	Fms. 911 & 138	10.12.32 to 25.2.33	28.2.33
053 *†	*Rotorua* ...	Lamb, C. B.	... ...	... ...	M.L.	New Zealand Shipping	... ...		...
246 *†	*Ruahine* ...	Kinnell, G.	A. Hocken, R. Warren, L. Mercer.	F. G. Bedford ...	,,	,, ,, ,,	Fm. 915	23.10.32 to 13.2.33	18.2.33
	St. Helier ...	Pitman, R.	... ...	... ...	S.	G.W. Railway ...	Telegraphic Report	31.12.32	31.12.32
	St. Julien ...	Richardson, L.... ...	H. O. Freeman, T. E. Martin	... ...	,,	,, ,, ...	,, ,,	4.3.33	4.3.33
	St. Minver, S.T.	Hatton, A.	... ...	... ...	A.	Bunch Steam Fishing Co.	Fm. 911	4.12.32 to 13.12.32	16.12.32
	St. Patrick ...	Sanderson, C. W. ...	T. D. Thomas	... ...	S.	G.W. Railway ...	Telegraphic Report	13.7.32	13.7.32
038 ††	*Samaria* ...	Malin, R. G., Lt.-Commr., R.N.R.	E. Gleave, F. P. Collins, J. F. Drake.	F. H. Williams...	,,	Cunard ...	Fms. 911 & 138	30.1.33 to 18.2.33	22.2.33
061 *†	*Saxon Star* ...	Williams, T.	K. Griffiths	J. Moore ...	,,	Blue Star ...	Fms. 911 & 138	10.7.32 to 24.10.32	7.11.32
291 *†	*Scholar*	Whyte, D. L.	A. E. Jackson, D. O. Percy...	W. Ronaldson...	M.	Harrison ...	,, ,,	21.8.32 to 18.10.32	22.10.32
	Scotia	O'Neill, J.	W. H. Hughes	... ...	S.	L.M. & S. Railway	Telegraphic Report	8.3.33	8.3.33
033 ††	*Scythia*	Oram, B. B., R.D., Commr., R.N.R.	W. M. Stewart, A. Bridgewater A. B. Fasting.	R. M. Shaw ...	,,	Cunard ...	Fms. 911 & 138	23.1.33 to 11.2.33	20.2.33
211 *†	*Shropshire*, M.V.	Lyon, H. S.	D. Hetherington, J. D. Minton, G. W. Dobson.	D. McLellan ...	,,	Bibby	Fms. 911 & 138	27.11.32 to 1.2.33	9.2.33
121 *†	*Siamese Prince*	Jones, E. E.	J. P. Wedgwood, P. F. Owens, R. A. Brock.	A. Simpson ...	M.L.	Prince	Fm. 915	7.4.32 to 16.8.32	20.10.32
	Somerset ...	Pilcher, C. R.	... ...	... ...	,,	Federal	... ...	... ...	...
277 *†	*Spero*	Montgomery, H. ...	H. D. Vickers, A. Kirk ...	H. V. Chamberlain.	,,	Ellerman Wilson	Fm. 915	10.9.32 to 8.1.33	12.1.33
	Stephen ...	Jones, W. C. H., R.D., Commr., R.N.R.	A. Allan, R. D. Thomas, J. H. Stoker.	... ...	,,	Booth	,,	16.9.32 to 5.2.33	3.3.33
270 ††	*Strathaird* ...	Townshend, W. P., R.D., Capt., R.N.R.	R. H. Hand, H. Fitzmarshall, W. J. Alington.	F. W. Helmer ...	M.-S.	P. & O.	Fms. 911 & 138	5.11.32 to 10.2.33	13.2.33
079 *†	*Surrey*	Matthews, C.	J. R. Vincent	... ...	M.	Federal	... ...	... ...	...
044 *†	*Tacoma City* ...	Paul, H.	H. T. Thomas, T. J. Paull, J. L. Barry.	R. Lea	M.L.	Reardon Smith...	Fm. 911	3.9.32 to 12.12.32	20.12.32
229 *†	*Tactician* ...	Trinick, F., O.B.E. ...	A. Frew, S. Leyland, L. G. Sharman.	J. Bunbury ...	M.	Harrison ...	Fms. 911 & 138	3.10.32 to 18.12.32	26.12.32
045 ††	*Tainui*	McIntosh, A.	P. Campbell, H. Winyard, D. Pickersgill.	A. Bloxham ...	M.L.	Shaw, Savill & Albion	Fm. 915	10.9.32 to 25.12.32	6.1.33
081 *†	*Tairoa*	Grayston, E.T., D.S.C., R.D., Commr.,R.N.R.	G. L. Almond, W. Thowless, L. B. Miller.	J. B. Cleave ...	S.	,, ,, ,,	Fms. 911 & 138	18.7.32 to 3.11.32	9.11.32
046 ††	*Tamaroa* ...	Williams, G.	R. S. Pearce, R. H. Jones, R. S. Masters.	A. Lund ...	M.-S.	,, ,, ,,	,, ,,	4.12.32 to 13.12.32	6.1.33
264 **	*Tanda*	Pilcher, E. T., Lt.-Commr., R.N.R.	C. Stratford, G. Chadwick Smith, A. Wilcox.	W. Harris ...	M.L.	E. & A. S.S. Co....	Fm. 915	24.6.32 to 12.12.32	8.2.33
165 *†	*Tantalus*, M.V....	Melling, C. F.	E. Saville, W. B. Hailstone, L. A. Munday.	J. Clarkson ...	S.	A. Holt	Fms. 911 & 138	31.10.32 to 10.1.33	30.1.33
047 *†	*Taranaki*, M.V.	Wood, C., D.S.C. ...	B. M. Norris, C. Stewart. H. N. Lawson.	A. A. Grundy ...	,,	Shaw, Savill & Albion.	,, ,,	26.1.33 to 1.3.33	8.3.33
020 *†	*Tasmania* ...	Williams, J. W. ...	... ...	... ...	,,	New Zealand Shipping	Fm. 911	16.7.32 to 25.1.33	8.2.33
069 *†	*Tekoa*	Price, J. H.	R. Belfield, C. W. Fulcher, A. B. Goord.	F. Gardiner ...	M.	,, ,,	Fms. 911 & 138	30.7.32 to 29.11.32	14.12.33
048 ††	*Themistocles* ...	Elford, H. C.	T. H. Davies, D. S. Anthes...	N. Rutter ...	M.-S.	Aberdeen Commonwealth	,, ,,	23.9.31 to 30.10.32	4.11.32
007 *†	*Thistleglen* ...	Whitfield, G. A., O.B.E.	G. L. Hetherington, H. R. Mock, J. Mallum.	J. Keohane ...	M.	Allan Black & Co.	,, ,,	10.10.32 to 13.1.33	26.1.33

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Line.	Logs, Registers, or Records Contributed. 8.12.32 to 8.3.33.	Date Last Return Received.
161 *† *Titan*	Rundle, G. G. ...	G. Roberts, E. Butler, G. Alder.	T. H. Nightingale	S.	A. Holt	Fms. 911 & 138 6.1.33 to 3.2.33	6.3.33
244 *† *Tongariro* ...	Hamilton, F. S. ...	G. D. Baldwin, G. W. Pring, H. Dawson.	E. G. Stride ...	M.L.	New Zealand Shipping.	Fm. 915 29.5.32 to 10.9.32	28.9.32
025 †† *Transylvania* ...	Bone, D. W.	A. Middleton	T. McDonald ...	S.	Anchor	Fms. 911 & 138 20.11.32 to 6.2.33	8.2.33
288 *† *Traveller* ...	Crowley, J. M.	... ...	E. Stopps ...	M.	Harrison ...	,, ,, 3.12.32 to 17.12.32	28.12.32
119 *† *Trojan Star* ...	Mills, D. H.	T. Gilchrist, E. R. Pearce, F. O. Stokes.	W. R. Rathmell	,,	Blue Star ...	,, ,, 25.10.32 to 11.1.33	16.1.33
245 *† *Turakina* ...	Laird, J.	H. G. Letts, E. G. Williams, J. Reeve.	N. Hallett ...	,,	New Zealand Shipping.	,, ,, 14.5.32 to 22.8.32	6.10.32
276 †† *Tuscania* ...	Rome, W. B. ...	J. Noble, G. Squires, E. Richardson.	J. McDonald ...	S.	Anchor	,, ,, 12.10.32 to 30.11.32	1.12.32
113 *† *Upwey Grange*, M.V.	Goodrick, H. P. ...	A. Bradbury, G. T. Hurst, P. J. Walker.	W. Starr ...	M.	Houlder ...	Fms. 911 & 138 26.10.32 to 9.1.33	16.1.33
292 †† *Viceroy of India*	Thornton, E. J., R.D., Capt., R.N.R. ...	R. H. Turner, M. F. Shute, W. W. FitzRoy.	J. A. K. Smith	M.-S.	P. & O.	Fms. 911 & 138 31.10.32 to 26.1.33	31.1.33
101 †† *Voltaire* ...	Symonds, P.	H. E. Morrison	W. Burnett ...	S.	Lamport & Holt	,, ,, 19.2.33 to 5.3.33	8.3.33
263 ** *Wairuna* ...	Davies, R. L.	J. Warwick, R. Tulloch, R. B. Steere.	C. Ward ...	M.L.	Union S.S. Co. of N.Z.	Fm. 915 15.6.32 to 29.9.32	8.12.32
005 †† *Warwick Castle*	Owens, G.	P. Clissold	W. Roache ...	S.	Union Castle ...	Fms. 911 & 138 22.10.32 to 12.2.33	14.2.33
060 †† *Westernland* ...	Harvey, H.	L. Williams, J. H. Mackie, J. L. McLaren.	J. Eustice ...	,,	Red Star ...	,, ,, 3.12.32 to 18.2.33	27.2.33
056 *† *Westmoreland* ...	Holland, E.	D. Clegg, A. L. Hill, G. Webster.	R. Glover ...	,,	New Zealand Shipping.	,, ,, 15.5.32 to 17.9.32	22.9.32
208 †† *Winchester Castle*, M.V.	Morton Betts, W. ...	G. F. Moon, R. F. Pembry ...	W. A. Smith ...	,,	Union Castle ...	,, ,, 19.11.32 to 7.1.33	10.1.33
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043 ** *Zealandic*, M.V.	Summers, W. G. ...	C. A. Meyers, J. Steele, G. Campbell.	R. E. Jones ...	S.	Shaw, Savill & Albion.	Fms. 911 & 138 23.5.32 to 22.8.32	31.8.32
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