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A MATTER OF GREAT INTEREST TO THE MERCHANT NAVY.

Ocean Currents and Navigation off the South and East Coasts of Africa.

THE set and drift of ocean currents is of course a matter which engages the constant attention of the navigator in all parts of the world, but the handing on of information of experience of currents has engaged the Commanders of ships more in some trades than in others.

To the navigator off the South and East Coasts of Africa the currents are a matter of constant and imperative interest, and we want to make as sure as we can that all useful information which has not been published of them is handed on as far as possible in this year's numbers of THE MARINE OBSERVER.

I have hanging in my smoking room a picture of a ship in which my father was Chief Officer, which I can remember from childhood. It is a water-colour painting of R.M.S. *Celt* by one of her Able Seamen, high on the rocks near Quoin Point, and they are landing the passengers in the ship's boats through a great surf.

She piled up at night through steering too fine a course and not making proper allowance for deviation of the compass, and current, when on passage from Table Bay to Algoa Bay on February 7th, 1875. The Captain's and 2nd officer's certificates were dealt with. That picture served as an object lesson throughout my time at sea.

My earliest recollections of the effect of the Agulhas current are those of fishing expeditions in False Bay, Hout Bay and at Kommetje. As boys we used to go fishing for snook with the Malay fishermen. Splendid sport, bowling along under sprit sail and jib with the South Easter, and hauling in snook hand over hand, with the barb filed off your hook, and no other bait than a piece of shark skin; or climbing the small rocky islands in search of penguin and dyker eggs, and fishing from the rocks. The fish caught in Hout Bay or at Kommetje was always the best, firm and delicious, that at False Bay was inclined to be flabby and not so good. Part

of the Agulhas current runs past Cape Hangklip into False Bay, and there the sea water is much warmer than it is on the west side of the Cape Peninsular in Hout Bay and at Kommetje. Along the West coast of Cape Colony northward from Cape Point the surface water is comparatively cold, due very largely to the up-welling which takes place on Western coasts.

My first recollection of experiencing the Agulhas current itself was during the last and longest passage I made in a sailing ship, and I am not likely to forget it—Sea Training and tuition by experience and necessity, hard work and hunger! The Barque *Peri*, a very old iron vessel, was 134 days from Fremantle to London. We were not less than three weeks off the coast of Cape Colony in the months of June and July, 1898. Making the land near East London, we stood well out on the Starboard tack instead of working close in along the coast as we should have done. Then standing in on the Port tack at night time, it blew very hard from the Westward, causing a very steep high sea on the edge of the bank with the wind against the current, and being uncertain of our position we wore ship. Deeply laden with a cargo of jarrah for wood paving, she rolled and lurched very heavily. On the outward passage we had rove off rope in place of wire lanyards. These now stretched, the main cap cracked and we expected the main top mast and top-gallantmast to go over the side. She came to on the other tack. Later when we drew into the land and into smoother water we were able to pass a Spanish cap, and swifter in the rigging and back stays, a job calling for some skill and resource—and so good for those under training!

Probably the ill-fated *Waratah* came to her end in the steep heavy sea which runs like the side of a house at the edge of the bank when it blows hard from the S.W. against the Agulhas current. During service in small steamers carrying cargo and coolie emigrants from Indian to South African ports, in a transport during the second Boer war, and in two small cruisers on the Cape Station, one saw and learned much of the currents off the South and East Coast of Africa. For instance, when steaming up the coast, it gave a young officer of the watch confidence having to con the ship close in to avoid the main stream, and gain from the counter current during daylight and clear weather. One had to learn the land marks, how best to fix the ship's position and to realize how much, if not truly stemmed, the current coming on either bow, would set the ship off her course.

Shortly before last leaving the station in 1906, we were told off to escort the German Mail Steamer *Prinzregent*, with H.R.H. the DUKE OF CONNAUGHT, then Inspector-General of the Forces, on board. After leaving Mozambique we took station five cables off the port beam of *Prinzregent*. Shortly after relieving the deck at four o'clock the following morning, we heard the breakers, and the ships were hauled out. We had been set in by the current, which is set up by the S.E. trade in the South Indian Ocean, part of it running past the North end of Madagascar, past the Comoro Islands, and splitting near Cape Delgado. Then back in September, 1902, we were sent to examine the wreck of a large cargo steamer on the Atlas Reef, Struys Bay, and to recover gear used in the unsuccessful salvage operations which had been abandoned in June. She was bound to the Westward round Cape Agulhas, and had probably been set in by the current which is said to run towards the land, after S.E. gales hereabouts, and they had mistaken a steamer's masthead light for the light which was then fixed white, on Agulhas, and altered course to the North-Westward too soon.

In some small works of survey we were engaged in we saw something of the inshore currents, and on cruises to Mauritius and Seychelles something of the oceanic currents which feed the coast currents. These are a few reminiscences of personal experiences up to 1906, when I last left South and East African waters and the land of my birth. They are given with the hope that they may possibly help to stir up the interest of others, many of whom have far greater, far longer, and more recent experience of currents in navigating these waters; and encourage them to put on paper their experiences for the benefit of all through the medium of THE MARINE OBSERVER.

In this number we publish the first of the four quarterly Charts of Currents on the Trade Routes off the South and East Coasts of Africa, to the Westward of the longitude of Mauritius.

Last year we were rather disappointed for there were not anything like as many responses to our requests for remarks, based upon general experience of Currents in navigating the Indian Ocean, as were received in previous years when the currents of the Atlantic and Pacific were being charted. The remarks then received from the Commanders of ships supplied a wealth of knowledge and information as may be seen in Volumes I to V, and these were a tremendous help in the investigations which were carried out during the charting process.

The African Pilot, Part III, gives a fine general description of the currents off the South and East Coast of Africa, based upon the Admiralty Current Charts of the Indian Ocean which were published in 1896, containing observations up to 1894, supplemented by occasional observations up to the year of the publication of the ninth edition, 1929. The charts with descriptions we are now preparing and publishing are the first to be published for 35 years and so it is most desirable that they should be complete with all available reliable observations from 1910. As far back as last July we circulated a notice in THE MARINE OBSERVER asking for observations of set and drift which might not have been already returned. Now is the time when those who are interested can best assist us by sending in their generalized experience and ideas about the currents in this region. We want to know, and to be able to give information of the breadth and varying strength, with distance from the land of the Agulhas, Mozambique and East African Coast currents.

At present probably the most valuable observation received in this connection is that made by H.M. Ships *Birmingham*, *Lowestoft* and *Verbena* working in company under the command of Captain R. H. L. BEVAN, D.S.O., M.V.O., R.N., on July 18th, 1926, which is here given:—

“On 18th July, 1926, by stationing *Lowestoft* and *Verbena* 5 miles on either beam of *Birmingham* and ordering all ships to maintain revolutions for 10 knots, an endeavour was made to ascertain whether there is anything to be gained by keeping an offing of 20 miles or more on passage southwards from Durban.

At 1000 *Birmingham* was in Latitude 32° 13.5' S., Longitude 29° 23.8' E., course 223°. *Verbena* was 5 miles on starboard beam, and *Lowestoft* 5 miles on port beam.

By 1110 *Verbena* had drawn 7° ahead, and *Lowestoft* 8° astern of bearing. At 1515 *Verbena* was 29° ahead and *Lowestoft* 32° astern of bearing.

Over a period of 6 hours, *Verbena*, whose course took her 1 to 2 miles outside the 100 fathom line and 12 miles off shore, averaged .62 knot faster than *Birmingham* and 1.27 knots faster than *Lowestoft*.

It appears likely that the maximum strength of the Agulhas current will be found just outside the 100 fathom line.”

This, of course, is one occasion in one of the two great coastal stream currents we are now investigating. More information of a similar nature is very desirable. We want to find out all we can about the variation of these currents, both seasonal and occasional, and particularly what may account for these occasional changes.

We want to find out and provide as much information as possible of the strength and width of the counter currents which are so beneficial to coasters proceeding along the coast in the opposite direction to that of the main stream. More and better information of occasional sets towards the land such as that into Struys Bay, with contributory causes, will be invaluable to mariners. These are matters which concern the Corps of Voluntary Marine Observers particularly, but they concern all mariners. We may, in the specialisation of the work which under modern conditions has become necessary, have created the impression that we do not seek information from the masters of ships outside the Voluntary Observing Fleet. We have not intended to do so. The fact is that it would be impossible to deal with regular or frequent returns from the whole Merchant Navy. If we had a Marine Division five times the size of ours it would not be possible to deal adequately with so much data.

So it has been necessary to limit the number of ships regularly making returns, but information of special interest is always welcome from any ship. The information which is of most special interest now, and which we seek from all who can give it, is that of the system of currents in the Western portion of the Indian Ocean, their strength, dimensions and variations. The Corps of Marine

Observers are asked to bring these notes to the notice of the Commanders and officers of ships who do not receive this Journal. We appeal to all masters of ships navigating these waters, and especially to the masters of coasters, to refer to their log books, search their memories and generalize their experiences, and put them clearly on paper and send them in as soon as possible. It will be too late for individual observations to be dealt with in the Marine Division for these charts (except they be abnormal) when this reaches ships abroad. These were asked for last July.

To the Port Captains and Harbour Masters along the South and East Coasts of Africa, at Mauritius and the Seychelles, we apply for information which may throw better light upon this matter of currents, and information of conditions in the depths will be most helpful. Information which they have gained in connection with their own duties and in touch with the masters of ships, information

which they may be able to obtain from research and survey ships using their ports, or from fishery research vessels, will all be welcome. In this number the first of the four quarterly charts is given, the last of these will come out in the December number and that number will be the last to deal with this particular subject for a long time. All information which is to be used in this investigation should reach us not later than the end of May. Matter written in such a form as to be ready for publication in *THE MARINE OBSERVER* will be much appreciated.

Meanwhile we remind the Commanders of "Selected Ships" of what we said in our notes in the November, 1930, number, about giving information of set and drift of currents in their routine Wireless Weather Reports.

December 12th, 1930.

SHIPS' WEATHER SIGNALS FROM THE SHORE AND FROM SELECTED SHIPS.

FOLLOWING what we said last month, we wish to call special attention to Weather Signals in this number, in which it will be seen that Germany has adopted a Weather Shipping Bulletin on a similar plan, and with the same code key for coast station observation reports, to that of the British Isles.

By the courtesy of Captain L. SCHUBART, Marine Superintendent of the German Meteorological Service, we are also able to publish for the information of British shipping and seamen the names of

German Ships detailed as Selected Ships at the moment, so that all interested may know what ships of that nationality may be expected to make routine wireless weather reports in the interests of navigation.

MARINE SUPERINTENDENT.

London.

December 30th, 1930.

THE MARINE OBSERVER'S LOG.

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

PHOSPHORESCENCE.

South Pacific.

THE following is an extract from the Meteorological Log of S.S. *Rotorua*, Captain E. HOLLAND, Wellington, N.Z., to Balboa. Observer, Mr. H. F. C. WILKINSON, 3rd Officer.

March 19th., 7.42 p.m. (G.M.T. 0548, 20th) in Latitude 34° 21' S., Longitude 150° 54' W. (course 063°, 14.0 knots), a peculiar phosphorescent effect was observed. It consisted of long streaks of phosphorescence laying in an E.N.E. and W.S.W. direction, of about fifteen feet width, the distance between the streaks being about 30 yards. They extended as far as one could see on both sides of the ship and were of remarkable brightness. There was fine rain falling at the time, and on several occasions patches of extreme brightness were observed lying between these streaks and resembled the lights of a large passenger steamer, some distance off. We steamed through this for ten minutes, when the phenomenon ceased as abruptly as it had begun, but the ship's wake remained a vivid green for another five minutes. At time of observation: Temperature, sea 67.5°, wind East force 4, moderate sea and easterly swell, sky completely overcast with St-Cu/Cu-Nb.

After a light rain shower lasting about five minutes the more exposed parts of the ship's bridge were found to be covered with dark yellow dust. My clothing was covered with dark yellow spots, as though it had been raining mud. At daylight the weather side of the ship from truck to waterline was seen to be covered with the dust.

Dustfall is occasionally experienced on this route, England—South Africa, generally between Cape Blanco and Cape Verde, but no one on board remembers seeing it such a long way north and so far from the land, about 300 miles.

SQUALL.

North Atlantic Doldrums.

THE following is an extract from the Meteorological Log of S.S. *Walmer Castle*, Captain W. MORTON BETTS, Southampton to Cape Town. Observer, Mr. G. H. PICKERING, 2nd Officer.

March 9th, 1930, 12.30 a.m. (0138 G.M.T.), in Latitude 4° N., Longitude 13° W., very clearly defined line squall arched up from S. by W., extending over a 110 degree arc of the horizon. It passed over at 1.0 a.m. (0208 G.M.T.) and lay in an E. by N. and W. by S. direction from horizon to horizon and the sky was almost clear on either side of it. Wind became S. by W., force 3, until after it had passed over and then fell light. There was just a few heavy drops of rain during its passage over.

DUSTFALL IN THE NORTH ATLANTIC.

Off North-West Coast of Africa.

THE following is an extract from the Meteorological Report of S.S. *Balmoral Castle*, Captain E. F. GILBERT, Cape Town to Southampton. Observer Mr. H. A. DELLER, 3rd Officer:—

Thursday, 6th March, 1930, at about 2245 G.M.T., in Latitude 34° 05' N., Longitude 15° 06' W. Wind S.E., Force 5 to 6. Sky overcast:

ELECTRIC STORM.**South Australian Waters.**

THE following is an extract from the Meteorological Report of S.S. *Mongolia*, Captain H. R. RHODES, Adelaide to Fremantle.

March 29th, 1930, at 5.50 a.m., in Latitude 35° 19' S., Longitude 126° 36' E. When passing through a violent electric storm, the ship was struck by forked lightning. One flash was seen to run down into the water about 100 yards ahead of the ship and the next flash hit the foremast. There was a considerable report and the flash seemed to scatter, lighting up the entire ship. No damage was done at all. Sky completely overcast with Nb and Cu-Nb lying very low indeed. Wind, E.S.E., force 4, heavy rain.

CORPOSANTS.**North Atlantic.**

THE following is an extract from the Meteorological Log of S.S. *Port Sydney*, Captain W. G. HIGGS, London to New Zealand, via Halifax, N.S., and Panama. Observer, Mr. R. BETRESS, 3rd Officer.

Friday, March 28th, 1930, at 10.50 p.m. A.T.S., in Latitude 43° 48' N., Longitude, 42° 11' W. Ship steering 246°, speed 12 knots. Barometer 1001 mb. Temperature: Dry Bulb 62°, Wet Bulb 61°. Wind S.W., force 5. Vessel ran into a heavy rain squall, wind veering W.S.W., force 7. The squall was accompanied by several flashes of lightning, which appeared to be to the westward of the ship, distant probably five miles. At 11.00 p.m. A.T.S. the atmosphere had cleared somewhat and the bulk of the squall was now astern. The air began to feel colder and a glance at the thermometer showed: Dry Bulb 54°, Wet Bulb 54°. At 11.15 p.m. A.T.S. vessel ran into a second squall of even greater intensity, wind force reaching 8 at times. The lightning now was over the ship and striking the water on the starboard bow. After three blinding flashes in quick succession at approximately 11.25 p.m. the wind force decreased to 6 and the rain began to cease. At 11.30 p.m. the atmosphere to the westward was now clear of heavy rain and the electrical disturbance was now out on the port beam. At 11.40 p.m. a light was observed (about the same size and brilliance as a star of the first magnitude) apparently poised on the extreme tip of the lightning conductor at the foremast head. This light was quite steady with no suggestion of waxing and waning and remained in the same position for about two minutes and then went suddenly. The lightning by this time was now bearing S.S.E. from the ship, wind W.S.W., force 7. The barometer remained steady throughout the disturbance.

FROST SMOKE.**North Atlantic.**

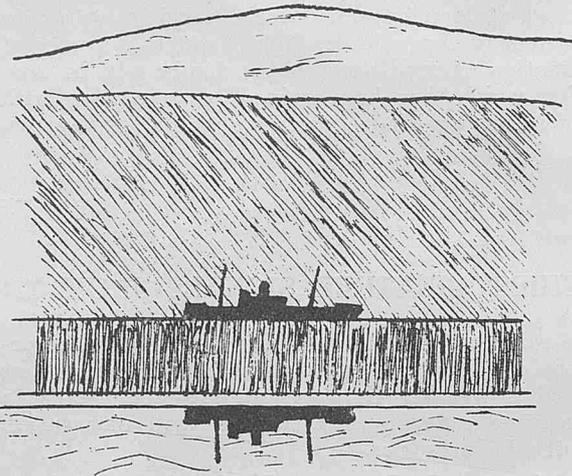
THE following is an extract from the Meteorological Report of S.S. *Minnetonka*, Captain T. F. GATES, C.B.E., London to New York, Observer, Mr. H. E. D. McCARTNEY, 5th Officer.

March 23rd, 1930, Noon at ship (1700 G.M.T.) in Latitude 40° 23' N., Longitude 65° 38' W. Mist was observed rising from the sea surface in lines parallel with the wind direction. They rose from a height of from four to six feet, and were separate from twelve to twenty feet. Sea temperature 59°, a rise of 15° during forenoon. Air temperature 32°, steady throughout forenoon. Wind W.N.W., force 5. Sky St.-Cu and Cu. Overcast. Between 3.0 and 4.0 p.m. (2000 and 2100 G.M.T.). Mist gradually disappeared. Observed position at 4.0 p.m., 40° 26' N., 67° 02' W. Wind W.N.W., force 5. Sky Cu. 6. Sea temperature, 40°. Air 33°.

MIRAGE.**West Coast of North America.**

THE following is an extract from the Meteorological Report of S.S. *Uffington Court*, Captain E. J. CLARKE, Los Angeles to Panama Canal. Observer, Mr. E. V. QUICKENDEN, 2nd Officer.

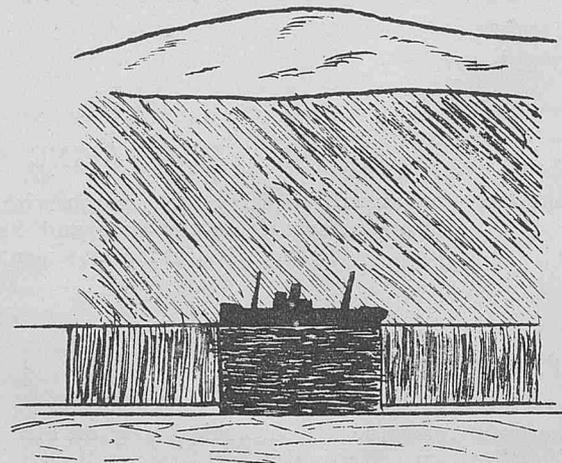
Wednesday, 26th March, 1930, observed first at 08.45 Pacific Standard Time (1645 G.M.T.) the accompanying sequence of changes in mirage. Own position 14 miles West (true) of Golden Gate, San Francisco. Cloudless sky with fog bank over land between Duxbury Reef and Point St. Pedro. Barometer 29.88 in. Air temperature, 60°. Sea temperature, 52°. Calm with smooth sea and moderate westerly swell. Observed vessels bearing N.E. true. Distance approximately 4 miles.



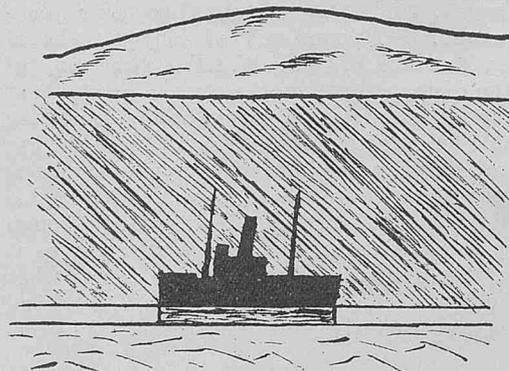
HIGH LAND

FOG BANK

@ 0845.



@ 0847.



@ 0850

Off Cape Town.

THE following is an extract from the Meteorological Log of S.S. *Llandaff Castle*, Captain J. ATTWOOD, Cape Town to Las Palmas. Observer, Mr. R. F. PEMBRY, 4th Officer.

March 20th, 1930, 1045 G.M.T. Observed Dassen Island Lighthouse bearing 343° distant 16 miles with inverted lighthouse and island above true one, and third small upright one above this. All the land from Table Bay to Saldanha Bay was very distorted by refraction, and the horizon to seaward was thrown up 20° , having the appearance of a low-lying fog bank.

Barometer 1016.5 mb. Temperature Dry Bulb 63° , Wet Bulb 60° , Sea 58° , Wind S., force 3, Weather b.v. Table Mountain visible 50 miles. On nearing Dassen Island this mirage disappeared and lighthouse assumed normal appearance until after passing, when it gradually lengthened to about twice its normal height, remaining so until out of sight.

VISIBILITY.

Lombok Island, East Indies.

THE following is an extract from the Meteorological Log of M.V. *Centaur*, Captain J. WARD HUGHES, Fremantle to Singapore, observer, Mr. D. M. McADAM, 3rd Officer.

21st March, 1930, at 8.30 a.m. Latitude $10^\circ 07'S$. Longitude $116^\circ 52' E$. Mt. Rinjani 12,350 ft. (Lombok Peak) was observed bearing 347° . D.R. from star sights at 5.30 a.m. put vessel distant 106 miles from Mt. Rinjani, and this position was confirmed by sextant angle and "The Danger Angle" and also by subsequent noon sights.

Cumulus occasionally obscured the peak but horizon was very clear cut and distinct. Cloud at 8.30 a.m. was A-Cu, Cu, Cu-Nb.6. Rain squalls were observed both East and West of vessel and close to. These squalls were small in area. Wind was N.N.E., force 1. Sea nil, Swell S.W. slight.

Extreme accuracy is not claimed for "The Danger Angle" tables where angles are small and distances great, but in this case it was noted that the position obtained by sextant angle coincided exactly with that obtained by reliable solar and stellar observations.

Black Sea.

THE following is an extract from the Meteorological Report of M.V. *Sylvafield*, Captain W. McDONALD, Constantinople to Tuapse, Russia, by Mr. H. G. WAUGH, 3rd Officer.

March 7th, 1930, 5.44 p.m., A.T.S. (1533 G.M.T.) in Latitude $42^\circ 51' N$., Longitude $34^\circ 34' E$. (D.R.). Temperature of Air 41° . Sea $44\frac{1}{2}$; Clouds Cu. 2/10. Estimated normal visibility 10 miles horizon extremely sharp and clear. Land observed—South coastline of "Krimea" to the northward, distant 95 miles, and coastline of "Anatolia" to the southward, distant 53 miles. Ship's position checked by stellar observations.

LUNAR HALO.

North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Modasa*, Captain J. W. GILCHRIST, East Africa to London, via Suez. Observer, Mr. B. PAUL, 2nd Officer.

March 12th, 1930, at 2.30 a.m. A.T.S., Latitude $40^\circ 04' N$., Longitude $9^\circ 43' W$.

Observed a well-defined lunar halo consisting of four distinct complete rings round the moon.

They were of the following colours from the moon:—red, orange, yellow, green, surrounded by a bright whitish haze. Outside diameter of halo 21° . Altitude 45° bearing N.W. approximately.

This phenomenon was visible for about ten minutes, then the clouds cleared. Temperature air $59^\circ F$. Clouds, upper, Ci. and Ci-St., Lower, St.-Cu., 7/10th clouded. Wind N.N.W., force 5.

METEOR.

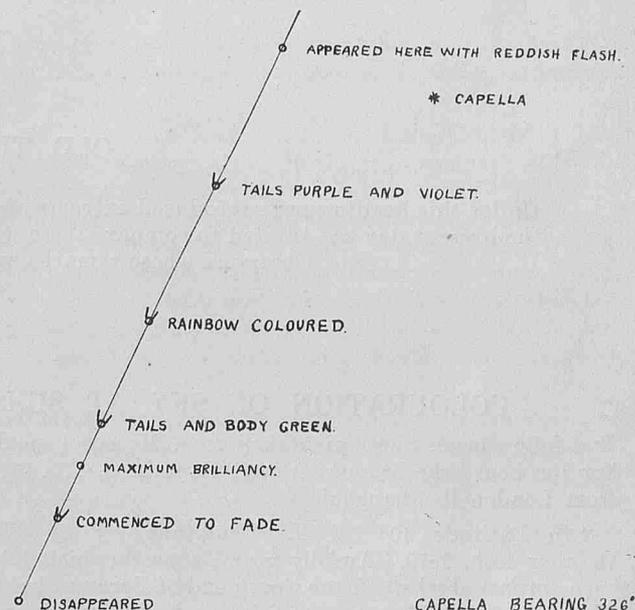
South Pacific.

THE following is an extract from the Meteorological Report of S.S. *Ruapehu*, Captain F. W. ROBINSON, Balboa to Auckland, N.Z. Observer, Mr. T. S. FARRAR, 4th Officer.

17th March, 1930, in Latitude $18^\circ 08' S$., Longitude $117^\circ 40' W$., 7.54 p.m. A.T.S. Wind calm. Barometer 29.99 in. Weather b., clouds Cu/S.W., amount 1.

* ALDEBARAN

° 7



Meteor appeared a-beam of Capella with a reddish coloured flash and travelled downwards towards the N.W. horizon. It appeared to have two long tails which changed in colour on its passage. When just below Capella the tails were purple and violet, then rainbow coloured, finally becoming a brilliant green. The body itself was at first purple and then green. It disappeared by slowly fading away before reaching the horizon. The meteor was exceptionally brilliant and was visible for about 9 seconds. It lit the northern sky for about 6 seconds.

WATERSPOUT.

South Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Nestor*, Captain W. CHRISTIE, Fremantle to Durban, observer, Mr. A. E. STEPHENSON, 3rd Officer.

18th March, 1930, 10.30 p.m. A.T.S., Latitude $29^\circ 56' S$., Longitude $82^\circ 52' E$.; Course 270° Wind, South, force 2; (Two hours previously, light variable airs) Temperatures, Dry 74° , Wet 72° ; Sky, Cu-Nb, 3 (rising to southward). Sea, South 2.

A Cu-Nb cloud, abaft the Beam, moving in a N.N.E. direction, when on the port quarter, seemed to shoot forth, from a recess in the cloud, a long tentacle; this wavered in the air and preceded the cloud at an angle of about 45° , for a period of perhaps $1\frac{1}{2}$ minutes. It then seemed simultaneously to recurve and withdraw into the cloud.

This was apparently a waterspout drawn back into the cloud without making contact with the sea; the effect was weird owing to the moon being directly behind the cloud and illuminating the whole scene.

Fifteen minutes afterwards the sky became overcast from the southward and remained so until 6.00 a.m. the next day.

WATERSPOUTS.

Malacca Strait.

THE following is an extract from the Meteorological Report of S.S. *Kalyan*, Captain C. H. COCHRANE, Singapore to Penang, observer, Mr. W. R. B. NOALL, 4th Officer.

March 21st, 1930, at 4.16 p.m. Standard Time, wind which had been light and variable, freshened from E.N.E. to force 4, accompanied by heavy rain squall, which reduced visibility to 2 or 3 miles. The ship was then off Pulo Undan, on passage from Singapore to Penang. When the squall passed and the weather cleared

at 4.50 p.m., a vapour spout was observed bearing N.N.W. from the ship, and rising to merge with a bank of nimbus and strato-cumulus cloud which had passed over in the squall. Shortly after another spout appeared to the southward of, and close to, the first, each growing in size and resembling smoke from a steamer whose hull is below the horizon. At 5.35 p.m. a third spout gradually appeared, and was followed shortly by two more, each one appearing close to, and to the south of the previous one. Meanwhile the first ones to form slowly flattened out until they merged with the bank of cloud above in the form of stratus, and the fifth spout finally disappeared at 6.05 p.m., when the weather was fine and clear, with light S.E.'ly winds and a steady barometer.

OLD TIME MARINE OBSERVER'S LOG

Under this heading are reproduced extracts of records and Sketches made at sea over fifty years ago. Marine Observers of the present day are invited to compare these with their own experience, and should they know of surviving Old Time Marine Observers whose remarks appear, it is hoped that they will bring these to their notice.

COLOURATION OF SKY AT SUNSET.

THE following extracts are taken from Meteorological Log No. 4851 kept on board the barque *Astarte*, Captain G. F. PARSON, on passage from London to Shanghai.

"In Latitude 10° 54' N., Longitude 26° 34' W., under date October 19th, 1879. Awfully grand sunset (which I have only once seen surpassed when off the South end of Formosa before a Typhoon). Three columns of heavy cumuli in the E.N.E., East, and E.S.E., were of a livid crimson reflecting on to sea and ship with a background of the deepest blue or purple. The Western sky, composed of Ci-St and detached Cu, showed all shades of yellow, orange and red with the interstices of clear sky, green of all tints, even to the very darkest, such as are rarely seen in the sky."

CONTRASTING WINDS.

"October 22nd, in Latitude 7° 16' N., Longitude 25° 42' W. We appear to be just at the meeting point of East and West winds, sometimes one advancing, then the other. This morning for two hours a ship was sailing on a parallel course abeam a mile off with the wind from opposite quarters and a strip of calm between us. Every ship in sight with a different wind."

LOSS OF PROPELLER.

THE following extracts are taken from the Meteorological Log No. 4628 kept on board the S.S. *Hankow* of London, Captain W. SYMINGTON, on passage from Melbourne to London via Suez. February 3rd, 1880, 1.45 p.m. Latitude 41° 05' N., Longitude 9° 42' W.

"Ship lost her propeller. It flew off in pieces leaving the shaft quite bare. Made all possible sail and by midnight with a light air from the S.E. ship began to move and steer well. 4th February. Ship sailing and steering remarkably well, and quite able to reach Plymouth under canvas. February 8th. Noon, Lizard bore N. 20° E. 20 miles. Engaged steam tugs *Pendragon* and *Kimberly* to tow ship to Plymouth. February 8th, 1.30 a.m. The tugs not being able to tow ship's head to leeward of the breakwater lighthouse, which was then bearing about North, we were forced to let go both anchors with 95 fms. on port and 65 fms. on starboard anchor, and when ship swung round we found her stern about two cables from the breakwater and opposite the Iron Circular Fort. The ship being in a very dangerous position with the heavy sea; fired rockets for assistance.

At 4 a.m. Government tugs *Trusty* and *Carron* came, but were unable to help us then. At 8 a.m. they returned, and we were able to get a hawser from the *Carron*, but she could not keep herself head to sea and was obliged to slip her end. At 10.30 both tugs tried to pass hawsers again, but unsuccessfully, and both returned into the Sound.

"At 1 p.m. tugs *Trusty*, *Carron* and *Scotia* returned to us bringing the lifeboat. The *Trusty* anchored right ahead of us and with the aid of the lifeboat passed two toelines to us. At 2.20 hove up our starboard anchor and slipped port, one with 90 fathoms of cable, and having also received a hawser from the *Carron* both tugs gradually moved us ahead. At 2.30 *Carron's* toeline parted, but she skilfully passed another to us and the *Scotia* succeeded in passing one to the *Trusty* and towed ahead of the latter. Just as we were clearing the end of the breakwater a huge wave broke over the ship heeling her 40 degrees, and she came upright with such violence that the starboard anchor (which was hanging at the hawse) went through the ship's side. At 3.15 p.m. the ship in safety, and at 3.45 anchored in the Sound with 60 fathoms cable. Here ends this log."

NEED OF METEOROLOGICAL CHARTS.

THE following extract is taken from the Meteorological Log No. 4715A of the ship *Taranaki*, Captain H. P. WRIGHT, on passage from Australia to United Kingdom via the Cape. March 29th, 1880. "Noon position, Latitude 29° 49' S., Longitude 107° 35' E. By the old wind charts I note the trades steady between 25° and 30°. I intend trying to make our Westing somewhere about 27° S. I feel very much the want of good wind charts showing force and Southern limits of S.E. trade winds.

"A great many ships leave South Australia at this season deep with grain and of course prefer the Cape Route to Cape Horn. Our ship *Otago* six years ago came home via the Cape in 84 days, but I have no knowledge of her track (same season with grain)."

CONFLICTING WINDS.

THE following extract is taken from Meteorological Log No. 4906 kept on board. Ship *Cambrian Monarch*, Captain T. OWEN, on passage from London to Sydney.

"May 3rd, 1880, in Latitude 1° 25' N., Longitude 25° 05' W. The conflict between the S.E. and the Northerly winds is very marked to-day. The former started to predominate over its adversary about 4 a.m., but continued rather light until 2.30 p.m. with every appearance of the trades except a very dark bank in the N.W. At that time wind died away almost to a calm which lasted for a few minutes, when a fresh breeze came away from N.W. by N. Notwithstanding this breeze, the clouds which were stratus and pretty low travelled as before from the S.E. for about 20 minutes, when I observed a rather strange phenomenon in the sky bearing S.W. at an altitude of about 20°, viz., the clouds going round like a whirlwind from right to left, the circle of commotion had a diameter of about 10° and kept revolving rapidly for 10 minutes, when the clouds ceased to travel any further. When this N.W. breeze first sprung up the barque *Lady Seury*n was in sight about two miles to the southward, and although we were coming along at the rate of about six knots I could see distinctly that she held the wind from the E.S.E. until we almost came up with her. Consequently this N.W. breeze could not be travelling more than 6½ knots."

MEN OVERBOARD.

THE following extract is taken from Meteorological Log No. 4813 kept on board. S.S. *Gordon Castle*, Captain W. WARING, on passage from Shanghai to New York.

"October 3rd, 1880, in Latitude 40° 38' N., Longitude 26° 36' W. Two of Chinese crew overboard; stopped and backed astern and was fortunate enough to pick one up. He went overboard starboard side and was picked up port side. It was only by his screams I knew where he was and did not know until after he was picked up that there had been two in the water. Man saved said, 'Other man gone bottom and he only saved by getting a bucket.' Weather was too bad to lower a boat and heavy squall on at time; never expected to pick him up, it being pitch dark and blowing a gale."

HEAVY ATLANTIC GALE.

THE following extract is taken from Meteorological Log No. 4822A kept on board the Ship *Tilkhurst*, Captain E. J. BLAKE, on passage from Bassein to Channel for Orders:

"November 25th, 1880, Noon, Latitude 47° 13' N. Longitude 19° 54' W. Barometer 29.43 in., Wind S.S.W. force 8:—Noticing the barometer at noon had fallen so much I shortened down to three lower topsails and fore topmast staysail, keeping ship 'By the Wind' on the Starboard tack. Wind increasing and at 3.10 p.m. Lower Fore and Mizzen topsails split to pieces. 4 p.m. Ship down main rail. In lower topsail which burst, ship under storm trysail and spanker. From 4 p.m. to 8 p.m. wind increased force 12, ship under water to leeward and trembling fearfully. I have never felt her tremble before. At 7 p.m. the jibboom was reported gone, a sea must have struck it, we never heard it aft. The wind was hauling, the sea did not seem to be very heavy, but the blinding spray cut like a knife. I had to put my mouth down to the officers' ears to make them hear.

"During this time, that is from 4 to 8 p.m., the sky was nearly clear the whole time, stars shining bright. About 8 p.m. it commenced to get squally but the wind did not moderate much until after midnight. During the squalls we had sheet lightning all round the horizon and during the heaviest of the gale the clouds had not much way on them.

"Our ship is a very stiff ship, lightly sparred, and built very strongly, so you can get a pretty good idea what the weight of wind must have been to lay her down main rail under, trembling her like a leaf.

"The jibboom was 19 inches in the Cap secured with three heavy wire guys on each side with heavy double chain back rope. No one heard it or saw it go. On clearing the wreck we found that the Jumper on the Whisker was broken. The Whisker carried away about a foot outside the Cat Head, the Inner Jib guy band burst and the large link of the outer Martingale stay carried away.

"We lost two of the large Iron ports on the Port side, the Fore Top Gallant sail blew out of the gaskets and the sail started from the rope round the clew of the mainsail."

DANGEROUS CROSS SEAS.

THE following extract is taken from Meteorological Log No. 5075 kept on board the Barque *Sheen Lee*, Captain J. M. GRAY, on passage from Hamburg to Iquique.

January 13th-14th, 1881. Latitude 40° 37' N. Longitude 17° 11' W. Weather simply extraordinary, about 10 ships in company this last two days. No one carrying any sail and wind in light puffs and sometimes fresh breezes flying about in all directions. Weather now clear and now thick, and sea most horrid. About midnight there arose suddenly an immense sea from N.E. and at same time a very high Chop sea from S.W. These meeting formed a perfect cauldron and ship was perfectly helpless there being little or no wind. Sea came smashing on board on both sides and I thought we were going to be entirely broken up.

"These conditions continued until 5 a.m. when with Jib managed to get ship's head to N.E. and it is a fact that a sea broke over both bow and stern at the same time. How our masts stood during the rolling I cannot understand. I managed to keep her head and stern to it until 9 a.m. on 14th when breeze from N.E. took ship aback. Turned round after much trouble and keeping S.W. had a most terrific sea again, head and stern, but considering light wind ship laid fairly quiet.

"It fell nearly calm at 3 p.m. and ship again got into the trough and how the masts, bulwarks, etc., stood it I don't know. This state of affairs is causing such destruction in sails, gear, and rigging that if it remains much longer, we shall be pretty well knocked up.

"The heavy rolling has carried away a chain plate, starting a leak in Main Channels. Ship otherwise behaving well and only making a little water. Pumps are carefully attended, but I apprehend much damage to Cargo it having shifted, and I here enter my solemn protest that in the whole course of my seafaring life I have never experienced such a sea and weather before.

"Either we have a hurricane coming or one has passed us. Crew have made utmost endeavour to get cargo trimmed again and I myself have not had my clothes off for five nights and days, being continually on watch for shifts of wind and proper management of ship."

Note.—The log records that similar conditions existed for a further forty-eight hours when there were no less than thirty-eight ships in company. A gale then sprang up from the S.W. later shifting to N.W.

WHIRLWIND.

THE following extract is taken from Meteorological Log No. 4869 kept on board the Brig *W. V. Freeden*, Captain W. V. FREEDEN, on passage from Pernambuco to Liverpool.

"January 15th, 1881, at Noon, in Latitude 35° 57' N. Longitude 29° 54' W., Wind N.W. force 7. Saw a very small bank in the West, took the wheel myself and kept her East with only lower topsails set. Was struck directly afterwards by a wind of hurricane force lasting for from 5 to 7 minutes, moving around the compass from N.W. through South several times.

"Lower clouds moving in all directions against the sun like a corkscrew twisted upwards, exactly like waterspouts. Nearly calm

for twenty minutes afterwards, then freshening from the South nearly blowing the masts away. Lost new fore lower topsail. Of the foresail, mainsail and two Topgallant sails I have seen nothing, they all blew out of the gaskets. How the main topsail held I can't understand but it bent the mast like a stick. She is leaking too, making about 4 inches per hour. Now there is work.

"January 16th Noon. Wind calmed in the morning; another ship to the East. A fearful sea running from Easterly and South to S'wly. direction. At noon wind to N.N.E. blowing a gale after a calm. Have nothing to lose this time anyhow. Got her head to the East to rest the crew. The other ship running away before the wind."

CRIPPLED IN HURRICANE.

The following extract is taken from Meteorological Log No. 4967A kept on board Ship *British Commodore*, Captain J. W. THORNE, on passage from Calcutta to New York.

"January 20th, 1881, in Latitude 26° 09' S., Longitude 62° 14' E. :— Sighted a ship partially dismasted, took in sail and steered for her, then hove to. Proved to be ship *Maire Bhen* of London, from Calcutta to London. She experienced a hurricane on the 12th and 13th in Latitude 24° S., Longitude 68° E. Had lost fore and mizen topmast, main top gallantmast and all attached yards; also lost all sails and gear. She had experienced strong S.E'ly. gales for some time previous. Lost spars, etc., by cutting away. Captain stated that Barometer fell to 28.80 in. and that it lasted 36 hours more or less. Supplied them with all gear we could spare and proceeded on our course at 10.45 a.m."

CAPTAIN CHARLES MAITLAND.

A Great Master of Training Ships for Officers.

BY THE SON OF HIS OLD EMPLOYER.

THE death on 25th November, 1930, of Captain CHARLES MAITLAND, whose uncle Captain FREDERICK MAITLAND, R.N., commanded H.M.S. *Bellerophon* when Napoleon surrendered to him on the 15th July, 1815, has removed one of the most famous and best known of sailing ship masters of the end of the last century and the early years of the present. CHARLES MAITLAND was apprenticed to Messrs. DEVITT & MOORE in the year 1866, and was appointed to the *St. Vincent*, 892 tons, said to have been the fastest ship the Firm owned, and in 1871 he was appointed Second Mate under Captain LOUITT.

In 1873 he was appointed 2nd Mate under Captain ALSTON in the *Dunbar Castle*, known as the *Last of the Dunbars*, the last ship which Mr. DUNCAN DUNBAR ordered shortly before his death to be built by LAING of Sunderland, and launched in 1866. CHARLES MAITLAND served in that vessel until 1876, when he was appointed First Mate in the *Gateside*, 697 tons, under Captain ISMAY.

In 1879 he was given command of the *Gateside* and remained in her until 1884, when the ship was sold. About this time MAITLAND joined Mr. J. D. CLINK, and in 1889 he was appointed to command his new full-rigged ship *Valkyrie*, 2,270 tons, built by CONNELL.

In 1890 he returned to us to command the *John Rennie*, 847 tons. In that year we had purchased from Messrs. ANDERSON, ANDERSON & Company their two famous ships, the *Harbinger*, 1,506 tons, and *Hesperus*, 1,777 tons, and in those sailing ships was begun a scheme known as The Brassey Training Scheme, to improve the conditions and training of future officers in the Merchant Service, the outcome of deliberation between LORD BRASSEY and my father, the late SIR THOMAS DEVITT. Quoting from my friend, Mr. BASIL LUBBOCK'S "Colonial Clippers," I find the following very true words:—

"Luckily for the success of the venture Messrs. DEVITT & MOORE possessed two or three Captains in their employ who were specially fitted for the arduous task of controlling and teaching a shipload of 30 to 40 high-spirited boys.

"Of such were Captains BARRETT, CORNER, and MAITLAND."

In 1897 Captain MAITLAND was appointed to command the *Harbinger*. In 1898 he was transferred to the *Hesperus* and in her he numbered among the cadets under his charge the MARQUIS OF

GRAHAM—the present DUKE OF MONTROSE. In 1899 he was appointed to the *Illawarra*, in which ship he remained till she was sold in 1907.

He was then transferred to the *Port Jackson* and commanded her until she was sold in 1916, her purchase price being used by us towards the cost of founding and establishing the Nautical College, Pangbourne.

CHARLES MAITLAND therefore actually had command of all our specially-equipped training ships except the *Macquarie* and *Medway*. A very great number of sailors ashore and afloat, and who did not continue at sea after their training, will, on hearing of his passing, think back with affectionate gratitude to the debt they owe CHARLES MAITLAND, who looked after them and brought out in them the best qualities of practical seamanship as much by his example, keen sense of humour and courage, as by his teaching. He knew very well the great value of a sailing ship training, not only because of the real sailor-like qualities, which by its very nature it produced, but also the character building and resource which it brought out.

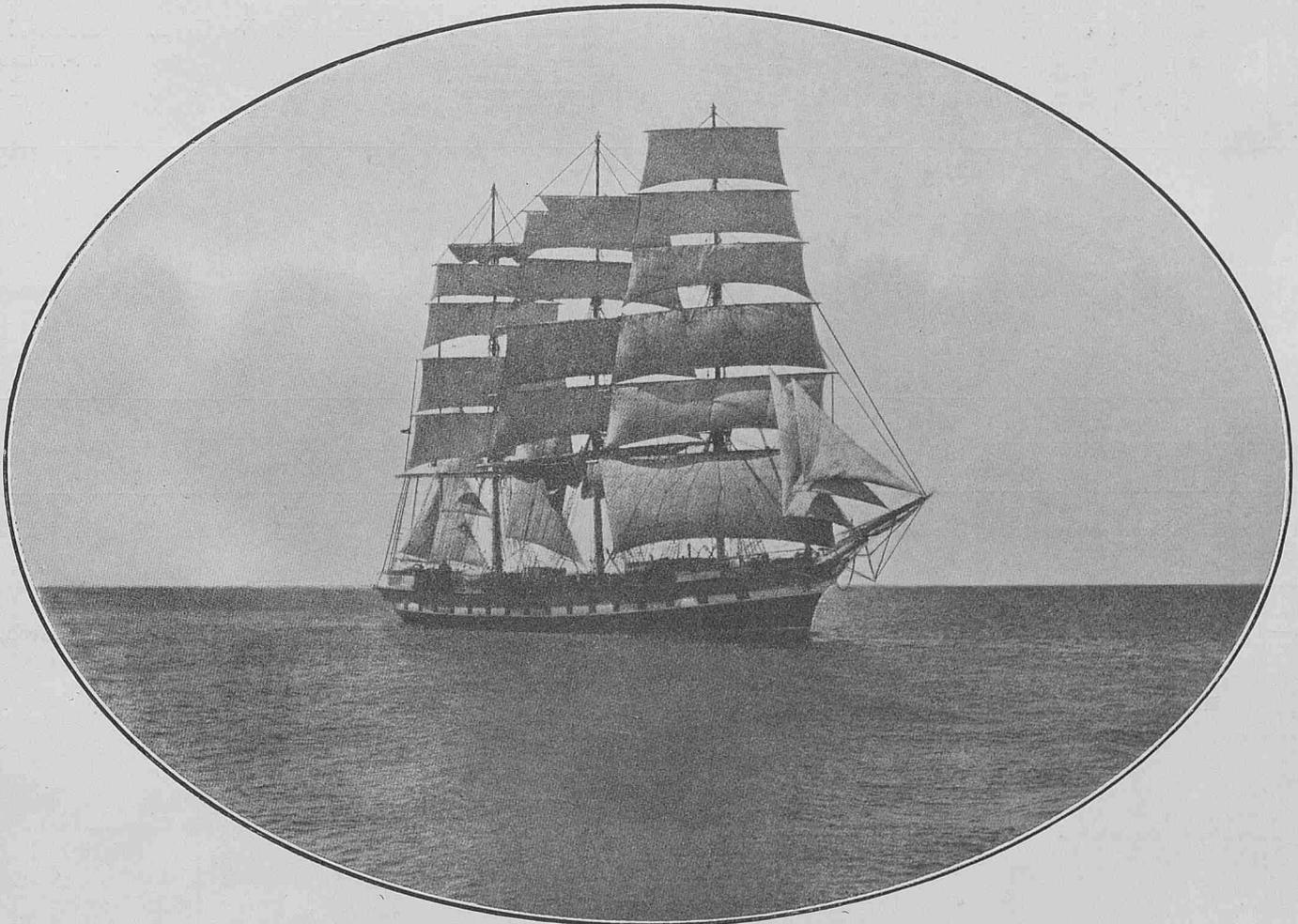
During the last few years there has been much talk about what may be the best scheme for training future officers for the Merchant Navy. However carefully schemes may be thought out and regulations framed for the ships in which apprentices or cadets are carried, the one thing that matters is the wise selection of the masters of these ships. If men such as the late Captain MAITLAND are employed the schemes will be successful, but not otherwise. He was a sailor and a man in the very best sense of the words, and he never served in a steamship, which will explain the following nice distinction between sail and steam. An old sailing ship captain, a friend of his, who when his owners sold their sailing ships, joined a steamship company and was soon given command of a steamer, on being asked by Captain MAITLAND how he liked steam replied, "It's fine. It's far better than going to sea."

Captain MAITLAND died as he lived, full of humour and courage, and has left behind him the great heritage of a fine example of what sailors should be, especially those who have charge of ships carrying apprentices. It was a great privilege to have known him.



The Master of the *Port Jackson* 1907-1916.

CAPTAIN CHARLES MAITLAND.



FOUR-MASTED BARQUE "PORT JACKSON."

SOUTHERN ICE REPORTS.

During the Years 1929 and 1930.

March.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1929	8	Ainsworth Bay, A	Admiralty Sound,	Several small pieces of ice	Floating at foot of the ice cliff, apparently having calved therefrom.	S.S. <i>Gloxinia</i> .
	18	Tierra del Fuego.	37° 42' W.	1 berg	Small pinnacled	R.R.S. <i>William Scoresby</i>
	16	53° 55' S. 53° 00' S.	37° 00' W	2 bergs	Large tabular berg approx. 1 mile long and 100 ft. high and 1 pinnacle berg.	S.S. <i>Gloxinia</i> .
1930	2	49° 29' S.	70° 29' E.	1 berg	Small berg about 50 ft. high, apparently aground	Aux. Bq. <i>Discovery</i> .
	20	61° 52' S.	59° 31' W.	4 bergs	Large, the largest being about ½ mile long and 350 ft. high	S.S. <i>Bulysses</i> .
	19	59° 54' S.	54° 25' W.	Several large and small bergs	The largest being about ½ mile long and 400 ft. high	do.
	18	58° 16' S.	49° 11' W.(D.R.)	2 bergs, 3 growlers	Moderate irregular	R.R.S. <i>William Scoresby</i> .
	30	57° 15' S.	46° 56' W.	1 berg	Moderate irregular, appears fresh	do.
	30	57° 21' S.	46° 15' W.	1 berg, many growlers	Moderate, well weathered, irregular, signs of breaking up	do.
	30	57° 22' S.	46° 05' W.	21 bergs, many growlers and pieces	10 moderate tabular, 11 moderate irregular, 2 with heavy black deposit.	do.
	17	55° 50' S.	43° 28' W.	12 bergs, field ice	The largest berg being about ½ mile long and 450 ft. high by sextant; the field ice being about 1½ miles in length and 100 yds. wide.	S.S. <i>Bulysses</i> .
	17	55° 40' S.	43° 20' W.	4 bergs	Small, height about 60 ft.	do.
	24	55° 35' S.	42° 24' W.	1 berg	Moderate irregular, heavy black deposit	R.R.S. <i>William Scoresby</i> .
	3	53° 46' S.	40° 15' W.	1 growler	Moderate irregular	do.
	28	53° 40' S.	39° 40' W.	1 berg	Moderate irregular	do.
	16	53° 50' S.	38° 40' W.	2 bergs	Estimated about 300 yds. each in length (about 150 yds. apart).	S.S. <i>Bulysses</i> .
	27	53° 17' S.	38° 32' W.	1 berg	Moderate, tabular	R.R.S. <i>William Scoresby</i> .
	4	53° 52' S.	38° 30' W.	2 bergs	1 tabular moderate, 1 irregular moderate	do.
27	53° 20' S.	38° 00' W.	1 berg	Moderate irregular	do.	
27	53° 20' S.	37° 50' W.	1 berg	Small irregular	do.	

SUPPLEMENTARY.

During the Year 1928.

March.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1928	1	30 miles North	of Prince Olaf	Pinnacle berg	150 ft. high	R.R.S. <i>William Scoresby</i> .

Note.—This report was received in the Marine Division too late for inclusion in statement of Ice published in the March, 1929, Marine Observer.

Reports of ice previous to March, 1929, will be found in The Marine Observer, Vol. VI, No. 63, pp. 63 and 64.

WEATHER SIGNALS.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

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

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

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

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

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

In parts of the world where such stations and particulars are not given, British **A Selected Ships** should make their reports to **CQ**

on 2100 metres (143 kc/s) as stated on page 18 Vol. VIII, No. 85 (January, 1931, MARINE OBSERVER).

B Selected Ships broadcast their report to C.Q. on 600 m. spark, and these may be intercepted by the stations ringed in on Chart IV. In making these reports to C.Q. "B Selected Ships" should make special endeavour to ensure that the report is received at these shore stations. With a view to assisting Meteorological Services who have provided information and to ensuring that routine reports from all "Selected Ships" within range of certain coast stations may be received by those services a list of stations specially detailed to receive reports from "B Selected Ships" is given on pages 69 and 70. The procedure given on pages 16 to 19, Vol. VIII, No. 85, should be adhered to as far as possible.

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

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

Request for Information.

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

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		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.				
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 IV).	Weather London.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	Control system. "Selected Ships" chosen to report in given order notified by station daily at 2230, 0330, and 1030 G.M.T. Roll call thus—Weather begins—Call signs of chosen "Selected Ships"—Weather ends.
	Chatham Mass.	Lat. 41° 42' N. Long. 70° 00' W.	WCC.		142.9 kc/s. (2098 metres).	North Atlantic West of Longitude 40° W.	Observer Washington.	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	No control. All British "A Selected Ships" within area to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.
	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTH.		125 kc/s. (2400 metres).	North Atlantic South of Latitude 38° N. and East of Longitude 40° W.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	No control—all British "A Selected Ships" within area should report in accordance with Schedule.

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

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTH.	Radio Horta	Weather only, up to 7 groups, preferably No. 3 Supplementary Groups.	
Indian Ocean.	Calcutta.	Lat. 22° 33' 31" N. Long. 88° 20' 16" E.	VWC.	Weather.	Weather only up to 6 groups, No. 6 Supplementary Groups preferred.	
	Rangoon.	Lat. 16° 45' 57" N. Long. 96° 11' 51" E.	VTR.			
	Madras.	Lat. 12° 59' 17" N. Long. 80° 10' 56" E.	VWM.			
	Bombay.	Lat. 19° 04' 55" N. Long. 72° 49' 54" E.	VWB.			
	Karachi.	Lat. 24° 51' 05" N. Long. 67° 02' 32" E.	VWK.			
	Matara.	Lat. 6° 01' 07" N. Long. 80° 35' 39" E.	GZP.			
	Mauritius.	Lat. 20° 23' S. Long. 57° 35' E.	VRS.	Observatory Mauritius.	Weather 4 universal groups and first of No. 6 Supplementary Groups.	

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

(Continued.)

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

II.—WIRELESS WEATHER SIGNALS.

WIRELESS WEATHER BULLETINS.

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

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

SWEDEN.

North Sea and Baltic.

C.W. Issues.

Karlsborg W/T station, Latitude 58° 29' N., Longitude 14° 29' E. (approx.), call sign **SAJ**, broadcasts weather bulletins for shipping, daily as follows:—

at 1050 G.M.T. } Wavelength 4,275 metres (C.W.).
and at 2200 G.M.T. }

The bulletins are similar in arrangement to the British "Weather Shipping" message which was described in Vol. VIII, No. 86, pp. 50 and 51, of this Journal.

The 1050 G.M.T. bulletin is based upon observations made at 0700 G.M.T., and that broadcast at 2200 G.M.T. upon observations made at 1800 G.M.T.

The bulletins commence with the words "Weather Report," and are divided into five parts.

Part I, in code.

Contains observations made at nine Swedish and four Danish and Norwegian coast stations (see following List) and from ships in the North Sea.

Coast Stations' observations are broadcast in two five-figure groups for each station*.

LIST OF OBSERVATION STATIONS.

Index Number.	Station.	Position (approx.).	
		Latitude N.	Longitude E.
2	Bjurö klubb	64° 28'	21° 34'
3	Holmögadd	63° 35'	20° 45'
4	Bremö	62° 13'	17° 44'
5	Örskär	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	Hammeren	55° 17'	14° 47'
2	Hanstholm	57° 07'	8° 36'
3	Utsire	59° 18'	4° 53'
4	Kinn	61° 34'	4° 47'

Observations from ships in the North Sea follow the Coast Stations' reports.

Part II, en clair (English).

A General Inference of weather conditions in 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 2, 3 and 4 (above) for particulars, see p. 72.

Part V.

Navigation and Ice Warnings.

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

GERMANY.

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—1015 and 2130 G.M.T.

The message issued at 1015 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 report in code giving actual observations with station numbers at the following stations.

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 given in the February number and in the Pamphlet, M.O. 329.

Part II contains a brief review of meteorological conditions followed by a forecast for the following 24 hours in German, covering the whole sea area of the South Frisian and North Frisian coasts between Borkum Riff Lt.-V., Elbe entrance and Heligoland, and from Elbe entrance northward to Ellenbogen (Sylt).

Western Baltic.

I.C.W. Issue.

Kiel W/T station, approximate Latitude 54° 24' N., Longitude 10° 11' E.

Call sign **DBK**.

Wavelength—680 m. I.C.W.

Time of transmission 1100 G.M.T., based on 0700 G.M.T. observations.

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

Part I is a report in code giving actual observations with station numbers at the following stations:—

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 review of meteorological 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.

Swinemunde W/T station, approximate Latitude 53° 55' N., Longitude 14° 16' E.

Call sign—**DAS**.

Wavelength—715 m. I.C.W.

Times of Transmission—1030 and 2145 G.M.T.

The message issued at 1030 G.M.T. is based on 0700 G.M.T. observations. The message issued at 2145 G.M.T. is based on 1800 G.M.T. observations.

The messages are preceded by the words "Seewetter Swinemunde" and consists of two parts.

Part I is a report in code giving actual observations with station numbers at the following stations:—

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 review of meteorological 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 report in code giving actual observations with station numbers at the following stations:—

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 review of meteorological conditions followed by a forecast for the following 24 hours in German, covering the area from Danzig Bay to Memel.

WIRELESS STORM WARNINGS.

SWEDEN.

Baltic.

C.W. Issues.

Karlsborg W/T station broadcasts warnings, *en clair*, English, of strong winds or gales for the following areas:—

- Sweden, West Coast (Skagerrak, Kattegat and the Sound).
- Baltic (Southern Baltic; South Skane, Bleking and Oland; Northern Baltic; East Gotaland, Svealand and Gotland).
- Gulf of Bothnia (Bothnia Sea; Bothnia Bay).

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 on p. 71.

GERMANY.

North Sea.

I.C.W. Issues.

Norddeich W/T station, Latitude 53° 36' N., Longitude 7° 09' E., (approx.), call sign **DAN**, broadcasts storm warnings, for the North Sea, on 600 metres, I.C.W., on receipt. Warnings are also broadcast on 750 metres, I.C.W., at 1015 and 2130 (after the weather bulletin), unless previously cancelled. All times are G.M.T. Warnings are broadcast *en clair* and preceded by the word "Funksturm."

The Warnings will contain information as to the type of disturbance, together with the direction and force of the wind.

Western Baltic.

I.C.W. Issues.

Kiel W/T station, Latitude 54° 24' N., Longitude 10° 11' E., (approx.), call sign **DBK**, broadcasts storm warnings for the Western Baltic; preceded by the word "Funksturm", on 600 metres, I.C.W., on receipt. Warnings are also broadcast on 680 metres, I.C.W. at 1100 G.M.T. Warnings are broadcast *en clair*.

Western and Central Baltic.

I.C.W. Issues.

Swinemunde W/T station, Latitude 53° 55' N., Longitude 14° 16' E., (approx.), call sign **DAS**, broadcasts storm warnings for the coast from Flensburg to Leba, preceded by the word "Funksturm" on 600 metres, I.C.W., on receipt. Warnings are also broadcast on 1100 metres I.C.W. at 0530, 1030, 1650 and 2145 unless previously cancelled. All times are G.M.T. Warnings are broadcast *en clair*.

The warnings are also transmitted on request.

Eastern Baltic.

I.C.W. Issues.

Pillau W/T station, Latitude 54° 39' N., Longitude 19° 56' E., call sign **DBP**, broadcasts storm warnings for the Eastern Baltic, preceded by the words "Storm Warnungen für die Ostliche Ostsee" on 600 metres, I.C.W., on receipt. Warnings are also broadcast on 740 metres, I.C.W., at 1130 G.M.T. (after the weather bulletin) and on request.

WIRELESS ICE WARNINGS

Sweden.

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 Statistbrytaren" (from the State ice breaker).

Latvia.

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 526.3 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.

Russia.

I.C.W. Issues.

Leningrad W/T station, Latitude 59° 55' N., Longitude 30° 15' E., (approx.), call sign **RDB**, broadcasts a report of the general ice conditions for the Gulf of Finland *en clair* in Russian at 1000 G.M.T. and in *English* at 1200 G.M.T., on 600 m. I.C.W.

Night Signals.

Signal.	Meaning.
Three <i>white</i> lights, triangle point up	Gale from N.W.
Three <i>white</i> lights, triangle point down	Gale from S.W.
Four <i>white</i> lights, triangle point up (one light above)	Gale from N.E.
Four <i>white</i> lights, triangle point down (one light below)	Gale from S.E.
One <i>red</i> light	"Atmospheric disturbance, be alert and look out for further information."

IV. VISUAL GALE WARNINGS.

Sweden.

Day Signals.	Night Signals.	Explanation.
		Gale (Force 7 to 9) is expected between N. and W.
		Gale (Force 7 to 9) is expected between S. and W.
		Gale (Force 7 to 9) is expected between N. and E.
		Gale (Force 7 to 9) is expected between S. and E.
		Gale of which the direction is not indicated.
		Storm (Force 10 to 12) is expected between N. and W.
		Storm (Force 10 to 12) is expected between S. and W.
		Storm (Force 10 to 12) is expected between N. and E.
		Storm (Force 10 to 12) is expected between S. and E.
		Storm of which the direction is not indicated.

R = Red. W = White.

Norway.

Day Signals.

Signal.	Meaning.	Signal.	Meaning.
	Indicates that a gale is expected, or is probable from S.W.		Indicates that a gale is expected, or is probable from N.W.
	Indicates that a gale is expected, or is probable from S.E.		Indicates that a gale is expected, or is probable from N.E.
	"Atmospheric disturbance, be alert and look out for further information."		

One flag displayed with any of the above signals indicates that the wind may be expected to *veer* during the gale.
 Two flags displayed with any of the above signals indicate that the wind may be expected to *back* during the gale.

Germany.

Day Signals.

Signal.	Meaning.
	Indicates that a gale is expected, or is probable from S.W.
	Indicates that a gale is expected, or is probable from S.E.
	Indicates that a gale is expected, or is probable from N.W.
	Indicates that a gale is expected, or is probable from N.E.
	Indicates the probability of a gale of which the direction of approach is not indicated.
	One flag displayed with any of the above signals indicates that the wind may be expected to <i>veer</i> during the gale.
	Two flags displayed with any of the above signals indicate that the wind may be expected to <i>back</i> during the gale.
	Displayed for the benefit of fishing vessels and small craft. It denotes that the wind is expected to increase in strength to force 6-7 (Beaufort scale).

Night Signals.

By night a *red* light is hoisted in place of any of the Day Signals; at certain stations, however, the following signals, known as amplified signals, are hoisted:—

Signal.	Meaning.
Two <i>white</i> lights vertical... ..	Gale probable from S.W'd.
Two <i>red</i> lights vertical	Gale probable from N.W'd.
A <i>white</i> light over a <i>red</i> light ...	Gale probable from S.E'd.
A <i>red</i> light over a <i>white</i> light ...	Gale probable from N.E'd.
One <i>red</i> light	Indicates the probability of a gale of which the direction of approach is not indicated.

The *red* light also constitutes a warning to fishing vessels and small craft that the wind is expected to increase in strength to force 6-7 (Beaufort scale).

In addition to the above night signals, storm signals are made at certain stations by searchlight directed towards the sky at an elevation of about 35°, and are repeated in various directions at two-hour intervals, commencing at the first even-numbered hour after dusk.

The day storm signals, indicated by cones, are made by long and short flashes. A short flash of about *three seconds'* duration corresponds with the point of the cone, and a long flash of about

nine seconds' duration corresponds with the base of the cone; thus the day storm signals, indicated by cones, are made as follows:—

- One cone point down — ■
- Two cones points down — ■ ■ ■ ■
- One cone point up ■ — ■
- Two cones points up ■ ■ ■ ■ ■
- Two cones bases towards each other ■ ■ ■ ■ ■

The day storm signal, indicated by a red flag, is made by a circular movement of the beam of light on the sky in a clockwise direction.

The day storm signal, indicated by two red flags, is made by a circular movement of the beam of light on the sky in an anti-clockwise direction.

The day storm signal, indicated by a ball, is made by a circular movement of the beam of light on the sky in a direction alternately clockwise and anti-clockwise.

The cone signal is preceded and followed by the flag signal. When no flag signal is made, the cone signal is preceded and followed by the ball signal, indicating that no direction of shift of wind can be given.

The warnings hold good for a distance of about 50 miles from the vicinity of the signal station; they continue in force until the evening of the day following the day of issue.

FOREIGN SELECTED SHIPS.

Under Weather Signals in the January MARINE OBSERVER, a Table of the world's tonnage was given, together with the number of Selected Ships proportionate to each nation's tonnage desired to be maintained by each country in accordance with the recommendation of the International Meteorological Organization, to comply with Article 35 of the International Convention on Safety of Life at Sea, 1929.

In that number full particulars were also given of the International Ships' Wireless Weather Telegraphy Code, and the scheme of communication for British "Selected Ships" in all parts of the world.

The names of British "Selected Ships" for the time being are indicated each month in THE MARINE OBSERVER.

Until similar lists of "Selected Ships" are published and corrected at short intervals by each country party to the Convention on Safety of Life at Sea or through the medium of an International body, shipping may not be aware of which ships of other nations are detailed to perform the voluntary duties of Selected Ships in different parts of the world.

Through the courtesy of Captain L. SCHUBART, Marine Superintendent of the Deutsche Seewarte, Hamburg, we are enabled to give

for the information of British shipping and seamen the names of German Selected Ships detailed as such up to the time of going to press.

It should be clearly understood that it will only be possible to give the names of foreign Selected Ships not exceeding in number the national complement in accordance with the latest tonnage tables, once a year; and that just as British "Selected Ships" are subject to change, so are foreign.

This arrangement is only temporary and may be discontinued.

While British "Selected Ships" work to the schedule for communications given in the January MARINE OBSERVER, at present foreign Selected Ships do not work to such a schedule, but they use the international observation times 0000, 0600, 1200, and 1800 G.M.T. in all parts of the world.

German Selected Ships address their reports when in range of Norddeich through DAN to Seewarte; elsewhere to C.Q., or to stations which may be detailed to receive their reports in other parts of the world.

GERMAN SELECTED SHIPS.

December 1930.

Ship.	Commander.	Line.	Ship.	Commander.	Line.
Adolf Woermann	M. FORSTER	Woermann Line.	New York	K. GRAALES	Hamburg-America Line.
Albert Ballin	P. WIEHR	Hamburg-America Line.	Njassa	W. HERM	" " "
Antonio Delfino	C. LUBBE	Hamburg-South America S.S. Co.	Orinoco	H. DAU...	" " "
Bayern	H. HINTZE	Hamburg-America Line.	Reliance	C. LÜCK	" " "
Berlin	H. v. THULEN	North German Lloyd.	Resolute	FR. KRUSE	" " "
Bremen	L. ZIEGENSEIN	" " "	Rio Bravo	C. CHRISTIANSEN	North German Lloyd.
Cap Arcona	E. ROLLN	Hamburg-South America S.S. Co.	Rio Panuco	KORD-LÜTGERT	" " "
Cap Norte	F. SACHSE	" " "	Rugia	H. BROCK	Hamburg-America Line.
Cap Polonia	F. WILDE	" " "	Sejdlitz	O. JURANY	North German Lloyd.
Cleveland	W. HENNECKE	Hamburg-America Line.	Sierra Cordoba	D. REIMERS	" " "
Columbus	A. AHRENS	North German Lloyd.	Sierra Morena	C. NAUER	" " "
Deutschland	O. LANGER	Hamburg-America Line.	Sierra Ventana	D. BALLEHR	" " "
Dresden	R. WURPTS	North German Lloyd.	St. Louis	R. NISS	Hamburg-America Line.
Europa	N. JOHNSEN	" " "	Stuttgart	A. WINTER	North German Lloyd.
Galleia	C. JESSE	Hamburg-America Line.	Tanganjika	ZELLE	Hamburg-America Line.
General Artigas	FR. FRANK	" " "	Teutonia	W. STORKER	" " "
General Belgrano	C. v. LUCKNER	" " "	Toledo	R. HOHLFELD	" " "
General Mitre	FR. SCHENK	" " "	Udena	F. JANTZEN	German East Africa Line.
General Osorio	F. ALERS	" " "	Usambara	H. MICHELSEN	" " "
General San Martin	J. WEYMAR	" " "	Usukuma	F. MICHELSEN	" " "
General v. Steuben	—	" " "	Wadai	J. EIBEN	Woermann Line.
Hamburg	TH. KOCH	" " "	Wahöhe	P. NIEDERBRÄCHT	" " "
Karlsruhe	H. FILZINGER	North German Lloyd.	Wanagoni	H. REISS	" " "
Madrid	F. BROCK	" " "	Watousi	N. BECKER	" " "
Magdalena	TH. METZENTHIN	Hamburg-America Line.	Württemberg	FR. HARDER	Hamburg-America Line.
Milwaukee	H. MOLCHIN	" " "	York	P. MILTZLAFF	North German Lloyd.
Monte Oliva	M. WELSTERMANN	Hamburg-South America S.S. Co.			
Monte Sarmiento	H. GENENZ	" " "			

GREAT BRITAIN—AMENDMENT.

WIRELESS WEATHER BULLETINS.

C.W. Issues "Weather Shipping" Bulletin.

Vol. VIII, No. 86, p. 50, column 1, *delete* lines 18 to 28 and *substitute* the following:—

"W/T Station, Rugby. Latitude $52^{\circ} 22' 10''$ N., Longitude $1^{\circ} 11' 15''$ W.

"Call sign G.B.R.

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

"Times of transmission 0910 G.M.T. and 2118 G.M.T.

"The message issued at 0910 G.M.T. is based upon 0700 G.M.T. observations, the message issued at 2118 G.M.T. is based upon 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 a.m. weather signal."

Special Notices Regarding Personnel.

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

OBITUARY.

The death of Captain JOHNSTON HUGHES, Commander of the Elder Dempster M.V. *Apapa*, which occurred at his home near Liverpool, on January 3rd, is noted with regret. In 1882 Captain HUGHES commenced his sea career, at the age of fifteen, as an apprentice in the ship *Sierra Lucena*. On completing his apprenticeship he remained in sail until he obtained his master certificate, and after serving a short time with Lamport and Holt, Ltd., joined Elder Dempster & Co., Ltd., in 1892, rising to command five years later, his first ship being the *Teneriffe*. Since then he has been continuously in command of ships of the Elder Dempster Fleet and a regular member of the Corps of Voluntary Marine Observers since 1921.

Lieutenant-Commander J. Kearney, R.N.R.

Captain J. KEARNEY, Commander of the R.M.S. *Adriatic*, has retired from active service afloat after 34 years' service with the White Star Line. Joining the White Star Line in 1896, he has held command since 1908, his more recent ships being the *Calgaric*, *Doric*, *Megantic*, *Cedric*, *Baltic*, and *Adriatic*. He has been associated with the Corps of Voluntary Marine Observers since 1898, who join with the Marine Division in wishing him long life and happiness in his retirement.

THE BROTHERS WRIGHT PATENT

NO. 2,000,000

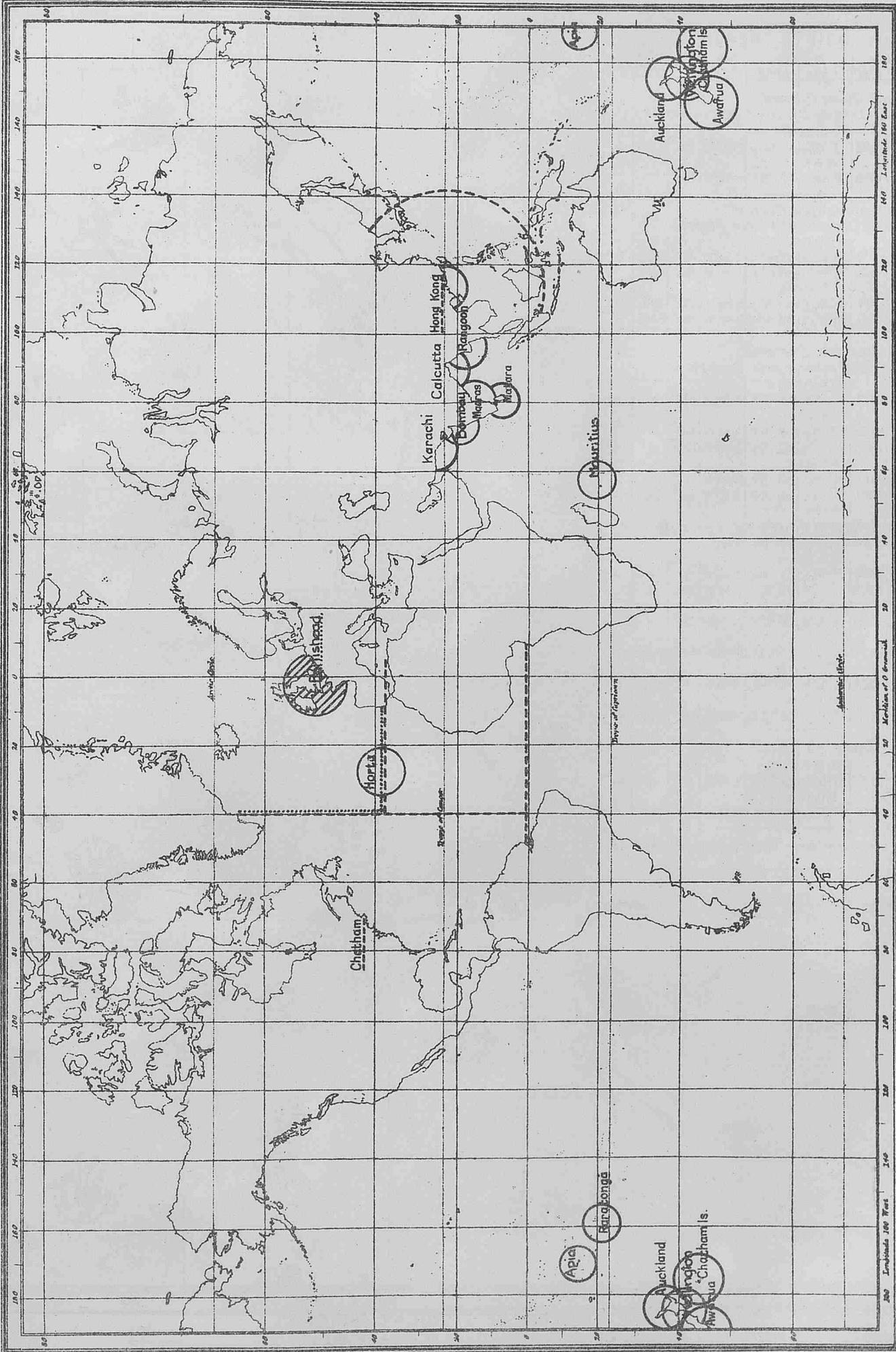
IN WITNESS WHEREOF, the said Inventors have hereunto set their hands and seals at Dayton, Ohio, this 17th day of October, 1903.

WRIGHT BROTHERS

Witness my hand and seal this 17th day of October, 1903.

Witness my hand and seal this 17th day of October, 1903.

Chart. IV.— SHIPS' WIRELESS WEATHER SIGNALS.
Stations for Reception of Routine Wireless Weather Reports from "Selected Ships"



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

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

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



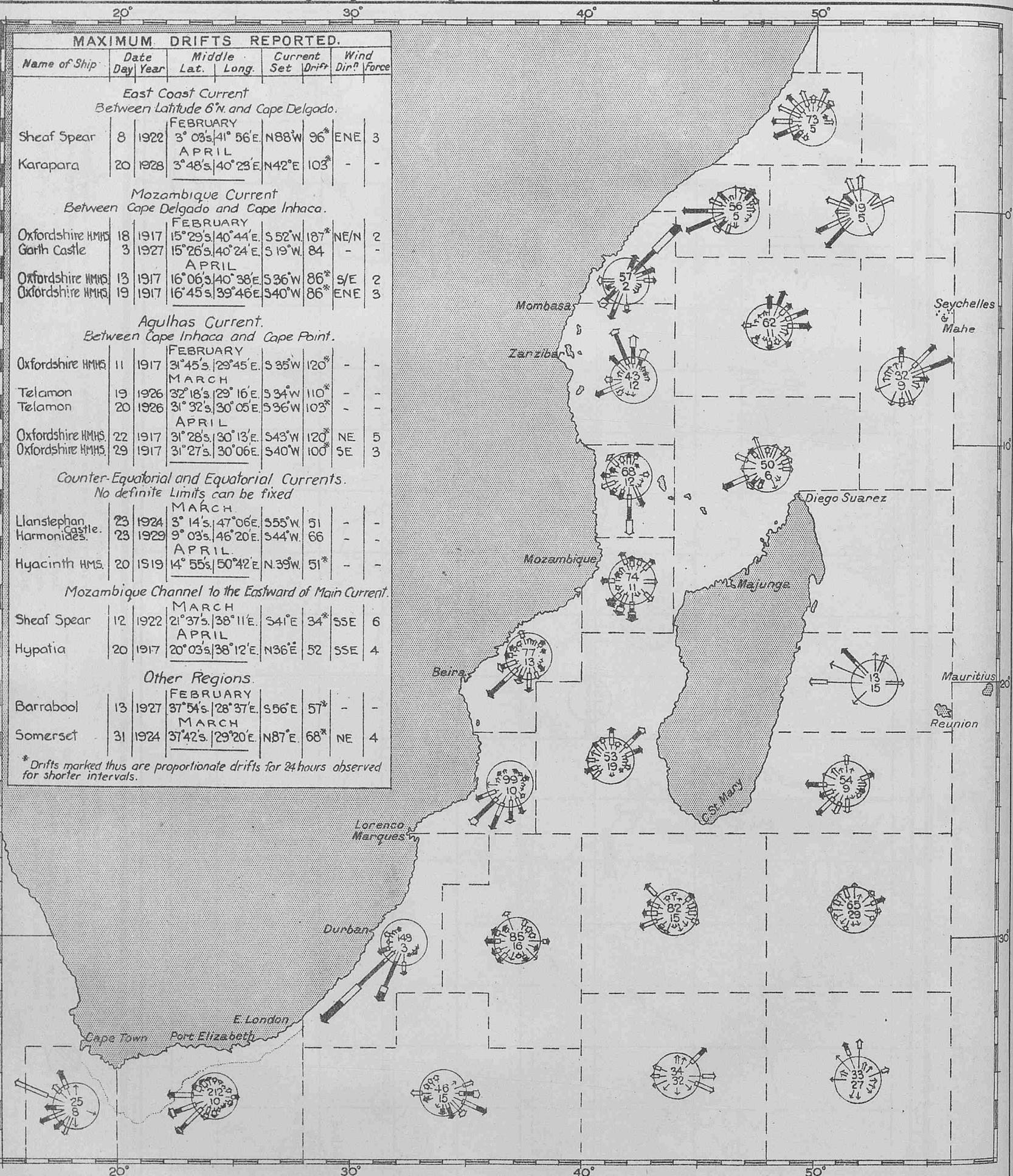
CURRENTS ON THE TRADE ROUTES OFF THE S. AND E. COASTS OF AFRICA AND WESTWARD OF MAURITIUS.

FEBRUARY MARCH. and APRIL.

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

MAXIMUM DRIFTS REPORTED.								
Name of Ship	Date	Middle	Current	Wind				
Day	Year	Lat.	Long.	Set	Drift	Dir ^o	Force	
East Coast Current								
Between Latitude 6°N. and Cape Delgado.								
FEBRUARY								
Sheaf Spear	8	1922	3° 03'S, 41° 56'E.	N88°W	36*	ENE	3	
APRIL								
Karapara	20	1928	3° 48'S, 40° 29'E.	N42°E	103*	-	-	
Mozambique Current								
Between Cape Delgado and Cape Inhaca.								
FEBRUARY								
Oxfordshire HMMS	18	1917	15° 29'S, 40° 44'E.	S 52° W	187*	NE/N	2	
Garth Castle	3	1927	15° 26'S, 40° 24'E.	S 19° W	84	-	-	
APRIL								
Oxfordshire HMMS	13	1917	16° 06'S, 40° 38'E.	S 36° W	86*	S/E	2	
Oxfordshire HMMS	19	1917	16° 45'S, 39° 46'E.	S 40° W	86*	ENE	3	
Aguilhas Current.								
Between Cape Inhaca and Cape Point.								
FEBRUARY								
Oxfordshire HMMS	11	1917	31° 45'S, 29° 45'E.	S 35° W	120*	-	-	
MARCH								
Telamon	19	1926	32° 18'S, 29° 16'E.	S 34° W	110*	-	-	
Telamon	20	1926	31° 32'S, 30° 05'E.	S 36° W	103*	-	-	
APRIL								
Oxfordshire HMMS	22	1917	31° 28'S, 30° 13'E.	S 43° W	120*	NE	5	
Oxfordshire HMMS	29	1917	31° 27'S, 30° 06'E.	S 40° W	100*	SE	3	
Counter-Equatorial and Equatorial Currents.								
No definite Limits can be fixed								
MARCH								
Llanstephan Castle.	23	1924	3° 14'S, 47° 06'E.	S 55° W	51	-	-	
Harmonides.	23	1929	9° 03'S, 46° 20'E.	S 44° W	66	-	-	
APRIL								
Hyacinth HMS.	20	1919	4° 55'S, 50° 42'E.	N 39° W	51*	-	-	
Mozambique Channel to the Eastward of Main Current.								
MARCH								
Sheaf Spear	12	1922	21° 37'S, 38° 11'E.	S 41° E	34*	SSE	6	
APRIL								
Hypatia	20	1917	20° 03'S, 38° 12'E.	N 36° E	52	SSE	4	
Other Regions.								
FEBRUARY								
Barrabool	13	1927	37° 54'S, 28° 37'E.	S 56° E	57*	-	-	
MARCH								
Somerset	31	1924	37° 42'S, 29° 20'E.	N 87° E	68*	NE	4	

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



EXPLANATION OF CURRENT ROSES.

The current roses are drawn from observations within the pecked lines.

Arrows flow with the current, length represents frequency, thickness strength.

6-12 miles per day	...	→
13-24 " " "	...	→
25-48 " " "	...	→
49-72 " " "	...	→
73 " " " and above	...	→

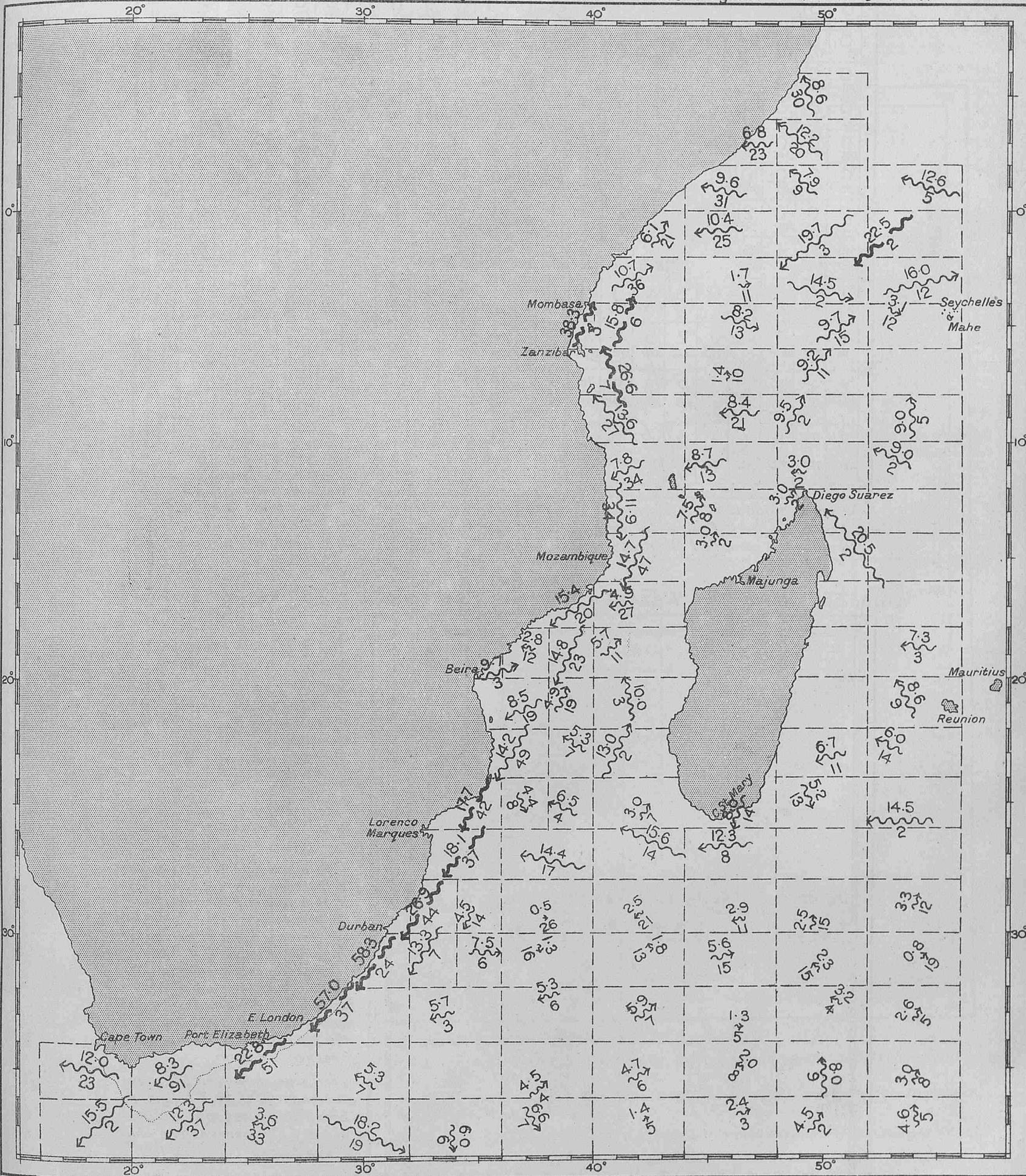
Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%

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

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

FEBRUARY MARCH, and APRIL,

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

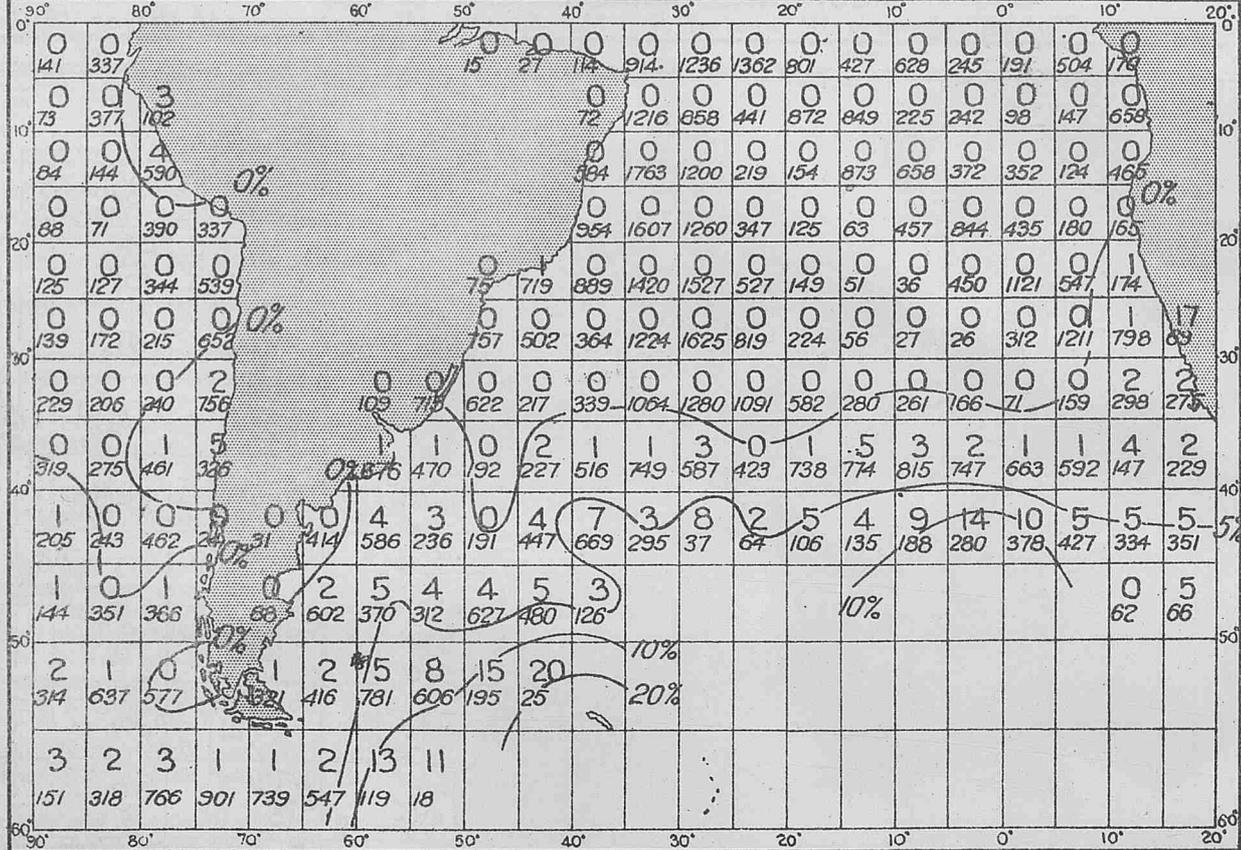


EXPLANATION OF CURRENT ARROWS.

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

MARCH.

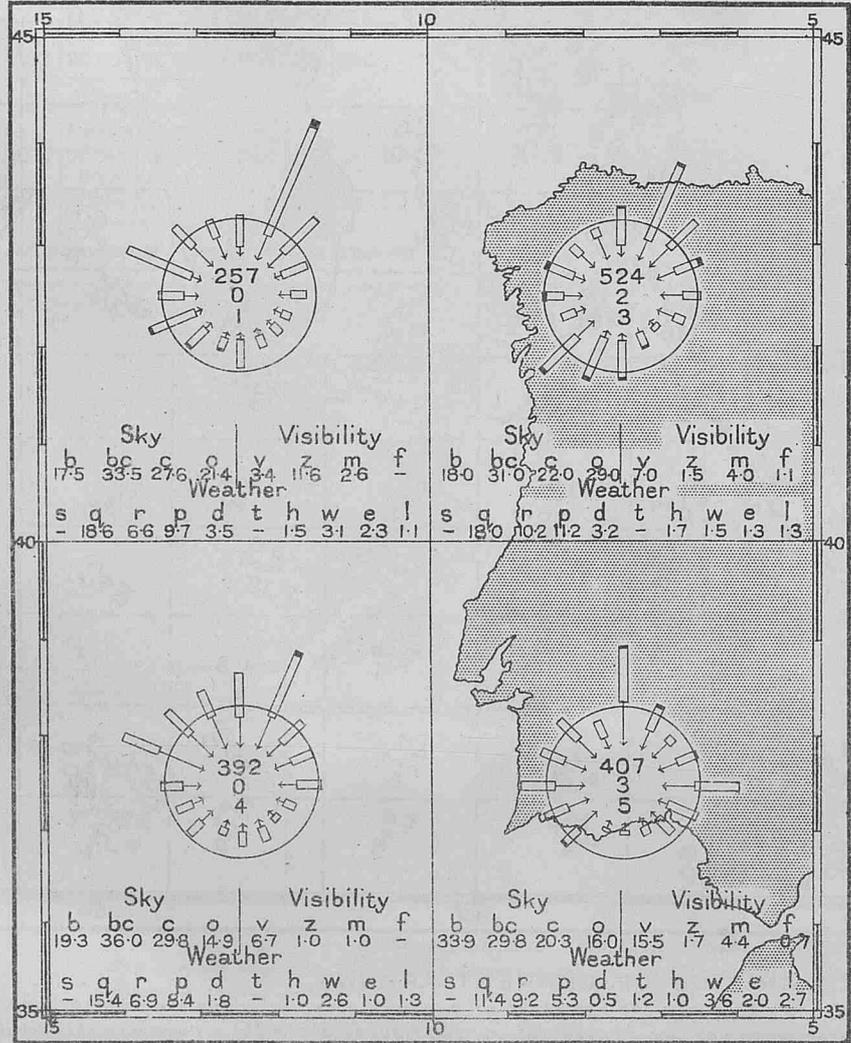
FOG IN THE SOUTH ATLANTIC AND VICINITY OF WEST COAST OF SOUTH AMERICA, PERCENTAGE FREQUENCY.



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

MARCH.

WIND, FOG, MIST AND WEATHER FOR THE REGION OFF THE COAST OF PORTUGAL.



EXPLANATION.

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

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

Gales. Moderate. Light.
 8-12 4-7 1-3

Distance from head of arrow to circle represents 5%,
 Scale: 0 10 20%

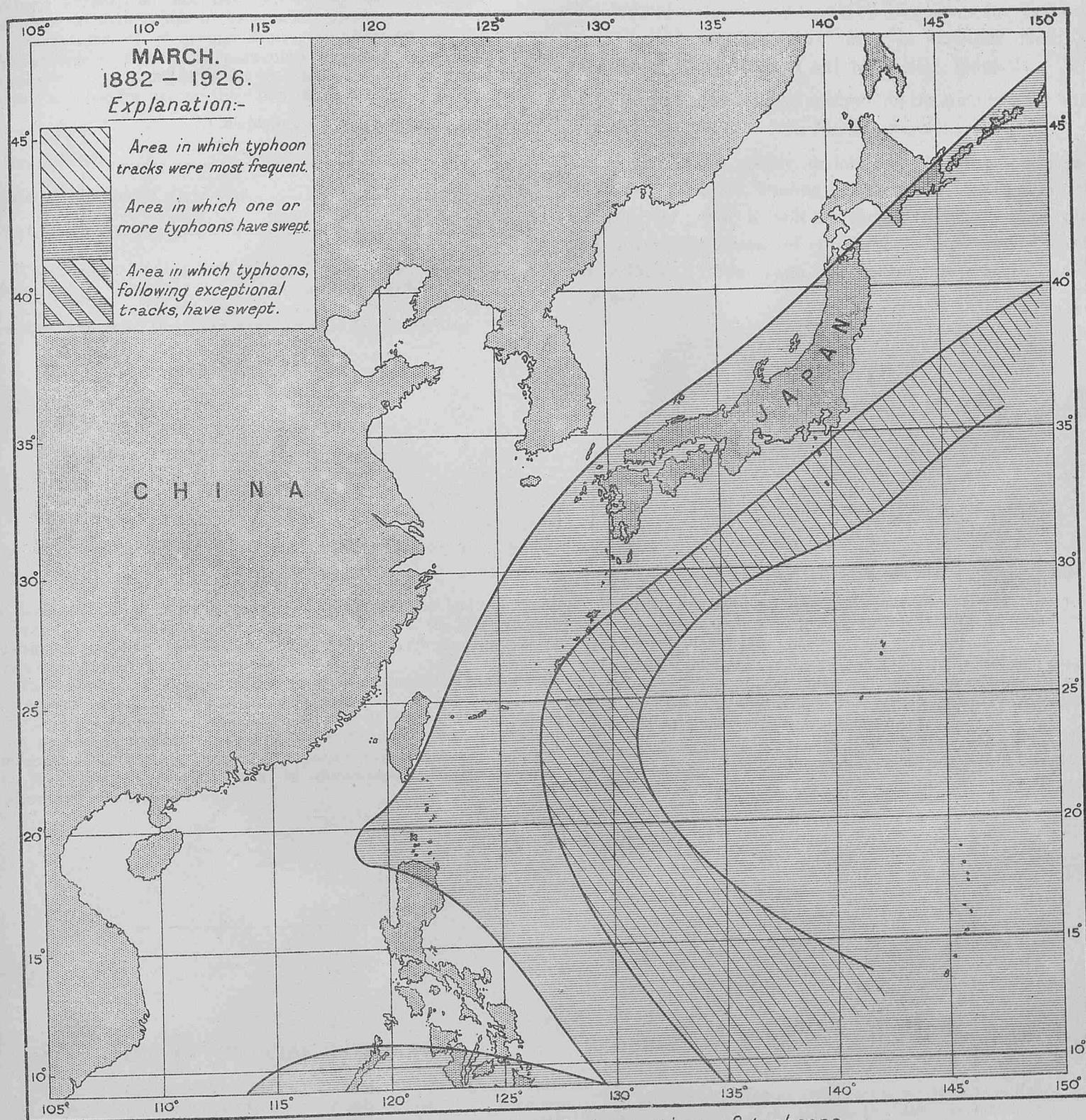
The upper figure in the centre of the rose gives total number of observations, the middle figure the percentage frequency of calms and the lower figure the percentage frequency of variable winds.

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

For example, in the 5° square Latitude 40° to 45° N. Longitude 5° to 10° W. b was logged 18 times in every 100 observations while f was logged 1 in every 100.

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

TYPHOONS IN THE FAR EAST DURING 45 YEARS.



Remarks:- Same atmospheric conditions as in February; only one or two typhoons crossed the East China Sea near longitude 123° travelling N.E.
Principal Track:- East of the Riu-Kiu islands and between Honshiu and the Bonin Islands, nearer to Japan.
Starting Point:- between Guam and Yap.

(From Atlas of the Typhoons of the China Seas, 1882 to 1926, by the Rev. P.E. Gherzi S.J., Director Zi-ka-wei Observatory, near Shanghai, China).

NOTICES.

POSTAL ARRANGEMENTS.

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

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

S.S..... Captain.....

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

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

ICE REPORTS.

Commanders of ships in the Trans-North Atlantic and Southern Ocean Trades are earnestly requested to have the Ice Report Form 912 completed and returned at the end of each passage. A nil return is desired if no ice is seen.

These forms are supplied with THE MARINE OBSERVER each month to regular observing ships in these Trades.

"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.

CARE OF OFFICIAL LITERATURE.

THE MARINE OBSERVER and such ocean meteorological charts and atlases as can be supplied which are sent to Regular Observing Ships, are placed on board as equipment for doing Routine Voluntary Meteorological Work, and as some return to the Captains and Officers who do this work and the shipowners who encourage it in the ships whose names appear in the Fleet List in THE MARINE OBSERVER. This literature is official equipment and all concerned are asked to take great care of it.

The books sent annually, as Excellent Awards, to a certain number of Commanders and Officers who have done the best work, are presentations and are, of course, the personal property of the recipients.

In view of the fact that the Meteorological Office equipment in Voluntary Observing Ships is provided at the cost of Public Funds, it is essential that it should be treated with great care.

COVER FOR MARINE OBSERVER.

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

The arrangements for assembling the numbers for binding was described in Vol. VII, No. 84, page 237.

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

ILLUSTRATIONS FOR THE MARINE OBSERVER.

When making sketches, charts or plans, Marine Observers will give us great assistance if they will give consideration to reproduction in "The Marine Observer."

The size of any chart or drawing should not, if possible, exceed that of a page of "The Marine Observer," and if charts and drawings of all kinds are made with Indian Ink upon white drawing paper their reproduction will be greatly facilitated.

When photographs are sent in it would give us great assistance if they are accompanied by the plate or film, which will be returned if desired.

REQUESTS FOR REPLACEMENTS OF INSTRUMENTS, ETC.

The attention of Marine Observers is invited to the list of Nautical Officers and Agents of the Marine Division, overleaf.

Correspondence, delay and inconvenience may be saved if the Commanders and Officers of observing ships will kindly make their requests for replacements of instruments, logs, etc., to the appropriate Agency.

The Agents have the necessary gear, information and instruction to supply the needs of regular observing ships and to give advice upon questions of Marine Meteorology to any officers of the Merchant Navy who may desire it.

ICE CHART. WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

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

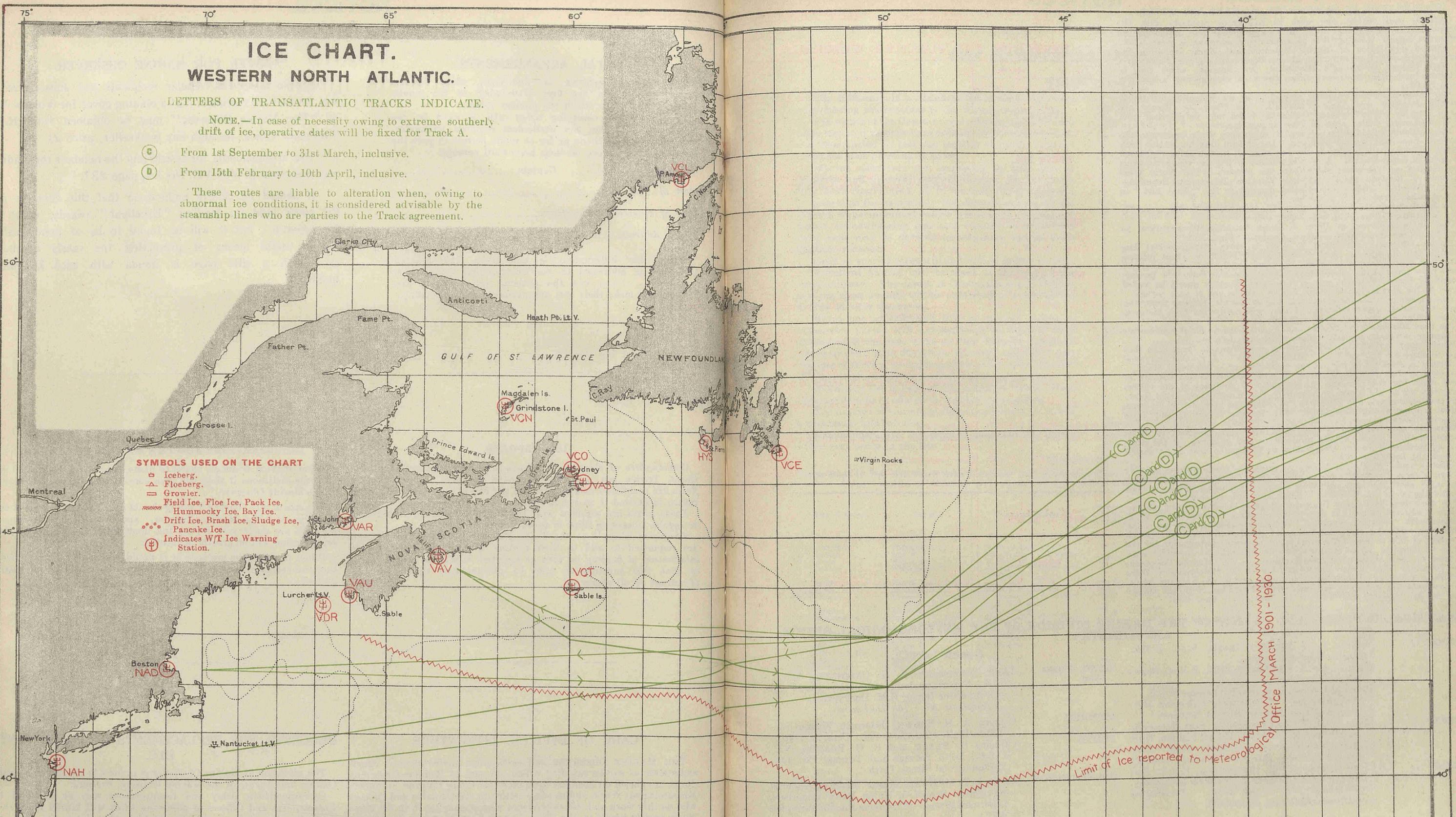
(C) From 1st September to 31st March, inclusive.

(D) From 15th February to 10th April, inclusive.

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

SYMBOLS USED ON THE CHART

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



PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks
		Lat.	Long.	
March 24, 1913	S.S. Floride ...	48°21'N.	34°05'W.	Berg 60 ft. high, 200 ft. long.
" 20, 1915	S.S. Wanaby ...	38°55'N.	48°32'W.	Piece—supposed portion of a berg 5 ft. high, 60 ft. long.
" 21, 1920	U.S. Hyd. Bulletin ...	38°02'N.	40°38'W.	3 ft. high, 30 ft. long.
" 21, 1921	S.S. Hollandia ...	37°50'N.	47°23'W.	Berg.

No Reports of Ice, sighted during the month of January, 1931, have been received at the Meteorological Office.

CO-OPERATION OF SHIPOWNERS, MASTERS AND MATES.

Captains and officers who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officers or Agents, a list of these gentlemen with addresses is given below. A general description of Marine Meteorological Work, including the particulars desired from intending Marine Observers, is given in Chapter I of THE MARINE OBSERVER'S HANDBOOK, 5TH EDITION, which may be obtained from H.M. Stationery Office direct, or through any booksellers, price 2s. 6d.

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

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

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

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

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

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

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

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

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

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

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

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

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

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
BALTIC.			
8.1.31	55°16'N.	12°37'E.	Drifting wreckage.
NORTH SEA.			
11.1.31	4 m. E. by S. of West Hinder Lt. Vessel.		Pillar Buoy painted black, showing red occulting light every 10 seconds. Apparently adrift.
ENGLISH CHANNEL.			
8.1.31	48°47'N.	4°26'W.	Large black buoy.
11.1.31	49°42'N.	0°17'W.	Large tree trunk Dangerous to navigation.
NORTH ATLANTIC.			
3.1.31	63°40'N.	12°—'W.	Submerged wreckage.
5.1.31	43°25'N.	63°30'W.	Large bell buoy, letters <i>A N D</i> visible in white. Dangerous to navigation.
6.1.31	32°50'N.	33°17'W.	Floating light buoy.
6.1.31	12' N.W. of Cape Finisterre.		Large spherical buoy, painted black and white. Dangerous to navigation.
6.1.31	31°53'N.	71°35'W.	40,000 ft. of lumber, pieces 3" by 10" by 16" lost overboard from ss. <i>Sidney M. Hauptman</i> .
8.1.31	43°10'N.	65°05'W.	A submerged derelict with the stumps of two masts visible above water.
8.1.31	40°00'N.	56°18'W.	Buoy about 10 ft. high flying a red pennant marked with letter <i>N</i> .
9.1.31	39°03'N.	74°21'W.	Tall can buoy.
18.1.31	45°47'N.	7°23'W.	A wreck awash, showing apparently two stumps of masts.
19.1.31	48°13'N.	5°24'W.	Three buoys drifting.
20.1.31	48°03'N.	6°16'W.	Red conical buoy, marked white letter <i>S</i> . Dangerous to navigation.
22.1.31	48°02'N.	5°58'W.	Drifting black buoy.
GULF OF MEXICO.			
5.1.31	25°03'N.	84°17'W.	Gas buoy showing flashing white light.
CHINA SEA.			
14.1.31	19°N.	112°E.	Derelict junk. dangerous to navigation.

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

- LONDON Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent.
 Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant.
 Room 319, Adastral House, Kingsway, W.C.2.
 (Telephone No.: Holborn 3434 Extension 421).
 Nearest station Temple, District Railway.
- THAMES Lieut. C. H. WILLIAMS, R.N.R., Port Meteorological Officer, Royal Albert Docks, London, E.16.
 (Telephone No.: Albert Docks 2659. Telegraphic Address: Barometric Aldock, London).
- MERSEY Lieut. Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool.
 (Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool).

Agents.

- BELFAST Captain J. MCINTYRE, Harbour Master, Harbour Office. (Telephone No.: Belfast 4090).
- BRISTOL CHANNEL Captain T. JOHNSTON, Technical College, Cathays Park, Cardiff. (Telephone No.: Cardiff 6813).
- CLYDE Mr. ROBERT CLEARY, Master Mariner, The Clutha Stevedoring Co., Ltd., Princes Dock, Glasgow. (Telephone No.: 513 Ibrox).
- FREMANTLE W. Australia. ... Captain J. J. AIREY, Deputy Director of Navigation, Customs House. (Telephone No.: B 1391).

Agents (contd.).

- HONG KONG, China. Lieut. Commander R. H. CALDWELL, D.S.C., R.N., Superintendent, Admiralty Chart and Chronometer Depot, H.M. Dockyard. (Telephone No.: 108 Dockyard).
- HUMBER Captain A. M. BROWN, Ellerman Wilson Line Office, Hull. (Telephone No.: Central 2180).
- FORTH Captains G. BLACK and C. G. BONNER, V.C., D.S.C., Leith Salvage and Towage Co., Ltd., 2, Commercial Street, Leith.
- SOUTHAMPTON Mr. R. I. T. MCEWAN, Master Mariner, Gilchrist Navigation School, 5, Union Bank Chambers, 1, Bernard Street. (Telephone No. Southampton 4277).
- SYDNEY, New South Wales. Commander G. D. WILLIAMS, D.S.O., R.D., R.N.R., Deputy Director of Navigation.
 Captain C. LINDBERGH.
 Customs House. (Telephone No.: B6421).
- TYNE Captain J. J. MCEWAN, Marine School, South Shields.
- VANCOUVER, British Columbia. Mr. T. S. H. SHEARMAN, 61, Leigh Spencer Building, 553, Granville Street. (Telephone No.: Seymour 3309).

LIST OF VOLUNTARY OBSERVING SHIPS

FLEET LIST.

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

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

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

Only in special cases will individual letters be sent.

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

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

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

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

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

Explanation of Abbreviations.

Unless otherwise stated, vessels on the following list are s.s.—M.V. indicates Motor Vessel.

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

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

No. = No Meteorological Office instrumental equipment on board.

M = Ship's barometer *mercurial*.

A = Ship's barometer *aneroid*.

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

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

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

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

** = Short range transmission and reception.

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

Selected Ships.

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

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.1.31.	Date Received.
233 †† <i>Aba</i> , M.V. ...	Williams, T. E. ...	J. D. Townson, R. Cherry ...	W.T.	Elder Dempster ...	Form 911 6.11.30 to 8.12.30 ...	12.12.30
121 †† <i>Abinsi</i> ...	Sola, P. ...	G. H. Worsley, J. J. Smith. ...	W.T.M.	" "	Forms 911 & 138 31.10.30 to 4.12.30	9.12.30
122 †† <i>Acera</i> ...	Toft, J. T. ...	R. B. Ellis ...	M.L.	" "	" " 3.12.30 to 8.1.31	15.1.31
155 *† <i>Achilles</i> ...	Williams, D. T. ...	C. Broad, R. E. Agar, J. C. Stratford.	M.L.	A. Holt ...	Form 915 1.5.30 to 31.8.30 ...	3.9.30
055 *† <i>Actor</i> ...	Whyte, D. L. ...	" " " " " " " "	No. M.	Harrison ...	" " " " " " " "	" " " "
123 †† <i>Adda</i> , M.V. ...	Shooter, J. C. ...	J. Boyd, F. C. Langton ...	W.T.M.	Elder Dempster ...	Forms 911 & 138 23.10.30 to 24.11.30	28.11.30
050 †† <i>Adriatic</i> ...	Kearney, J., Lt.-Commr., R.N.R.	O. V. Lucas, E. P. Hughes, H. R. Wilkinson.	W.T.	White Star ...	" " 23.11.30 to 14.12.30	17.12.30
<i>Aeneas</i> ...	Wallace, W. K.	A. McL. Pilcher ...	No. A.	A. Holt ...	Form 911 10.11.30 to 14.11.30	22.12.30
166 *† <i>Agamemnon</i> ...	Beswick, W., D.S.C., Commr., R.N.R.	C. Mackinnon, P. McGilligan.	W.T.	" "	Forms 911 & 138 23.10.30 to 10.11.30	2.12.30
<i>Aidan</i> ...	Reynolds, W. H. B. ...	A. A. Gerrard ...	No. A.	Booth ...	Form 911 24.9.30 to 28.11.30	11.12.30
<i>Alaunia</i> ...	Prothero, M. ...	T. O. Ellis ...	" A.	Cunard ...	" " 16.11.30 to 6.12.30	8.12.30
<i>Alban</i> ...	Evans, L. ...	J. G. Tippet ...	" A.	Booth ...	" " 18.8.30 to 7.10.30	27.10.30
310 †† <i>Aleantara</i> , M.V. ...	Wakeman, E. C. ...	" " " " " " " "	W.T.	R.M.S.P. ...	" " 25.10.30 to 3.12.30	8.12.30
178 *† <i>Alipore</i> ...	Lyndon, E. P. ...	W. L. Dobbin ...	No. M.	P. & O. ...	" " 30.10.30 to 15.11.30	8.12.30
175 †† <i>Almanzora</i> ...	Hannam, F. S. ...	W. D. Lowe ...	W.T.	R.M.S.P. ...	" " 14.10.30 to 22.11.30	26.11.30
012 †† <i>Almeda Star</i> ...	Turner Russell, W. ...	E. H. Osgood, H. Metcalf, P. H. Hunt.	No. M.	Blue Star ...	Forms 911 & 138 27.9.30 to 13.11.30	15.11.30
<i>Alondra</i> ...	Scott, L. S. ...	G. Hamilton, A. N. Johnson	" A.	Yeoward ...	Form 911 16.11.30 to 8.12.30	15.12.30
<i>Alynbank</i> ...	Robertson, J. ...	G. E. Beaton ...	" A.	A. Weir & Co. ...	" " 21.11.30 to 4.12.30	29.12.30
103 †† <i>Andalucia Star</i> ...	Vernon, R. ...	T. B. Whetherley, P. Clarke, H. Bradshaw.	" M.	Blue Star ...	Forms 911 & 138 19.10.30 to 2.12.30	29.12.30
<i>Anchises</i> ...	Dunlop, J. K. ...	E. N. Sandon, E. G. Coombe	" A.	A. Holt ...	Form 911 24.2.30 to 5.4.30	10.6.30
<i>Antiochus</i> ...	Dougall, W. T. ...	C. F. Lock ...	" A.	" " " " " " " "	" " 20.11.30 to 5.12.30	1.1.31
209 †† <i>Aorangi</i> , M.V. ...	Martin W. ...	E. Anderson, J. Watling, R.N. Turner, D.H. Richards, H. Webster.	M.L.	Canadian-Australasian	Form 915 1.5.30 to 15.8.30	11.12.30
120 †† <i>Apapa</i> ...	Hughes, J. ...	J. R. Sergiades, V. Feeney.	W.T.M.	Elder Dempster ...	Forms 911 & 138 21.11.30 to 22.12.30	29.12.30
029 †† <i>Appam</i> ...	Beith, A. ...	W. M. M. Hutchings, C. V. Evans, H. O. Forster.	W.T.	" "	" " 26.11.30 to 2.1.31	3.1.31
<i>Araby</i> ...	Lee, J. ...	H. Haigh ...	No. A.	MacIver ...	Form 911 1.9.30 to 20.11.30	26.11.30
115 †† <i>Arandora Star</i> ...	Moulton, E. W. ...	" " " " " " " "	" M.	Blue Star ...	" " 21.12.30 to 6.1.31	15.1.31
278 *† <i>Architect</i> ...	Mowat, I. ...	A. C. Bannister ...	" M.	Harrison ...	Forms 911 & 138 4.10.30 to 8.12.30	15.12.30
247 *† <i>Argyllshire</i> ...	Page, W. J. ...	D. D. Ingram, D. C. Valt, D. Hayl.	" M.	Federal ...	Form 911 27.5.30 to 1.10.30	10.10.30
293 *† <i>Ariguani</i> ...	Scudamore, J. H. H. D.S.C., R.D., Commr., R.N.R.	G. McKee, W. Ireland, M. H. Thomson, J. S. Bell.	M.L.	Elders & Fyffes ...	Form 915 9.8.30 to 7.12.30	24.12.30
<i>Ariosto</i> ...	Biggins, R. L. ...	N. F. Hewetson, R. W. Holdsworth.	No. A.	Ellerman Wilson ...	Form 911 22.9.30 to 27.12.30	6.1.31
144 †† <i>Arlanza</i> ...	Clarke, E., R.D., Commr., R.N.R.	W. Dorrell, H. V. Todd ...	W.T.	R.M.S.P. ...	Forms 911 & 138 7.11.30 to 20.12.30	29.12.30
091 †† <i>Armada Castle</i> ...	Whitfield, G. J. ...	W. Pace, C. Lloyd, A. H. Parry, E. T. Day.	M.L.	Union Castle ...	Form 915 1.8.30 to 23.11.30	26.11.30
296 *† <i>Arracan</i> ...	Thomson, S. ...	K. Currie, B. Bain, T. B. Wilkins.	"	P. Henderson ...	" " 26.3.30 to 5.11.30	11.11.30

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.1.31.	Date Received.
095 † <i>Arundel</i> ... <i>Arundel Castle</i> ...	Shaw, B. ... Morton Betts, W. ...	M. Mahoney ... G. L. Clarke, O. Pitts, E. McKinley.	C.C. M.L.	Southern Rly. Union Castle	Telegraphic Report 16.1.31 ... Form 911 8.8.30 to 28.12.30 ...	16.1.31 2.1.31
280 *† <i>Astronomer</i> ... 065 † <i>Asturias</i> M.V. ...	Richards, J. ... LeBrecht, H. A. ...	T. R. Hill ... H. G. Whittle, S. J. Hill, R. S. Stevens, J. M. Phillips.	No. M. W.T.	Harrison ... R.M.S.P. Co. ...	Forms 911 & 138 4.11.30 to 30.11.30 ... Form 138 23.11.30 to 1.1.31 ...	4.12.30 5.1.31
156 *† <i>Ascanius</i> ...	Wilson, C. A. ...	J. T. Collin, W. J. E. Wright C. B. Reeder.	M.L.	A. Holt ...	Form 915 1.5.30 to 9.8.30 ...	13.8.30
<i>Atlantian</i> ... <i>Atrous</i> ...	Masters, W. ... Wilcox, J. H. ...	... E. A. H. Gepp ...	No. A. " A.	Leyland ... A. Holt ...	Form 911 6.10.30 to 12.11.30 ... " " 4.3.30 to 28.6.30 ...	25.11.30 2.8.30
281 *† <i>Auditor</i> ... <i>Ausonia</i> ...	Owen, W. T. ... Murchie, P.A., R.D., Capt. R.N.R.	L. Richardson ... E. R. Taylor ...	" M. " A.	Harrison ... Cunard ...	Forms 911 & 138 31.8.30 to 15.11.30 ... Form 911 15.11.30 to 7.12.30 ...	25.11.30 15.12.30
212 *† <i>Australia</i> ...	Scutt, W. ...	P. McDougal, E. H. Lidstone, A. G. Brooks.	M.L.	British India ...	Form 915 25.7.30 to 1.8.30 ...	16.8.30
010 † <i>Avelona Star</i> ... 124 † <i>Avila Star</i> ...	Thomas, R. J. ... Hopper, G.E. ...	F. N. Johnson ... W. J. Stratton, C. Barratt, R. C. Freaker, A. C. Abbott	No. M. " M.	Blue Star ... " ...	... Forms 911 & 138 15.11.30 to 1.1.31 ...	... 8.1.31
<i>Balmoral Castle</i> ... 179 *† <i>Balyanald</i> ...	Gilbert, E. F. ... Short, C. E. ...	H. Baty ... E. R. Physick ...	" A. " M.	Union Castle ... P. & O. Branch	" " 21.3.30 to 7.5.30 ... Forms 911 & 138 18.12.30 to 5.1.31 ...	14.5.30 15.1.31
051 † <i>Ballie</i> ...	Davies, E. ...	J. H. Walker, J. Law, D. W. Chamberlain.	W.T.	White Star ...	" " 8.12.30 to 28.12.30 ...	30.12.30
<i>Bampton Castle</i> ... <i>Banbury Castle</i> ...	James, J. S., D.S.C. Aylen, C. E. H. ...	H. R. Graham ... E. Hamlyn, R. C. J. Watt, C. J. B. Thompson	No. A. " A.	Union Castle ... " ...	Form 911 15.10.30 to 29.11.30 ... " " 13.8.30 to 6.9.30 ...	20.12.30 7.10.30
248 *† <i>Banffshire</i> ... 180 *† <i>Baradine</i> ...	Westropp, T. G. ... Elliot Smith, H. ...	A. Banks, N. Stewart ... C. B. Roche, A. G. Jenkins, L. A. Hill, C. F. Halliday, G. L. Farnfield.	" M. M.L.	Turnbull Martin ... P. & O. Branch	Forms 911 & 138 28.8.30 to 19.9.30 ... Form 915 1.8.30 to 6.11.30 ...	25.9.30 11.11.30
037 *† <i>Baronessa</i> ... <i>Baron Forbes</i> ...	Compton, R. W. ... Cairns, W. ...	... L. Maclean, J. Blackwood ...	No. M. " A.	Houlder ... H. Hogarth & Sons...	... Form 911 26.11.30 to 20.12.30 ...	... 20.12.30
213 *† <i>Barpeta</i> ...	Partridge, H. ...	C. S. Galloway, J. D. Bards- ley, H. Stott.	" M.	British India ...	Forms 911 & 138 30.10.30 to 28.11.30 ...	22.12.30
181 *† <i>Barrabool</i> ... 070 † <i>Bayano</i> ...	Sheepwash, J. S. ... Swain, F. H. ...	F. M. Mosey ... G. M. Binks ...	" M. W.T.	P. & O. Branch ... Elders & Fyffes	" " 22.9.30 to 1.1.31 ... " " 31.10.30 to 3.12.30 ...	9.1.31 8.12.30
<i>Baychimo</i> ... 059 † <i>Belgenland</i> ...	Cornwell, S. A. ... Morehouse, W. A. ...	... J. R. Loe, J. H. I. Mackie, F. Good.	No. A. W.T.	Hudson Bay Co ... Red Star ...	Form 911 8.7.30 to 29.9.30 ... Forms 911 & 138 4.12.30 to 11.12.30 ...	6.11.30 22.12.30
<i>Benalder</i> ... 133 † <i>Bendigo</i> ...	Fairweather, J. J. ... Wyatt, F. N. ...	E. D. Copeman ... J. G. Davies, J. K. Krone, F. Jones.	No. A. " M.	Ben Line ... P. & O. Branch	Form 911 10.3.30 to 18.4.30 ... Forms 911 & 138 12.7.30 to 10.10.30 ...	24.4.30 22.10.30
<i>Bengore Head</i> ... 233 *† <i>Berwickshire</i> ...	Milligan, J. ... Evens, E. H. ...	C. J. Rea ... J. O. Woodall, R. Frankish, C. Allister.	" A. W.T.	Ulster S.S. Co. ... Turnbull Martin ...	Form 911 23.12.30 to 23.12.30 ... Forms 911 & 138 28.10.30 to 1.1.31 ...	30.12.30 6.1.31
<i>Brenda</i> ... <i>Brighton</i> ...	Wright, J. ... Munton, G. ...	N. Ross ... H. L. Smith ...	No. A. C.C.	Scottish Fishery Brd. Southern Railway ...	Form 911 5.12.30 to 30.12.30 ... Telegraphic Report 6.10.30 ...	1.1.31 6.10.30
057 † <i>Britannic</i> ...	Summers, F. F., R.D., Commr., R.N.R.	J. W. Peters, F. Patchett, A. Thompson.	W.T.	White Star ...	Forms 911 & 138 27.10.30 to 16.11.30 ...	18.11.30
269 *† <i>British Consul</i> ... 311 *† <i>British Dominion</i> ...	Putt, R. O. ... Taylor, R. J. ...	C. Galley ... J. E. Jones ...	No. M. " M.	British Tankers ... " ...	" " 29.11.30 to 4.1.31 ... " " 13.8.20 to 4.10.30 ...	15.1.31 8.10.30
067 *† <i>British Empress</i> ...	Penton, P. M. ...	T. Snowling, J. Dryden, D. Malcolm.	" M.	" ...	" " 28.11.30 to 24.12.30 ...	1.1.31
308 *† <i>Bulyses</i> M.V. ...	Head, B. P. ...	G. P. Hansard ...	" M.	Anglo-Saxon Petroleum Co.	Forms 911 & 138 2.7.30 to 10.9.30 ...	22.9.30
249 *† <i>Buteshire</i> ...	Gibb, A. W. P. ...	P. McMillan, S. W. Brown, F. C. Doyle.	M.L.	Turnbull Martin ...	Form 915 20.4.30 to 24.8.30 ...	12.9.30
031 † <i>Caledonia</i> ...	Collie, A. ...	M. J. Harvey, R. Leiper, J. McMillan.	W.T.	Anchor ...	Forms 911 & 138 9.11.30 to 14.12.30 ...	16.12.30
<i>Calgairic</i> ...	Frank, F. A., D.S.O., R.D., Commr., R.N.R.	... O. W. Ll. Jones ...	"	White Star ...	... Telegraphic Report 16.1.31 ...	... 16.1.31
250 *† <i>Cambria</i> ... <i>Cambridge</i> ...	Copland, C. P. ... Williams, R. ...	H. C. Fryer, F. Pover, D. H. Chadwick, H. Mackillican.	C.C. M.L.	L.M. & S. Rly ... Federal ...	Form 915 1.5.30 to 9.8.30 ...	12.8.30
026 † <i>Cameronia</i> ... 295 † <i>Camilo</i> ...	Gemmell, W. ... Forrester, W. T., O.B.E.	D. C. Shedden ... H. H. Dunning, G. M. Roberts, C. E. Stocker, E. F. Witchell, A. H. Peacock, R. R. Taylor.	W.T. M.L.	Anchor ... Elders & Fyffes	Forms 911 & 138 16.11.30 to 7.12.30 ... Form 915 30.5.30 to 24.9.30 ...	11.12.30 30.9.30
101 *† <i>Canonesa</i> ... <i>Cape of Good Hope</i> ...	Brodie, W. H. ... Jacobson, T. A. ...	F. E. Flint ... W. R. G. Carling ...	No. M. " A.	Furness Houlder ... Lyle S.S. Co. ...	Forms 911 & 138 29.10.30 to 7.1.31 ... Form 911 17.9.30 to 7.11.30 ...	13.1.31 13.12.30
282 † <i>Carinthia</i> ...	Hawkes, W. A., R.D., Commr., R.N.R.	... P. O. Davis, E. R. B. Freeman, J. D. Archer.	W.T.	Cunard ...	... Forms 911 & 138 27.10.30 to 14.11.30 ...	... 18.11.30
035 † <i>Carmania</i> ...	Townley, J. C. ...	M. S. Hodgson ...	"	" ...	Form 915 11.10.29 to 30.11.30 ...	10.12.30
092 † <i>Carnarvon Castle</i> M.V.	Owens, G. ...	W. B. Tanner, C. B. Osborne, R. D. McCallum.	"	Union Castle ... Cunard ...	... Forms 911 & 138 13.10.30 to 1.11.30 ...	... 4.11.30
034 † <i>Caronia</i> ...	Brown, F. G., R.D., Capt., R.N.R.	H. Holmes ... A. M. Askin ...	No. A. " M.	Elders & Fyffes ... P. & O ...	Form 911 16.11.30 to 14.12.30 ... Forms 911 & 138 5.10.30 to 1.1.31 ...	20.12.30 3.1.31
<i>Casanave</i> ... 184 † <i>Cathay</i> ...	Browne, S. ... Dagiell, J. ...	B. R. Coe ... G. T. Kavanagh ...	" M. W.T.	Elders & Fyffes ... White Star ...	Form 911 19.10.30 to 22.11.30 ... Forms 911 & 138 21.12.30 to 11.1.31 ...	5.12.30 14.1.31
<i>Cavina</i> ... 052 † <i>Cedric</i> ...	Riseley, A. D. ... Freeman, C. P., R.D., Commr., R.N.R.	Ward Hughes, J. ... J. Cockburn, B. L. Brind, D. M. McAdam.	" M. M.L.	A. Holt & Co. ...	Met. Log. 19.2.30 to 21.7.30 ...	7.10.30
157 *† <i>Centaur</i> M.V.	Ward Hughes, J. ...	J. A. Webbe ... H. K. Houghton ...	M.L. No. A.	A. Holt & Co. ... White Star ... Elders & Fyffes	Form 911 26.8.30 to 9.12.30 ... " " 20.10.30 to 22.11.30 ...	10.12.30 28.11.30
056 † <i>Ceramic</i> ... <i>Chanquinola</i> ...	Lloyd, W. ... Thorburn, R. A., R.D., Commr., R.N.R.	W. S. Keith ... S. Waddington ... T. D. Forbes ...	W.T. No. A.	White Star ... Elders & Fyffes	Form 911 17.2.30 to 24.4.30 ... " " 25.7.30 to 10.10.30 ...	19.5.30 16.10.30
<i>Chindwin</i> ... <i>Chirripo</i> ...	Paterson, G. ... Sapsworth, S. A. ...	H. G. Williams, J. E. Jenkins, R. W. Leese, A. G. Daniells.	" A. " A.	Henderson ... Elders & Fyffes	Form 915 13.5.30 to 19.10.30 ...	31.10.30
192 † <i>Chitral</i> ...	Siggers, O. ...	R. W. Kellie ... H. H. Asher ...	" M. " A.	P. & O. ... Ellerman ...	Form 911 5.8.30 to 15.8.30 ... " " 2.10.30 to 16.11.30 ...	1.9.30 8.12.30
285 *† <i>City of Baroda</i> ... <i>City of Benares</i> ...	Bremner, D. M. ... Wyper, J. ...	... Mordue, J. A. ...	" M. " A.	White Star ... " ...	Form 911 19.10.30 to 22.11.30 ... Forms 911 & 138 21.12.30 to 11.1.31 ...	5.12.30 14.1.31
<i>City of Cambridge</i> ... <i>City of Carlisle</i> ...	Wilson, E. G. ... Mordue, J. A. ...	P. R. Winship, C. W. Nelson, W. V. Highton.	" A. M.L.	" ... " ...	Form 915 5.5.30 to 19.9.30 ...	11.12.30
268 *† <i>City of Chester</i> ...	Letton, F. W. ...	H. Burns ... McMillan, J. ...	M.L. W.T.	" ... " ...	Form 911 & 138 20.10.30 to 29.10.30 ...	15.12.30
266 † <i>City of Exeter</i> ... <i>City of Harvard</i> ...	Nicholl, L. ... McMillan, J. ...	H. Saunders ... Walton, H. L., O.B.E., R.D., Commr., R.N.R.	No. A. " M.	" ... " ...	... Form 911 & 138 27.11.30 to 9.12.30 ...	15.12.30
<i>City of Hong Kong</i> ... 286 † <i>City of London</i> ...	Walton, H. L., O.B.E., R.D., Commr., R.N.R. Brown, J. G. ...	A. J. Barrett, E. Gillies, C. Macpherson.	" M. W.T.	" ... " Forms 911 & 138 16.11.30 to 9.12.30 ...	15.12.30 29.12.30

LIST OF VOLUNTARY OBSERVING SHIPS

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Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.1.31.	Date Received.
274 †† <i>City of Nagpur</i> ...	Martin, D. ...	J. Campbell, J. W. Wother- spoon, W. Kerr.	W.T.	Ellerman ..	Forms 911 & 138 29.9.30 to 19.10.30	27.11.30
275 *†† <i>City of Palermo</i> ...	Pattison, J. B. ...	T. W. Walford ...	No. M.	" ..	Form 911 6.1.30 to 21.3.30...	24.3.30
267 †† <i>City of Paris</i> ...	MacMillan, J. ...	E. A. Davidson ...	W.T.	" ..	Forms 911 & 138 15.10.30 to 5.11.30	1.1.31
270 *†† <i>City of Rangoon</i> ...	Jones, P. ...	B. H. Constable, S. A. Martyn, B. McLennan.	M.L.	" ..	Form 915 14.6.30 to 6.9.30...	20.9.30
271 *†† <i>City of Roubaix</i> ...	Radcliffe, A. V., R.D., Lt.-Comr., R.N.R.	J. A. Williams, J. L. Robertson, A. N. G. Jones.	No. M.	" ..	Forms 911 & 138 14.10.30 to 3.11.30	15.12.30
272 *†† <i>City of Singapore</i> ...	Kendall, J. W. ...	F. Wrigley ...	" M.	" ..	" " 3.12.30 to 25.12.30	12.1.31
273 *†† <i>City of Valencia</i> ...	Ewing, W. ...	A. Travis, C. C. Duncan, C. B. P. Bradbury.	" M.	" ..	" " 6.9.30 to 17.11.30	19.11.30
<i>City of Yokohama</i> ...	Singleton, J. G. ...	J. Kinley, N. Dawson, H. Nish	" A.	" ..	Form 911 29.10.30 to 20.11.30	25.11.30
<i>Clan Alpine</i> ...	Waterhouse, J. ...	S. S. Stammwitz ...	" A.	Clan ...	" " 17.11.30 to 5.12.30	17.12.30
<i>Clan Kenneth</i> ...	Young, A. H., R.D., Commr., R.N.R.	T. A. Pearson ...	" A.	" ..	" " 20.11.30 to 1.12.30	29.12.30
<i>Clan Lindsay</i> ...	Malpas, J. H. ...	T. P. Milne ...	" A.	" ..	" " 24.7.30 to 27.8.30	1.9.30
<i>Clan Macalister</i> ...	Stenson, F. J., A.D.C., R.D., Capt., R.N.R.	T. M. Rees Davis ...	" A.	" ..	" " 1.11.30 to 22.11.30	16.12.30
<i>Clan MacBean</i> ...	Boag, J. ...	G. W. Spiller ...	" A.	" ..	" " 5.12.30 to 15.12.30	22.12.30
<i>Clan Macbeth</i> ...	Worthington, C. D. ...	W.R. Woodruffe, A.G. Beynon, H. J. M. Watkins.	" A.	" ..	" " 15.10.30 to 7.11.30...	11.11.30
<i>Clan Macfadyn</i> ...	Laird, C. ...	W. C. Dazell ...	" A.	" ..	" " 21.9.30 to 22.10.30	4.11.30
<i>Clan Macfarlane</i> ...	Redford, L. F. ...	W. H. Simpson, H. F. Town	" A.	" ..	" " 22.9.30 to 12.10.30	17.10.30
<i>Clan Macgillivray</i> ...	Mackinlay, A. ...	S. R. J. Woods ...	" A.	" ..	" " 12.10.30 to 23.10.30	24.11.30
<i>Clan Macindoe</i> ...	Scott-Smith, H. E. G.	J. W. Thompson, J. West ...	" A.	" ..	" " 8.10.30 to 18.10.30	17.11.30
<i>Clan Mackellar</i> ...	Lyall, A. B. ...	A. V. Howard ...	" A.	" ..	" " 26.11.30 to 13.12.30	3.1.31
<i>Clan Macphoe</i> ...	Gourlay, J. B. ...	E. H. Stone, T. Cornelius, A. Pollock.	M.L.	" ..	Form 915 6.7.30 to 3.10.30	8.11.30
004 *†† <i>Clan MacNair</i> ...	Holman, W. G. ...	" ..	W.T.	" ..	" ..	" ..
<i>Clan Macnaughton</i> ...	Clark, J. ...	R. C. Steel ...	No. A.	" ..	Form 911 18.5.30 to 19.6.30	28.6.30
<i>Clan Macquarrie</i> ...	West, W. F. ...	J. H. Thorpe ...	" A.	" ..	" " 13.10.30 to 22.11.30	1.12.30
002 *†† <i>Clan Macwhirter</i> ...	Low, A. ...	T. G. Mitchell, M. J. Lewis, L. Grant.	M.L.	" ..	Form 915 10.6.30 to 2.9.30	11.12.30
003 *†† <i>Clan Malcolm</i> ...	George, L. S. ...	A. Lynch, J. W. Jones, B. Hind, W. E. Baker	"	" ..	" " 15.8.30 to 6.11.30	16.12.30
<i>Clan Morrison</i> ...	Porterfield, W. M. Lt.- Commr., R.N.R.	R. J. Brittain ...	No. A.	" ..	Form 911 7.11.30 to 1.12.30	4.12.30
<i>Clan Murdoch</i> ...	Wynne, R. H. ...	P. S. Evans ...	" A.	" ..	" " 20.11.30 to 19.12.30	12.1.31
<i>Clan Ramald</i> ...	Douglas, R. ...	J. W. Rennie ...	" A.	" ..	" " 7.8.30 to 30.8.30...	13.10.30
<i>Clan Ross</i> ...	Neill, G. A. ...	H. J. Makepeace, R. H. McElligott.	" A.	" ..	" " 27.10.30 to 17.11.30	22.12.30
<i>Clan Sinclair</i> ...	Cater, H. ...	L. Thomson ...	" A.	" ..	" " 4.9.30 to 10.12.30	17.12.30
312 †† <i>Clydefield</i> ...	Love, J. S. ...	W. J. Brooks, E. Holmes ...	W.T.	Hunting & Son, Ltd.	Forms 911 & 138 9.11.30 to 17.12.30	23.12.30
185 †† <i>Comorin</i> ...	Cartwright, C. W. D.S.C.	E. J. R. Worth ...	No. M.	P. & O. ...	" " 29.11.30 to 2.12.30	9.1.31
049 *†† <i>Coptic, M.V.</i> ...	Williams, G. ...	R. E. Nicholson, T. Davies, T. Burt	W.T.	Shaw, Savill & Albion	" " 8.11.30 to 9.12.30	16.12.30
040 †† <i>Corinthic</i> ...	Bowan, H. ...	R. Orangle, A. Mackie, E. Burt	" A.	White Star ...	" " 21.6.30 to 5.10.30	10.10.30
<i>Cornwall</i> ...	Mac Rae, A. B. ...	" ..	No. A.	Federal ...	Form 911 12.11.29 to 1.12.29	20.1.30
006 †† <i>Coronado</i> ...	Martin, G. E. ...	W. J. Dodd, B. E. Druce, F. Heald.	W.T.	Elders & Fyffes	Forms 911 & 138 30.11.30 to 4.1.31	5.1.31
301 *†† <i>Culebra</i> ...	Cooke, F. ...	B. A. Gammon, H. E. Sang, R. J. Finch.	M.L.	R.M.S.P. Co. ...	Form 915 31.8.30 to 7.11.30	15.11.30
251 *†† <i>Cumberland</i> ...	Macmillan, D. ...	A. Taylor, J. Pring, J. K. Macdonald, F. R. J. Wilson.	"	Federal... ..	" " 1.6.30 to 18.10.30	24.10.30
285 *†† <i>Custodian</i> ...	O'Connor, T. ...	J. Johnson ...	No. M.	Harrison ...	Forms 911 & 138 10.3.30 to 13.6.30	16.7.30
<i>Cyclops</i> ...	Glossop, S. ...	R. A. Hanney ...	" A.	A. Holt ...	Form 911 13.10.30 to 3.12.30	22.12.30
<i>Dakotian</i> ...	Atkinson, W. H. ...	R. J. S. Pope ...	" A.	Leyland ...	" " 10.11.30 to 17.12.30	24.12.30
<i>Dardanus</i> ...	Christie, W. ...	J. S. Ogilvie ...	" A.	A. Holt ...	" " 23.8.30 to 2.10.30	23.10.30
<i>Darian</i> ...	Hannaford, W. ...	A. S. Holland ...	" A.	Leyland ...	" " 27.9.30 to 8.10.30	14.10.30
302 †† <i>Darro</i> ...	Green, J. ...	F. J. Swallow, G. B. Medleycott, A. W. Finny.	W.T.M.	R.M.S.P. Co. ...	Forms 911 & 138 15.9.30 to 5.11.30	11.11.30
<i>Davisian</i> ...	Trickey, J. ...	P. M. Ralston ...	No. A.	Leyland ...	Form 911 29.8.30 to 22.10.30	28.10.30
053 *†† <i>Delphic</i> ...	Hodgson, W. S. ...	J. V. Jones ...	" M.	White Star ...	" " 23.2.30 to 31.3.30	11.4.30
303 †† <i>Demerara</i> ...	Matthews, G. P. ...	H. H. Treweeks, E. N. Gillet, F. Crankshaw.	W.T.M.	R.M.S.P. Co. ...	Forms 911 & 138 27.10.30 to 17.12.30	22.12.30
073 †† <i>Demosthenes</i> ...	Lloyd, W. ...	S. A. Fergusson ...	"	Aberdeen Common- wealth.	" " 29.3.30 to 12.5.30	15.5.30
003 *†† <i>Denis</i> ...	Harris, F. C. P. ...	A. W. Hanchett ...	W.T.	Booth ...	Form 911 7.10.30 to 15.12.30	16.12.30
304 †† <i>Descado</i> ...	Purvis, A. ...	H. Fraser ...	W.T.M.	R.M.S.P. Co. ...	" " 11.10.30 to 19.11.30	4.12.30
117 †† <i>Desna</i> ...	Huff, G. ...	G. L. Elliott ...	"	" ..	Forms 911 & 138 13.10.30 to 3.11.30	12.12.30
252 *†† <i>Devon</i> ...	Kinnell, G. ...	G. Chaplin ...	No. M.	Federal ...	" " 5.10.30 to 10.11.30	15.12.30
<i>Dieppe</i> ...	Lidbetter, W. ...	E. A. Biles ...	" C.C.	Southern Railway ...	Telegraphic Report 13.1.31	13.1.31
284 *†† <i>Director</i> ...	Worthington, B. ...	R. W. Baldwin ...	No. M.	Harrison ...	Forms 911 & 138 29.5.30 to 29.8.30	9.9.30
080 *†† <i>Discovery, Auxy. Barque.</i>	King Davis, J. ...	W. R. Colbeck ...	M.L.	Douglas Mawson Expedition.	" ..	" ..
081 †† <i>Discovery II, R.R.S.</i>	Carey, W. M. Commr. R. N.	J. Irving, A. N. Nelson, R. A. B. Ardley.	"	Falkland Islands Government.	Met. Log. 15.12.29 to 8.5.30	11.9.30
214 *†† <i>Domala, M.V.</i> ...	Kitson, A. G. ...	T. L. Sampson, A. Earl, G. Henderson, D. Cowley.	No. M.	British India ...	Forms 911 & 138 29.10.30 to 5.1.31	6.1.31
<i>Dominia, C.S.</i> ...	Campos, V., O.B.E., Lt.-Commr., R.N.R.	W. E. Allen, A. S. Muir, W. F. Anderson.	M.L.	Telegraph Construc- tion & Maintenance.	Form 915 5.9.30 to 24.11.30	6.12.30
<i>Dominic</i> ...	Griffith, W. ...	F. W. Boden ...	No. A.	Booth ...	Form 911 2.4.30 to 19.4.30...	26.5.30
<i>Dorelian</i> ...	Hugan, C. ...	V. W. Bird ...	" A.	Leyland ...	" " 10.10.30 to 8.12.30	11.12.30
061 †† <i>Doric</i> ...	Jackson, W. W. P.	R. Hawkins ...	W.T.	White Star ...	Forms 911 & 138 16.11.30 to 5.12.30	8.12.30
<i>Dorington Court</i> ...	Adamson B. ...	G. E. C. Garrick ...	No. A.	Haldin & Co. ...	Form 911 31.7.29 to 17.2.30	27.3.30
<i>Dromore Castle</i> ...	Heanly, T. W. ...	P. Swan ...	" A.	Union Castle ...	" " 18.1.30 to 3.7.30	9.9.30
142 †† <i>Duchess of Atholl</i> ...	Latta, R. G. ...	G. H. D. Williams ...	W.T.M.	Canadian Pacific	Forms 911 & 138 6.12.30 to 22.12.30	30.12.30
152 †† <i>Duchess of Bedford</i>	Gibbons, H. ...	A. Mawsey ...	"	" ..	Form 911 15.11.30 to 2.12.30	5.12.30
151 †† <i>Duchess of Richmond.</i>	Freer, A., R.N.R.	F. H. Stell ...	"	" ..	Forms 911 & 138 30.11.30 to 18.12.30	22.12.30
143 †† <i>Duchess of York</i> ...	Stuart, R. N., V.C., D.S.O., Commr., R.N.R.	N. Scallan ...	"	" ..	" " 22.11.30 to 11.12.30	9.1.31
098 †† <i>Dunbar Castle, M.V.</i>	Vincent, E. S., R.D., Commr., R.N.R.	J. Daziel ...	W.T.	Union Castle ...	Forms 911 & 138 2.10.30 to 7.12.30	18.12.30
<i>Dunluce Castle</i> ...	Hutchings, A. H. ...	A. C. M. Black ...	No. A.	" ..	Form 911 5.9.30 to 13.11.30	19.11.30
<i>Dunrobin</i> ...	Ramsay, J. D. ...	W. R. Holt, J. J. Butt	" A.	Glen & Co. ...	" " 6.11.30 to 13.11.30	5.12.30
102 *†† <i>Duquesa</i> ...	Williams, W. E. ...	F. D. Jones ...	" M.	Furness Withy ...	Forms 911 & 138 3.11.30 to 7.1.31	12.1.31
215 *†† <i>Duveda, M.V.</i>	Parkes, C. E. ...	J. E. Miles ...	" M.	British India ...	Form 911 2.2.30 to 10.3.30...	28.4.30
<i>Edinburgh Castle</i> ...	Kerby, J. H. ...	F. A. G. Hunter ...	" A.	Union Castle ...	" " 18.10.30 to 7.12.30	9.12.30
<i>Egort</i> ...	Nelson, J. A. ...	J. T. Townson, R. A. Cherry	" A.	Elder Dempster	" " 16.9.30 to 3.10.30	6.10.30
107 *†† <i>El Argentino, M.V.</i>	Ellis, F., D.S.C.	W. Findlay, J. Burch, C. G. Adlard.	" M.	Houlder ...	Forms 911 & 138 2.9.30 to 5.11.30	17.11.30

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.1.31.	Date Received.
283 *† Khiva ...	Dawson, E. E. N. ...	E. V. Lewis ...	No. M.	P. & O. ...	...	...
186 *† Kidderpore ...	Woodroffe, S. Y. ...	R. H. Hand ...	" M.	" ...	Forms 911 & 138 24.9.30 to 29.11.30	22.12.30
169 ** Kwangchow ...	Stringer, C. B. L. ...	O. Fox ...	M.L.	China Nav. Co. ...	Form 915 1.5.30 to 1.11.30	6.1.31
193 *† Lahore ...	Hollow, J. H. ...	J. H. Benjamin ...	No. M.	P & O ...	Forms 911 & 138 24.3.30 to 16.8.30	21.8.30
Lalande ...	Major, T. W. ...	A. N. Blundell ...	" A.	Lampport & Holt ...	Form 911 9.10.30 to 1.11.30	14.11.30
Lancashire ...	Fountain, C. ...	W. H. Campe ...	" A.	Bibby ...	" 13.3.30 to 9.4.30	22.4.30
036 †† Lancastria ...	Oram, B. B., R.D., Commr., R.N.R.	H. V. Clarke ...	W.T.	Cunard ...	Forms 911 & 138 24.11.30 to 14.12.30	19.12.30
Laomedon ...	Watson, C. J. ...	A. E. Martin ...	No. A.	A. Holt ...	Form 911 26.10.30 to 7.12.30	29.12.30
La Paz, M.V. ...	Benson, C. W. ...	G. Patt, P. H. Ray ...	" M.	Pacific S.N. Co. ...	" 30.3.30 to 29.4.30	3.5.30
Laplace ...	Hickman, V. G. ...	" ...	" A.	Lampport & Holt ...	" 3.5.30 to 19.8.30	27.8.30
Lapland ...	Harvey, H. ...	" ...	W.T.	Red Star ...	" ...	"
076 *† Larvs Bay ...	Jermyn, W. M. ...	F. B. Marsden ...	No. M.	Aberdeen Common-wealth.	Forms 911 & 138 11.10.29 to 3.11.30	29.12.30
112 *† La Rosarina ...	Webb, C. ...	W. S. Hamblin ...	" M.	Houlder ...	" 5.10.30 to 27.11.30	1.12.30
Lassel ...	Leicester, F. S. ...	W. H. Chapman ...	No. A.	Lampport & Holt ...	Form 911 7.9.30 to 21.11.30	24.12.30
064 †† Laurentic ...	Binks, J. ...	C. Cochrane, H. G. Williams, R. Conway.	W.T.	White Star ...	Forms 911 & 138 1.11.30 to 22.11.30	24.11.30
083 *† Lautaro, M.V. ...	Leyne, R. W. ...	G. A. Thexton ...	No. M.	Pacific S.N. Co. ...	Form 911 12.5.30 to 16.9.30	19.9.30
Leicestershire ...	Griffiths, C. A. ...	E. D. Brand, H. Kerbyson, A. Thomson.	" A.	Bibby ...	" 21.9.30 to 27.11.30	4.12.30
254 *† Limerick ...	Molyneux, P. L. ...	J. Hamblyn, G. Shepherd, C. W. Roberts, C. H. Pett.	" M.	Federal ...	Forms 911 & 138 24.5.30 to 19.6.30	26.9.30
093 *† Llandaff Castle ...	Attwood J. ...	T. H. Watley ...	W.T.	Union Castle ...	Form 911 18.7.30 to 22.9.30	27.9.30
097 †† Llangibby Castle ...	Harvey, H. B. ...	H. Warren ...	"	"	Forms 911 & 138 16.8.30 to 18.10.30	23.10.30
094 *† Llandoverly Castle ...	Morgan, A. O., R.D., Commr., R.N.R.	L. H. Farrow, T. C. Goldstone, F. R. Pope.	M.L.	"	Form 915 20.9.30 to 24.11.30	3.12.30
216 *† Llanstephan Castle ...	Jackson, C. R. ...	J. D. Crombie ...	W.T.	"	Form 911 6.9.30 to 29.9.30	1.10.30
084 *† Lobos, M.V. ...	Grant, F. H. ...	R. W. Gill, R. H. Sissons ...	No. M.	Pacific S.N. Co. ...	Forms 911 & 138 30.10.30 to 16.11.30	3.12.30
Loch Katrine ...	Cocks, A. ...	M. A. Murch ...	" A.	R.M.S.P. Co. ...	Form 911 5.11.30 to 26.9.30	4.12.30
Lochmonar, M.V. ...	Miles, A. G. ...	F. G. Dawson ...	" A.	"	"	"
London Exchange ...	Griffiths, J. ...	C. T. V. Rixham ...	" A.	Furness Withy ...	Form 911 28.11.30 to 24.12.30	30.12.30
Lord Antrim ...	Jarvis, F. E. ...	C. A. Milligan ...	" A.	Ulster S.S. Co. ...	" 21.9.30 to 4.10.30	7.10.30
Loriga, M.V. ...	Large, E. H., R. D., Commr., R.N.R.	J. W. Gordon ...	" A.	Pacific S.N. Co. ...	" 16.10.30 to 10.1.31	13.1.31
194 †† Macedonia ...	Dickenson, C. C. ...	R. A. B. Kempton ...	" M.	P. & O. ...	Forms 911 & 138 21.9.30 to 10.12.30	13.12.30
013 *† Macharda ...	Hanna, R. G. ...	A. C. Hocking ...	" M.	Brocklebank ...	Form 911 9.11.30 to 6.12.30	10.12.30
232 ** Madura ...	Wright, J. A. ...	C. Cairns ...	" M.	British India ...	" 22.9.30 to 23.11.30	27.11.30
048 *† Mahana ...	Cameron, J. M. ...	H. C. Smith, A. E. Masters, M. G. Stuart.	M.L.	Shaw, Savill & Albion	Form 915 13.9.30 to 5.1.31	8.1.31
141 *† Mahia ...	Andrews, C. M. ...	G. Sangwin ...	W.T.	"	"	"
014 *† Mahronda ...	Sharpe, G. ...	A. Melville, H. Willington, W. Le Brocq.	No. M.	Brocklebank ...	Forms 911 & 138 23.11.30 to 12.12.30	29.12.30
015 *† Mahsud ...	Kershaw, R. W. ...	S. Richardson, E. Walker, J. R. Paisley.	" M.	"	" 18.8.30 to 7.11.30	11.11.30
016 *† Maidan ...	Ison, W. A. ...	F. Moore ...	" M.	"	" 27.9.30 to 6.12.30	15.12.30
017 *† Maihar ...	Charlton, W. L. ...	C. Cadwallar, H. Gillespie, A. D. Spring.	M.L.	"	Form 915 6.7.30 to 25.9.30	4.11.30
042 *† Maimoa ...	Johnson, J. W. ...	J. W. Hart, A. Winton, E. Sainsbury, J. F. H. Stroud	"	Shaw, Savill & Albion	" 22.9.30 to 8.12.30	30.12.30
Maimyo ...	Smith, G. C. ...	J. L. Rodgers ...	No. A.	Brocklebank ...	Form 911 5.11.30 to 11.12.30	19.12.30
018 *† Makalla ...	Maughan, J. W. ...	E. Williams ...	" M.	"	Forms 911 & 138 22.9.30 to 4.12.30	24.12.30
225 ** Makura ...	MacDonald, D. ...	A. P. Cousin, S. H. Crawford, N. H. Pearson, M. V. Langdale.	M.L.	Canadian-Australasian	Form 915 20.5.30 to 30.8.30	31.10.30
298 ** Malabar, M.V. ...	Donaldson, A. ...	A. Campbell, L. Millar, G. Rothery, S. ...	"	Burns, Philp & Co. ...	" 9.4.30 to 21.9.30	20.11.30
019 *† Malakuta ...	Adamson, F. L. ...	H. Simpson ...	No. M.	Brocklebank ...	Forms 911 & 138 24.5.30 to 11.10.30	22.10.30
020 *† Malancha ...	Whitham, F. A. ...	R. Humble, H. B. Kelly ...	" M.	"	" 26.7.30 to 30.10.30	6.11.30
021 *† Malda ...	Denne, G. H. A. ...	D. B. Lattin, W. Davidson ...	" M.	British India ...	Form 138 6.7.30 to 26.9.30	8.12.30
195 †† Maloja ...	Browning, J. B., R.D., Commr. R.N.R.	R. H. Turner, C. H. Hand, E. J. Spurling.	" M.	P. & O. ...	Forms 911 & 138 26.4.30 to 10.7.30	16.7.30
196 †† Malwa ...	Britten, P. O. ...	P. J. Lawrence ...	" M.	"	" 11.8.30 to 13.11.30	21.11.30
Mamilius ...	Cole, N. ...	" ...	" A.	White Star ...	"	"
Manchester Brigade ...	Stott, C. H. ...	J. H. Round, E. E. Bonnaud, J. Gregory.	M.L.	Manchester Liners ...	Form 915 10.5.30 to 25.11.30	5.12.30
Manchester Hero ...	Mitchell, G. M. ...	R. O. Jones ...	No. A.	"	Form 911 11.11.30 to 16.12.30	1.1.31
Manchester Producer ...	Struss, F. D. ...	T. J. Boyd ...	" A.	"	" 1.6.30 to 3.7.30	23.7.30
023 †† Mandala ...	Whittingham, A. G., R. D. R.N.R.	W. E. F. Powell ...	" M.	British India ...	"	"
146 *† Mandasor ...	Richardson, T. ...	— Madden ...	" M.	Brocklebank ...	"	"
220 *† Manela ...	Maples, S. H. ...	T. M. Robertson, E. W. Cholerton.	" M.	British India ...	Forms 911 & 138 30.11.30 to 10.12.30	18.12.30
021 *† Mangalore ...	Mallett, R. ...	J. McGilvray, G. E. Jones, A. M. Parry.	" M.	Brocklebank ...	" 17.12.30 to 26.12.30	1.1.31
022 *† Manipur ...	Cochran, G. N. ...	L. F. Dodson, R. Penston, A. Hill.	" M.	"	" 5.12.30 to 1.1.31	3.1.31
294 *† Manistee ...	Edwards, A. C. ...	" ...	M.L.	Elders & Fyffes ...	"	"
231 *† Manora ...	Hudson, H. T., R.D., Commr., R.N.R.	J. Brawn, D. W. Speirs, D. D. Bangay.	No. M.	British India ...	Form 911 20.9.30 to 2.12.30	4.12.30
197 †† Mantua ...	Jack, H. M. ...	F. R. N. Greasley ...	" M.	P. & O. ...	Forms 911 & 138 26.10.30 to 18.12.30	19.12.30
299 ** Marella ...	Mortimer, S. ...	J. Cummings, M. Pemberton, Donaldson, A. ...	M.L.	Burns Philp ...	Form 915 7.5.30 to 23.8.30	20.11.30
276 *† Marengo ...	Aspinall, A. E. ...	W. D. Colquhoun-Thomas, H. Bryan, G. W. Revell, W. L. Hepson.	"	Ellerman Wilson ...	" 5.6.30 to 6.10.30	10.10.30
222 †† Margha ...	Pitcairn, C. M., Hemmings, W. H.	P. Wright, H. Watkins ...	"	British India ...	" 24.8.30 to 14.11.30	19.11.30
104 *† Marquesa ...	Smiles, R. S. ...	J. Wetherall ...	No. M.	Furness Houlder ...	Forms 911 & 138 22.9.30 to 21.10.30	25.11.30
044 †† Mataroa ...	Kershaw, W. A. R. ...	F. Eadon, H. A. Hill, F. C. Chamby, L. B. Miller.	M.L.	Shaw, Savill & Albion	Form 915 15.8.30 to 23.11.30	27.11.30
023 *† Matheran ...	Mulcahy, J. J. ...	S. S. Slade, W. F. Harris, C. B. Rogers.	No. M.	Brocklebank ...	Forms 911 & 138 21.11.30 to 9.12.30	29.12.30
223 *† Matiana ...	Green, F. V. ...	L. A. Bunn, P. M. Wilson, J. W. Fitz, W. Daly.	" M.	British India ...	" 10.12.30 to 20.12.30	24.12.30
024 *† Matra ...	Cornish, N. P. ...	C. Shaw, W. Robertson, O. Jones.	" M.	Brocklebank ...	" 10.8.30 to 18.10.30	21.10.30
032 †† Mauretania ...	McNeil, S. G. S., R.D., Capt. R.N.R.	R. H. C. Crawford ...	W.T.	Cunard ...	" 10.12.30 to 6.1.31	12.1.31
287 †† Melita ...	Stewart, A. ...	L. N. Outram ...	No. A.	Canadian Pacific ...	" 21.12.30 to 8.1.31	12.1.31
Melmore Head ...	Moore, J. R. ...	" ...	" M.	Ulster S.S. Co. ...	"	"
071 *† Meltenian ...	Cannon, J. R. ...	W. Lawton ...	" M.	Leyland ...	Forms 911 & 138 1.12.30 to 3.1.31	13.1.31
Mercian ...	Hughan, C. ...	" ...	" A.	"	Form 911 28.7.30 to 30.9.30	8.10.30
Meriones ...	Hanvey, T. W. ...	J. G. Jones ...	" A.	A. Holt ...	" 23.12.30 to 11.12.30	30.12.30

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 16.1.31.	Date Received.
164 *† <i>Talthybius</i> ...	Evans, D. L. C. ...	D. McFarlane, N. Anderson R. H. Oliborn.	M.L.	A. Holt ...	Form 915 10.9.30 to 25.11.30 ...	6.12.30
046 †† <i>Tamaroa</i> ...	Hartman, W. H. ...	A. J. Galvin ...	No. M.	Shaw, Savill & Albion	Forms 911 & 138 30.7.30 to 1.9.30	4.9.30
264 ** <i>Tanda</i> ...	Pilcher, E. T., Lieut.- Commr. R.N.R.	V. C. Lette, R. Lloyd-Harry, B. W. Dun. G. Chadwick- Skinner, M. B.	M.L.	E. & A. S.S. Co.	Form 915 6.6.30 to 3.9.30 ...	31.10.30
165 *† <i>Tantalus</i> , M.V. ...	Dodds, R. ...	F. C. Oppen, R. M. Gray, W. J. Ryan.	"	A. Holt ...	" 6.9.30 to 8.1.31 ...	16.1.31
047 *† <i>Taranaki</i> , M.V. ...	Wood, C., D.S.C. ...	G. Campbell, W. D. Pim, K. A. Gordon, S. P. Wallis.	"	Shaw, Savill & Albion	" 26.7.30 to 11.11.30 ...	17.11.30
<i>Tarantia</i> ...	Caithness, J. B. ...	J. M. Cherry ...	No. A.	Anchor ...	Form 911 9.11.30 to 4.12.30 ...	21.12.30
<i>Tasmania</i> ...	Williams, J. V. ...	" ...	" A.	New Zealand S.S. Co.	" ...	"
<i>Tevrestas</i> ...	Wilkinson, W. H. ...	F. Stott ...	" A.	A. Holt & Co. ...	Form 911 9.10.30 to 26.12.30 ...	31.12.30
243 *† <i>Tekoa</i> ...	McNish, R. ...	J. G. Phillips, R. Aldridge, E. Mason.	" M.	New Zealand S.S. Co.	Forms 911 & 138 1.10.30 to 1.11.30	8.11.30
<i>Telamon</i> ...	Brown, R. ...	G. Edge ...	" A.	A. Holt ...	Form 911 26.10.30 to 23.11.30	10.12.30
<i>Tetela</i> ...	Brice, E. H. ...	F. P. Inch, R. H. Theaker, J. W. J'one.	" A.	Elders & Fyffes ...	" 25.11.30 to 26.12.30	31.12.30
<i>Teucer</i> ...	Davies, J. ...	C. C. L'Estrange, L. C. Pod- more.	" A.	A. Holt ...	" 29.10.30 to 7.12.30	10.1.31
077 †† <i>Themistocles</i> ...	Young, A. D. ...	E. Johansen ...	W.T. M.	Aberdeen Common- wealth	Forms 911 & 138 17.5.30 to 10.7.30	14.7.30
<i>Theseus</i> ...	Carnon, C. G. ...	P. Dunsire ...	No. A.	A. Holt ...	Form 911 5.10.30 to 7.11.30 ...	8.12.30
007 *† <i>Thisleglen</i> ...	Whitfield, G.A., O.B.E.	W. H. Gould, S. B. Davis, E. W. Kent.	M.L.	Allan Black & Co. ...	Form 915 26.4.30 to 29.9.30 ...	21.10.30
235 *† <i>Tilawa</i> ...	Colborn, E. ...	F. R. B. Langdon, A. S. Jones, J. W. Walker.	No. M.	British India ...	Forms 911 & 138 10.9.30 to 7.11.30	1.12.30
168 *† <i>Tinhow</i> ...	Chicken, W. E. ...	G. W. Seth, P. Aydon, E. Swiff.	"	A. Weir & Co. ...	" " 6.8.30 to 12.11.30	16.12.30
161 *† <i>Titan</i> ...	Power, J. J. ...	C. C. L'Estrange ...	M.L.	A. Holt ...	Form 911 10.2.30 to 21.5.30 ...	27.5.30
244 *† <i>Tongarivo</i> ...	Hamilton, F. S. ...	F. S. Cashmore, P. S. Calcutt, E. G. Williams, A. G. Robinson.	"	New Zealand S.S. Co.	Form 915 6.4.30 to 5.8.30 ...	21.8.30
025 †† <i>Transylvania</i> ...	Bone, D. W. ...	A. Middleton, J. A. Leferre, D. I. Chamberlain.	W.T.	Anchor ...	Forms 911 & 138 1.12.30 to 21.12.30	29.12.30
283 *† <i>Traveller</i> ...	Barrow, W. T. C. ...	" ...	No. M.	Harrison ...	" ...	"
<i>Trecarrell</i> ...	Hunt, D. ...	W. E. McEwan, G. A. Solly ...	" A.	Hain S.S. Co. ...	Form 911 5.11.30 to 21.11.30 ...	25.11.30
005 *† <i>Trematon</i> ...	Mill, C. R. ...	J. Jenkyn, C. M. Quick, R. Stitson, W. B. Paul, T. M. Meakin, R. S. Davies.	M.L.	" " ...	Met. Log. 16.9.29 to 8.3.30 ...	25.3.30
119 *† <i>Trojan Star</i> ...	Griffin, G. A. ...	A. Emerson, L. S. Hassell ...	No. M.	Blue Star ...	Forms 911 & 138 12.8.30 to 13.12.30	6.1.31
245 *† <i>Turakina</i> ...	Ashworth, F. ...	V. V. Johnston ...	" M.	New Zealand S.S. Co.	" " 4.7.30 to 7.8.30	11.8.30
<i>Tuscania</i> ...	Rome, W. B. ...	" ...	W.T.	Anchor ...	" ...	"
167 *† <i>Tyndareus</i> ...	Findlay, J. ...	J. A. Evans, R. L. Holdstock, M. J. Case, H. Pierpoint.	M.L.	A. Holt ...	Met. Log. 7.1.30 to 1.6.30 ...	20.6.30
<i>Uffington Court</i> ...	Clarke, E. J. ...	E. V. Quickenden ...	No. A.	Haldin & Co. ...	Form 911 29.3.30 to 2.5.30 ...	6.5.30
176 *† <i>Ulysses</i> ...	Owen, R. D., O.B.E. ...	J. W. Prior ...	W.T.	A. Holt ...	" 1.5.30 to 14.6.30 ...	17.6.30
113 *† <i>Upwey Grange</i> ...	Goodrick, H. P. ...	A. Bradbury, G. T. Hurst ...	No. M.	Houlder ...	Forms 911 & 138 28.9.30 to 5.12.30	9.12.30
039 ** <i>Valacia</i> ...	Gronow, S. ...	J. Kettlewell ...	" M.	Cunard ...	" " 9.5.30 to 19.6.30	5.7.30
292 †† <i>Viceroy of India</i> ...	Ohlson, B. J., D.S.O., R.D., Commr. R.N.R.	A. G. Stansfield ...	" M.	P. & O. ...	" ...	"
<i>Vigilant</i> ...	Simpson, E. S. S. ...	J. Wilson ...	" A.	Scottish Fishery Board.	Form 911 1.12.30 to 30.12.30 ...	1.1.31
206 ** <i>Waiotapu</i> ...	Hender, W. ...	J. L. Russell ...	" M.	Union S.S. Co. of N.Z.	Forms 911 & 138 7.9.30 to 15.10.30	3.11.30
263 ** <i>Wairuna</i> ...	Stewart, A. R. ...	J. E. Warwick, C. T. Robb, G. M. Coote.	M.L.	" "	Form 915 4.7.30 to 6.10.30 ...	28.11.30
<i>Warfield</i> ...	Steel, R. ...	A. J. K. Collins ...	No. A.	" "	Form 911 29.10.30 to 9.11.30 ...	20.11.30
060 †† <i>Westernland</i> ...	Trant, A. W., O.B.E.,	W. L. Wood, C. Clark ...	W.T.	Red Star ...	Forms 911 & 138 10.11.30 to 13.12.30	16.12.30
260 *† <i>Westmoreland</i> ...	Reilly, H. E. ...	J. D. Marks, K. M. Lloyd Jones, H. Hill.	M.L.	Federal ...	Form 915 22.5.30 to 26.8.30 ...	2.9.30
<i>William Scoresby</i> , R.R.S.	Irving, J. J. C., Lieut. Commr. R.N.	" ...	"	Falkland Islands Government.	" ...	"
096 †† <i>Windsor Castle</i> ...	{ Bickford, C. N., ... { Chave, Sir B., K.B.E.	W. S. Byles, E. H. Dixey, J. Traigner.	"	Union Castle ...	Form 915 1.5.30 to 7.9.30 ...	10.9.30
043 ** <i>Zealandic</i> ...	Gaskell, J. H., R. D., Lieut. Commr. R.N.R.	G. L. Almond ...	W.T.	Shaw, Savill & Albion	Forms 911 & 138 31.10.30 to 4.12.30	10.12.30
<i>Zent</i> ...	Robinson, H. J. ...	J. Hillman ...	No. A.	Elders & Fyffes ...	Form 911 17.9.30 to 17.10.30 ...	27.10.30
<i>Conway</i> , H.M.S. ...	Richardson, F. A., D.S.C., Commr., R.N.	The Senior Cadets ...	Cadets' M.L.	" ...	Cadets' Met. Log. 21.9.30 to 13.12.30	18.12.30
<i>Pangbourne Nauti- cal College</i>	Tracy, A. F. G., Commr., R.N.	" ...	"	" ...	Cadets' Met. Log. 24.9.30 to 16.12.30	20.12.30
<i>Worcester</i> , H.M.S.	Steele, G. C., V.C., Lieut.-Commr., R.N.	" ...	"	" ...	Cadets' Met. Log. 26.9.30 to 17.12.30	19.12.30
<i>Abaco</i> ...	" ...	The Keepers ...	Lighthouse Register.	" ...	Lighthouse Register 1.7.29 to 31.12.29	24.3.30
<i>Cay Lobos</i> ...	" ...	" ...	"	" ...	Lighthouse Register 13.9.28 to 13.11.29	16.12.29
<i>Double Headed Shot</i>	" ...	" ...	"	" ...	Lighthouse Register 1.7.29 to 31.12.29	24.3.30
<i>Inagua</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.7.29 to 7.1.30	24.3.30
<i>Sombrero</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.1.30 to 30.6.30	28.7.30
<i>Walting Island</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.7.29 to 31.12.29	24.3.30
<i>Cape Pembroke</i> ... (Falkland Is.)	" ...	" ...	"	" ...	Lighthouse Register 1.1.30 to 30.6.30	18.8.30

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

Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., received up to 31.12.30.	Date Received
<i>Darian</i> ...	Hannaford, W. ...	D. G. Longmuir ...	Leyland	Water Samples ...	17.10.30
<i>Darro</i> ...	Green, J. ...	F. J. Swallow ...	R.M.S.P. Co.	" ...	14.11.30
<i>Davision</i> ...	Trickey, J. ...	J. Holman ...	Leyland	" ...	31.10.30
<i>Dorelian</i> ...	Hugan, C. ...	" ...	"	" ...	15.12.30
<i>Hildebrand</i> ...	Buck, R. H. ...	R. D. Thomas ...	Booth	" ...	11.11.30
<i>Mercian</i> ...	Hughan, C. ...	W. Parry ...	Leyland	" ...	7.10.30
<i>Nevisian</i> ...	McCormick, J. ...	T. J. Jones ...	"	Water Samples ...	24.11.30