

VOL. VI. No. 72.

THE MARINE OBSERVER.

DECEMBER, 1929.

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VOLUME VI.

This number completes the sixth volume of THE MARINE OBSERVER and as usual we remind our readers of the arrangements for binding.

With it are provided the title page—loose—and the index for the whole volume. A specially made binding cover may be purchased from the Stationery Office.

In each of the twelve numbers, the cover, advertisement pages, list of Voluntary Observing Ships and North Atlantic Ice Chart contain information which is not permanent and which may be repeated in future numbers. These may be dispensed with. When these have been removed there will remain pages numbered in sequence throughout each number, also pages unnumbered containing lithographic charts which will follow the numbered pages as they are published in the monthly numbers. These should be placed in the Volume cover and bound.

We thank most heartily all who have contributed to THE MARINE OBSERVER—the Corps of Voluntary Marine Observers, Seafarers who are not regular members of our corps, contributors direct and indirect, at ports throughout the British Empire and in other countries, the printers at the Stationery Office and assistants in the Marine Division, they have not only performed a National Service, but a service to the British Empire and the whole civilized world.

It is a fact that THE MARINE OBSERVER as the organ of organized British Marine Meteorology reviewing month by month the activities of those British ships and seamen who carry on our great voluntary service at sea has influenced the trend of events in that it has enabled the Director of the Meteorological Office to give advice which was found of practical value to the International Conference on Safety of Life at Sea in revising the Convention to meet modern requirements of safe navigation. It has also provided information which has been of service at British Empire and International Marine Meteorological Conferences. In fact, by making known what is being done in British regular observing ships at sea our JOURNAL has obtained its success, and therefore the greatest credit is due to the Corps of Voluntary Marine Observers.

Possibly there are some who do not realize the full significance of our JOURNAL to the seafarer. Just as one example, we would point to the series of articles concluded in the November number dealing with the winds of the Oceans. Some years ago seamen complained that there was no modern account accessible to them of the wind systems of the Oceans. Mr. E. W. BARLOW has remedied that; for we do not think there is in existence at the present time a more comprehensive yet concise account of the winds over the Oceans, than is contained in the series which, commencing with "The Trade Winds" in Volume V was followed in this volume by "The

Monsoons," "The Brave West Winds and Roaring Forties" and concluded with "The Wind Systems of the Arctic and Antarctic." There is in fact in the first six volumes of THE MARINE OBSERVER material for a general manual of Marine Meteorology for seamen and we hope that before long it may be possible to assemble this in one handy volume which may be within the means of all officers of the sea service.

The assembling of the current roses, arrows, curves and tables, published in section charts in the first four volumes as an Atlas of Currents on the Main Trade Routes of the North Atlantic, has been completed and this will shortly be published for general use at sea. No work is so perfect that it cannot be improved, and marine observation being difficult there is always room for improvement. One of the most difficult tasks of Marine Observers is to write descriptions of unusual Marine Meteorological phenomena, accounts of their experience in applying the work to the navigation of their ship and providing information which cannot be given in the columns of the log.

Space is provided in the Meteorological Log, in the Ships Meteorological Report (Form 911) headed "Additional Remarks," and since the publication of remarks in "The Marine Observer's Log," commenced in 1924, there has been much greater use made of this space. It should be remembered that in writing up "Additional Remarks" these are not only for the information of those who examine the logs in the Marine Division, but they are for general information and more especially for the information of seafarers.

Therefore we would say to Marine Observers, when you experience, see, hear or feel something which is of special interest in connection

with Marine Meteorology, take special observations and make careful notes and write out your description when you have leisure to do so, making it as clear, vivid, accurate and concise as possible.

Thinking of your brother seamen who will read your remarks if published in the THE MARINE OBSERVER do not burden them with unnecessary words. Aim at interesting those who may read your remarks, placing your figures, such as instrumental observations, etc., which are not included in the columns of the log, at the end of your description.

Then with regard to photos, sketches and weather charts these are reproduced by photography in black and white and you will assist us greatly if they are placed in the log in such a manner that they can be conveniently detached for the process of making plates.

"The Marine Observer's Log" is now the most interesting part of THE MARINE OBSERVER and selection for publication from the many "Additional Remarks" received becomes more difficult.

Marine Observers can now best serve the cause of Marine Meteorology and safe navigation by recounting their experiences in the application of the work to the economical and safe navigation of their ships, for their example must be made generally known if this work is to fully benefit the whole sea service, and in 1930 we hope to receive many such accounts.

London,

2nd September, 1929.

MARINE SUPERINTENDENT.

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.

NOTES FROM THE LAST LARGE BRITISH FOREIGN GOING SAILING SHIP.

THE following was received from Mr. S. BUTCHER, Second Officer, four masted Barque *Garthpool*, Captain D. THOMSON, Belfast to Australia and thence to Queenstown.

"Several items which may be of interest. The first and foremost is that of ice encountered whilst we were running the 'Easting down' on a passage between Belfast and Cape Borda, South Australia.

"On December the 7th 1928 at 13.30 A.T.S. in Latitude 43° 23' S., Longitude 10° 22' W. Wind West, force 7. Barometer 29.18 in., passed close to a small iceberg approximately 60 feet high and 100 feet long.

"At 18.50 A.T.S. passed an iceberg in Latitude 43° 19' S., Longitude 9° 07' W. Wind West, force 7. Barometer 29.17 in., steady. Approximately 250 feet high and 700 feet long.

"On December 8th 1928, at 9.15 A.T.S. Passed an iceberg in Latitude 43° 19' S., Longitude 5° 40' W. Wind W.N.W. force 7, barometer 29.30 in., steady. Approximately 700 feet high and 1,000 feet long.

"At 13.20 A.T.S. passed an iceberg in Latitude 43° 12' S., Longitude 4° 10' W. Wind W.N.W., force 7. Barometer 29.35 in., rising. Approximately 800 feet high and 1,000 feet long.

"On December 11th 1928. At 7.00 A.T.S. passed an iceberg in Latitude 42° 07' S., Longitude 11° 55' E. Wind N.W. by W., force 7. Barometer 29.50 in., rising. Approximately 250 feet high and 450 feet long, having twin peaks.

"On December 12th 1928. At 4.00 A.T.S. passed an iceberg in Latitude 41° 56' S., Longitude 17° 28' E. Wind N.N.W. Barometer 29.50 in., falling. Approximately 150 feet high and 300 feet long. An hour later we passed to windward of several small pieces about

5 feet high, apparently broken off from the previous berg. Distance from the berg and the detached pieces, E. by S. about 14 miles.

"On the night of the 9th May 1929 in Latitude 29° 40' S., Longitude 11° 50' E. At 0258 G.M.T. observed a huge shooting star travelling from north to south, altitude 18° 30' bearing S.S.E. (true). By 0306 G.M.T. the tail had gradually diffused, being about 1° lower in altitude when last visible to the naked eye. When observed through glasses the huge tail had the appearance of being double, that is, similar to the smoke curling over a steamer's funnel. Part of the tail passed over α Pavonis (altitude 18° 00' East) completely obscuring it and several minor stars.

"On Saturday 1st June 1929 in Latitude 0° 30' N., Longitude 24° 20' W. passed close to a disturbance of the sea having the appearance of smoothed water made by a ship turning round with the vortex in the centre. I cannot explain the cause of this phenomenon excepting that there were no whales visible either an hour before or after and none were close to the ship for weeks. The diameter of the disturbance was approximately 100 feet."

SEA TEMPERATURE.

Pacific Coast of Mexico.

THE following is an extract from the Meteorological Report of S.S. *Loch Katrine*, Captain O. V. SCHLANBUSCH, Rotterdam to North Pacific Coast. Observer, Mr. D. R. MALLINSON, Cadet.

"On 15th December, 1928, ship was in Gulf of Tehuantepec (Latitude 15° N., Longitude 95° W.). The sea water dropped in temperature from 83° F. to 73° F. and rose again in the evening to 81° F. Wind increased at 0300 from calm to force 4. Sea rough. Wind N.E. by N. at 0600, force 4. Barometer 29.90 in. Temperature

76° F. Course S. 63° E., speed 12 knots. Sea 5. Swell 3. Position, Latitude 14° 17' N., Longitude 95° 54' W."

NOTE.—In THE MARINE OBSERVER, Volume V, page 3, observations made in C.S. *Dominia* of large sea temperature variation in this part of the North Pacific Ocean were published.

DISCOLOURED WATER.

Arabian Sea.

THE following is an extract from the Meteorological Report of S.S. *Nowshera*, Captain S. N. ROWE, Sydney, N.S.W. to London. Observer, Mr. W. ASHCROFT, 3rd Officer.

"December 31st, 1928, Latitude 10° 23' N., Longitude 53° 41' E. at 20.00 A.T.S. Wind N.E., force 5. Barometer 29.913 in. Temperature Air 75°. Sea 78°. Sea and swell N.E.4. Cumulus 1/10th. Steering 306° 12½ knots, the sea water was of a whitish appearance, at 20.55 A.T.S. the water was its normal colour, at 21.35 A.T.S. it was again of a whitish appearance, and at 22.20 A.T.S. was its normal colour."

FLOATING PUMICE STONE.

South Pacific Ocean.

THE following is an extract from the Meteorological Report of Barquentine *Alexa*, Captain G. H. HEYEN, Sydney, N.S.W. to Gilbert Islands.

"December 19th, 1928. At daybreak position by account, Latitude 18° 28' S., Longitude 176° 15' E., Wind E, fresh. Found many small pieces of pumice stone on deck, which had been washed aboard during the night. From aloft, numerous drifts up to two cables in length, and several fathoms in width, were visible in all directions, extending to the horizon, and trending towards West and North-West. Secured many pieces with a draw-bucket, the smallest being about the size of a pea, and the largest roughly round, twelve inches in diameter and eight inches thick. The lower portions of the larger pieces were waterlogged, and crumbled easily, the upper parts being quite hard. As many as ten large barnacles were observed to be growing from one piece of pumice stone. When to leeward of Fiji, the trades took off and with the wind light and variable, the ship was constantly passing through thick fields or drifts for five days; the last being observed on December 25th, in Latitude 14° 06' S., Longitude 175° 46' E."

MAGNETIC DISTURBANCE.

South Atlantic Ocean.

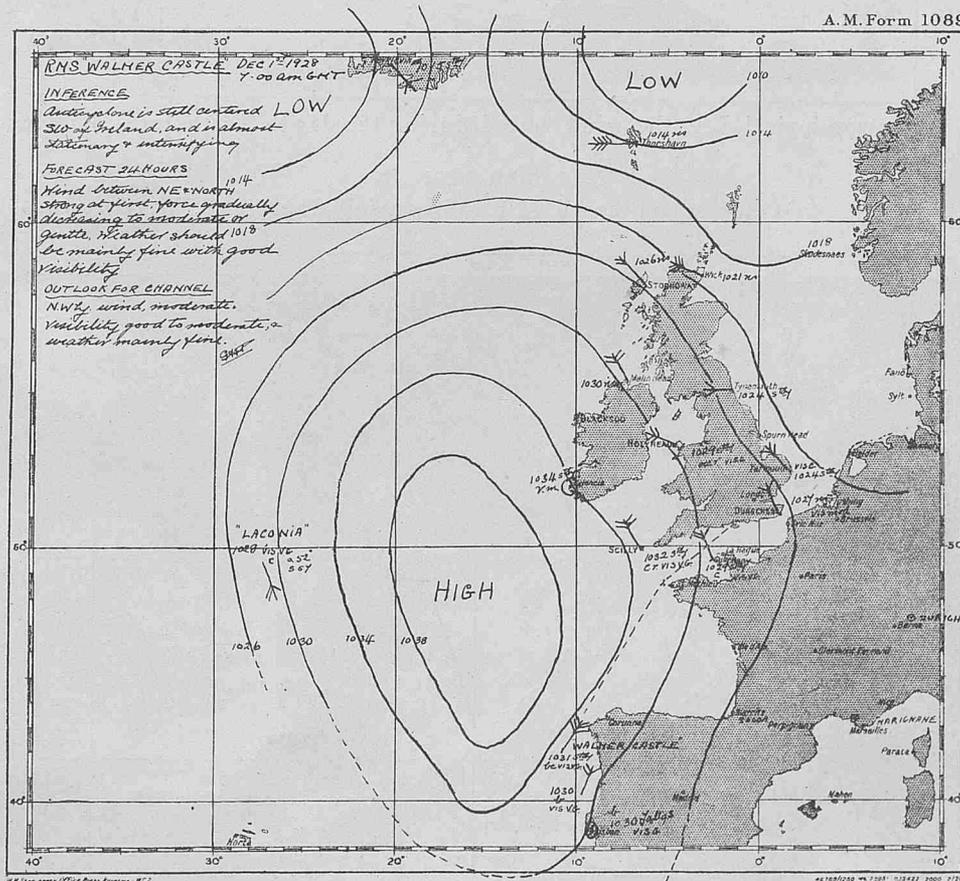
THE following is an extract from the Meteorological Log of S.S. *Elpenor*, Captain A. L. GORDON, Liverpool to Cape Town. Observer, Mr. A. R. PEARSON, 2nd Officer.

"3.55 p.m., December 23rd, 1928, in Latitude 13° 51' S., Longitude 1° 21' E. Steering by Standard Compass S. 17° E. (Error 21° W. = S. 38° E. True), Steering Compass S. 22° E., both Compasses were suddenly deflected 90°, North Point swinging to East, and then swung freely back to normal. Period of disturbances about three minutes."

WEATHER CHARTS MADE AT SEA.

Eastern North Atlantic.

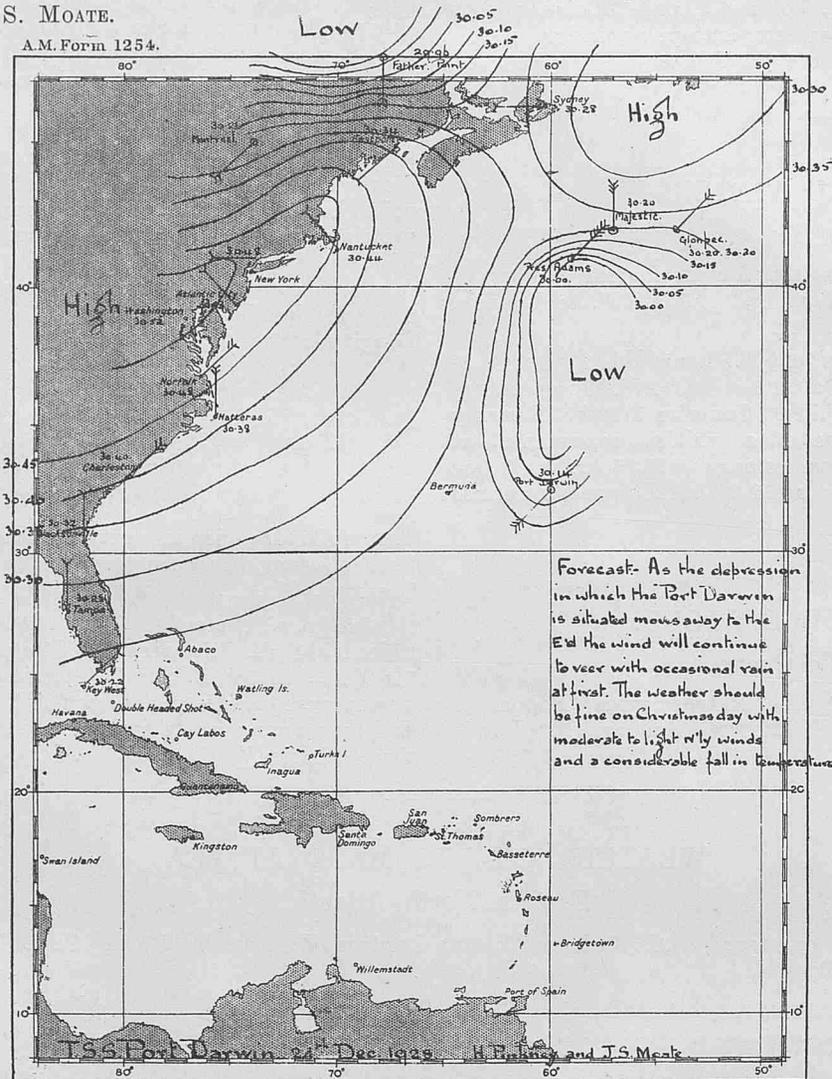
Weather Chart made at sea on board S.S. *Walmer Castle*, Captain W. MORTON BETTS, Cape Town to Southampton, by Mr. G. H. PICKERING, 3rd Officer.



According to *Walmer Castle's* Meteorological Report, the wind remained from N.E. by N. during the 1st December, decreasing to force 3 at 10 p.m. Weather, passing showers.

Western North Atlantic.

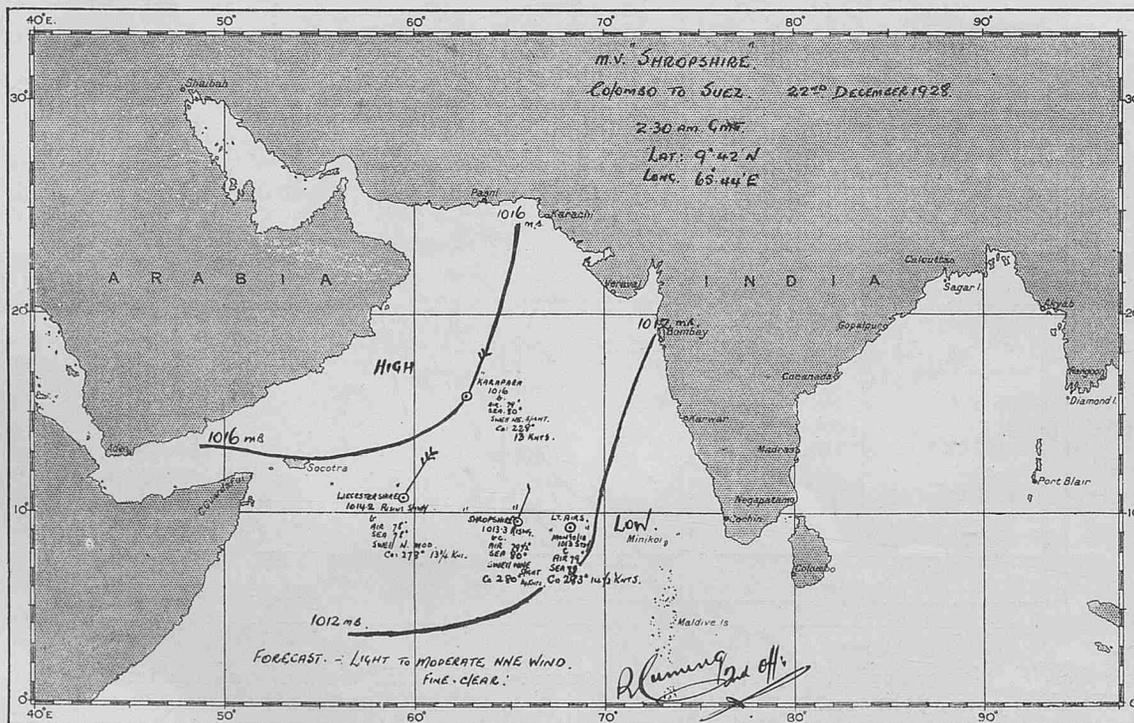
Weather Chart (one of a series) made at sea on board S.S. *Port Darwin*, Captain I. R. SAWBRIDGE, Colon to London, by Messrs. H. PINKNEY and J. S. MOATE.



According to *Port Darwin's* Meteorological Log, the wind veered during the day to North force 5 by midnight. The weather was fine and mainly overcast.

Arabian Sea.

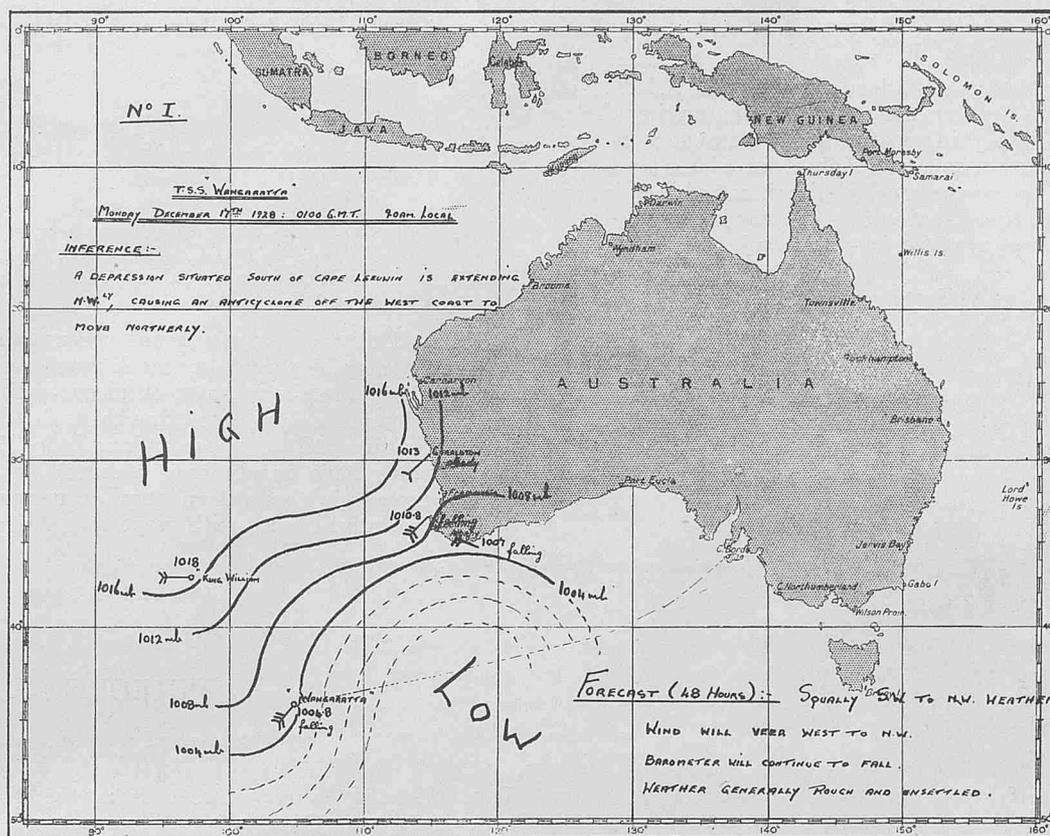
Weather Chart (one of a series) made at sea on board M.V. *Shropshire*, Captain B. W. ADAMSON, Colombo to Suez, by Mr. R. CUMING, 2nd Officer.



According to *Shropshire's* Meteorological Log, a steady N.N.E'ly wind of force 4 maintained throughout the next 24 hours. Weather fine.

Western Australian Waters.

Weather Chart (one of a series) made at sea on board S.S. *Wangaratta*, Captain W. SCUTT, Cape Town to Adelaide, by Mr. S. R. MILLARD.



According to *Wangaratta's* Meteorological Log, the wind veered to W.N.W. force 3 by midnight. Barometer falling, overcast with light rain from 2 p.m. 17th to 3 a.m. 18th.

MIRAGE.

Off Coast of Peru.

THE following is an extract from the Meteorological Report of M.V. *Lautaro*, Captain R. W. LEYNE, Chile to Balboa. Observer, Mr. J. T. DENLEY, 3rd Officer:—

“ December 10th. 1928, at anchor off Pisco, Peru, in Latitude 13° 43' S., Longitude 76° 16' W. Although at 8 a.m. the sky was overcast, by 8.30 it was clear, only a low bank of cloud being on the Western horizon and a few scattered Cumulus. At 9.15 a.m. the low bank seemed to have become Stratus and the horizon appeared saw-edged. Chincha Islands now became higher though no real mirage effect was seen. 10 a.m. brought about the appearance shown in the above sketch and this was maintained with minor variations until 11.30 a.m. Barometer at 10.30 a.m. read 29.98 in. Temperature of air 70° F. Water 61° F. Wind South (true), force 2-3. The inverted images of the tops of the north and middle islands kept appearing and disappearing from 10 to 11 a.m. and seemed to be the same yellow colour of the land, whereas the lower mirage was much darker and steady. The Sugar Loaf and two rocks were distinctly wavering in the air.

“ The approximate outline of the islands has been put in to give an idea of the natural formation and was not, of course, seen during the mirage. The effect gradually decreased and normal was reached at 2.10 p.m. the wind force increasing to a moderate breeze. Barometer 29.96 in. Temperature of Air 71° F. Water 62° F.”

ABNORMAL REFRACTION AT SUNSET.

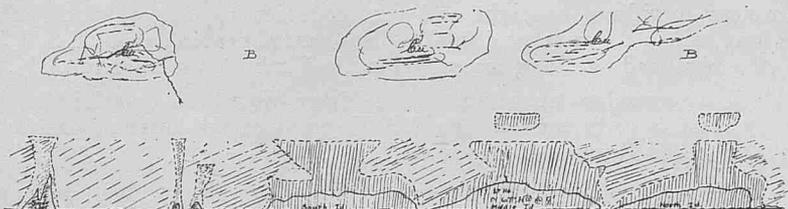
China Sea.

THE following is an extract from the Meteorological Log of S.S. *Chinkiang*, Captain C. B. L. STRINGER, Shanghai to Hong Kong.

“ December 29th, 1928, on voyage from Shanghai to Hong Kong in Latitude 27° 05' N., Longitude 121° 06' E. at sunset. When sun was about 5° above horizon it began to suffer distortion, this becoming greater as it neared the horizon. When 1° above horizon it became shaped like an hour glass and as it touched the horizon the lower portion appeared to spread on the sea at right angles in front of the upper, instead of sinking from sight.

“ The edge of the sun instead of being clean cut as usual had the appearance of short tongues of flame, but lost this appearance as the upper limb sank below the horizon; it was visible until the very last portion of the sun disappeared.

“ Weather at the time bc. Visibility 8. Sea 4. Swell moderate. Barometer 1026.4 mb. Temperature Dry 50° F. Wet 46° F. Wind E.N.E., force 4. Clouds, Stratus around horizon but with a clear space between them and horizon of about 10°, Cumulus clouds overhead, amount 5.”



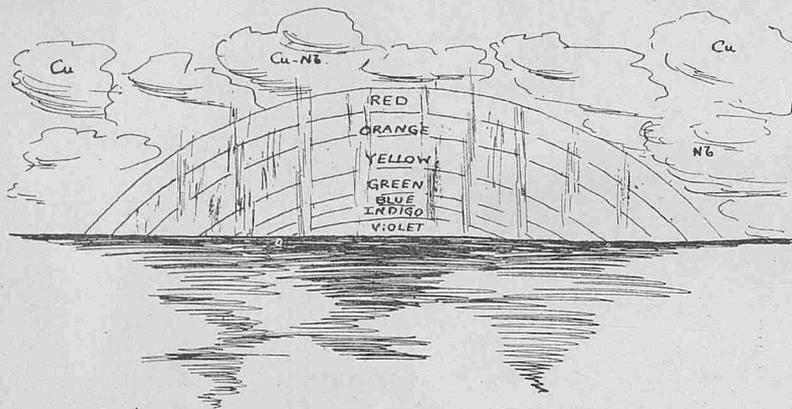
RAINBOW.

Off Colombo.

THE following is an extract from the Meteorological Log of H.M.S. *Ormonde*, Commander W. V. RICE, D.S.O., D.S.C., R.N. Observer Lieutenant H. P. PRICE, R.N.

"1st December, 1928, at 09.18 Standard Time (0348 G.M.T.) off Colombo, observed rainbow bearing 310° . (The accompanying sketch shows its appearance.) This rainbow gradually became more and more 'washy' in appearance, showing brighter in places and then commenced breaking up, green became predominant, blue, indigo and violet disappearing and left side of bow becoming yellow. At 09.23 the whole bow became a yellowish-pink and completely disappeared at 09.26.

RAINBOW



LUNAR RAINBOW.

South Indian Ocean.

THE following is an extract from the Meteorological Report of S.S. *Umvolosi*, Captain E. W. BARNES, Colombo to Durban. Observer Mr. R. A. DYNES, 3rd Officer.

"26th December, 1928, 20.38 A.T.S. (1642 G.M.T.). Latitude $14^\circ 50' S.$, Longitude $58^\circ 04' E.$ Vessel steaming 11 knots on 225° Course. Barometer rising slowly 1012.6 mb. Wind, Gentle S.E. Trades, force 3. Cloud, Fracto-Cumulus (Upper layer), Cumulo-Nimbus (Lower layer), amount 7/10. Weather, fine generally with light occasional passing showers. Temperatures Dry Bulb $78^\circ F.$ Wet Bulb $77^\circ F.$ Sea $80^\circ F.$ Sea S.E. 3. Swell S.E. 4. Observed remarkable Lunar Rainbow forming complete arc from horizon to horizon, in S.S.W. and West points respectively. Summit of bow laying at foot of horizontal base of heavy dark Cumulo-Nimbus cloud and having altitude of 10° only. Moon (Full) rising in North-East, unobscured with altitude of $25\frac{1}{2}^\circ$. This rainbow was remarkable for its well defined vividness of colour, the orange, yellow and violet being brilliantly visible, also its lengthy period of duration, lasting in all some forty-five minutes, which was thirty minutes after cessation of light showers, or any apparent rain in locality."

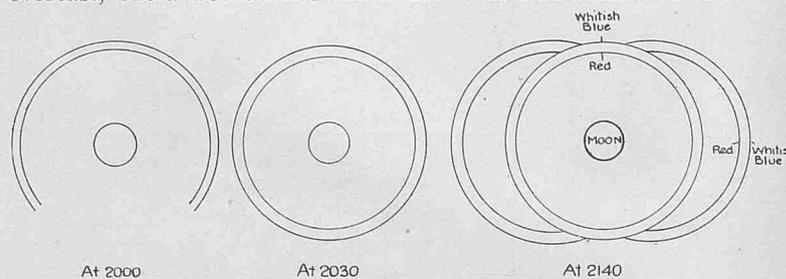
TRIPLE LUNAR HALO.

North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Clan Sinclair*, Captain P. V. TAYLOR, Birkenhead to Port Said. Observer Mr. J. A. DENNIS, 3rd Officer.

"On December 27th, 1928, at 20.00 A.T.S. observed a very distinct semi-lunar halo. Course S. $68^\circ E.$, speed 10 knots. Clouds Ci-St. Nb. and Alt-Cu. S.E. 2. At 20.30 a full lunar halo became visible, and at 21.40 when the moon bore east, altitude 45° , diameter of halo 44° , a triple lunar halo became very apparent, the inner

edge of the halo showed a clear red and the outer edge a very distinct whitish blue, the middle colours were not at all clear. The ship was in position Latitude $36^\circ 16' N.$, Longitude $6^\circ 44' W.$ when the observations were taken, the wind being northerly force 2. The triple halo remained visible until 22.45 when the sky became overcast, but a well-defined lunar halo was still visible at 24.00."



NOTE.—This is a very unusual observation. By theory halos of radius 22° may be formed by mock moons with these as centre. The drawing however shows no mock moons which would lie on or near the junctions of a horizontal line through the moon with the normal halo of radius 22° . Such secondary halos formed by mock suns or mock moons have rarely been observed because they are so faint. To complete this observation angular measurements of the position of the two lateral halos with respect to the moon would be required.

METEORITE.

South Indian Ocean.

THE following is an extract from the Meteorological Report of S.S. *Moldavia*, Captain C. W. BURLEIGH, D.S.O., R.D., R.N.R., Australia to London. Observer Mr. C. BARNES HOLMES, 4th Officer.

"December 28th, 1928, at 2.23 p.m. in Latitude $41^\circ 29' S.$, Longitude $99^\circ 00' E.$ Heard sounds of distant explosion—experienced slight vibration of ship—one of the crew reported seeing a bright object fall into the sea, which exploded. Distance from ship about seven miles."

METEOR.

North Atlantic Ocean.

THE following is an extract from the Meteorological Log of M.V. *Accra*, Captain J. B. WRIGHT, West Coast of Africa to Plymouth. Observer Mr. R. B. ELLIS, 2nd Officer.

"December 17th, 1928, 1.10 a.m. A.T.S., 0216 G.M.T. in Latitude $21^\circ 50' N.$, Longitude $17^\circ 23' W.$ observed a large meteor, of about same magnitude as Venus at its brightest, travelling from 135° to 160° at any altitude of 7° above the horizon. Visible for 23 seconds and disappeared below the horizon without bursting. Slight tail visible. Meteor had a snake-like movement. Visibility exceptionally fine. Clear sky."

Arabian Sea.

THE following report has been received from Mr. G. E. W. SITWELL, 2nd Officer, S.S. *Hampstead*, Colombo to Perim.

"At or about 2.25 M.T.S. on Friday, 14th December in Latitude $11^\circ 14' N.$, Longitude $66^\circ 22' E.$ (by Account), observed in South on or near meridian, a bright and very conspicuous meteor which left a long tail in its wake, and finally disappeared bearing about S.S.W., being obscured by cloud masses (Cumulo-Nimbus) near horizon.

"It appeared to originate in the Milky Way, and travelled at a very high velocity towards the S.S.W. point of the horizon, passing within a few degrees of Canopus."

WATERSPOUTS.

North Atlantic Ocean.

THE following is an extract from the Meteorological Log of R.M.S.P. *Andes*, Captain W. E. SMITH, Buenos Aires to Southampton.

"December 7th, 1928. 0950 G.M.T., Latitude 32° 29' N., Longitude 13° 25' W. Ship steering 028°, speed 15 knots, past weather calm with Cirrus upper clouds and Cumulus lower clouds, amount 4, moving from N.E., heaving Nimbus clouds appearing over Northern horizon and Eastern horizon, wind came away from the North, force 3. A waterspout observed 154°, of 2½° elevation, track apparently S. by W. very dark in colour, almost black on its Equatorial side with very little sea disturbance under column, rain could clearly be seen falling on its Polar side and the swirl of water could be distinctly seen in the column. Barometer rising slowly 1019.3 mb. attached thermometer 290° A. Temperatures Dry 61° F., Wet 58° F., Sea. 66° F.

"At 1004 G.M.T. Waterspout bearing 165° and rapidly withdrawing into cloud, whilst a smaller waterspout appeared on its Equatorial side of dark grey colour and a thin waterspout almost black in colour at an inclination appeared on its Polar side; visible rain was seen on the extreme Polar side only throughout.

"At 1025 G.M.T. Observed another waterspout bearing 109°, of 2¾° Elevation, track apparently S. by W. of dark grey colour at an inclination with a very clear distinct disturbance on horizon immediately under main column. General appearance of curve and visible rain on both Polar and Equatorial sides becoming obscured by rain at 1035 G.M.T. when wind backed to S.W. force 3. Barometer falling 1018.3 mb., attached thermometer 292° A. Temperatures dry 64° F., Wet 59° F., Sea 66° F. The water swirl in second case could not be clearly seen.

"At 1500 G.M.T. Barometer rising 1017.5 mb., attached thermometer 291° A., Dry 63° F., Wet 59° F. Sea 66° F. Wind veered to North, force 4."

OLD TIME MARINE OBSERVER'S LOG.

Below 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.

PARRY'S JOURNEY TOWARDS THE NORTH POLE,
1827.

THE following extracts are taken from the original diary (in the possession of the Meteorological Office) kept by Lieutenant J. C. ROSS during an attempt to reach the North Pole with Captain W. E. PARRY, July, 1827.

Heads of Instructions left with Lieutenant FOSTER:—

"To land the launch with all her gear and stores as soon as possible.

"As you remove the stores take in ballast and keep the ship down to 15 feet 3 inches mean draft.

"If driven out of harbour strain every nerve to send fresh notices to the three rendezvous and one if possible to be placed under head sheets of launch in Hecla Bay.

"If you find the ship not likely to be secure in Hecla Bay with a diminished crew give up the survey and employ yourself to the best advantage where you are.

"Consider all Scientific Research as of secondary importance to the safety of the ship.

"You may enter 12 men from the whalers if needful.

"If you go on the survey instruct Lieutenant CROZIER as to the employment of the remaining crew in your absence. Lieutenant CROZIER keep the men from straggling and to be cautious with respect to the Russians.

"You may appoint another rendezvous for your own party, but it is not to interfere with mine.

"Ship to be quite ready for sea on the 26th August. Send letters if any opportunity and always give the Admiralty the latest news of the Expedition.

"On the 15th August and each succeeding day till my return a large smoky fire is to be made on the highest hill near the ship so as to be distinctly visible from the Northward. The fire is to be continued from 8 a.m. to 2 p.m. each day. If a fire should be made by us in the boats it will show that we are at hand and if two should be made at once a little removed from each other, they are to be understood as implying that we are in want of assistance.

"In the event of my being detained until the nights become dark a pound rocket is to be thrown up each night **precisely** at five minutes before midnight and another at five minutes after midnight, Apparent Time at Ship. If from the hill near the Ship so

much the better. Should these rockets be seen by us in the boats we shall, if circumstances will allow, reply to them by making a fire to point out our situation.

"The three rendezvous already alluded to are as follows:—The North Ext. of Little Table Island, Latitude about 80° 50' N. The North Ext. of Walden Island, Latitude 80° 35' 38" N. The Low Island, Latitude 80° 16' or thereabouts.

"At the first of these, provisions have already been deposited and Lieutenant CROZIER, whom I take with me in a third boat, will convey some to the Low Island.

"Send notices if possible with all useful information to each of these rendezvous, previously to the 15th August and also a few stores for repairing boats to the most northerly you can reach. Permit no extra allowance of provisions, fuel, etc., etc., except for the sick or on very particular occasions, of which Mr. HALSE is to keep an account.

"General Regulations of the Ship to be strictly attended to and no one to go on any excursion alone or unarmed.

"In any unforeseen case do what may best advance the objects of the Expedition, but consider it **most important** the security of the Ship on which the lives of all are mainly depending.

"SATURDAY, 23RD JUNE.—Arrived at the edge of the land ice in about Walden Island at 3 a.m. after a very laborious day's work: rest was now absolutely necessary for the health of the party and although the sea was perfectly free from ice, it was quite impossible to go further. The boats were therefore hauled up on a flat piece of the land ice. Lieutenant CROZIER was sent with a party to bring some provisions from the store left by the ship on the ice. During his absence a comfortable hot supper was prepared and the awnings rigged over the boats.

"He returned in about an hour with the provisions. A bear had been there and displaced, without injury, a bag of bread. 4 a.m. The wind shifted to the S.W. and the sea beat with some violence against the land ice on which the boats were hauled and we were apprehensive that before long the whole would be broken up, but towards noon it fell calm again. At 6 a.m. got into our findresses and enjoyed seven hours of the sweetest sleep that I ever knew.

"At 1 p.m. having breakfasted we launched the boats and stood away for Little Table Island with a light air from the S.E. Lieutenant CROZIER left us after giving us three hearty cheers and returned towards the Low Island to secure the provisions left there from the bears, etc. The weather seems beautifully fine and

the songs of the people as we sailed and paddled along towards the land and the novelty of the scene altogether excited sensations of the most pleasing nature.

"At 10.10 p.m. we landed at Little Table Island whence we had a commanding view to the North and the prospect of an open sea in that direction hastened our departure, and having more effectively secured the depot of provisions and landed a few stores which we brought from the ship for that purpose we set out again at 10.30 p.m.

"MONDAY, 25TH JUNE.—Light airs from the S.W. with foggy weather. The extremely rugged ground which we had to travel over rendered it necessary for us to unload the boats and carry the loads forward and afterwards return for the boats one at a time. This made our progress but slow and the labour very great. Stopped an hour at 5 a.m. to dine, after which we continued our toil; crossed a small hole of water over which we found several floe pieces which we travelled across with great ease. They were covered with pools of water and had but very little snow on them; by the rate at which we walked over these pieces we all felt perfectly confident that over such ice we could with ease travel from 20 to 25 miles easily and it is on such ice as this that we have been led to expect, from the accounts we have seen of the main ice, that we hope to travel to the Pole.

"Our boats received some very severe blows in passing some of the ridge of hummocks, but did not sustain the least injury, indeed we felt often surprised that they were not stove in by the violence of the blows in descending from the top of the ridge. At 11 a.m. we halted for the night.

"Latitude by Meridian Altitude Noon $81^{\circ} 15' 12''$ N. This was a much lower latitude than we expected but the very circuitous route we were obliged to take to avoid hummocks that we could not profitably cross and the difficulty of steering a course over such ice during an intensely thick fog will sufficiently account for it. Retired to rest at 1.15 p.m. Rose at 3.15 p.m. Breakfasted and set out at 10 across to the North edge of the floe on which we slept. Wind from the West with thick foggy weather.

"FRIDAY, 29TH JUNE.—Light airs and thick foggy weather. The fog cleared away at 1.40 a.m. and presented to our view a most appalling scene. We appeared to be perfectly enclosed by ridge of immense hummocks, we looked round and wondered how we could have got the boats over them, they appeared to us to be perfectly unmountable and yet we were quite sure that we had found a road through them during a very thick fog. Captain PARRY and myself went forward to one of the highest of the hummocks and the view was by no means satisfactory, not a flat piece of ice could be seen to the North, nor the least appearance of lanes or holes of water. We found a tolerable gap amongst the hummocks for the boats and returned to the party to dine at 2.10. Set out again 3.10. Our route was necessarily very circuitous and the work of getting the boats up the slopes of hummocks extremely laborious. The scene however, was new and highly interesting and beautiful, and day was fine and the whole party with loads on their shoulders followed each other up the sides of these immense hummocks, the boats laying down in the hollow until the people returned to drag them up the same road one at a time.

"From the top of the highest ridge nothing but immense hummocks could be seen, but these prevented our seeing to any great distance and we continued to hope that a few days would bring us to better ice or produce some change in our favour. At present we could do no more than labour hard to get to the North and we felt a pride in overcoming obstacles which had to ourselves appeared almost unmountable; we could not, however, do wholly without rest, so we halted at 9.15 a.m. having, after nearly 11 hours labour, travelled less than one mile to the North. We had, however, succeeded in crossing the hummocks and arrived at the edge of the floe on which they stood. Breakfasted at 4 p.m. and got all ready to set out, but a view from a high hummock at the margin of the floe induced us to wait and watch the motion of the loose ice which was drifting about, rendering the launching of the boats difficult and dangerous, without any chance of our being able to do any good. Tried for soundings, no bottom, with 200 fathom line. At 10 p.m. the loose ice being more quiet, we commenced the work of launching our boats over it and got across to another hummocky floe at midnight where we halted to dine. Latitude by Meridian Altitude $81^{\circ} 23' 8''$ N.

"THURSDAY, 5TH JULY.—Light breezes and hazy. Halted at 1.45 a.m. to dine, then continued our work at 2.45 until 6 when we

stopped for the night at the north edge of a floe having gone during this day's journey perhaps $1\frac{1}{2}$ miles to the North. Obtained observations on Dip of the Magnetic Needle $82^{\circ} 09' 59''$, also for Longitude and Variation, tried for soundings with 400 fathom line, no bottom. A Tern shot. Noon. Light breezes and cloudy.

"Rose at 4 p.m. but the glare of light reflected from the surface of the snow was so intense and the snow itself so soft from the heat of the noonday sun, that we were unable to proceed until 6.30 p.m. and then the travelling was slow and laborious over loose pieces of small hummocky ice. We made a great improvement in the comfort of our travelling by wearing some Esquimeaux boots which had been sent to us from Greenland by Lieutenant BOBBALL of the Danish Navy. The Lapland shoes which we had hitherto used got filled with water immediately after we set out. The Hay in them used to keep the feet warm whilst we were travelling, but directly we halted they became bitterly cold and the only comfort we then had, strange as it may appear, was to take our boots and stockings off, wring the water out of them, and put them on again in that state.

"During this day's travelling the labour has been most excessive from the small pieces of ice we have had to cross over and the progress but very trifling; indeed the only chance there remains of our doing much is by the wind opening the ice. For the past three days we have not gone above $2\frac{1}{2}$ or 3 miles in the desired direction and our prospects are by no means cheering. The weather continued fine all day and we kept working away at pushing forward with the hope that the present kind of ice does not extend far to the North. Indeed it was some consolation to feel that it could not possibly be worse.

"Halted at 11.30 to dine, the weather beautifully fine. From a high hummock no land could be seen to the Southward or Eastward. Fog bank rising to the Westward.

"Midnight light breezes and fine. Latitude by Meridian Altitude below the pole $81^{\circ} 46' 09''$ N. Obtained observation for Longitude and Variation this morning.

"THURSDAY, 12TH JULY.—Moderate breezes and cloudy, soon after midnight the haze and clouds cleared away and once more we beheld with delight the clear blue sky, a sight which but few people know how to enjoy. To us who have been continually enveloped in fogs for these last three weeks it was a source of pleasure which few can understand.

"We pursued our journey at 1 a.m. over many small floes and the frequent crossings we were obliged to make rendered our progress but slow. Halted at 6 a.m. for the night, took advantage of the fine weather to obtain our observations for the Dip of the Magnetic Needle, for the intensity of the earth's magnetism, variation, longitude by chronometer, and some experiments with thermometers prepared for the purpose. Completing the above observations occupied us about 3 hours, after which we retired to rest. Latitude by Meridian Altitude at noon $82^{\circ} 13' 08''$ N. being two miles less than we reckoned.

"Rose at 6 p.m., breakfasted and enjoyed the comfort of a good wash for the first time this last week. Struck the awnings and set out about 8 p.m. The glare of light reflected from the snow painful to the eyes, but not sufficiently powerful to produce snow blindness. A light breeze from the East also seemed to prevent it by keeping our eyes cool; travelling very bad over small pieces of ice and holes of water. The labour and loss of time launching and hauling up again very great, two small fish 9 and 7 inches long seen near the surface, two ivory gulls and three mallemauks seen, midnight light breezes and fine clear weather. Latitude Meridian Altitude below the pole $82^{\circ} 16' 36''$ N.

"SATURDAY, 14TH JULY.—Light breezes and fine clear weather. Having at length got the boats and provisions safely across to an opposite floe after six hours labour, halted at 1 a.m. to dine, resumed our toil at 2 a.m. across a floe of N by W $\frac{3}{4}$ mile when we came to another still more difficult task across loose ice which though not more than one hundred yards detained us about two hours. Hauled the boats on a floe, which, although composed of light ice and very rugged, appeared from one of the highest hummocks near us to be of great extent towards the North. Travelled on about $\frac{1}{2}$ mile taking, as usual, the provisions in advance. On returning for the boats a bear was seen within a few yards of them. Captain PARRY

and myself were at a considerable distance in advance looking for the road and without arms. The reports of the muskets which were fired at the bear hastened our return and we found their shots had not taken effect; he walked off to some loose ice severely wounded. Just at this time a fog bank was observed to be rising in an arch from the S.E. and in a short time the beautiful blue sky and the hard white clouds which appeared like enamelling upon it, was obscured from our sight.

"In the total absence of other objects to engage our attention during our travelling hours it was remarkable to observe how minutely we noticed the slightest alteration in the form or position of any of the clouds, the varied beauty of which had never before engaged so much of our attention and admiration.

"Halted at 6 a.m. for the night having probably advanced about 3 miles N.N.W. during day and travelled five or six to attain that distance. For some days past we had constantly seen a dark patch of cloud or sky to the N.N.W. which became much more conspicuous when the dense cloud of fog which had obscured the sky came over that part of the horizon. This must clearly be caused by land or water or some other remarkable peculiarity.

"Captain PARRY observed some birds like loons flying high and directly to the South on the 12th which I believe I have omitted to mention. Several birds which have been shot have been females and from the down being plucked off them, it is probable they were breeding. Unless land is somewhere to the North of us where can these birds go to?

"Soon after we halted some heavy showers of rain fell and wind freshened up from the S.E. and when we rose at 6 p.m. to set out, the weather was so bad that we were compelled to wait until it should improve. It blew a strong breeze from the S. Eastward with thick hazy weather and continued heavy rain increasing the weight. Two ivory gulls were killed and a *Larus Rossii* seen by one of the men during his watch. Its cuneate tail gives it a very remarkable appearance and the black ring round its neck renders it too remarkable for him to be mistaken.

"FRIDAY, 20TH JULY.—Light breezes and thick foggy weather. Halted at 2 a.m. to dine and resumed our labour at 3. Ice more open from the change of wind and we made considerable progress being favoured by several large holes of water. The most of the ice over which we passed consisted of small flat pieces. Launchings frequent but very easy, the edge of the pieces being low, and free from hummocks. Beyond these we came to the heaviest floe we have yet seen on this occasion, with enormous hummocks at its margin, surface of snow hardened by the frost. Halted at 7 a.m. for the night on a large but very rugged floe, having gone during this day's journey between 6 and 7 miles N.N.W., travelled 10 and walked 16 miles.

"Latitude observed at noon $82^{\circ} 35' 34''$ N., being only 2 miles North of our observed Latitude at midnight on the 17th, evidently showing we had drifted to the Southward at least 10 or 11 miles.

"Wind continued fresh from the Northward all the afternoon until 8 p.m. when it fell light. Started again at 8 p.m. across the floe on which we slept; then half-mile by water, after which we came again to very light ice not more than 18 inches to 2 feet thick and varying from 50 to 200 yards across the pieces. We gained about $2\frac{1}{2}$ miles of Northing by midnight. Midnight light winds and foggy weather."

"Copy of Note from Captain PARRY to me relating to the present circumstances of the Expedition:—

"It seems to me now but too evident that it is not within the limits of probability that the wind (even if it changed immediately) could take us to the North of $82^{\circ} 45'$ N. again in time to allow us to get back to the *Hecla* by the 31st August, beyond which time I should not on any account like to delay our return to her. I am of opinion, therefore, that to make more than another day's journey would be to incur useless risk since no object can reasonably be expected to be gained, so that I think it would be more prudent and as creditable not to pursue our journey Northward after the evening of the 27th. Write down under this what you think of it."

Signed W. E. PARRY.

'I perfectly concur with you in every particular and am clearly of opinion that it would be neither desirable nor prudent to go Northward after the 27th instant.'

Signed J. C. ROSS.

"JULY 27TH, 1827.—Paper left in a tin canister upon the Ice: Whoever finds this paper is requested to send it under cover to the Secretary of the Admiralty, London, with a notice of the time and place where it was found.

Latitude $82^{\circ} 42'$ N.
Longitude $29^{\circ} 00'$ E.

Signed W. E. PARRY, Captain.
Signed JAS. C. ROSS, Lieutenant.
Signed C. J. BURLY, Surgeon.
Signed E. I. BIRD, Mid.

SHIPS VISITED BY NATIVES OFF PAPA ISLAND.

Eastern Archipelago.

THE following extracts are taken from the Meteorological Log No. 4703 kept on board the ship *Mikado* of London, Captain C. C. PREHN, on passage from London to Shanghai.

"DECEMBER 9TH, 1878. Noon Position Latitude $1^{\circ} 23'$ S. Longitude $129^{\circ} 43'$ E. Native canoes came off from Papa Island wanting knives and tobacco. Found the tide to be against us all forenoon. It appears that the tide changes at noon and then sets slightly to the Eastward.

"DECEMBER 10TH, 1878. Noon position Latitude $0^{\circ} 49'$ S. Longitude $130^{\circ} 20'$ E. Half a dozen native canoes came off from Battanta Island and from the Low Islands asking for nothing else but knives, tobacco and medicine. The natives explained to us that after sunset the tide would run to the Eastward, which it did, but not strong either way. On nearing the narrow part of Dampier Strait the tide seemed to get stronger because we drifted through without any wind throughout the strait."

DERELICT.

THE following extract is taken from the Meteorological Log No. 4647 kept on board the ship *Sierra Madrona* of Liverpool, Captain P. MURDOCH, on passage from Liverpool to Bombay.

"APRIL 19TH, 1879. Noon position Latitude $30^{\circ} 15'$ N., Longitude $18^{\circ} 37'$ W. 5 a.m. Passed alongside and sent a boat with Chief Officer to a wooden vessel lying nearly bottom up with her keel about 5 feet out of water. Ship was lying on the port side with rudder gone, lower masts and bowsprit standing. She was newly coppered and had apparently been only a week or so in this position as there were no barnacles or seaweed about her. Appears to be American built of red pine, could not distinguish her name or make out anything about her to give a clue to her nationality. Appears to be a ship about 1,000 to 1,200 tons register.

"Thirty-eight sail in sight from the deck, bound South."

A BOAT VOYAGE.

THE following extract is taken from the Meteorological Log No. 4596 kept on board the ship *Non Crop* of Liverpool, Captain W. RANDALL, on passage from Liverpool to New Orleans:—

"SUNDAY, 17TH AUGUST, 1879. 2.30 p.m. Rounded to, for a small boat under sail which proved to be a decked boat about 30 feet long named *The Golden Gate* from Boston, U.S.A., to Australia via the Cape of Good Hope under the command of Captain BURREL and one man. Gave him the longitude and a small quantity of bread and proceeded. NOTE: The noon position of the *Non Crop* on this day was Latitude $30^{\circ} 53'$ N., Longitude $26^{\circ} 34'$ W."

A BLACKWALL MIDSHIPMAN'S LOG.

This is a photograph of a page of a log book kept by Midshipman A. W. BROOKE SMITH in Messrs. RICHARD GREEN & Sons' Ship *Alfred*, Captain GEORGE TICHELL.

LOG of the ship *Alfred* from

Sydney towards *London*

H.	Courses.	K.	F.	Winds, &c.	Lee Way.	
Sunday March 1 st 1863						
2	S. by E.	9				pm Strong breeze & cloudy etc.
4		8	4			In 2 ^d reef of main & miz. topsails
6		8	4			
8		8	4	Bar 29.50	#19	Strong breeze and puff - In maintop staysail, jib & 2 ^d reef of foretop
10		7	4			
12		7	4			Strong breeze & gusty with thick etc slight rain.
2	S. by W.	7	4			am Increasing gale thick etc with light rain Up foremast & in 3 ^d reef of maintopsail.
4	S. by E.	4	4	Bar 29.20		
6		5	4			Moderating breeze with thick etc - Set foresail
8		5	4			
10		5	4			Out 3 ^d reef of maintopsail set the mainmast P.D.S. in Cuddy.
12		4	4			Dist. per Log. Lat 52° 25' S Long 165° 5' W - 190 m.
Monday March 2 nd 1863						
2	S. by E.	8		N. W. W.		pm Fresh breeze and overcast.
4		8				
6		8				Fresh breeze and puff - Hoisted the mainmast.
8		6		Westly.	#12	
10		6				Decreasing & cloudy - set mainmast.
12		7		Bar 29.20		
2	S. by E.	8	4			am Steady breeze & puff with light rain at times.
4		8	4			
6		7	4		#12	Strong breeze and cloudy Set maintop gall sail maintop staysail and jib.
8		8	4			
10		6	4			Fresh breeze & cloudy with light rain.
12		6	4			Dist. per Log. Lat 53° 55' S Long 149° 26' - 201 m.

H.	Courses.	K.	F.	Winds, &c.	Lee Way.	
Tuesday March 3 rd 1863						
2	S. by E.	8	4	N. W. W.		pm Moderate breeze & passing clouds.
4		8	4	Westly.		
6		8	4			
8		8	4		#15	
10		8	4			
12		7	4	N. by W.		Moderate breeze & fine -
2	S. by E.	7	4	Bar 29.45		pm Mist - fine
4	S. by E.	5	4	N. by W.		Light breeze and fine -
6		5	4	Bar 29.50	#15	Set foretop gall M Royal & paid lower foretop staysails.
8		6	4			
10		6	4			Set jib & 2 ^d jib
12		5	4			Light breeze & fine - Dist. per Log. Lat 53° 24' S Long 144° 57' W - 208 m.
Wednesday March 4 th 1863						
2	S. by E.	7		N. Westly.		pm Moderate breeze with passing clouds.
4		7				
6		7	4			Fresh breeze with thick fog - In staysails.
8		8	4		#14	
10		6				Fresh breeze with very thick fog - In M. Royal & 2 ^d jib. An iceberg close on starboard. Luffed a great sheet to the ship; sea propping the ice & throwing sails to 3 ^d topsail, jib.
12		7		Bar 29.52		
2	S. by E.	8	4	N. Westly.		am Increasing breeze with thick fog In 2 ^d reef of maintopsail.
4		5	4	Bar 29.50	#10	Strong breeze & puff In jib & 2 ^d reef of foretop gal returned the mainmast - set foretop staysail.
6	S. by E.	3	4			
8		3	4			
10		3	4			Fresh breeze with constant rain.
12		3	4			Dist. per Log. Lat 53° 30' S Long 140° 58' W - 211 m.

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In 1929 there remains only one large British square-rigged foreign going sailing ship afloat and in commission, the Four Masted Barque *Garthpool* whose 2nd mate contributes remarks in this number. Sail training has nearly ended. This log of a Blackwall midshipman will be of interest to many at this time.—

It is unnecessary to point out to the older officers and those young ones of the present day who were trained in sail, the lessons which the midshipmen learnt alone from the four days experience recorded on this page of the log.

The following notes culled from the logs and journals of a midshipman in GREEN's Service—which was probably the best training service which the Merchant Service ever had—may be of interest and assistance to youngsters now under training and all concerned in the training of the future officers and men of the Merchant Navy.

See the very first entry on this page of the log "Strong breeze and cloudy weather; in 2nd reef of main and mizen topsails." Those youngsters had to learn to observe the weather as their officers did and then when the topsail yards were on the cap and reef tackles hauled out can you see the midshipmen racing for the weather mizen topsail earing?! They moved and saw and used their limbs and best senses! These became habits which made them keen, observant and resourceful. Then the last entry in the log in the forenoon on Sunday. "P.D.S. in the cuddy."—Performed divine service in the cuddy. There was not only reefing, furling, making and trimming sail, but in these ships there was good discipline and good organisation under God-fearing officers and everything was done Blackwall fashion.

At this time (in the 60's) Captain HOPKINS, late of the HON. EAST INDIA COMPANY, was Superintendent of the Midshipman's department in GREEN's London Office. He interviewed and examined prospective entrants, and regulated appointments, leave and promotion of midshipmen.

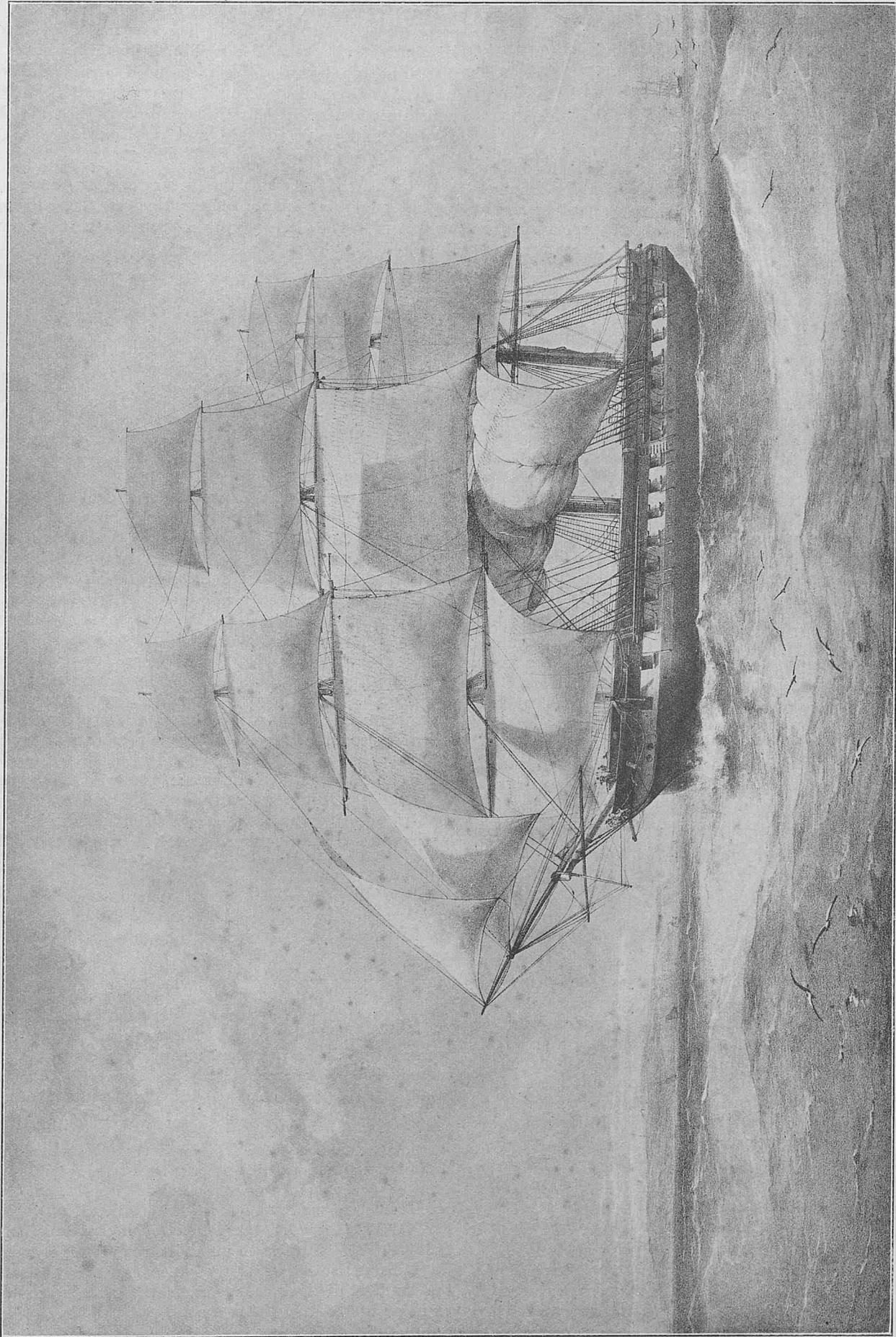
The midshipmen, 3rd, 4th and 5th mates, messed in the midshipmen's berth in the 'tween decks abaft the after hatch, the junior mates slung in cots inside the berth and the midshipmen in hammocks outside the berth. Abaft the midshipmen's berth was the 1st class passengers' accommodation.

Alfred, as did all GREEN's ships at this time, carried a large ship's company, including six midshipmen, or young gentlemen as they were always spoken of.

To quote from a midshipman's journal:—

"The old *Alfred* had been built for a frigate of 36 guns, but she was not taken over by the Government so Messrs. GREEN took her into their own fleet—a fine ship of the old style, she was flush deck fore and aft—no patent truss to the lower yards—but rolling tackles and truss tackles. We had four reefs in the topsails (fore and main) and as the topsail halyards came down the same side, we reefed topsails and mastheaded the yards together—walking away with the halyards (main) and turning round and coming back with the fore.

"We sighted a good number of ships and boarded several, one we signalled, the *Fiery Cross* tea clipper and one ship the *Chrysolite* was in company with us nine days from 26° N. to 9° N."



"ALFRED", EAST INDIAMAN.

In these ships the officers kept three watches, the junior officer or senior midshipman of the watch trimmed sail forward and lead the men aloft.

The 3rd mate was responsible for good order in the Midshipmen's berth and for their general welfare. The Midshipmen, assisted by the boys and ordinary seamen, worked the mizen and kept their watch on the lee side of the poop. First and second voyage midshipmen had regular instruction daily under the boatswain in seamanship, knotting, splicing, etc. All midshipmen took sights daily, handing the noon position to the Captain and took turn to lunch with him at the cuddy table. Each midshipman kept a log as above; their promotion largely depended upon the manner this log was kept and their giving a satisfactory account of themselves as navigators to Captain HOPKINS and the report of the Commander upon their general conduct and ability as seamen and

officers. Above all they were expected to be officer-like in their bearing.

There was no elaborate system of scholastic work enforced in these ships (selection in the first place ensured a good education), the example of the tone, leadership, seamanlike qualities and good discipline of GREEN's officers, founded upon traditions passed on from the HON. EAST INDIA COMPANY'S sea service, inspired the midshipmen to learn their trade and engraved upon them that sense of duty and pride of ship and service without which no officer can really succeed at sea.

In the *Alfred*—of which the picture overleaf is a photograph from an old engraving—many officers received their training, the best-known of whom was Captain SQUIRE T. S. LECKY author of "Lecky's Wrinkles."

CURRENTS ON THE TRACKS TO THE SOUTH OF AUSTRALIA.

PREPARED IN THE MARINE DIVISION BY E. W. BARLOW, SENIOR PROFESSIONAL ASSISTANT.

The charts of currents on the tracks to the South of Australia, which are being published in the present volume of THE MARINE OBSERVER, have been drawn from observations made during the years 1910-1927, the method employed being the same as in previous charts. A good number of observations are available for the regions adjacent to the Australian coasts, but for the ocean south of Latitude 38° S., observations are rather scanty.

THE MARINE OBSERVER charts extend down to the northern edge of the Southern Ocean General Drift in the longitudes of Australia. As was stated in the article on the "Currents on the Tracks from the Latitude of the Plate to Magellan Straits and Cape Horn," in THE MARINE OBSERVER for November, the northern part of the Southern Ocean Drift inclines to the north-eastward in the eastern part of the South Indian Ocean, forming the southern part of the circulation round the anticyclone of that ocean and merging into the northerly current which flows up the west coast of Australia. The charts have been published in the usual order, commencing with the Autumn quarter (Southern Hemisphere) and finishing with the Summer quarter. Currents during the four seasons are described in turn below.

Autumn Quarter.—The mean drifts are weak throughout the region. Actual drifts observed are shown by the roses not to exceed 24 miles per day in any but coastal regions. Sets are, as a whole, very variable but a slight preponderance of easterly set is shown by the coastal roses and a somewhat greater one in the roses for the areas south of Latitude 40° S. The highest frequency of N.E. and E. set is in the region to the south-west of Tasmania but the rose is founded on only nine observations. From the arrows of mean set and drift we see that there is no general easterly mean drift over the area, the drifts being variable and often of more or less opposite set in adjacent regions. Two definite facts, however, emerge. The easterly set becomes stronger towards the southern limits of the region covered by the chart, and there is a definite current of about 6 miles per day which follows the coastline from Latitude 30° S., the northern limit of the chart, round Cape Leeuwin to Longitude 120° E. This reappears as a weaker current towards the eastern coast of the Bight and follows the coastline down to Bass Strait. It is probable that this current is continuous, flowing round the Bight in the neighbourhood of the 100 fathom line, but this region is not covered by the charts. The strongest mean drift shown on the chart is 12.5 miles per day, setting S.S.W. in Latitude 42° to 44° S., Longitude 120° to 124° E. but this is derived from only four observations. The maximum drift observed during Autumn for the period 1910-1927 is 40 miles per day, S. 37° E., recorded by S.S. *Port Sydney* on March 1st, 1922 in Latitude 40° 16' S., Longitude 147° 24' E.

Winter Quarter.—There is a rather greater frequency of drifts exceeding 24 miles per day in this quarter though the maximum drift recorded is less than that given above for Autumn. It is 37 miles per day, N. 27° E., observed by S.S. *Clan Ross* on June 13th, 1927, in Latitude 30° 54' S., Longitude 113° 30' E. Several points of difference may be noted by comparison of the charts for the Autumn and Winter. In Winter the Cape Leeuwin section of the coastal current is weaker, while that to eastward of the Bight is considerably stronger. The current of 9.5 miles, S.E., in Latitude 34° to 36° S., Longitude 132° to 136° E., forming part of this coastal stream, is the best-established of the stronger mean drifts shown by the arrows, being derived from 43 observations. The set round Cape Leeuwin, though weaker in mean drift, is more constant than it is in autumn. The general easterly drift is again confined to the extreme south of the region but it is weaker and less extensive than it was in Autumn. An interesting feature is that the majority of the mean sets between Latitude 38° S. and 46° S. are westerly so that in spite of the blank areas it is established that there is a much more definite current stream in this part of the ocean than in Autumn.

Spring Quarter.—The actual currents observed have about the same strength as those of the Winter quarter. The maximum drifts are however a little stronger, the greatest being 44 miles, N. 82° E., on September 5th, 1927, recorded by S.S. *Babranald* in Latitude 33° 43' S., Longitude 105° 16' E. The mean drift of the coastal current is still weaker round Cape Leeuwin than it is in Winter and on to eastwards of the Bight it has lost the additional strength shown on the Winter chart. The weak westerly stream of the open ocean shown in Winter has disappeared and the general easterly current is only represented by south-easterly sets in Latitude 44° to 48° S., West of Longitude 124° E. In its diverse mean sets the chart, as a whole, resembles that of Autumn.

Summer Quarter.—The actual currents observed are weaker during this quarter than at any other time of the year, only five observations of drifts equalling or exceeding 30 miles per day having been received. The maximum drift is 35 miles, N. 30° W., on January 16th, 1917, recorded by S.S. *Osterley* in Latitude 33° 38' S., Longitude 108° 29' E. The mean drift round Cape Leeuwin and West Cape Howe is the weakest of the year and the set is S.S.E., off the land, a distinct change from the other seasons. Over the remainder of the area the sets are very variable.

General Remarks.—THE MARINE OBSERVER charts show that there is no general easterly current over the region and confirm the indications of the older charts that the Southern Ocean Drift does not flow in these longitudes with strength or steadiness north of

Latitude 48° to 50° S. The oceanic region is mostly one of weak and variable current, with the exception that the Winter quarter shows a distinct but weak westerly set over a considerable area. The coastal current, on the other hand, is more definitely shown by THE MARINE OBSERVER charts than by the older charts; where it is hardly traceable in some months.

In FINDLAY'S "Sailing Directions for the Indian Ocean" it is stated that the average flow of the Southern Ocean Drift round the globe, derived from bottle and other observations, is 10 miles per day. THE MARINE OBSERVER charts do not extend far enough south to give values for comparison with this figure but it may be noted that the highest mean drifts shown in the most southerly latitudes of the charts lie between 9 and 10 miles per day.

The flow of the Southern Ocean Drift is due largely to the frictional effect of the prevailing westerly winds of the Southern Hemisphere. Another factor will, however, operate in producing this current. When adjacent areas of the sea surface are at different temperatures, a slight slope of the sea surface must be produced, the level of the warm water being the highest and that of the cold water the lowest. In the case of the Southern Ocean Drift we have relatively warm water to the north and cold water to the south. By BUYS BALLOT'S Law the current resulting from this lateral pressure gradient will flow eastwards and therefore this current will enhance that due to the wind. The same explanation was given in the article on "Currents in the North Atlantic Ocean," THE MARINE OBSERVER, VOL. IV. No. 48, for the North Atlantic Drift. In the present case, however, the wind is stronger and steadier and the resulting current is also stronger. The flow of the coastal current around Cape Leeuwin and West Cape Howe resembles that of the Cape Horn Current, both occupying a similar situation with regard to the Southern Ocean Drift. The coastal current flowing along the southern coast of Australia appears to resemble the great coast-line formed currents in other parts of the world, such as the Gulf Stream, the explanation of which, on the theory of EKMAN, was given in the article above referred to. This explanation necessitates a prevailing wind blowing obliquely over, or parallel to, the coastline. This wind is provided by the general westerly wind of the region which blows during a large part of the year. It is interesting to note that the westerly wind is strongest in Winter when, as we have seen above, the coastal current eastward of the Bight is strongest. The mean flow of current round Cape Leeuwin and West Cape Howe does not change much throughout the year and is not greatly influenced by the prevailing S.E. winds of late Summer and Autumn in that region.

Notes on Weather.—During the southern summer an area of high pressure lies between the south coast of Australia and about Latitude 42° S. During the southern winter, anticyclonic conditions prevail over the land and the pressure decrease over the ocean with increasing south latitude. South of Latitude 39° S., westerly winds prevail in all months of the year. As shown however by the

Meteorological Charts of the Southern Ocean between the Cape of Good Hope and New Zealand there is a high degree of variability and it is only winds from directions between N.E. and S., through E., that are infrequent. The prevailing westerly wind is due to the passage of frequent cyclonic depressions, the centres of the majority of which pass well to the southward of Latitude 50° S., giving winds varying between S.W. and N.W. within the area of the charts. Occasionally a depression passes further north with winds varying from N. to N.E. with subsequent easterly and south-easterly gales. The percentage of gales between the parallels of 45° and 50° S. is 17 to 20 in Winter and 7 to 13 in Summer. Between the parallels of 40° and 45° S. it is appreciably less in all seasons.

North of Latitude 39° S., westerly winds prevail for eight months of the year, May to December. The most settled months in this region are January to April. The winds are variable up to Latitude 36° S., but between Latitude 36° S. and the coast of Australia there is a predominance of south-easterly wind due to the anti-cyclonic circulation. This south-easterly wind on rare occasions rises to a strong gale lasting about 48 hours, accompanied by haze and raising a very irregular cross sea, as the constant south-westerly swell experienced in this region does not subside when the south-easterly wind is blowing. Several years may, however, elapse without the occurrence of one of these gales. Settled weather with south-easterly winds may sometimes occur during the months October to December, but the westerly gales of October are frequently as severe as those experienced at any time during the Winter. The season of occurrence of westerly gales is May to October and they are usually as severe near the coast as in the open ocean. There may be an occasional westerly gale in November or December and more rarely during the early months of the year.

Fog is infrequent at all seasons, especially between the coast and Latitude 39° S., with frequencies of 0 to 2 per cent. in all seasons. South of Latitude 39° S., the seasonal frequency varies in different areas from 0 to 8 per cent., as shown by the Atlas above referred to. The haze which comes up with the sea breeze in summer is occasionally thick enough to render objects indistinct at a distance of 3 or 4 miles.

In the Bass Strait the winds are variable but westerly and south-westerly winds prevail from September to January. In June, northerly winds predominate and in July and August the winds are mainly between N. and S.W., through W. Gales are experienced in all months, but are most frequent in July, August and September. On the Tasmanian coast south of Latitude 42° S., south-easterly winds and gales may be experienced in June. From July to November westerly and south-westerly winds prevail, with also a considerable amount of N. and N.W. wind in July to September. There is much bad weather during the winter months. The frequency of fog in the Bass Strait and Tasmanian Waters is variable and mainly small.

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

SOUTHERN ICE REPORTS.

During the Years 1917 to 1928.

December.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1917	30	57° —' S.	131° —' W.	Berg	260 feet high by 500 feet long	S.S. <i>Medway</i> .
	31	55° —' S.	119° —' W.	Berg .. .. .	.. .. .	do.
1921	12	38° 08' S.	33° 14' E.	Large berg .. .. .	.. .. .	S.S. <i>Runic</i> .
	14	41° 57' S.	35° 04' E.	Large berg	About 500 feet long and 200 feet high	S.S. <i>Port Chalmers</i> .
		42° —' S.	35° —' E.	13 large bergs	About 1,000 feet long and from 300 to 600 feet high.. .. .	do.
		44° —' S.	48° —' E.			
	17	43° 33' S.	44° 16' E.	Berg	About 60 feet high and 150 feet long	S.S. <i>Armagh</i> .
		44° 03' S.	46° 42' E.	Berg	170 feet high. A few large growlers about 15 miles E.N.E. from berg.	do.
	18	44° 40' S.	52° 14' E.	Berg. Four growlers in vicinity	About 20 feet high	do.
1922	31	55° 37' S.	129° 56' W.	Berg	Conical - about 100 feet high	S.S. <i>Middlesex</i> .
	7	55° 54' S.	128° 24' W.	Berg	Two conical peaks	do.
		52° 02' S.	116° 58' W.	Berg, small .. .. .	.. .. .	S.S. <i>Mahia</i> .
1923	29	48° 27' S.	46° 48' E.	Berg, small .. .. .	.. .. .	S.S. <i>Devon</i> .
1926	17	44° 37' S.	59° 40' W.	Berg	Probably 2 cables in length and 100 feet above water	M.V. <i>Lagarto</i> .
		45° 04' S.	59° 48' W.	Berg, large	Bergs ahead to 2 points on each bow at 9.10 p.m., 9.20 p.m. ice ahead. Altered course S. 40° E. (t), 10.05 p.m. Found passage and resumed original course. Passed several bergs and growlers during remainder of Watch. At 9.0 p.m. a string of bergs were in alignment with smaller ice at frequent intervals between. Six miles were steamed parallel to these bergs before a passage could be found. One of this group was a floating island 2 to 3 miles in length on 1 side and 1 to 2 miles on the other (estimated)—height estimated at 250 feet or more although appearing less—line of bergs probably around a few miles off the 100 fathom line, and would remain there awaiting a Westerly wind. Theory is to some extent supported by the berg passed at 8.10 p.m. on the 17th (still daylight) one end of which was remarkable in appearance, as if, from its colour and formation it had been broken away from a larger grounded berg and had some of the sea-bed attached.	do.
	26	44° 06' S.	59° 23' W.	5 bergs, tabular	Largest berg being 280 feet high and ¼ mile long (height by sextant angles). At distances of from 3 to 5 miles from main berg were 4 smaller bergs (about ¼ as large as large berg). Possibly calved from main berg by weathering. The large berg had many large transverse cracks and looked as if it would break up at any time. Several tons were falling from the large berg at short intervals and slabs of from 2 to 10 tons floated around the berg. Berg about 40 miles East of the 100 fathom line.	S.S. <i>Enton</i> .
	18	46° 05' S.	59° 18' W.	Large berg	About 2 cables in length and 100 feet above water	M.V. <i>Lagarto</i> .
		47° 04' S.	58° 57' W.	Berg		
		47° 13' S.	58° 54' W.	Berg		
	26	42° 55' S.	58° 53' W.	3 bergs	One large tabular, similar to the former (S.S. <i>Enton</i> Longitude 59° 23' W.)—and two small ones about 3 miles apart—bergs in distance.	S.S. <i>Enton</i> .
	18	47° 25' S.	56° 50' W.	Berg	About 2 cables in length and 100 feet above water	M.V. <i>Lagarto</i> .
	26	42° 39' S.	58° 40' W.	2 small bergs		
	18	49° 14' S.	58° 26' W.	Berg	In the distance	S.S. <i>Enton</i> .
	6	43° 29' S.	58° 22' W.	Berg	About 2 cables in length and 100 feet above water	M.V. <i>Lagarto</i> .
	7	43° 56' S.	58° 53' W.	3 large bergs		
	7	43° 50' S.	58° 40' W.	3 large bergs .. .. .	.. .. .	S.S. <i>Tairoa</i> .
	17	42° 24' S.	58° 28' W.	1 large berg		
	6	60° 28' S.	44° 26' W.	Pack ice	Drifting North about 1 knot	S.S. <i>Australind</i> .
	7	60° 17' S.	44° 23' W.	Pack ice		
	8	Saddle Island bearing S. 40 miles		Pack ice .. .. .	.. .. .	do.
	9	Cape Bennet bearing S. 35° E. 40 miles		Pack ice .. .. .	.. .. .	do.
	10	Saddle Isle bearing S. 11° W. 16 miles		Pack ice .. .. .	.. .. .	do.
	5	60° 40' S.	43° 38' W.	Pack ice .. .. .	.. .. .	do.
	11	Cape Dundas bearing S. 16° W. 40 miles.		Pack ice .. .. .	.. .. .	do.
	13	S. side of Lewthwaite Strait to Signy Island.		Pack ice .. .. .	.. .. .	do.
	1	60° 38' S.	42° 48' W.	Pack ice .. .. .	.. .. .	do.
	2	60° 34' S.	42° 29' W.	Pack ice .. .. .	.. .. .	do.
	3	60° 41' S.	42° 09' W.	Pack ice .. .. .	.. .. .	do.
	4	60° 45' S.	41° 48' W.	Pack ice .. .. .	.. .. .	do.
	19	53° 34' S.	38° 36' W.	2 bergs and small ice .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
		53° 41' S.	38° 26' W.	1 small berg and growler	In sight	do.
		53° 48' S.	38° 13' W.	Close to one weathered berg .. .. .	.. .. .	do.
	20	53° 42' S.	38° 06' W.	Few bergs in sight .. .. .	.. .. .	do.
	19	53° 56' S.	38° 02' W.	1 tabular berg	Few bergs seen	do.
	9	Off Right-Whale Bay		Very little ice	Very little ice seen to northward of the Island	do.
	18	53° 33' S.	37° 46' W.	Few bergs sighted	Mostly bergs which have been aground for a long period	do.
	17	Cape North vicinity		Few bergs sighted .. .. .	.. .. .	do.
	9	Sunset Fjord (Bay of Isles)		Ice sighted .. .. .	.. .. .	do.
		Off Fortuna Glacier		Ice sighted .. .. .	.. .. .	do.
		Off Cape Saunders		Several bergs sighted .. .. .	.. .. .	do.
	17	Off Cape Saunders		Several bergs sighted .. .. .	.. .. .	do.
	8	From Leith Harbour to Bird Island Passage		Very little ice .. .. .	.. .. .	do.
	9	Off Prince Olaf		Ice sighted .. .. .	.. .. .	do.
	20	Cape Best to Cape George		Ice sighted .. .. .	.. .. .	do.
	5	53° 58' S.	36° 00' W.	Bergs and growlers	Three medium sized tabular bergs and several growlers of various sizes, numerous other bergs in sight.	R.R.S. <i>Discovery</i> .
	5	Off Cumberland Bay		Few bergs sighted .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	10	Off Cumberland Bay Entrance		8 bergs sighted to seaward .. .. .	.. .. .	do.
	21	Off Drygal Ski Fjord		Ice in sight .. .. .	.. .. .	do.
	23	54° 08' S.	35° 43' W.	2 bergs sighted .. .. .	.. .. .	do.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1926	20	Close to Filchner Rocks		18 bergs in sight	Small irregular shaped	R.S.S. <i>William Scoresby</i> .
	21	Off S.E. end of Island (S. Georgia)	54° 59' S. 35° 24' W.	3 tabular bergs	About 3 and 5 miles in length	do.
			55° 08' S. 35° 11' W.	Several bergs in sight .. .. .	.. .. .	do.
	22		55° 20' S. 34° 47' W.	2 bergs sighted .. .. .	.. .. .	do.
			Near Clerke Rocks	Ice sighted .. .. .	.. .. .	do.
	4		53° 38' S. 33° 40' W.	2 bergs sighted .. .. .	.. .. .	do.
	3		53° 12' S. 31° 01' W.	Bergs and growlers	Six bergs including 2 large glaciers and many growlers sighted throughout the day.	R.R.S. <i>Discovery</i> .
	2		Bergs, growlers and bergy-bits	Passed 67 bergs during the day and numerous others of various shapes and sizes in sight, two of which were 1/2 mile long (estimated) also many growlers and bergy-bits and a large quantity of loose ice.	do.	
	1		Bergs, growlers and bergy-bits	Sighted 14 bergs mostly tabular and large, and 9 others of various shapes and sizes, also numerous, medium sized growlers and bergy-bits throughout the day.	do.	
	1		Bergs, growlers and bergy-bits	Sighted 44 bergs of various shapes and sizes, including one small berg which was very much discoloured and covered with Moranic deposit, also numerous growlers and bergy-bits.	do.	
1927	24		43° 50' S. 8° 30' E.	Berg .. .. .	.. .. .	Barque <i>Penang</i> .
	23		42° 58' S. 43° 44' E.	Berg and small ice	Berg approximately 70 feet high	S.S. <i>Otaki</i> .
	7		42° 25' S. 44° 26' E.	Berg	Measured 300 feet high, 600 feet long, approx. square, sides sheer, outlying portions at base showing signs of cracking. Three bluish layers.	S.S. <i>Port Melbourne</i> .
	22		37° 40' S. 53° 30' W.	Several large bergs .. .. .	.. .. .	S.S. <i>Schwarz</i> .
	17		47° 00' S. 53° 20' W.	Berg	Numerous bergs passed to position of Dec. 18	S.S. <i>Brynje</i> .
	16		36° 05' S. 53° 15' W.	Berg, very long .. .. .	.. .. .	S.S. <i>Unodina</i> .
	31		35° 18' S. 52° 43' W.	Bergs .. .. .	.. .. .	S.S. <i>Atto</i> .
	1		47° 16' S. 50° 54' W.	Bergs, very numerous	150 to 200 bergs encountered in S. Atlantic. "We were among them for 5 days. The distance from the first iceberg seen to the last noticed was 695 miles. We did not strike one although we were close to them at times".	Barque <i>Pommern</i> .
	17 to 18	From 47° 00' S. to 43° 25' S.	53° 20' W. 49° 32' W.	Numerous bergs .. .. .	.. .. .	S.S. <i>Brynje</i> .
	17		36° 00' S. 49° 20' W.	17 bergs in sight	Bergs in sight all the voyage S. Georgia to Buenos Aires, 5th-17th December—one berg understood to be 50 miles long.	Aux. barque <i>Tijuca</i> .
	17		36° 15' S. 48° 50' W.	21 bergs in sight	"The radio messages received from Laurie Island during the last few weeks indicate that the procession of great bergs (which began in June last) shows no sign of diminution. The last message received on 2nd January, 1928."	do.
	18 to 19	From 43° 25' S. to 40° 20' S.	49° 32' W. 47° 11' W.	Numerous bergs .. .. .	.. .. .	S.S. <i>Brynje</i> .
	19 to 20	From 40° 20' S. to 37° 06' S.	47° 11' W. 44° 13' W.	Numerous bergs .. .. .	.. .. .	do.
14		38° 57' S. 43° 18' W.	63 bergs in sight .. .. .	.. .. .	Aux. barque <i>Tijuca</i> .	
13		40° 20' S. 42° 00' W.	37 bergs in sight	See note 17th barque <i>Tijuca</i>	Aux. barque <i>Tijuca</i> .	
20 to 21	From 32° 06' S. to 34° 42' S.	47° 11' W. 40° 32' W.	Several bergs .. .. .	.. .. .	S.S. <i>Brynje</i> .	
6		39° 57' S. 38° 27' W.	Last of numerous bergs	See report of December 1st.	Barque <i>Pommern</i> .	
1928	1		42° 37' S. 8° 30' E.	Berg .. .. .	.. .. .	Barque <i>Penang</i> .
	11		42° 07' S. 11° 55' E.	Berg	250 feet high, 450 feet long having twin peaks	Four masted barque <i>Garthpool</i> .
	2		42° 40' S. 13° 45' E.	Berg	2 1/2 miles distant	Barque <i>Penang</i> .
	12		41° 56' S. 17° 28' E.	Berg	150 feet high, 300 feet long	Four masted barque <i>Garthpool</i> .
	2		42° 40' S. 17° 30' E.	Berg	1 1/2 miles distant. Loose ice to E. and N. Very small lumps close to vessel's side.	Barque <i>Penang</i> .
	19		43° 56' S. 47° 12' E.	Large berg	120 feet high, 350 feet long, wedge shaped	M.V. <i>Heidelberg</i> .
	7		43° 23' S. 10° 22' W.	Small berg	60 feet high, 100 feet long	Four masted barque <i>Garthpool</i> .
	7		43° 19' S. 9° 07' W.	Berg	250 feet high, 700 feet long	do.
8		43° 19' S. 5° 40' W.	Berg	700 feet high, 1,000 feet long	do.	

Reports of ice previous to October, 1917, will be found on the back of the Monthly Meteorological Chart of the East Indian Seas, October 1917, No. 138.

WEATHER SIGNALS.

SOUTH AMERICA.

II.—WIRELESS WEATHER BULLETINS.

The Key and Decode Tables of the International Weather Telegraphy Code will be found on pages 21 to 25 of Volume VI No. 61. (The January, 1929, Number.)

The method of decoding station weather reports made in code was described in the British "Weather Shipping" Bulletin, on pages 45 to 47 of Volume VI No. 62. (The February, 1929, Number.)

The same method of decoding weather reports applies in all cases where the International Code is used.

The letters given in the descriptions which follow give the key to the tables for decoding the figures.

Where *other* than International code tables are used they are published along with the signals described and an explanation is given.

Chile.

C. W. Issues.

Santiago Central, W.T. Station.—Approximate Latitude 33° 26' S., Longitude 70° 38' W.

Call Sign.—**CCS.**

Wave length.—3000 metres C.W.

Times of transmission.—0130 and 1600 G.M.T.

The message issued at 0130 G.M.T. is based upon 1800 G.M.T. observations and the 1600 G.M.T. message is based on the 1200 G.M.T. observations at a selection of the following coast stations:—

Indicator Letter.	Station.	Position (approximate).	
		Latitude.	Longitude.
AR	Arica	18° 28' S.	70° 20' W.
AN	Antofagasta	23° 39' S.	70° 25' W.
AS	Aysen	45° 26' S.	72° 59' W.
BO	Puerto Bories	51° 45' S.	72° 32' W.
CA	Caldera	27° 04' S.	70° 52' W.
CS	Constitucion	23° 27' S.	70° 37' W.
CQ	Coquimbo	29° 57' S.	71° 20' W.
CO	Corral	39° 53' S.	73° 35' W.
GA	Galera	40° 00' S.	73° 45' W.
GF	Guafo	43° 35' S.	74° 45' W.
IQ	Iquique	20° 13' S.	70° 10' W.
JF	Juan Fernandez	33° 42' S.	78° 45' W.
ME	East Mocha	38° 23' S.	73° 53' W.
PM	Puerto Montt	41° 30' S.	72° 53' W.
PA	Punta Arenas	53° 08' S.	70° 56' W.
TL	Taltal	25° 26' S.	70° 31' W.
TU	Tumbes	36° 37' S.	73° 07' W.
VD	Valdevia	39° 48' S.	73° 48' W.
VP	Valparaiso	33° 06' S.	71° 40' W.
SA	Santiago	33° 26' S.	70° 38' W.

The bulletins consist of three parts:—

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

Part II.—Gives the observations of a selection of the above coast stations in the following code:—

IIVS' BBD' FW'.

II = Indicator Letter of observation station.

V = Visibility (Table XIV, page 24, Vol. VI, No. 61).

S' = State of Sea (Table LX).

BB = Barometer reading, corrected, in millimetres, with initial figure 7 omitted. (To convert millimetres to mbs. or inches see Table LXI.)

D' = Wind direction (Table LXII).

F = ,, force (Beaufort scale up to 9).

W' = Weather at the time of observation (Table LXIII).

Part III.—Is a forecast (based on land station reports only) for the following 24 hours, "en clair" (Spanish).

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

Argentina.

C.W. Issue.

Buenos Aires-Dársena Norte W/T Station, approximate Latitude 34° 36' S., Longitude 58° 22' W., call sign **LOL**, broadcasts a weather bulletin, "en clair," in Spanish, at 0205 G.M.T., on a wave-length of 1,000 metres (C.W.). The bulletin will contain a weather forecast for the ensuing 24 hours for the Rio de la Plata.

Brazil.

Spark Issues.

(a) WIRELESS WEATHER REPORTS ON THE BRAZILIAN COAST.

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

W/T Station.	Position (approx.).		Call Sign.	Times of Sending. G.M.T.
	Latitude.	Longitude.		
Belém (Para)	1° 27' S.	48° 30' W.	SQB	0245, 0645, etc., etc.
S. Luiz (Maranhã)	2° 32' S.	44° 17' W.	PXM	0300, 0700, etc., etc.
Natal	5° 47' S.	35° 18' W.	PXN	0330, 0730, etc., etc.
Olinda (Pernambuco)	8° 01' S.	34° 51' W.	PPO	0345, 0745, etc., etc.
Amaralina (Bahia)	13° 01' S.	38° 28' W.	PPA	0315, 0715, etc., etc.
Fernando Noronha	3° 51' S.	32° 25' W.	PXF	0315, 0715, etc., etc.
Abrolhos	17° 58' S.	38° 45' W.	SNN	0320, 0720, etc., etc.
Santos	23° 56' S.	46° 20' W.	PPS	0245, 0645, etc., etc.
Florianopolis	27° 36' S.	48° 34' W.	PPF	0315, 0715, etc., etc.
Junçãõ (Rio Grande do Sul)	32° 04' S.	52° 07' W.	PPJ	0345, 0745, etc., etc.
Rio	22° 59' S.	43° 11' W.	PPR	0000, 1200, 1500, 2100.

The wave-length used by the above stations for the transmission of the messages is 600 metres (spark), except Belém, which is 1,800 metres, and Abrolhos which is 300 metres.

(b) SPECIAL MESSAGES, INCLUDING FORECASTS FOR THE SOUTH COASTS OF THE STATE OF RIO JANEIRO, THE REMAINDER OF THE SOUTHERN BRAZILIAN COAST, AND TO BUENOS AIRES.

Ilha do Governado—Rio de Janeiro—W/T Station, approximate Latitude 22° 49' S., Longitude 43° 11' W., call sign **SOH**, broadcasts daily two special weather bulletins at 1800 and 0100 G.M.T., both on 1,800 metres (spark).

These bulletins are divided into three parts; the first part contains respectively the 1200 and 2100 G.M.T. observations in International Code of various Brazilian, Uruguayan and Argentine meteorological stations given below; the second part contains upper air observations in code; the third part contains detailed weather forecasts in Portuguese, "en clair."

Indicator Number.	Station.	State.	Position (approx.).	
			Latitude.	Longitude.
01	Ondina ...	Bahia ...	13° 00' S.	38° 31' W.
02	Caetité ...	"	14° 03' S.	42° 37' W.
03	Victoria ...	Esp. Santo ...	20° 10' S.	40° 18' W.
04	Bello Horizonte ...	Minas Geraes	19° 55' S.	43° 56' W.
05	Uberaba ...	"	19° 45' S.	47° 57' W.
06	Pirapora ...	"	17° 18' S.	44° 57' W.
07	Juiz de Fora ...	"	21° 45' S.	43° 20' W.
08	Rio de Janeiro ...	Rio de Janeiro	22° 54' S.	43° 10' W.
09	Cabo Frio ...	"	22° 52' S.	42° 01' W.
10	S. Paulo ...	São Paulo "	23° 33' S.	46° 38' W.
11	Santos ...	"	23° 56' S.	46° 19' W.
12	S. Paulo dos Agudos ...	"	22° 28' S.	49° 00' W.
13	Cuyaba ...	Matto Grosso...	15° 35' S.	56° 05' W.
14	Coxim ...	"	18° 28' S.	54° 45' W.
15	Tres Lagoas ...	"	20° 47' S.	41° 42' W.
16	Curityba ...	Paraná ...	25° 25' S.	49° 16' W.
17	Florianopolis ...	S. Catharina ...	27° 36' S.	48° 30' W.
18	Palmas ...	Paraná ...	26° 23' S.	51° 58' W.
19	Porto Alegre ...	Rio G. Sul ...	30° 01' S.	51° 13' W.
20	Uruguayana ...	"	29° 45' S.	57° 05' W.
21	S. Luiz das Missões ...	"	28° 23' S.	54° 58' W.
22	Rio Grande ...	"	32° 01' S.	52° 05' W.
23	Bagé ...	"	31° 20' S.	54° 06' W.
24	S. Victoria do Palmar	"	33° 31' S.	53° 21' W.
25	Sta. Isabel ...	Uruguay ...	32° 45' S.	56° 32' W.
26	Montevideo ...	"	34° 54' S.	56° 12' W.
27	Buenos Aires ...	Buenos Aires	34° 36' S.	58° 22' W.
28	Oran ...	Salta ...	23° 06' S.	64° 20' W.
29	Adalgala ...	Catamarca ...	27° 30' S.	66° 26' W.
30	Corrientes ...	Corrientes ...	27° 27' S.	58° 49' W.
31	Santa Fé ...	Santa Fé ...	31° 40' S.	60° 42' W.
32	Mendoza ...	Mendoza ...	32° 53' S.	68° 49' W.
33	Victorica ...	Pampa Central	36° 10' S.	65° 21' W.
34	Cipoletti ...	Rio Negro ...	38° 56' S.	68° 08' W.
35	Bahia Blanca ...	Buenos Aires...	38° 45' S.	63° 15' W.
36	P. Madryn ...	Chubut...	42° 49' S.	64° 58' W.
37	Sarmiento ...	"	45° 30' S.	69° 00' W.
38	16 de Outubro ...	"	42° 12' S.	71° 08' W.

1800 G.M.T. Bulletin.

First part of Bulletin (observations of 1200 G.M.T.) in International Code represented by "Key Letters" as follows:—

- Brazilian Stations (01-24) I_n I_n BBBDD, FwwTT,
- Uruguayan ,, (25-26) I_n I_n BBBDD,
- Argentine ,, (27-38) I_n I_n BBBDD

Second Part of Bulletin sent in code preceded by the word "Pilot" contains upper air observations.

Third Part of Bulletin contains weather forecasts and is preceded by the word "Previsão."

0100 G.M.T. Bulletin.

The First Part of the Bulletin contains the 2100 G.M.T. observations (in code) of stations 08, 09, 11, 17, 22 and 24, in exactly similar form as for stations 01-24 in the 1800 G.M.T. Bulletin.

Second Part of Bulletin contains upper air observations in code and is preceded by the word "Temp Alegrete."

Third Part of Bulletin contains weather forecasts for the following day for the south coast of the State of Rio de Janeiro, remainder of the Brazilian coast and to Buenos Aires, in Portuguese "en clair," preceded by the word "Previsão."

NOTE.—Missing figures are replaced by hyphens.

Barometric readings are transmitted in millimetres and tenths. (To convert to mbs. and ins. see Table LXI.)

Temperatures are transmitted in whole degrees C. (To convert to Fahrenheit see Table LXIV.)

SPECIAL WEATHER TELEGRAPHY TABLES.

NOT INTERNATIONAL CODE.

Table LX.

S'.—State of Sea.

- 0 = Calm.
- 1 = Very smooth.
- 2 = Smooth.
- 3 = Slight sea.
- 4 = Moderate sea.
- 5 = Moderate heavy sea.
- 6 = Heavy sea.
- 7 = High sea.
- 8 = Very high sea.
- 9 = Mountainous sea.

Table LXI.

Conversion of Millimetres into Millibars and Inches.

Mm.	Mb.	In.	Mm.	Mb.	In.	Mm.	Mb.	In.
695	926.6	27.37	743	990.6	29.25	759	1011.9	29.88
700	933.2	27.56	744	991.9	29.29	760	1013.2	29.92
705	939.9	27.76	745	993.2	29.33	761	1014.6	29.96
710	946.6	27.95	746	994.6	29.37	762	1015.9	30.00
715	953.2	28.15	747	995.9	29.41	763	1017.2	30.04
720	959.9	28.35	748	997.2	29.45	764	1018.6	30.08
725	966.6	28.54	749	998.6	29.49	765	1019.9	30.12
730	973.2	28.74	750	999.9	29.53	766	1021.2	30.16
735	979.9	28.94	751	1001.2	29.57	767	1022.6	30.20
736	981.2	28.98	752	1002.6	29.61	768	1023.9	30.24
737	982.6	29.02	753	1003.9	29.65	769	1025.2	30.28
738	983.9	29.06	754	1005.2	29.69	770	1026.6	30.32
739	985.2	29.10	755	1006.6	29.73	775	1033.2	30.51
740	986.6	29.13	756	1007.9	29.76	780	1039.9	30.71
741	987.9	29.17	757	1009.2	29.80	785	1046.6	30.91
742	989.2	29.21	758	1010.6	29.84			

Table LXII.

D'.—Wind Direction.

- 0 = Calm.
- 1 = North.
- 2 = N.E.
- 3 = East.
- 4 = S.E.
- 5 = South.
- 6 = S.W.
- 7 = West.
- 8 = N.W.

Table LXIII.

W'.—Weather at time of Observation.

- 0 = Fine or fair.
- 1 = Slight cloud.
- 2 = Cloudy or overcast.
- 3 = Overcast and threatening.
- 4 = Mist.
- 5 = Drizzle.
- 6 = Rain.
- 7 = Snow, or rain and snow.
- 8 = Squalls.
- 9 = Thunderstorm.

Table LXIV.

Conversion of Centigrade Temperatures to Fahrenheit.

Cent.*	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.
Trans-		Trans-		Trans-		Trans-	
mitted.		mitted.		mitted.		mitted.	
—		00	32	10	50	21	70
51	30	01	34	11	52	22	72
52	28	02	36	12	54	23	73
53	27	03	37	13	55	24	75
54	25	04	39	14	57	25	77
55	23	05	41	15	59	26	79
56	21	06	43	16	61	27	81
57	19	07	45	17	63	28	82
58	18	08	46	18	64	29	84
59	16	09	48	19	66	30	86
				20	68		

* 50 is added to the amounts to indicate minus temperatures centigrade.

WIRELESS STORM WARNINGS.

South America.

Chile.

C.W. Issues.

Santiago Central W/T Station, call sign CCS, broadcasts storm warnings when necessary, after the weather bulletins at 0130 and 1600 G.M.T. on a wave length of 3,000 metres (C.W.).

III.—WIRELESS TIME SIGNALS.

Chile.

Spark Issue.

W/T Station.	Call Sign.	Wave-length Metres.	G.M.T. of Time Signal.
Valparaiso Lat. 33° 01' 04" S. Long. 71° 39' 27" W.	CCE	1,000 (spark).	h m s h m s 00 55 00-01 00 00

SYSTEM.—The Time Signal commences at 00h 55m 00s G.M.T. and continues for 5 min. During this period every beat (represented by a dot) of the Standard clock at the even second is transmitted *except* the 29th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th and 59th.

The dot at the final second of each minute is the Time Signal (which ends at 01h 00m 00s G.M.T.).

NOTES.—(1) Sent daily except Sundays.

(2) Time Signal controlled by the Hydrographic Office.

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

Brazil.

I.C.W. Issues.

W/T Station.	Call Sign.	Wave-length Metres.	G.M.T. of Time Signal.
Rio de Janeiro—Arpoador Lat. 22° 59' 19" S. Long. 43° 11' 26" W.	PPR	600 (I.C.W.).	h m s 14 00 00 and 24 00 00

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

The procedure is as follows:—

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

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

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

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

IV.—VISUAL STORM WARNINGS.

South America.

Chile.

Valparaiso.

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

By day.	By night.	Barometer.	Signification.
Flag D (Int.), close up ...	—	30·05	} Fine weather.
Flag D (Int.), half-mast...	—	30·00	
Flag D (Int.), low down...	—	29·95	
One ball, close up ...	One blue light ...	29·94	} Variable.
One ball, half-mast ...	Two blue lights ...	29·90	
One ball, low down ...	Three blue lights...	29·85	
Two balls, close up ...	One red light ...	29·74	} Storms or bad weather.
Two balls, half-mast ...	Two red lights ...	29·65	
Two balls, low down ...	Three red lights ...	29·60	
No day signal ...	One red light and one blue light, hoisted in a vertical line.	Barometer falling rapidly.	

Argentina.

Buenos Aires.

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

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

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

Red White Black

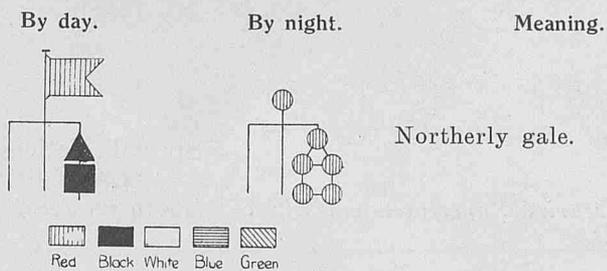
**Uruguay.
Montevideo.**

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

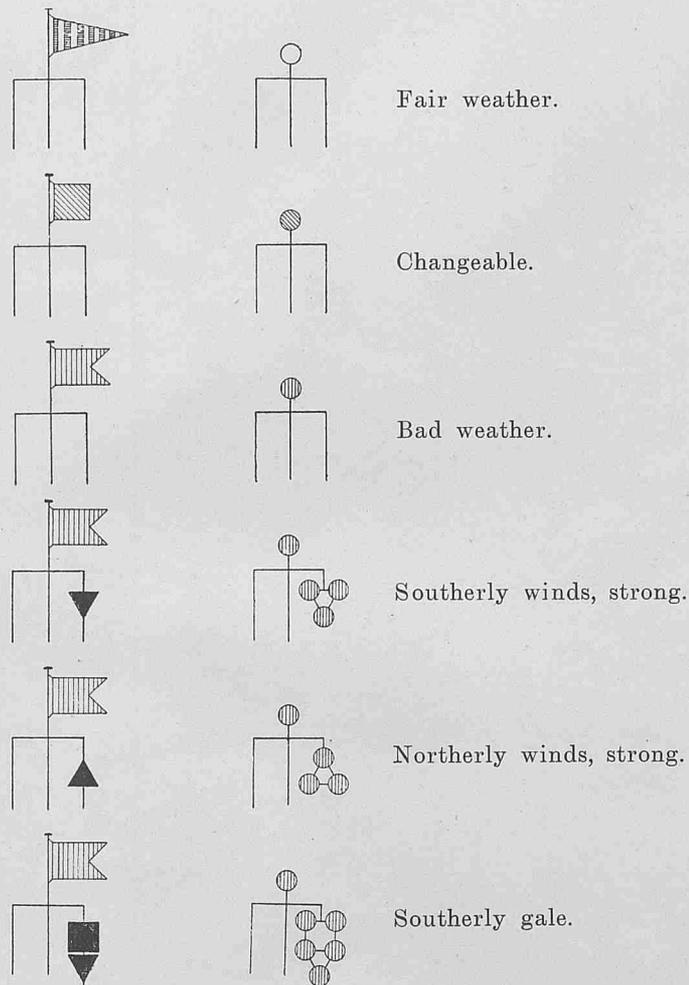
By day.—Red and white flag hoisted *under* the national flag.

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

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

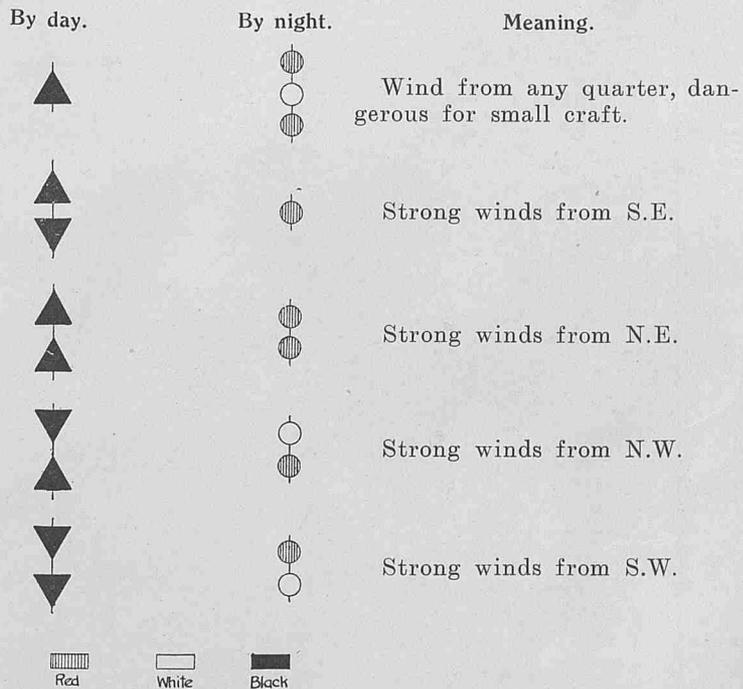


By day.	By night.	Meaning.
---------	-----------	----------



Brazil.

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



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

GREAT BRITAIN—AMENDMENT.

Wireless Telephony (R/T) Issues.

“Weather Shipping” Bulletin.

VOLUME VI, No. 62, PAGE 47, column 2, line 3:—

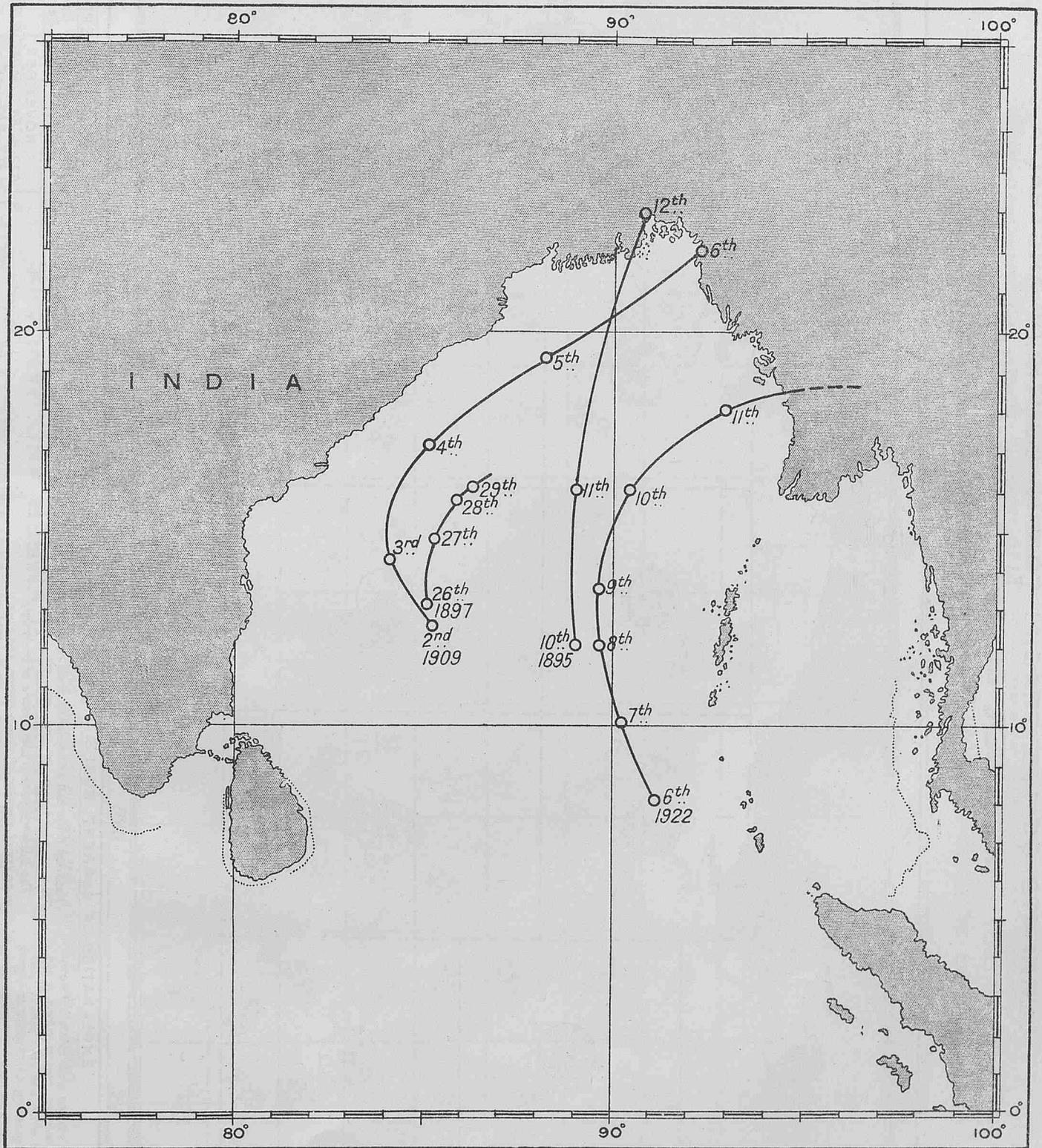
For 2130 G.M.T. substitute 2115 G.M.T.

(To come into force on Monday, 2nd December, 1929).

Special Notices Regarding Personnel.

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

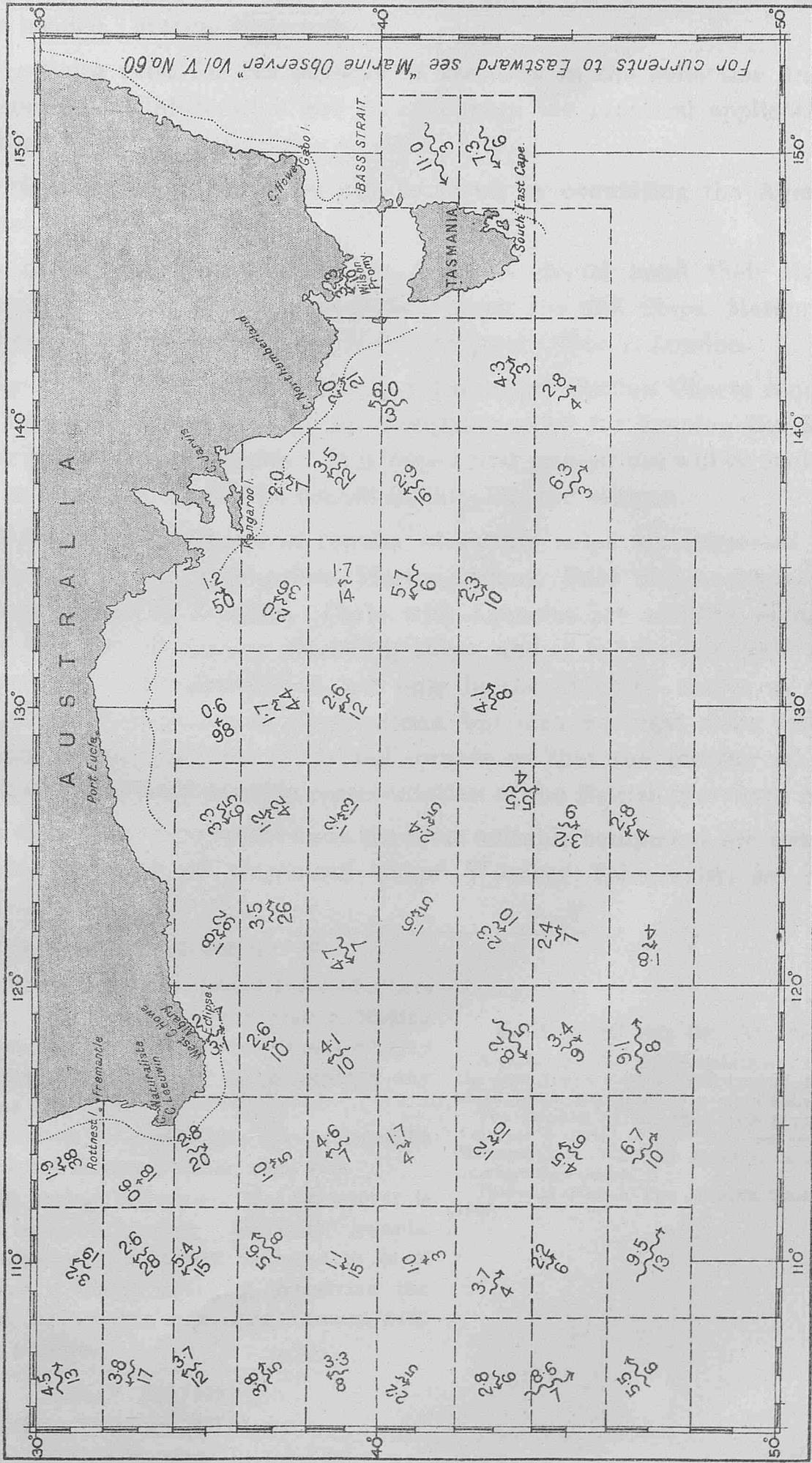
TRACKS OF SEVERE CYCLONES IN THE BAY OF BENGAL
DECEMBER
DURING THE YEARS 1891-1923.



The above are tracks of severe storms taken from "Storm Tracks in the Bay of Bengal" compiled by Dr. C.W.B. Normand and published by the India Meteorological Department.

CURRENTS ON THE TRACKS TO THE SOUTH OF AUSTRALIA, NOVEMBER, DECEMBER AND JANUARY.

Observations of ships regularly observing for the British Meteorological Office 1910-1927.



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.

NOTICES. IMPORTANT.

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

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

Much time and correspondence may be saved by consulting the Agents at ports where Agencies exist.

Ships using ports where there are Agencies should hand their Meteorological Logs, Form 915, to the Agents. Wireless Registers Form 138 and Ships' Meteorological Form 911 should in all cases be sent direct to the Meteorological Office in London.

The Agents have all Forms, including Logs and Outline Charts required for the work at sea and have the necessary gear for equipping ships for keeping the Meteorological Log and replacing defective instruments. It is hoped that greater use will be made of the advantages now offered at the Agencies for the benefit of shipping and seamen.

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

Those observing ships which have the most suitable equipment are detailed as "Selected Ships" for the purpose of Organised Ships' Weather Telegraphy, *see* List of Voluntary Observing Ships.

COVER FOR MARINE OBSERVER.

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

The arrangements for assembling the numbers for binding is described in this Number, page 259.

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.

BACK NUMBERS OF THE MARINE OBSERVER.

A certain number of back numbers of THE MARINE OBSERVER for the years 1924 to 1927, are now available for issue to regular observing ships, which may have lost or mislaid the originals sent to them.

The Captains of observing ships requiring numbers to complete Volumes I (1924) to IV (1927) are requested to notify the Port Meteorological Officer or Agent at their appropriate port, of the numbers they desire.

This only refers to THE MARINE OBSERVER for the years 1924 to 1927.

GREAT BRITAIN.

Wireless Telephony (R/T) Issues.

Gale Warning.

Temporary Arrangements.

From the 10th November Gale Warnings issued on Sundays will be broadcast at 1500 G.M.T. instead of 1530 G.M.T. as at present.

ICE CHART. WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

- (C) From 1st September to 31st March inclusive.
 - (E) From 1st December to 14th February, inclusive.
- These routes are liable to alteration when, owing to abnormal ice conditions, it is considered advisable by the steamship lines who are parties to the Track agreement.

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.	
Dec. —, 1903	S.S. Lord Antrim ...	42°00' N.	55°00' W.	Ice.
" 22, 1915	S.S. Carolyn ...	42°53' N.	57°38' W.	Large Berg.
" 16, 1920	S.S. Oriana ...	43°53' N.	44°30' W.	Berg.
" 16, 1927	S.S. Ascania ...	47°52' N.	46°50' W.	Four large Bergs.

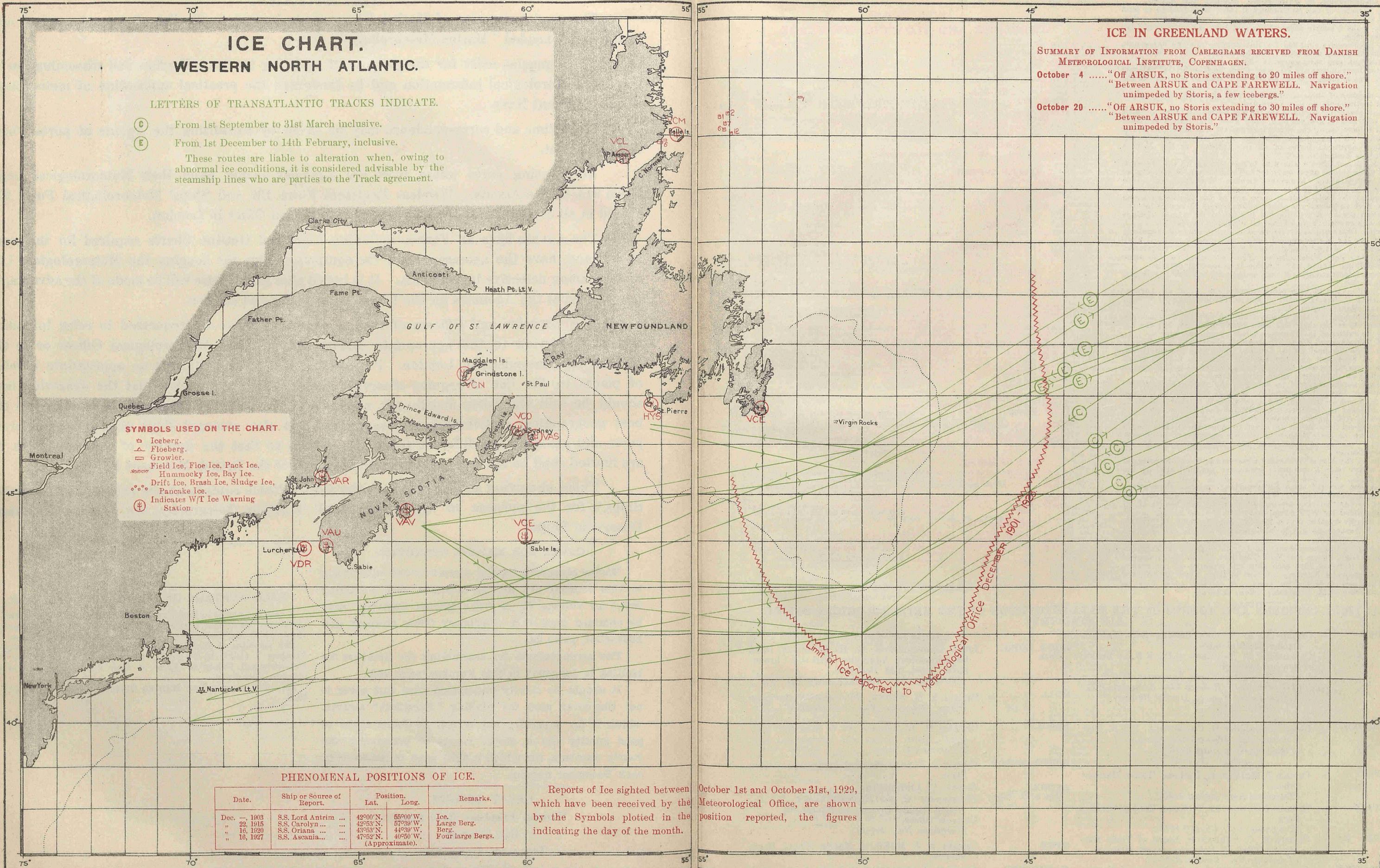
(Approximate).

Reports of Ice sighted between October 1st and October 31st, 1929, which have been received by the Meteorological Office, are shown in position reported, the figures indicating the day of the month.

ICE IN GREENLAND WATERS.

SUMMARY OF INFORMATION FROM CABLEGRAMS RECEIVED FROM DANISH METEOROLOGICAL INSTITUTE, COPENHAGEN.

- October 4 "Off ARSUK, no Storis extending to 20 miles off shore."
- "Between ARSUK and CAPE FAREWELL. Navigation unimpeded by Storis, a few icebergs."
- October 20 "Off ARSUK, no Storis extending to 30 miles off shore."
- "Between ARSUK and CAPE FAREWELL. Navigation unimpeded by Storis."



MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

The Director of the Meteorological Office is authorised to lend tested Instruments to Captains of British-owned ships who undertake to make 4 hourly observations and keep Meteorological Logs for the Office.

The instruments supplied for this purpose are one barometer, four thermometers with screen, two hydrometers and in some cases a Barograph and rain gauge is added to the equipment.

Tested instruments are also lent to a number of British Atlantic Liners which make special coded W/T weather reports to the Office.

The number of ships co-operating with the M.O. using official tested instruments on loan is limited.

Vessels observing regularly for the Meteorological Office to which office instruments are not lent, keep Form 911, Ship's Meteorological Report, using the ship's instruments, the barometer being compared with Standards. The number of ships regularly contributing approved forms of all descriptions to the Marine Division is limited to 500.

Captains and Officers who wish to co-operate with the Meteorological Office should apply *by letter* to The Director, Meteorological Office, Air Ministry, Kingsway, London, W.C.2; or *in person* between the hours of 10 a.m. and 4 p.m., to the Marine Superintendent at the same address or to any of the gentlemen whose names and addresses are given below acting as agents at the respective ports. A waiting list is kept of the names of ships whose commanders have offered to regularly co-operate.

Marine Observers (i.e., Captains and Officers who regularly observe for the Meteorological Office) will greatly assist if they will send in Meteorological Logs immediately on completion through the Port Meteorological Officer or Agent, at the same time notifying him of any possible instrumental defects.

Defective instruments will then be replaced and new Log Books, etc., provided.

In London and at base ports where there is not an Agency, notification of defects should be sent to headquarters on arrival, with the Meteorological Log.

Vessels making voyages of less than two months' duration are requested to retain their logs until nearly filled up, but the log should be returned in all cases at least twice yearly.

W/T Registers and Forms 911 should in all cases be sent directly to the Meteorological Office, London. The Port Meteorological Officer at Liverpool and the Visiting Officer in London board vessels co-operating with the Meteorological Office, and the agents visit ships at their ports when circumstances permit.

Postage abroad incurred on behalf of the Meteorological Office in returning logs will be refunded. Postage from British Empire ports need not be prepaid, if the envelope is marked O.H.M.S., and addressed to the Director, Meteorological Office, London.

Captains and Officers whether they observe regularly for the Meteorological Office or not are urged to report exceptional phenomena in air or sea. Reports of weather experienced in or near Tropical Cyclones or hurricanes, also abnormal currents are specially desired.

Ships on the List of Voluntary Observers to the Meteorological Office which have a mercurial barometer are indicated by the letters M.L., W.T. and M.

These are selected ships for reporting weather observations made at specified times by W/T to "All Ships," and they are invited to perform this service, which is for the benefit of all shipping fitted for W/T reception.

For sample weather report message see Chapter I. of "Wireless and Weather an Aid to Navigation," page 6, and page 19 of Vol. VI., No. 61.

THE MARINE OBSERVER is sent monthly to all ships regularly contributing Logs, Forms and W/T Registers to the Meteorological Office. It is hoped that each ship will preserve all her copies. Personal copies of Numbers are sent to those whose special contributions are published in them. A suitable cover may be obtained from H.M. Stationery Office, price 2s.

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
NORTH SEA.			
6.10.29	51°20'N.	2°15'E.	Black gas buoy, light flashing, surmounted by black flag marked No. 1 on sides.
11.10.29	59°28'N.	1°28'W.	Abandoned schooner, bulwarks awash.
19.10.29	7 mls. from Schouwen Bank Lt. V.	on bearing 179°.	Red conical buoy, "capsized" shackle on top.
IRISH SEA.			
1.10.29	5 miles E.S.E. of Maidens.		Waterlogged lifeboat.
ENGLISH CHANNEL.			
8.10.29	49°37'N.	0°59'W.	Vessel's starboard sidelight attached to its screen, with considerable amount of wreckage underneath.
12.10.29	5 miles N.W. of Corbiere Lt. H.		Vessel's mast, apparently attached to wreckage 6 feet out of water, dangerous to navigation.
26.10.29	49°57'N.	4°52'W.	Red staff and globe conical buoy marked <i>Castle</i> in white letters.
BALTIC.			
13.10.29	55°15'N.	16°—E.	Wreck of small sailing vessel or M.V. bottom up.
MEDITERRANEAN.			
12.10.29	37°21'N.	3°15'E.	Wrecked passenger flying boat bottom up, cream colour, marked <i>I-AISZ</i> and <i>Care Opostle B.</i>
NORTH ATLANTIC.			
1.10.29	25°38'N.	70°11'W.	Unlighted gas and whistle buoy, black skeleton superstructure, base covered marine growth.
2.10.29	4 miles S. of Fenwick Shoal Lt. V.		Spar buoy painted white stripes, surmounted by cage and small flag.
2.10.29	31°48'N.	64°07'W.	Conical buoy, painted black and white.
3.10.29	42°03'N.	59°32'W.	Spar showing about 7 feet out of water, probably attached to submerged wreckage.
4.10.29	47°51'N.	7°44'W.	Large conical buoy, red, dangerous to navigation.
4.10.29	21°09'N.	74°58'W.	Raft about 30 feet square, consisting of timbers.
6.10.29	26°23'N.	70°03'W.	Gas buoy painted white, lantern red, light extinguished.
6.10.29	34°05'N.	49°44'W.	Large round iron mooring buoy, red.
8.10.29	50°42'N.	5°10'W.	Small black buoy, upside down.
10.10.29	44°01'N.	9°19'W.	Red spherical buoy.
10.10.29	27°05'N.	79°45'W.	Partly submerged wreckage with two masts attached.
10.10.29	26°27'N.	74°13'W.	Red nun buoy, no distinguishing mark.
10.10.29	2 miles S. of C. Henry Approach Gas and Whistle No. 2 Buoy.		Spar floating on end.
11.10.29	47°45'N.	0°20'W.	Red conical buoy.
12.10.29	43°08'N.	10°22'W.	White spherical buoy, long staff surmounted by a cage, dangerous to navigation.
12.10.29	65°24'N.	9°28'E.	Wreck with mast 6 feet out of water.
12.10.29	58°31'N.	10°40'W.	Capsized collapsed lifeboat.
17.10.29	46°20'N.	4°20'W.	Wreck adrift, 60 metres long, dangerous to navigation.
22.10.29	42°27'N.	10°24'W.	Red and black conical buoy with white staff and flag attached, dangerous to navigation.
GULF OF MEXICO.			
3.10.29	27°58'N.	91°40'W.	Spar, 40 feet long, 2 feet diameter.
3.10.29	24°17'N.	81°37'W.	Tree trunk, 30 feet by 2 feet in diameter.
3.10.29	26°33'N.	87°15'W.	50 feet 2-masted schooner awash, masts carried away 8 feet above deck, marked <i>427 v</i> on bow.
6.10.29	27°09'N.	91°30'W.	Log 30 feet by 2 feet diameter.
8.10.29	23°17'N.	81°25'W.	Black steel cylinder, 40 feet long and 4 feet diameter, floating upright and showing 6 feet out of water.
NORTH PACIFIC.			
3.10.29	32°53'N.	117°34'W.	Raft of logs 12 feet square.
3.10.29	18°01'N.	103°51'W.	Two large tree trunks 20 feet long, covered marine growth.
6.10.29	43°18'N.	124°46'W.	Submerged trawler, masts and green painted bow above water.

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.

LIVERPOOL ... Lieut. Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office.
(Telephone No.: *Bank 8959*).

Agents.

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

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

CLYDE ... Captain M. C. CORRANCE, Board of Trade Surveyor's Office, 73, Robertson Street, Glasgow.
(Telephone No. *Central 2283-4*).

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

HONG KONG, China.

Agents (contd.).

Lieut. Commander R. G. H. MILLIGAN, R.N., Superintendent, Admiralty Chart and Chronometer Depot, H.M. Dockyard.
(Telephone No.: *108 Dockyard*).

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

LEITH ... Captains G. BLACK and C. G. BONNER, V.C. D.S.C., Leith Salvage and Towing Co., Ltd., 2, Commercial Street.

SOUTHAMPTON Captain D. FORBES, Nautical Academy, 1, Albion Place.

SYDNEY, New South Wales. Captain C. LINDBERGH.
Commander C. D. MATHESON, R.D., R.N.R., Acting Deputy Director of Navigation.
Customs House.
(Telephone No.: *B 6421*).

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

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

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LIST OF VOLUNTARY OBSERVING SHIPS

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 reports received, are given with the date and description of last log, register or report 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 reports 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 with tested Instruments lent by the Meteorological Office for making coded W/T reports to Weather, London.

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 the letters M.L., W.T. or M. after their names in the equipment column are "Selected ships" invited to make by W/T, standard form reports of observations taken at arranged G.M. Times to "All Ships." See "Wireless and Weather an aid to Navigation."

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
†† <i>Abinsi</i> ...	Millson, H. E. ...	S. H. Worsley ...	M.L.	Elder Dempster ...	Form 911 17.4.29 to 6.5.29...	28.5.29
†† <i>Acera</i> ...	Wright, J. B. ...	R. B. Ellis ...	No. M.	" " ...	31.7.29 to 3.9.29 ...	5.9.29
*† <i>Achilles</i> ...	Williams, D. T. ...	A. G. Phillips, N. Anderson, F. V. Addy.	M.L.	" Holt " ...	Met. Log. 29.5.29 to 30.9.29 ...	4.10.29
*† <i>Actor</i> ...	Nicholas, P. O. ...	E. Pearce, F. M. Eales, A. C. Bannister.	"	Harrison ...	" 7.7.29 to 24.9.29...	7.10.29
†† <i>Adda</i> , M.V. ...	Toft, J. T. ...	S. A. Boswell, W. B. Bryan ...	No. M.	Elder Dempster ...	Form 911 28.8.29 to 30.9.29 ...	4.10.29
††50 <i>Adriatic</i> ...	Hume, R. ...	J. A. Holme, H. R. Wilkinson, D. W. Chamberlain.	W.T.	White Star ...	W.T. Reg. 26.8.29 to 14.9.29 ...	18.9.29
<i>Aeneas</i> ...	Wallace, W. K. ...	J. Holden... ..	No. A.	A. Holt ...	" 23.9.29 to 12.10.29 ...	17.10.29
<i>Agapenor</i> ...	Christie, W. ...	B. Bell ...	" A.	" " ...	Form 911 25.8.29 to 14.9.29 ...	16.9.29
<i>Aidan</i> ...	Evans, L. ...	G. H. Williams ...	" A.	Booth ...	" 6.5.29 to 22.7.29... ..	24.7.29
<i>Alban</i> ...	Saxton, G. ...	R. G. Cheshire ...	" A.	" " ...	" 2.9.29 to 5.10.29/ ...	7.10.29
*† <i>Alipore</i> ...	Dawson, E. E. N. ...	W. L. Dobbin ...	" M.	P. and O. ...	" 6.7.29 to 25.8.29... ..	11.9.29
<i>Almanzora</i> ...	Clarke, E. C. ...	F. Deveson ...	" A.	R.M.S.P. ...	" 10.8.29 to 21.8.29 ...	23.9.29
††63 <i>Albertic</i> ...	Summers, F. F., R.D., Commr., R.N.R.	W. Hill, J. C. Boyce ...	W.T.	White Star ...	" 18.6.29 to 10.8.29 ...	9.9.29
<i>Alondra</i> ...	Scott, L. S. ...	H. Peters ...	No. A.	Yeoward ...	" 20.7.29 to 2.9.29 ...	13.9.29
<i>Alynbank</i> ...	Clayton, W. E. ...	R. M. Yates ...	" A.	A. Weir & Co. ...	W.T. Reg 21.9.29 to 6.10.29 ...	9.10.29
†† <i>Andaluca Star</i> ...	Thomas, R. J. ...	H. Austen ...	" M.	Blue Star ...	Form 911 3.3.29 to 24.3.29... ..	26.3.29
<i>Anchises</i> ...	Woodgett, R. J. ...	R. Fountain, J. F. Browning	" A.	A. Holt ...	" 24.8.29 to 12.10.29 ...	17.10.29
†† <i>Andes</i> ...	Matthews, G. P. ...	T. W. Stevens, L. A. Wood, Le Brecht, H. A. ...	M.L.	R.M.S.P. Co. ...	" 4.6.29 to 1.7.29 ...	22.7.29
<i>Antilochus</i> ...	Jones, E. ...	A. Pope ...	No. A.	A. Holt ...	" 2.8.29 to 18.9.29 ...	23.9.29
*† <i>Aorangi</i> , M.V. ...	Crawford, R. ...	E. V. Bilger, E. M. Anderson, D. Richards.	M.L.	Canadian- Australasian	Met. Log. 11.3.29 to 30.5.29 ...	31.5.29
††30 <i>Aquitania</i> ...	Diggle, E. G., R.D., Capt., R.N.R.	D. M. McLean, J. Locke, G. Duguid.	W.T.	Cunard ...	Met. Log. 14.6.29 to 30.9.29 ...	15.10.29
††62 <i>Arabic</i> ...	Musgrave, O. S. O. ...	W. Hesketh, F. Wills, C. Clark.	"	White Star ...	W.T. Reg. 1.9.29 to 16.9.29... ..	18.9.29
** <i>Arafura</i> ...	Gordon, A. S. ...	F. R. Miller, B. W. Dun. C. Stratford, H. Nuzum.	M.L.	Eastern and Australian	" 22.9.29 to 7.10.29 ...	12.10.29
*† <i>Argyllshire</i> ...	Wallace, J. ...	R. W. Cook ...	No. M.	Federal ...	" 16.9.29 to 5.10.29 ...	8.10.29
*† <i>Ariguani</i> ...	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	G. McKee, J. W. Dodd, W. Ireland, R. G. H. Hobson.	M.L.	Elders & Fyffes ...	Met. Log. 5.11.28 to 17.4.29 ...	15.6.29
<i>Ariosto</i> ...	Biggins, R. L. ...	" " " " ...	No. A.	Ellerman Wilson ...	Form 911 27.7.29 to 15.8.29 ...	18.8.29
†† <i>Armada Castle</i> ...	Knight, A. ...	H. Dryden, E. G. Broodbank, E. G. Fullick.	M.L.	Union Castle ...	Met. Log. 22.4.29 to 17.8.29 ...	21.8.29
	Singeisen, E. A., D.S.C., R.D., Capt., R.N.R.	" " " " ...	"	" " ...	Form 911 17.12.28 to 29.12.28 ...	4.2.29
	Colbourne, W. S., O. B. E., R.D., Commr., R.N.R.	" " " " ...	"	" " ...	Met. Log. 29.3.29 to 7.9.29... ..	25.9.29
*† <i>Arracan</i> ...	Duncan, S. S. ...	E. W. Stubbs, T. B. Wilkins, T. M. Loudann.	"	P. Henderson ...	" 1.6.29 to 7.9.29... ..	18.9.29
<i>Arundel</i> ...	Short, H. ...	Mr. Hill... ..	C.C.	Southern Rly. ...	Telegraphic Report 16.10.29 ...	16.10.29
<i>Arundel Castle</i> ...	Owen, S. H. ...	N. Willock ...	No. A.	Union Castle ...	Form 911 18.8.29 to 6.10.29 ...	10.10.29
*† <i>Astronomer</i> ...	Richards, J. ...	A. Browne, G. Roderick, W. B. Littlechild.	M.L.	Harrison ...	Met. Log. 24.3.29 to 1.10.29... ..	7.10.29

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
*† <i>Aescanius</i> ...	Wilson, C. A. ...	J. T. Collin, J. D. Auld, W. J. E. Wright.	M.L.	A. Holt ...	Met. Log. 13.5.29 to 12.9.29 ...	18.9.29
<i>Atlantian</i> ...	Masters, W. ...	...	No. A.	Leyland ...	Form 911 16.8.29 to 28.8.29 ...	24.9.29
<i>Atreus</i> ...	Wilkinson, T. G. ...	H. Nicholas ...	" A.	A. Holt ...	" 21.7.29 to 3.9.29 ...	12.9.29
*† <i>Auditor</i> ...	Owen, W. T. ...	D. O. Percy ...	" M.	Harrison ...	" 13.8.29 to 14.9.29 ...	19.9.29
*† <i>Australia</i> ...	Scutt, W. ...	...	M.L.	British India ...	...	...
*† <i>Author</i> ...	Whyte, D. L. ...	...	No. M.	Harrison ...	...	...
<i>Autolyceus</i> ...	Dunlop, J. K. ...	...	" A.	A. Holt ...	Form 911 25.10.28 to 11.11.28 ...	28.11.28
<i>Balmoral Castle</i> ...	Barron, A. ...	C. C. Page ...	" A.	Union Castle ...	" 13.7.29 to 2.9.29 ...	5.9.29
*† <i>Bairnald</i> ...	Nicholl, R. N. C. ...	A. H. G. Storrs ...	" M.	P. & O. Branch ...	" 13.5.29 to 14.8.29 ...	28.8.29
*†51 <i>Baltic</i> ...	Kearney, J. Lt-Commr. R.N.R.	N. E. Banks, A. C. T. Anson ...	W.T.	White Star ...	W.T. Reg. 9.9.29 to 28.9.29 ... Form 911 8.9.29 to 28.9.29 ...	2.10.29 1.10.29
<i>Bampton Castle</i> ...	James, J. S. D.S.C.	W. A. Cooke ...	No. A.	Union Castle ...	" 5.7.29 to 18.8.29 ...	30.8.29
*† <i>Banffshire</i> ...	Westropp, T. G. ...	A. Mc L. Pilcher ...	" M.	Turnbull Martin ...	" 25.7.29 to 16.8.29 ...	16.9.29
*† <i>Baradine</i> ...	Allin, C. H. C. ...	C. B. Roche, B. W. Pollitt, P. Haworth, L. A. Hill.	M.L.	P. & O. Branch ...	Met. Log. 12.4.29 to 18.7.29 ...	19.7.29
*† <i>Barpeta</i> ...	Rudge, J. G. ...	J. F. B. Hore ...	No. M.	British India ...	Form 911 22.8.29 to 18.9.29 ...	14.10.29
*† <i>Barrabool</i> ...	Rhodes, H. R. ...	T. G. Davies ...	" M.	P. & O. Branch ...	" 11.1.29 to 28.1.29 ...	5.3.29
*† <i>Barranca</i> ...	Edwards, A. C. ...	W. G. Lock, J. Kinsley, B. R. W. Farr.	M.L.	Elders & Fyffes ...	Met. Log. 2.2.29 to 22.9.29 ...	12.10.29
<i>Baychimo</i> ...	Cornwall, S. A. ...	...	No. A.	Hudson's Bay Co. ...	Form 911 8.7.29 to 24.9.29 ...	10.10.29
*†59 <i>Belgenland</i> ...	Morehouse, W. A. ...	C. H. Otterson, F. Good, F. Clitty.	W.T.	Red Star ...	W.T. Reg. 9.9.29 to 28.9.29 ... Form 911 8.9.29 to 28.9.29 ...	30.9.29 30.9.29
*† <i>Beltana</i> ...	Rollo, W. ...	G. V. Legassick ...	No. M.	P. & O. Branch ...	" 2.3.29 to 12.6.29 ...	19.6.29
<i>Benalder</i> ...	Fairweather, J. J. ...	D. T. McCullum ...	" A.	Ben Line ...	" 3.8.29 to 21.9.29 ...	12.10.29
*† <i>Bendigo</i> ...	Wyatt, F. N. ...	G. V. Legassick ...	" M.	P. & O. Branch ...	" 29.7.29 to 24.9.29 ...	10.10.29
*† <i>Benefactor</i> ...	Jones, C. W. ...	S. M. Smith, R. Huntingdon ...	" M.	Harrison ...	" 15.4.29 to 13.5.29 ...	23.5.29
*† <i>Bogota</i> ...	Cox, F. D. ...	C. J. Carlson ...	" M.	Pacific S.N.Co. ...	" 21.8.29 to 12.9.29 ...	17.9.29
*†31 <i>Berengaria</i> ...	Prothero, W. ...	S. A. T. Bullock, F. P. Collins, W. C. Robson.	W.T.	Cunard ...	W.T. Reg. 7.9.29 to 24.9.29 ... 28.9.29 to 15.10.29 ...	25.9.29 17.10.29
<i>Brenda</i> ...	Lamont, A. ...	N. Ross ...	No. A.	Scottish Fishery Bnd.	Form 911 1.9.29 to 11.9.29 ...	2.10.29
<i>Brighton</i> ...	Hill, A. ...	Mr. Munton ...	C.C.	Southern Railway ...	Telegraphic Report 17.10.29 ...	17.10.29
*† <i>British Dominion, M.V.</i>	Taylor, R. J. ...	H. B. Phillips ...	No. M.	British Tankers ...	Form 911 8.6.29 to 4.7.29 ...	8.7.29
*† <i>British Merchant</i>	Putt, R. O. ...	C. Low ...	" M.	"	" 8.8.29 to 25.9.29 ...	17.10.29
<i>Bruyere</i> ...	Birch, A. ...	...	" A.	Lampton & Holt ...	" 27.11.28 to 24.2.29 ...	4.3.29
*† <i>Bulysses M.V.</i>	Head, B. P. ...	A. J. Clatworthy ...	" M.	Anglo-Saxon Petroleum Co.	" 16.7.29 to 19.8.29 ...	28.8.29
*† <i>Buteshire</i> ...	Page, W. J. ...	J. McLeod, R. Owen, S. R. J. Woods.	M.L.	Turnbull Martin ...	Met. Log. 7.4.29 to 3.9.29 ...	24.9.29
*†65 <i>Calgarie</i> ...	Binks, J. W., R.D., Lt-Commr. R.N.R.	G. Kavanagh, A. Thompson, E. P. Hughes.	W.T.	White Star ...	Form 911 6.9.29 to 28.9.29 ... W.T. Reg. 9.9.29 to 26.9.29 ...	30.9.29 28.9.29
<i>Cambria</i> ...	Foy, C. A. ...	...	No.	W.I. and Panama Telegraph Co.	Form 911 ...	...
<i>Cambrja</i> ...	Copland, C. P. ...	O. W. Ll. Jones ...	C.C.	L.M. & S. Rly ...	Telegraphic Report 12.10.29 ...	12.10.29
*† <i>Cambridge</i> ...	Williams, R. ...	J. V. Williams, H. M. Knight, H. C. Walker, R. A. Belfield.	M.L.	Federal ...	Met. Log. 6.3.29 to 27.7.29 ...	31.7.29
*† <i>Cameronia</i> ...	Gemmell, W. ...	J. Herbert, D. C. Shedden ...	"	Anchor ...	Met. Log. 27.1.29 to 17.6.29 ...	24.6.29
*† <i>Camito</i> ...	Forrester, W. T., O.B.E.	H. H. Dunning, G. M. Roberts, M. H. Thomson.	"	Elders & Fyffes ...	" 14.3.29 to 10.7.29 ...	22.7.29
<i>Canadian Importer</i>	Forson, A. ...	C. Martin ...	No. A.	Canadian Gov. Mercantile Marine.	Form 911 23.8.29 to 21.9.29 ...	12.10.29
** <i>Canadian Winner</i>	McConechy, W. G. ...	J. M. Lang ...	" M.	"	" 17.9.28 to 13.10.28 ...	27.11.28
*† <i>Canonesa</i> ...	Brodie, W. H. ...	T. Wetherall ...	" M.	Furness Houlder ...	" 25.2.29 to 25.3.29 ...	4.4.29
<i>Cape of Good Hope</i>	Jacobson, T. A. ...	W. S. Bartlett ...	" A.	Lyle S.S. Co. ...	" 17.4.29 to 9.8.29 ...	16.9.29
*†35 <i>Carmania</i> ...	Brown, F. G., R.D., Capt. R.N.R.	E. R. Taylor, E. Gleave, R. P. Campbell.	W.T.	Cunard ...	W.T. Reg. 16.9.29 to 4.10.29 ...	9.10.29
*† <i>Carnarvon Castle</i> M.V.	Stanley, W. F., R.D., Commr. R.N.R.	H. L. Shaw, T. Campbell, S. S. Smith.	M.L.	Union Castle ...	Met. Log. 25.5.29 to 15.9.29 ...	27.9.29
*†34 <i>Caronia</i> ...	Hossack, W. H., R.D., Capt. R.N.R.	T. Parry, E. R. B. Freeman, S. E. Clowser.	W.T.	Cunard ...	W.T. Reg. 5.8.29 to 23.8.29 ... Form 911 4.8.29 to 23.8.29 ...	27.8.29 28.8.29
<i>Casanare</i> ...	Browne, S. ...	R. S. Howlett ...	No. A.	Elders & Fyffes ...	" 14.8.29 to 15.9.29 ...	20.9.29
*† <i>Cathay</i> ...	Griffin, R. H., O.B.E., R.D., Capt. R.N.R.	R. A. C. Beeching ...	" M.	P. & O ...	" 4.8.29 to 10.10.29 ...	14.10.29
<i>Cavina</i> ...	Jack, D. A. ...	R. C. Harradon ...	" A.	Elders & Fyffes ...	" 12.8.29 to 13.9.29 ...	16.9.29
*†52 <i>Cedric</i> ...	Smith, R. G. ...	W. Nicoll, J. Law, J. G. Wallace.	W.T.	White Star ...	W.T. Reg. 2.9.29 to 21.9.29 ... Form 911 1.9.29 to 22.9.29 ...	24.9.29 2.9.29
*† <i>Centaur</i> ...	Sturrock, R. G. ...	N. L. Thompson, J. Cockburn, B. L. Brind.	M.L.	A. Holt & Co. ...	Met. Log. 23.12.28 to 20.4.29 ...	29.8.29
<i>Ceramic</i> ...	Musgrave, T. ...	H. A. R. Daman ...	No. A.	White Star ...	Form 911 13.4.29 to 20.5.29 ...	22.5.29
** <i>Change</i> ...	Gambrell, F. C. ...	D. Tyer, R. Baigent, D. N. Hulton, J. McLeod.	M.L.	Yull & Co. ...	Met. Log. 18.1.29 to 10.6.29 ...	23.7.29
<i>Changuinola</i> ...	Thorburn, R. A., R.D., Commr. R.N.R.	V. R. Watkins ...	No. A.	Elders & Fyffes ...	Form 911 7.9.29 to 6.10.29 ...	12.10.29
<i>Chindwin</i> ...	Paterson, G. ...	...	" A.	Henderson ...	" 6.7.29 to 27.9.29 ...	8.10.29
*† <i>Chiripo</i> ...	Sapsworth, S. A. ...	...	" A.	Elders & Fyffes ...	" 26.8.29 to 28.9.29 ...	7.10.29
*† <i>City of Baroda</i>	McMillan, J. ...	J. E. Jenkins, W. Faichney, F. T. Mallett.	M.L.	Ellerman ...	Met. Log. 1.1.29 to 22.4.29 ...	30.4.29
<i>City of Benares</i>	Wyper, J. ...	R. W. Kellie ...	No. A.	"	Form 911 8.9.29 to 23.9.29 ...	12.10.29
*† <i>City of Bombay</i>	Brown, O. C. ...	E. H. Roberts ...	" M.	"	" 27.6.29 to 23.8.29 ...	31.8.29
*† <i>City of Bristol</i>	Jenkins, D. ...	K. G. Crockett ...	" M.	"	" 11.11.28 to 1.12.28 ...	7.1.29
<i>City of Canterbury</i>	Stanley, A. ...	R. H. Hodgson ...	" A.	"	" 9.4.29 to 8.5.29 ...	21.5.29
<i>City of Carlisle</i>	Mordue, J. A. ...	...	" A.	"	" 7.6.29 to 14.7.29 ...	16.7.29
*† <i>City of Chester</i>	Letton, F. W. ...	C. C. Duncan, P. C. Arthur, M. J. Mc Nicol.	M.L.	"	Met. Log. 25.7.29 to 30.8.29 ...	4.9.29
<i>City of Hong Kong</i>	Walton, H. L., O.B.E., R.D., Commr. R.N.R.	H. Saunders ...	No. A.	"	Form 911 1.5.29 to 25.5.29 ...	31.5.29
<i>City of Khios</i>	Reay, A. S. ...	J. H. Wilcox ...	" A.	"	" 26.7.29 to 15.9.29 ...	7.10.29
<i>City of London</i>	Nicoll, L. ...	...	" A.	"	" 2.2.29 to 17.4.29 ...	3.5.29
*† <i>City of Osaka</i>	Smith, W. H. ...	A. Niblock ...	" M.	"	" 14.8.29 to 11.9.29 ...	17.9.29
*† <i>City of Rangoon</i>	Jones, P. ...	...	M.L.	"	Met. Log. 6.10.28 to 27.7.29 ...	6.8.29
*† <i>City of Roubaix</i>	Radcliffe, A. V., R.D., Lt-Com. R.N.R.	...	No. M.	"	Form 911 10.9.29 to 18.9.29 ...	27.9.29
*† <i>City of Singapore</i>	Rhind, J. ...	...	" M.	"	...	...
*† <i>City of Valencia</i>	Anderson, W. W. ...	...	" M.	"	...	...
<i>City of Yokohama</i>	Singleton, J. G. ...	H. Nish ...	" A.	"	Form 911 31.5.29 to 20.7.29 ...	12.8.29
<i>Clan Alpine</i>	Lyall, A. B. ...	J. O. H. Kirkwood ...	" A.	Clan ...	" 8.7.29 to 4.10.29 ...	12.10.29
<i>Clan Kenneth</i>	Young, A. H., Commr. R.D., R.N.R.	H. C. Carter ...	" A.	"	" 17.8.29 to 31.8.29 ...	19.9.29
<i>Clan Lindsay</i>	Giles, H. J., R.D., Commr. R.N.R.	...	" A.	"	" 12.6.29 to 27.7.29 ...	8.8.29
<i>Clan MacBean</i>	Boag, J. ...	W. Thompson ...	" A.	"	" 21.9.29 to 10.10.29 ...	15.10.29

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
<i>Clan Macbeth</i> ...	Worthington, C. D. ...	A. H. Hersee	No. A.	Clan	Form 911 2.8.29 to 23.9.29... ..	7.10.29
<i>Clan Macfadyn</i> ...	Laird, C.	G. L. Roe	" A.	"	" 18.6.29 to 5.7.29... ..	19.8.29
<i>Clan Macfarlane</i> ...	Redford, L. F.	W. H. Simpson, H. F. Town	" A.	"	" 7.7.29 to 3.10.29... ..	8.10.29
<i>Clan Macgillivray</i> ...	Mackinlay, A.	F. H. Thornton	" A.	"	" 17.6.29 to 6.7.29... ..	6.8.29
<i>Clan Macindoe</i> ...	Holman, W. G.	H. Lockyer	" A.	"	" 12.7.29 to 8.8.29... ..	20.8.29
<i>Clan Mackellar</i> ...	Phillips, G. P.	"	" A.	"	" 30.6.29 to 12.8.29... ..	14.8.29
** <i>Clan Macphee</i> ...	Gourlay, J. B.	E. H. Stone, D. de Vall, L. R. Legg	M.L.	"	Met. Log. 12.2.29 to 3.9.29... ..	10.10.29
<i>Clan Macnaughton</i> ...	Clark, J.	"	No. A.	"	Form 911 20.7.29 to 18.8.29	9.9.29
<i>Clan Macquarrie</i> ...	West, W. F.	E. Gregory	" A.	"	" 10.7.29 to 13.8.29	15.8.29
<i>Clan Mactaggart</i> ...	Higgins C. J.	D. McAllister	" A.	"	" 22.5.29 to 12.6.29	20.6.29
** <i>Clan Macwhirter</i> ...	Low, A.	F. B. Barker, H. M. Watkins, B. Magill	M.L.	"	Met. Log. 2.3.29 to 19.9.29	27.9.29
** <i>Clan Malcolm</i> ...	George, L. S.	F. B. Fairweather, H. E. Luxton, J. F. Hubbard	"	"	" 18.11.28 to 25.5.29	13.6.29
<i>Clan Morrison</i> ...	Porterfield, W. M. Lt.-Commr., R.N.R.	L. C. Cuthbert	No. A.	"	Form 911 21.7.29 to 23.8.29	2.9.29
<i>Clan Murdoch</i> ...	Wynne, R. H.	J. B. Davies	" A.	"	" 9.7.29 to 6.10.29	17.10.29
<i>Clan Ranald</i> ...	Fraser, R. K.	K. G. Tucker	" A.	"	" 21.7.29 to 12.9.29	7.10.29
<i>Clan Ross</i> ...	Neill, G. A.	"	" A.	"	" 14.9.29 to 26.9.29	12.10.29
<i>Clan Sinclair</i> ...	Baker, E. W.	"	" A.	"	" 25.7.29 to 8.8.29... ..	2.9.29
† <i>Colonial</i> ...	Worthington, B.	A. S. Milne	" M.	T. & J. Harrison	" 13.4.29 to 23.6.29	29.6.29
†† <i>Comorin</i> ...	Borland, J. McI., C.B., D.S.O., R.D., Capt., R.N.R.	E. C. White	" M.	P. & O.	" 16.4.29 to 30.5.29	15.6.29
†† <i>Corinthic</i> ...	Freeman, C. P.	E. M. Burt, M. Bennett, I. A. Macnaughton	M.L.	White Star	Met. Log. 27.4.29 to 12.8.29	15.8.29
<i>Cornwall</i> ...	Lamb, C. B.	C. R. Brown	No. A.	Federal	Form 911 10.12.28 to 17.1.29	18.3.29
<i>Crawford Castle</i> ...	Conley, E. A.	"	" A.	Union Castle	"	"
*† <i>Culebra</i> ...	Goble, C. J., R.D., Commr., R.N.R.	H. D. Hooper, H. E. Sang, A. H. Phillipson	M.L.	R.M.S.P. Co.	Met. Log. 30.6.29 to 26.8.29	11.9.29
*† <i>Cumberland</i> ...	Macmillan, D.	P. Shakespear, F. Loughhead, T. Shillito, J. Lennox	"	Federal... ..	" 29.10.28 to 29.3.29	5.4.29
*† <i>Custodian</i> ...	O'Connor, T.	"	No. M.	Harrison	"	"
<i>Cyclops</i> ...	Cosker, W.	C. B. P. Anderson	" A.	A. Holt	Form 911 4.7.29 to 15.8.29	20.8.29
*† <i>Daga</i> ...	Wiles, N.	I. B. Campbell	" M.	P. Henderson... ..	" 4.3.29 to 10.6.29... ..	15.6.29
<i>Dakotian</i> ...	Robb, J.	W. R. Atkinson... ..	" A.	Leyland	" 1.7.29 to 9.8.29	18.8.29
<i>Dardanus</i> ...	Glossop, S.	R. W. Ellis	" A.	A. Holt	" 27.8.29 to 9.9.29	7.10.29
†† <i>Darro</i> ...	Shillito, B.	"	" M.	R.M.S.P. Co.	" 26.7.29 to 7.8.29... ..	28.8.29
*† <i>Defender</i> ...	Haylett, E.	"	" M.	T. & J. Harrison	"	"
<i>Delilian</i> ...	Stewart, G. F.	"	" A.	Leyland	Form 911 9.5.29 to 7.8.29	20.8.29
*† <i>Delphic</i> ...	Vaughan, P. R.	E. B. Clark	" M.	White Star	" 4.5.29 to 18.6.29... ..	26.6.29
*† <i>Delta</i> ...	Townshend, W. P., R.D., Capt., R.N.R.	D. M. Stafford	" M.	P. & O.	" 24.4.29 to 19.6.29	11.7.29
† <i>Demerara</i> ...	Willan, F. G. L., R.D., Capt., R.N.R.	P. W. Brundell	" M.	R.M.S.P. Co.	" 25.6.29 to 17.8.29	20.8.29
†† <i>Demosthenes</i> ...	Ogilvy, A.	S. A. Ferguson	" M.	Aberdeen Common-wealth	" 11.8.29 to 31.8.29	7.10.29
<i>Denis</i> ...	Harris, F. C. P.	"	" A.	Booth	" 2.8.29 to 16.8.29	17.9.29
†† <i>Deseado</i> ...	F. S. Hannam	"	" M.	R.M.S.P. Co.	" 4.8.29 to 27.9.29	28.9.29
†† <i>Desna</i> ...	Green, J.	L. T. Peterson	" M.	"	" 3.9.28 to 24.10.28	12.11.28
<i>Deucalion</i> ...	Melling, C. F.	"	" A.	A. Holt	" 31.8.29 to 11.9.29	19.9.29
*† <i>Devon</i> ...	Kinnell, G.	G. Chaplin	" M.	Feyland	" 6.9.29 to 17.9.29... ..	7.10.29
<i>Dieppe</i> ...	Marmery, S.	Mr. Parsons	C.C.	Southern Railway	Telegraphic Report 8.10.29	8.10.29
<i>Dimboola</i> ...	Dawson, J.	"	No. A.	Melbourne S.S. Co.	Form 911 2.8.29 to 28.8.29... ..	30.9.29
†† <i>Discovery, Auxy. Barque.</i> ...	King Davis, J.	W. R. Colbeck	M.L.	Douglas Mawson Expedition	"	"
*† <i>Domala, M.V.</i> ...	Kitson, A. G.	H. Robertson	No. M.	British India... ..	" 30.6.29 to 9.9.29	23.9.29
†† <i>Dominia, C.S.</i> ...	Campos, V., O.B.E., Lt.-Commr., R.N.R.	S. A. Garnham, A. S. Muir, L. J. Hegarty, W. F. Anderson	M.L.	Telegraph Construc-tion & Maintenance	Met. Log. 8.8.28 to 5.12.28... ..	27.12.28
<i>Dominic</i> ...	Jackson, T. H.	G. H. Clark	No. A.	Booth	Form 911 6.5.29 to 29.7.29... ..	15.8.29
†† <i>61Doric</i> ...	Hulme, R.	F. E. Patchett, J. Farrell, S. A. Jones	W.T.	White Star	" 25.8.29 to 12.10.29	15.10.29
<i>Dorington Court</i> ...	Cole N.	"	"	W.T. Reg. 25.8.29 to 14.9.29	"	18.9.29
<i>Dromore Castle</i> ...	Clarke, E. J.	"	No. A.	Haldin & Co.	Form 911 10.4.29 to 22.7.29	25.7.29
*† <i>Dryden</i> ...	MacMahon, J., R.D., Commr., R.N.R.	J. A. Sowden	" A.	Union Castle	" 15.4.29 to 9.5.29... ..	5.6.29
*† <i>Duchess of Atholl...</i> ...	Major, T. W.	"	" M.	Lampert & Holt	" 21.10.28 to 14.1.29	7.2.29
†† <i>Duchess of York</i> ...	McQueen, D. S.	A. Mackie	" M.	Canadian Pacific	" 22.9.29 to 11.10.29	17.10.29
	Stuart, R.N., V.C., D.S.O., Commr., R.N.R.	A. Mansey	" M.	"	" 25.8.29 to 3.10.29	7.10.29
<i>Dunaŕ Head</i> ...	Butt, H. L., R.D., Lt.-Commr., R.N.R.	D. Martin	" A.	Ulster S.S. Co.	" 22.1.29 to 6.2.29	18.2.29
<i>Dunluce Castle</i> ...	Jackson, C. R.	C. Loyd	" A.	Union Castle	" 2.8.29 to 21.8.29... ..	27.8.29
<i>Dunrobin</i> ...	Ramsay, J. D.	W. Martin	" A.	Glen & Co.	" 4.7.29 to 8.8.29... ..	11.9.29
*† <i>Duquesa</i> ...	Barker, A. W.	"	" M.	Furness Withy	" 22.4.29 to 28.6.29	3.7.29
*† <i>Durenda, M.V.</i> ...	Beeching, P. H.	J. E. Miles	" M.	British India... ..	" 6.3.29 to 24.3.29... ..	19.4.29
<i>Edinburgh Castle</i> ...	Gardner, G. F., O.B.E., Lt.-Commr., R.N.R.	A. R. J. Tilston	" A.	Union Castle	" 6.9.29 to 22.9.29... ..	24.9.29
<i>Egori</i> ...	Sola, P., D.S.O.	J. T. Townson	" A.	Elder Dempster	" 2.5.29 to 16.7.29... ..	17.7.29
*† <i>El Argentino</i> ...	Ellis, F., D.S.C.	C. H. Hughes	" M.	Houlder	" 12.5.29 to 18.7.29	22.7.29
*† <i>Eldon Park</i> ...	Burns, R.	D. Rankine	" M.	Denholm S.S. Co.	" 1.6.29 to 3.9.29	1.10.29
*† <i>Elmworth</i> ...	Dick, J.	"	" M.	R. S. Dalgleish	"	"
*† <i>Elpenor</i> ...	Wilson, R. J.	E. Roberts, S. Burton, J. E. Hiff	M.L.	A. Holt	Met. Log. 26.5.29 to 5.10.29	17.10.29
*† <i>Elstree Grange</i> ...	Todhurter, L. J.	J. G. Freeman	No. M.	Houlder	Form 911 8.7.29 to 5.9.29	30.9.29
*† <i>El Paraguayo</i> ...	Frost, C. R.	F. J. G. Rice	" M.	"	" 3.6.29 to 7.8.29	26.8.29
*† <i>El Uruguayo</i> ...	McNamara, T.	F. E. Hailstone	" M.	"	"	"
*† <i>Elysia</i> ...	Duncan, A. R.	D. Blair, G. S. Sinclair, W. Beveridge	M.L.	Anchor	Met. Log. 1.5.29 to 8.7.29	31.7.29
** <i>Empress of Asia</i> ...	Hailey, A. J., Lt.-Commr., R.N.R.	L. M. Goddard, J. F. Patrick, R. J. Hickey, E. Newell	"	Canadian Pacific	" 17.2.29 to 31.5.29	19.7.29
†† <i>Empress of Canada</i> ...	Douglas, L. D.	C. W. A. G. Hamley	"	"	"	"
†† <i>Empress of France</i> ...	Robinson, S., C.B.E., R.D., Commr., R.N.R.	A. G. Simmons	"	"	Met. Log. 9.3.29 to 21.6.29... ..	19.7.29
** <i>Empress of Russia</i> ...	Hosken, A. J.	R. A. Leicester, H. B. Metcalf, A. C. Jones	"	"	" 31.3.29 to 12.7.29	4.10.29
<i>Endeavour</i> ...	Law, E. F. B., Commr., R.N.	M. B. Thomas	"	His Majesty's Ship	" 15.3.29 to 8.7.29	18.7.29

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
<i>Enterprise</i> ...	Pridham-Wippell, H.D., Capt., R.N.	C. W. A. G. Hamley ...	M.L.	His Majesty's Ship ...	Met. Log. 18.3.29 to 15.7.29 ...	29.8.29
*† <i>Essequibo</i> ...	Roberts, E. ...	L. Marsland ...	No. M.	R.M.S.P. Co. ...	Form 911 8.8.29 to 24.9.29... ..	3.10.29
<i>Eumaeus</i> ...	Hodgson, R. N. ...	R. T. Dryden ...	" A.	A. Holt ...	" 22.9.29 to 2.10.29 ...	10.10.29
<i>Euryades</i> ...	Ewan, W. B. ...	W. K. Hole ...	" A.	A. Holt ...	" 10.8.29 to 27.8.29 ...	30.9.29
*† <i>Explorer</i> ...	Ling, J. T. ...	A. E. Rogers ...	" M.	Harrison ...	" 9.2.29 to 22.5.29... ..	13.6.29
<i>Explorer</i> ...	Allan, J. ...	A. Stout ...	" A.	Scottish Fishery Board.	" 2.9.29 to 18.9.29... ..	2.10.29
*† <i>Fordsdale</i> ...	Richardson, A. V. ...	F. Vaughan ...	No. M.	Aberdeen Common-wealth.	" 22.2.29 to 18.3.29 ...	4.4.29
<i>Francisco</i> ...	Scales, H. ...	B. Scholefield ...	" A.	Ellerman Wilson ...	" 2.8.29 to 12.9.29... ..	23.9.29
<i>Freya</i> ...	Angus, W. ...	J. M. Murray ...	" A.	Scottish Fishery Board.	" 7.9.29 to 29.9.29... ..	7.10.29
<i>Garth Castle</i> ...	Morgan, A.O., R.D., Commr. R.N.R.	F. O. Wilbraham ...	" A.	Union Castle ...	" 24.7.29 to 17.8.29 ...	20.8.29
** <i>Gascoyne</i> ...	Johnson, L. ...	W. J. Macphedran, C. Melson, J. S. Macbryde.	M.L.	A. Holt & Co... ..	Met. Log. 3.3.29 to 15.7.29... ..	28.8.29
*† <i>Glamorganshire</i> ...	Womersley, H. ...	R. E. E. Hadlow ...	No. M.	R.M.S.P. Co. ...	Form 911 13.6.29 to 22.7.29 ...	25.7.29
*† <i>Glenamoy, M.V.</i> ...	Homan, C. E. ...	R. K. Bishop, F. B. C. Wetherley.	M.L.	Glen Line ...	Met. Log. 24.12.28 to 5.5.29 ...	12.6.29
<i>Glenapp</i> ...	Ingram, T. F. ...	... ..	No. A.	" ...	Form 911 19.1.29 to 27.2.29 ...	2.4.29
<i>Glenbeg</i> ...	Newing, L. ...	F. B. Angier ...	" A.	" ...	" 5.3.29 to 9.7.29 ...	11.7.29
*† <i>Glenarray</i> ...	Angier, J. ...	J. Tyler ...	" M.	" ...	" 8.8.29 to 20.8.29... ..	16.9.29
<i>Glenluce, M. V.</i> ...	Kennett, W. H. ...	H. B. Porter ...	" A.	" ...	" 17.8.29 to 5.9.29... ..	30.9.29
<i>Glenshane</i> ...	Suter, S. C. ...	... ..	" A.	" ...	" 10.11.28 to 1.4.29 ...	6.4.29
<i>Glentworth</i> ...	Kilgour, H. A. ...	W. C. Wright ...	" A.	R. S. Dalgleish ...	" 16.9.29 to 3.10.29 ...	10.10.29
<i>Glocestershire</i> ...	Robin, E. ...	W. Moore ...	" A.	Bibby ...	" 1.12.28 to 8.2.29... ..	12.2.29
<i>Gloxinia</i> ...	Pool, F. G. ...	D. Coughlan ...	" A.	Stag Line ...	" 14.7.29 to 6.9.29... ..	9.9.29
<i>Guildford Castle</i> ...	Attwood, J. ...	... ..	" A.	Union Castle ...	" 8.6.29 to 18.7.29... ..	23.7.29
<i>Halesius</i> ...	Samuels, C. ...	N. MacLeod ...	" A.	R. P. Houston ...	" 6.8.29 to 3.9.29 ...	17.9.29
<i>Hallartus</i> ...	Felton, W. J. ...	F. D. Bonney ...	" A.	" ...	" 13.6.29 to 7.7.29... ..	8.8.29
*† <i>Hardwicke Grange</i> ...	Fowler, W. H. ...	W. Rogers, R. D. Seybold ...	" M.	" Houlder ...	" 20.7.29 to 25.9.29 ...	7.10.29
<i>Harmonides</i> ...	Elwell, F. R. ...	... ..	" A.	R. P. Houston ...	" 18.7.29 to 8.8.29... ..	17.9.29
*† <i>Hatimura</i> ...	Hemmings, W. H. ...	L. E. Heath ...	" M.	British India ...	" 30.6.29 to 19.7.29 ...	25.7.29
** <i>Hauraki, M.V.</i> ...	Norton, A. T. ...	D. M. McLeish, C. H. George, F. C. Cochran.	M.L.	Union S.S. Co., N.Z... ..	Met. Log. 17.4.28 to 25.10.28 ...	4.1.29
<i>Herald</i> ...	Maxwell, P. S. E., Commr. R. N.	H. J. C. Stokes... ..	"	His Majesty's Ship ...	" 1.4.29 to 29.7.29... ..	11.9.29
<i>Herminius</i> ...	Roberts, T. V. ...	D. W. MacGregor ...	No. A.	Aberdeen Common-wealth.	Form 911 13.7.29 to 23.8.29 ...	23.9.29
<i>Herschel</i> ...	Watson, W. W. ...	A. J. Corney ...	" A.	Lampport & Holt ...	" 4.5.29 to 19.7.29... ..	20.7.29
*† <i>Hertford</i> ...	Burton Davies, J. ...	... ..	M.L.	Federal ...	" ... ..	...
<i>Hestione</i> ...	McComish, A. B. ...	... ..	No. A.	R. P. Houston ...	Form 911 1.7.29 to 26.7.29... ..	1.8.29
<i>Hibernia</i> ...	Dudgeon, L. T. ...	A. Marsh ...	C.C.	L.M. & S. Railway ...	Telegraphic Report 17.10.29 ...	17.10.29
*† <i>Highland Chieftain, M.V.</i> ...	Robinson, R. H. ...	... ..	No. M.	Nelson ...	Form 911 13.8.29 to 29.9.29 ...	14.10.29
<i>Highland Prince</i> ...	Taylor, F. ...	W. A. Hall ...	" A.	Prince ...	" 30.3.29 to 11.4.29 ...	25.4.29
<i>Rover</i> ...	McKinnon, H. ...	E. Smart ...	" A.	Nelson ...	" 1.1.29 to 18.2.29... ..	11.3.29
<i>Hildebrand</i> ...	Buck, R. H. ...	... ..	" A.	Booth ...	" 16.7.29 to 29.8.29 ...	3.9.29
*† <i>Hobson's Bay</i> ...	Kydd, O. J. ...	J. Worrall, D. Horn, G. Cook	M.L.	Aberdeen Common-wealth.	Met. Log. 6.3.29 to 14.6.29... ..	3.7.29
<i>Holbein</i> ...	Gough, W. A. ...	F. Delaney ...	No. A.	Lampport & Holt ...	Form 911 2.5.29 to 3.8.29 ...	27.8.29
†† <i>Homeric</i> ...	Warner, G. E., R.D., Capt. R.N.R.	H. G. Morgan, J. W. Webbe, A. E. Dyer.	W.T.	White Star ...	W.T. Reg. 29.8.29 to 13.9.29 ...	17.9.29
<i>Hororata</i> ...	Barnett, H. ...	E. A. Quick ...	No. A.	New Zealand S.S. Co. Booth ...	Form 911 17.1.29 to 8.2.29... ..	18.3.29
<i>Hubert</i> ...	Furneaux, R. B. ...	A. S. Richardson ...	" A.	Booth ...	" 9.7.29 to 20.8.29... ..	27.8.29
<i>Huntingdon</i> ...	Field, H. G. B. ...	N. S. Lesmere ...	" A.	Federal... ..	" 6.3.29 to 19.7.29 ...	29.7.29
*† <i>Huntsman</i> ...	Russell, H. ...	G. R. R. Lettin ...	" M.	Harrison ...	" 28.1.29 to 27.6.29 ...	3.8.29
*† <i>Hydaspes</i> ...	Williams, P. E. ...	J. W. Charles ...	" M.	R. P. Houston ...	" 19.5.29 to 14.7.29 ...	9.9.29
*† <i>Ingoma</i> ...	Gibbings, W. ...	R. J. Weeks ...	" M.	Harrison ...	" 20.7.29 to 28.8.29 ...	3.9.29
<i>Inkum</i> ...	Meethan, J. T. ...	... ..	" A.	J. H. Welsford ...	" 18.8.29 to 1.9.29... ..	19.9.29
<i>Irania, M.V.</i> ...	Adams, P. A. ...	E. Allen ...	" A.	Iranian Tanker Co... ..	" 19.8.29 to 25.9.29 ...	14.10.29
** <i>Iris, C.S.</i> ...	Hughes, H. P. ...	... ..	M.L.	Pacific Cable Board... ..	Met. Log. 23.2.29 to 19.3.29 ...	18.7.29
<i>Iroquois</i> ...	Nares, J. D., D.S.O., Capt. R.N.	A. B. Foulston... ..	"	His Majesty's Ship ...	" 11.4.29 to 31.7.29 ...	4.9.29
*† <i>Ixion</i> ...	Collins, H. M. ...	D. Law ...	"	A. Holt ...	" 28.11.28 to 18.4.29 ...	28.6.29
<i>Javanese Prince, M.V.</i> ...	Smith, J. ...	J. B. Morrison ...	No. A.	Prince ...	Form 911 19.7.29 to 20.8.29 ...	30.8.29
*† <i>Jeyapore</i> ...	Cooper, C. P., O.B.E., R.D. Capt. R.N.R.	F. M. Squire ...	" M.	P. & O... ..	" 16.6.29 to 2.8.29... ..	7.8.29
<i>Justin</i> ...	Briscoe, W. ...	J. Stretch... ..	" A.	Booth ...	" 28.29 to 10.9.29... ..	20.9.29
†† <i>Katsar-i-Hind</i> ...	Headlam, P. C. R.D., Commr. R.N.R.	W. T. Banks ...	" M.	P. & O... ..	" 27.7.29 to 14.8.29 ...	21.8.29
*† <i>Kalyan</i> ...	Cornewall Jones, B. ...	W. R. B. Noal ...	" M.	P. & O... ..	" 24.8.29 to 13.9.29 ...	7.10.29
** <i>Kangaroo</i> ...	Norris, H. C. ...	J. Sinclair, J. S. Airey, E. Hutchinson, J. Edward, H. Reynolds, V. L. Gilbert, K. D. Fisher, A. C. Jones, J. W. Thompson, H. M. Clark.	M.L.	State Service Australia.	Met. Log. 3.9.28 to 24.2.29... ..	27.5.29
*† <i>Karamea</i> ...	McIntosh, A. ...	... ..	"	Shaw, Savill & Albion	" 10.3.29 to 1.7.29... ..	10.7.29
*† <i>Karapara</i> ...	Miller, A. C. ...	M. Rose ...	No. M.	British India... ..	Form 911 14.8.29 to 3.9.29... ..	1.10.29
*† <i>Kashgar</i> ...	Sudell, F., R.D., Commr. R.N.R.	R. P. Eddy ...	" M.	P. & O... ..	" 4.5.29 to 10.8.29... ..	13.8.29
*† <i>Kashmir</i> ...	Mallalue, R., Lt-Commr. R.N.R.	D. S. Charles ...	" M.	P. & O... ..	" 19.7.29 to 5.10.29 ...	10.10.29
*† <i>Khandalla</i> ...	Baird, S.K. ...	F. N. B. Johnson ...	" M.	British India ...	" 28.7.29 to 24.8.29 ...	16.9.29
*† <i>Khiva</i> ...	Britten, P. O. ...	C. E. Arundel, J. A. Ridley, H. V. Williamson.	M.L.	P. & O... ..	Met. Log. 16.5.29 to 26.8.29 ...	2.9.29
*† <i>Knight Companion</i> ...	Davis, A. L. ...	J. H. Isherwood ...	No. M.	A. Holt... ..	Form 911 29.8.29 to 18.9.29 ...	26.9.29
†† <i>Laconia</i> ...	Doyle, M. ...	E. W. Connell, A. B. Fasting, F. G. Russell ...	W.T.	Cunard ...	W.T. Reg. 9.9.29 to 29.9.29... ..	3.10.29
<i>Laguna</i> ...	Dunn, R. E., O.B.E... ..	R. W. Hanson ...	No. A.	Pacific S.N. Co. ...	Form 911 8.9.29 to 28.9.29... ..	1.10.29
*† <i>Lahore</i> ...	Chartars, W. ...	N. Bell ...	" M.	P. & O... ..	" 28.6.29 to 27.9.29 ...	1.10.29
<i>Lalande</i> ...	Hamill, H. ...	L. A. G. Owen ...	" A.	Lampport & Holt ...	" 28.5.29 to 22.7.29 ...	26.7.29
<i>Lancashire</i> ...	Foster, W. L. ...	W. H. Campe ...	" A.	Bibby ...	" 27.2.29 to 11.7.29 ...	10.10.29
†† <i>Lancastria</i> ...	Townley, J. C. R.D., Commr. R.N.R.	G. Overton, P. L. Williams, J. W. Counce.	W.T.	Cunard ...	W.T. Reg. 22.8.29 to 21.9.29 ...	24.9.29
<i>Laomedon</i> ...	Hatfield, F. ...	O. P. H. Wynne... ..	No. A.	A. Holt... ..	Form 911 9.9.29 to 28.9.29... ..	2.10.29
					" 8.9.29 to 28.9.29... ..	1.10.29
					" 14.8.29 to 8.10.29 ...	17.10.29

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
*† La Paz, M.V.	Benson, C. W.	H. Eardley	No. M.	Pacific S.N. Co.	Form 911 22.8.29 to 8.9.29...	30.9.29
†55 Layland	Harvey, H.	J. C. Flett, J. Gladstone, J. Mackie.	W.T.	Red Star	W.T. Reg. 25.8.29 to 13.9.29 22.9.29 to 11.10.29 Form 911 25.8.29 to 11.10.29	17.9.29 14.10.29 14.10.29
*† Largs Bay	Jenkyn, W. M.	...	No. M.	Aberdeen Commonwealth.	25.1.29 to 4.5.29	7.5.29
*† La Rosarina	Webb, C.	...	M.	Houlder	...	...
†64 Laurentine	Trant, E. L., R.D., Commr. R.N.R.	R. Hawkins, R. Conway, J. W. Peters.	W.T.	White Star	W.T. Reg. 15.9.29 to 4.10.29 Form 911 15.9.29 to 4.10.29	8.10.29 7.10.29
*† Lautaro, M.V.	Leyne, R. W.	J. T. Denley	No. M.	Pacific S.N. Co.	25.2.29 to 14.6.29	19.6.29
*† Leicestershire	English, G. L.	W. Walton, E. D. Brand, A. Thomson.	M.L.	Bibby	Met. Log. 18.5.29 to 27.7.29	31.7.29
*† Limerick	Molyneux, P. L.	G. Chaplin	No. M.	Federal	Form 911 6.6.29 to 22.6.29...	14.10.29
*† Llandaff Castle	Gilbert, E. F.	S. Drew, — Bayer, — Denn, W. Forsyth.	M.L.	Union Castle	Met. Log. 24.5.29 to 30.7.29	1.8.29
*† Llandoverly Castle	Stuart, C. E., Capt. R.N.R.	L. H. Farrow, G. Moon, S. Goldstone.	"	"	8.3.29 to 4.9.29	1.10.29
*† Llanstephan Castle	Whitfield, G. J.	A. W. Chandler	No. A.	"	Form 911 18.7.29 to 26.9.29	27.9.29
*† Lobos, M. V.	Pape, E. R.	S. E. Aylard	" M.	Pacific S.N. Co.	22.5.29 to 9.6.29	12.6.29
*† Loch Kairine	Schlanbusch, O. V.	L. H. Smith	" A.	R.M.S.P. Co.	28.5.29 to 23.8.29	27.8.29
*† Logician	Herschel, R. F.	A. G. S. Madrell	" M.	Harrison	2.6.29 to 5.9.29	1.10.29
*† London Importer	Nuttall, E. L.	F. F. Feint, J. H. Metcalfe, J. G. Freeman.	" M.	Furness Withy	...	...
*† Lord Antrim	Jarvis, F. E.	W. A. Haddock	" A.	Ulster S.S. Co.	Form 911 17.9.29 to 1.10.29	14.10.29
*† Loriga, M.V.	Large, E. H.	...	" A.	Pacific S.N. Co.	28.6.29 to 16.7.29	27.8.29
*† Losada, M.V.	Ross, J.	D. Beamer	" M.	"	15.8.29 to 3.9.29	10.9.29
†† Macedonia	Morton, A. J.	...	" M.	P. & O.	5.7.29 to 22.8.29	26.8.29
*† Macharda	Hanna, R. G.	A. C. Hocking	" M.	Brocklebank	2.8.29 to 28.8.29	23.9.29
*† Macquarie	Heyen, G. H.	...	" A.	On Chang & Co.	15.5.29 to 27.5.29	30.9.29
*† Maharaja	Elliott, G. F.	...	" M.	Asiatic S.N. Co.	6.3.29 to 24.4.29	10.6.29
*† Mahronda	Sharpe, G.	L. Lee	" M.	Brocklebank	30.5.29 to 5.8.29	15.8.29
*† Mahsud	Kershaw, R. W.	B. K. Ward	" M.	"	29.7.29 to 3.9.29	7.9.29
*† Maidan	Ison, W. A.	G. W. Pierpoint	" M.	"	7.7.29 to 26.9.29	10.10.29
*† Maihar	Charlton, W. L.	J. W. B. Robertson, C. Cadwallader, A. D. Spring.	M.L.	"	Met. Log. 12.4.29 to 6.7.29	12.8.29
*† Maimoa	Johnson, J. W.	J. H. Fuller, P. Savill, H. G. Withell.	"	Shaw, Savill & Albion	28.4.29 to 23.8.29	26.8.29
*† Maimyo	Smith, G. C.	J. L. Rodgers	No. A.	Brocklebank	Form 911 17.6.29 to 7.8.29	18.8.29
†58 Majestic	Marshall, W., G.B., D.S.O., R.D., Commr. R.N.R.	A. Fisher, W. T. Fitz Gerald, A. H. Young, W. W. Pearson.	W.T.	White Star	W.T. Reg. 5.9.29 to 18.9.29 26.9.29 to 9.10.29	21.9.29 12.10.29
*† Makalla	Maugham, J. W.	J. B. Newman	No. M.	Brocklebank	Form 911 8.9.29 to 18.9.29	26.9.29
*† Makambo	Williams, D. J., Rothery, S.	R. Perry, R. A. Williams S. Sandison.	M.L.	Burns Philp	Met. Log. 24.11.28 to 9.4.29	22.6.29
*† Makura	Brown, J. F. S.	W. A. Todd, J. Billingham, G. Edwards, D. A. Menlove.	"	Canadian-Australasian	21.2.29 to 9.6.29	2.9.29
*† Malabar, M.V.	Donaldson, A.	...	"	Burns, Philp & Co.	10.11.28 to 21.4.29	28.6.29
*† Malakuta	Adamson, F. L.	A. Horspool	No. M.	Brocklebank	Form 911 27.7.29 to 10.9.29	13.9.29
*† Malanaha	Whitham, F.	R. Humble	" M.	"	16.8.29 to 27.8.29	16.9.29
*† Malda	Denn, G.	B. R. Faithful	" M.	British India	4.8.29 to 25.8.29	26.9.29
† Maloja	Browning, J. B., R.D., Commr. R.N.R.	R. H. Turner	" M.	P. & O.	24.8.29 to 13.9.29	7.10.29
† Malua	Stringer, R. H., O.B.E., R.D., Commr. R.N.R.	F. D. Shaw	" M.	"	5.7.29 to 18.9.29	23.9.29
*† Manchester Brigade	Stott, C. H.	J. H. Round, H. Boyce, E. E. Bonnaud.	M.L.	Manchester Liners	Met. Log. 19.2.29 to 31.8.29	5.9.29
*† Manchester Hero	Emmett, J. H.	G. S. Robertson	"	"	16.12.28 to 17.7.29	25.9.29
*† Manchester Producer	Struss, F. D.	T. J. Boyd	No. A.	"	Form 911 10.8.29 to 8.9.29	10.9.29
*† Manela	Maples, S. H.	J. H. Heath	" M.	British India	31.8.29 to 5.10.29	10.10.29
*† Manalore	Mulcahy, G.	W. Harris	" M.	Brocklebank	21.7.29 to 9.10.29	14.10.29
*† Manipur	Cochran, G. N.	R. Penston, G. B. Falconer	" M.	Brocklebank	23.8.29 to 22.9.29	10.10.29
*† Manistee	Pengelly, J.	...	" M.	Elders & Fyffes	...	...
*† Manora	Hudson, H. T., R.D., Commr. R.N.R.	...	" M.	British India	Form 911 30.12.28 to 28.3.29	2.4.29
† Mantua	Davis, H. C., D.S.O., Commr. R.N.R.	...	" M.	P. & O.	10.6.29 to 1.8.29	8.8.29
*† Marella	Mortimer, S.	A. G. Hill, F. Vogelmann, B. Helen.	M.L.	Burns Philp	Met. Log. 19.11.28 to 28.3.29	22.6.29
*† Marengo	Curle, J.	H. Bryan, G. W. Revell, J. Ford.	"	Ellerman Wilson	24.2.29 to 17.8.29	23.9.29
† Margha	Hughes, C. G.	P. Wright, H. Watkins	"	British India	7.4.29 to 2.7.29	8.7.29
*† Marquesa	Smiles, R. S.	L. Owen	No. M.	Furness Houlder	Form 911 28.4.29 to 4.7.29	11.7.29
*† Marsina	Williams, G.	...	" A.	Burns, Philp & Co.	14.6.29 to 28.8.29	14.10.29
*† Matakana	Thurston, H. P.	E. Davies, B. Forbes-Moffatt, A. P. Winton, A. G. Collins.	M.L.	Shaw, Savill & Albion	Met. Log. 30.3.29 to 30.7.29	3.8.29
*† Mataram	Voy, W.	R. M. Blunt	No. A.	Burns, Philp & Co.	Form 911 29.5.29 to 29.6.29	6.8.29
† Matara	Kershaw, W. A. R.	F. Eadon, H. A. Hill, C. Meyer.	M.L.	Shaw, Savill, & Albion	Met. Log. 21.6.29 to 28.9.29	1.10.29
*† Matheran	Douglas, G. C.	W. Couling	No. M.	Brocklebank	Form 911 11.7.29 to 30.9.29	4.10.29
*† Matiana	Green, F. V.	W. Mortimer	" M.	British India	16.3.29 to 4.6.29	10.6.29
*† Matra	Cornish, N. P.	W. Gibson, R. V. Andrew	" M.	Brocklebank	21.4.29 to 13.7.29	17.7.29
*† Maungani	Martin, W.	G. H. Edwards	" M.	Union S.S. Co. of N.Z.	1.8.29 to 25.8.29	16.9.29
*†22 Maurerania	McNeil, S. G.S., R.D., Capt. R.N.R.	R. H. C. Crawford, C. B. Osborne, B. J. P. Tuck.	W.T.	Cunard	W.T. Reg. 15.9.29 to 30.9.29	4.10.29
†66 Megantic	Frank, F. A., D.S.O., R.D., Commr. R.N.R.	J. F. Walkire, A. H. H. Griffiths, F. Rogers.	"	White Star	1.7.29 to 10.9.29	25.9.29
†22 Melita	Stewart, A.	W. W. J. Ewens	"	Canadian Pacific	1.9.29 to 20.9.29	24.9.29
*† Memnon	Watson, C. J.	J. A. C. McGregor	No. A.	A. Holt	Form 911 12.1.29 to 23.1.29	28.1.29
†21 Metagama	Carr-Jones, D. T.	J. Hewson, J. H. Tudor, H. Benedictus.	W.T.	Canadian Pacific	W.T. Reg. 31.8.29 to 20.9.29	24.9.29
*† Middlesex	Wilde, H.	S. J. Woodhouse	No. M.	Federal	Form 911 14.7.29 to 30.7.29	2.9.29
*† Minna	Mackenzie, G. G.	A. M. Campbell, T. R. Ness	" A.	Scottish Fishery Brd.	30.8.29 to 23.9.29	3.10.29
†23 Minnedosa	McCombie, G. F. R. D., Commr. R.N.R.	C. D. Watt, W. J. P. Roberts, H. M. Sanders.	W.T.	Canadian Pacific	W. T. Reg. 15.9.29 to 5.10.29 Form 911 14.9.29 to 6.10.29	8.10.29 10.10.29
† Minnesota	Finch, E., R. D., Commr. R.N.R.	L. C. Hill	No. M.	Atlantic Transport	25.8.29 to 15.9.29	18.9.29
† Minnetonka	Gates, T. F., C.B.E.	J. H. Kenworthy	" M.	"	2.9.29 to 20.9.29	28.9.29

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
†† <i>Minnewaska</i> ...	Claret, F. H., C.B.E., Commr., R.N.R.	G. Niblett	No. M.	Atlantic Transport ...	Form 911 16.9.29 to 4.10.29 ...	8.10.29
<i>Mississippi</i> ...	Puttick, J. ... ..	... ..	" A.	"	" 2.9.29 to 13.9.29... ..	28.9.29
*† <i>Modasa</i> ...	Gilchrist, J. W. ...	B. H. Bentall	" M.	British India ...	" 12.5.29 to 1.8.29... ..	13.8.29
<i>Moeraki</i> ...	Lorlard, C.	F. G. Harvey	" A.	Union S.S. Co. of N.Z.	" 9.8.29 to 26.8.29... ..	30.9.29
†† <i>Moldavia</i> ...	Burleigh, C. W., D.S.O., R.D., Capt., R.N.R.	C. B. Holmes	" M.	P. & O. ...	" 15.8.29 to 3.9.29... ..	16.9.29
†† <i>Mongolia</i> ...	Furlong, G. H. S., R.D., Capt., R.N.R.	A. H. Cole	" M.	"	" 17.2.29 to 1.5.29... ..	6.5.29
††24 <i>Montcalm</i> ...	Rothwell, A.	F. H. Stell	W.T.	Canadian Pacific ...	W.T. Reg. 8.9.29 to 24.9.29... ..	27.9.29
††25 <i>Montclare</i> ...	Griffiths, J. N. ...	E. A. Shergold, T. L. Gillette, T. Sargent.	"	"	" 14.9.29 to 2.10.29	7.10.29
*†† <i>Montoro</i> ...	Hillman, E. J. ...	J. Middleton, J. Young, J. Campbell.	M.L.	Burns, Philp & Co. ...	Met. Log. 18.7.28 to 3.2.29... ..	22.6.29
†† <i>Montrose</i> ...	Dott, J. F.	J. Soame, J. M. Roche ...	No. M.	Canadian Pacific ...	W.T. Reg. 8.4.29 to 26.4.29 ...	30.4.29
††20 <i>Montroyal</i> ...	Freer, A. R.D., Capt., R.N.R.	A. H. Piggott, D. Ewing ...	W.T.	"	W.T. Reg. 28.7.29 to 13.8.29... ..	15.8.29
*†† <i>Moresby</i> ...	Henderson, D. A., O.B.E., Commr., R.A.N.	G. A. Gould	M.L.	His Majesty's Australian Ship.	Form 911 8.12.28 to 27.12.28 ...	3.1.29
†† <i>Mulbera</i> ...	Caffyn, F.	B. Martyn	No. M.	British India ...	Met. Log. 7.8.28 to 13.12.28 ...	13.3.29
*†† <i>Nagara</i> ...	Morris, C. G.	A. H. Frogbrook	" M.	R.M.S.P. Co. ...	" 6.7.29 to 30.8.29	3.9.29
*†† <i>Nagoya</i> ...	Cochrane, C. H. ...	S. Spring	" M.	P. & O. ...	" 23.12.28 to 15.3.29	2.5.29
†† <i>Naldera</i> ...	Randell, G. G.	C. H. Hand, M. F. Shute, J. C. Davies.	M.L.	"	Met. Log. 20.10.28 to 23.1.29 ...	8.2.29
*†† <i>Nardana</i> ...	Gulliver, B.	F. G. Sharps	No. M.	British India ...	Form 911 1.4.29 to 28.7.29... ..	10.8.29
†† <i>Narkunda</i> ...	Parker, J. J. W. R.D., Commr., R.N.R.	S. M. Yates, D. H. Moulton ...	" M.	P. & O. ...	" 19.7.29 to 27.9.29	30.9.29
*†† <i>Nellore</i> ...	Hignett, A. H., R.D., Lt.-Commr., R.N.R.	T. A. Sergeant	" M.	P. & O. ...	" 8.4.29 to 7.6.29	12.6.29
*†† <i>Nerbudda</i> ...	Williams, B. N. ...	G. A. Farley, S. Henderson ...	" M.	British India ...	" 16.12.28 to 8.2.29	11.2.29
*†† <i>Nestor</i> ...	Houghton, G. K. ...	C. Mackinnon	M.L.	A. Holt ...	Met. Log. 23.7.28 to 17.2.29 ...	21.5.29
*†† <i>Newby Hall</i> ...	Gorst, W.	W. E. Owen	No. M.	Ellerman ...	" 17.2.29 to 1.4.29... ..	23.5.29
*†† <i>Newfoundland</i> ...	Forworthy, A. W. ...	R. F. Handley, E. Sainty ...	M.L.	Furness Withy ...	" 24.5.29 to 4.10.29	10.10.29
*†† <i>Niagara</i> ...	Hill, T. V.	V. Knight, R. N. Turner, J. Webb.	"	Canadian- Australasian	" 6.3.29 to 20.6.29... ..	19.7.29
<i>Ningchow</i> ...	Beale, H. E.	H. Morley	No. A.	A. Holt... ..	Form 911 20.8.29 to 3.10.29 ...	14.10.29
*†† <i>Nirvana</i> ...	Ayres, R. M.	A. H. Baird	" M.	British India ...	" 9.8.29 to 21.8.29	16.9.29
*†† <i>Norfolk</i> ...	Mead, G. F.	C. R. Wavish, T. M. Devitt, L. W. Fulcher.	M.L.	Federal ...	Met. Log. 16.3.29 to 14.7.29 ...	19.7.29
<i>Norna</i> ...	Wright, J. W. ... ..	... ..	No. A.	Scottish Fishery Brd	Form 911 21.9.29 to 13.10.29 ...	17.10.29
*†† <i>Norseman, C.S.</i> ...	Davis, E. R.	L. Cook	" M.	Western Tel. Co. ...	" 13.7.29 to 3.9.29	28.9.29
*†† <i>Northumberland</i> ...	Upton, H. L., D.S.C., R.D., Commr., R.N.R.	W. J. Glassborow, H. R. M. Smith, R. S. Miller.	M.L.	Federal ...	Met. Log. 26.11.28 to 15.4.29 ...	26.4.29
<i>Nova Scotia</i> ...	Furieux, S. ... ..	... ..	No. A.	Furness Withy ...	Form 911 21.8.29 to 26.8.29 ...	12.9.29
*†† <i>Nowshera</i> ...	Parker, A. A.	W. Ascroft	" M.	British India ...	" 23.8.29 to 4.9.29... ..	7.10.29
*†† <i>Nudda</i> ...	Morrison, W. C. ...	... ..	" M.	British India... ..	" 1.6.29 to 10.8.29... ..	2.9.29
<i>Oaklands Grange</i> ...	Davis, Q. C.	J. C. Thomas	" A.	Houlder Bros. ...	Form 911 12.3.29 to 2.7.29... ..	5.7.29
††67 <i>Olympic</i> ...	Parker, W. H., C.B.E., R.D., Capt., R.N.R.	A. E. Harvey, J. Day, J. W. Paine.	W.T.	White Star ...	W.T. Reg. 12.9.29 to 26.9.29 ...	30.9.29
†† <i>Orama</i> ...	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	J. M. M. Swanson, C. K. Blake, F. Gray.	M.L.	Orient ...	Met. Log. 3.3.29 to 4.6.29... ..	28.6.29
<i>Oranian</i> ...	Arkle, J.	W. Shepherd	No. A.	Leyland ...	Form 911 27.7.29 to 2.10.29 ...	10.10.29
†† <i>Orbita</i> ...	Dominy, R. H., C.B.E., Commr., R.N.R.	J. R. Bubb	" M.	Pacific S.N. Co. ...	" 2.5.29 to 16.7.29... ..	23.7.29
†† <i>Oreoma</i> ...	Harvey, J. G.	W. J. Rutter, G. Redmond ...	" M.	"	" 27.7.29 to 14.8.29	21.8.29
†† <i>Orduna</i> ...	Daniel, T.	R. D. Eckford	" M.	"	" 6.7.29 to 19.9.29... ..	23.9.29
†† <i>Orestes</i> ...	Flynn, G. A.	R. Martin... ..	" A.	A. Holt... ..	" 28.7.28 to 8.9.28	26.11.28
†† <i>Orford</i> ...	Owens, A. L., Commr., R.D., R.N.R.	O. C. Davies	" M.	Orient ...	" 14.2.29 to 26.4.29	11.5.29
†† <i>Orla</i> ...	Barkley, E.	D. W. Hutchinson	" M.	Pacific S.N. Co. ...	" 18.6.29 to 5.7.29... ..	4.9.29
†† <i>Ormonde</i> ...	Rice, W. V., D.S.O., D.S.C., Commr., R.N.	H. P. Price	M.L.	His Majesty's Ship... ..	Met. Log. 11.1.29 to 30.5.29 ...	13.6.29
†† <i>Oronsay</i> ...	Shelford, W. S. ...	O. C. Davies, R. S. Hawker, E. M. Mackay.	"	Orient ...	" 23.6.29 to 24.9.29	3.10.29
†† <i>Orontes</i> ...	O'Sullivan, F. R. ...	... ..	No. M.	Orient ...	... ..	... ..
*†† <i>Oroya</i> ...	Ridyard, A.	P. H. Ray	" M.	Pacific S.N. Co. ...	Form 911 21.5.29 to 30.7.29 ...	9.8.29
†† <i>Orsova</i> ...	Thorne, G. G., R.D., Commr., R.N.R.	L. J. Vesty, N. W. Smith, J. D. Birch, R. B. Stannard.	M.L.	Orient ...	Met. Log. 31.3.29 to 2.7.29... ..	11.7.29
†† <i>Orvieto</i> ...	Kennedy, G. S. ...	H. A. Whittle, C. D. Lane, C. W. Pinckney.	"	"	" 27.4.29 to 31.7.29	2.8.29
†† <i>Osterley</i> ...	Sarson, M. J. ... ..	... ..	No. M.	"	Form 911 16.5.29 to 20.6.29 ...	24.6.29
†† <i>Otaki</i> ...	Clarke, P. B., D.S.C.	G. Dibley, F. Pover	M.L.	New Zealand S.S. Co.	Met. Log. 5.5.29 to 11.10.29 ...	17.10.29
†† <i>Otvanto</i> ...	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	... ..	No. M.	Orient ...	... ..	... ..
<i>Oxfordshire</i> ...	Foster, W. L.	E. A. Insley	" A.	Bibby Bros. ...	Form 911 24.1.29 to 21.2.29 ...	4.3.29
<i>Pacific Shipper, M.V.</i>	Goodwin, J. ... ..	... ..	" A.	Furness Withy ...	" 13.1.29 to 19.8.29	30.8.29
<i>Pakeha</i> ...	Elford, H. C.	W. Thowless	" A.	Shaw, Savill & Albion	" 8.8.29 to 10.9.29... ..	14.10.29
*†† <i>Pancras</i> ...	Jones, W. C. H. ...	H. Atkinson, R. Parry ...	M.L.	Booth ...	Met. Log. 6.3.29 to 29.7.29 ...	15.8.29
*†† <i>Parana</i> ...	Rathkins, C.E., R.D., Commr., R.N.R.	... ..	"	R.M.S.P. Co. ...	... ..	... ..
<i>Pareora</i> ...	Evans, J. O.	T. M. G. Fenwick	No. A.	Hain S.S. Co. ...	Form 911 16.5.29 to 13.6.29 ...	18.8.29
<i>Paris</i> ...	Cook, C. L.	Mr. Biles	C.C.	Southern Rly. ...	Telegraphic Report. 2.4.29 ...	2.4.29
<i>Patia</i> ...	Bower, H. C.	R. Laycock	No. A.	Elders & Fyffes ...	Form 911 31.7.29 to 30.8.29 ...	12.9.29
<i>Pelsander</i> ...	Slater, H. N.	L. Johnston	" A.	A. Holt... ..	" 8.7.29 to 5.8.29	3.9.29
<i>Pennland</i> ...	Making, V. L. ... ..	... ..	" A.	Red Star ...	" 2.9.29 to 21.9.29... ..	24.9.29
*†† <i>Peshawur</i> ...	McBryde, A. M. ...	K. A. H. Cummins, S. H. Bald- win, A. M. Tolfree.	M.L.	P. & O. ...	Met. Log. 10.12.28 to 1.5.29 ...	13.5.29
*†† <i>Piako</i> ...	Laird, J.	J. McCulloch	No. M.	New Zealand Co. ...	Form 911 22.8.29 to 7.9.29... ..	30.9.29
<i>Polycarp</i> ...	Reynolds, W. H. B. ...	... ..	" A.	Booth ...	" 9.6.29 to 24.8.29... ..	5.9.29
*†† <i>Port Adelaide</i> ...	Swan, L. H.	R. B. Linklater, C. J. Gorley, F. J. Lavers.	M.L.	Commonwealth & Dominion.	Met. Log. 6.1.29 to 19.6.29... ..	15.7.29
*†† <i>Auckland</i> ...	Durham, R. S., D.S.C.	J. G. Lewis, E. R. Rowlands, P. S. Ball, E. W. Dingle.	"	"	" 1.4.29 to 13.8.29	7.9.29
*†† <i>Campbell</i> ...	Enright, W. J. ...	J. G. Thom, J. C. Goddard, H. B. Walker.	"	"	" 26.2.29 to 5.7.29... ..	11.7.29

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log. Register, or Report Contributed. Received up to 18.10.29.	Date Received.
*† Port Caroline ...	Brown, A. H. ...	J. B. Bradley, G. Langford, J. Stannard, L. J. Brice ...	M.L.	Commonwealth & Dominion.	Met. Log. 26.10.28 to 3.4.29 ...	8.4.29
*† „ Darwin ...	Sawbridge, I. R. ...	H. Pinkney, N. Muzzell, A. McClouan.	„	„ „ „	„ 31.1.29 to 11.7.29 ...	25.7.29
*„ Denison ...	Ferris, J. ...	L. W. Cady, A. A. Cooper, E. Beard, J. Rowland-Hill.	„	„ „ „	„ 10.10.28 to 14.3.29 ...	1.4.29
„ Dunedin, M.V.	Farmar, F. ...	H. M. Post, C. A. Hodson, W. Hopkins.	„	„ „ „	„ 26.5.29 to 6.9.29... ..	20.9.29
„ Framantle, M.V.	Gilling, W. ...	„ „ „ „ „ „	No. A.	„ „ „	Form 911 2.7.29 to 21.7.29... ..	16.9.29
„ Gisborne, M.V.	Hayter, S. W. ...	H. Boys-Smith ...	„ A.	„ „ „	„ 25.5.29 to 12.10.29 ...	17.10.29
*† „ Hobart, M. V.	Cottell, S. C. ...	L. Copeland, R. D. Chamberlain, G. J. O. Jinman, W. B. Craig.	M.L.	„ „ „	Met. Log. 24.4.29 to 15.8.29 ...	21.8.29
*† „ Hunter ...	Robinson, C. A. ...	R.B. Stannard, A. McClouan, J. T. Weldin.	„	„ „ „	„ 1.8.28 to 23.12.28 ...	31.12.28
„ Huon ...	Compton, J. E. ...	„ „ „ „ „ „	No. A.	„ „ „	Form 911 9.8.29 to 8.9.29 ...	30.9.29
*† „ Melbourne ...	Kippins, T. ...	W. G. Jones, F. W. Elgar, W. E. Simpson.	M.L.	„ „ „	Met. Log. 23.11.28 to 21.4.29 ...	25.4.29
*† „ Nicholson ...	Jack, J. ...	H. S. Datson, E. E. Roswell, J. H. Sloan, J. A. D. Fisher.	„	„ „ „	„ 28.3.29 to 3.8.29... ..	8.8.29
*† „ Pirie ...	Hudson, J. J. ...	A. T. C. Cooper ...	„	„ „ „	„ 5.5.29 to 1.10.29... ..	17.10.29
*† „ Sydney ...	Higgs, W. G. ...	E. N. Rogerson, F. R. Gorman, A. Brown.	„	„ „ „	„ 8.5.29 to 18.9.29... ..	26.9.29
*† „ Victor ...	Williams, R. ...	H. G. Newbury, R. D. Elson, C. E. Midwinter.	„	„ „ „	„ 5.2.29 to 14.6.29 ...	22.7.29
„ Wellington ...	Jones, C. N. ...	L. J. Skails ...	No. A.	„ „ „	Form 911 5.6.29 to 6.9.29 ...	11.9.29
*† Princess Protea, H.M.S.A.S.	Friend, A. B. ...	„ „ „ „ „ „	M.	Houlder „ „	„ „ „	„
„ „ „	Dalglish, J., Lt-Commr., S.A.N.S.	F. J. Dean ...	M.L.	South African Naval Service.	Met. Log. 3.3.29 to 16.5.29 ...	3.7.29
*† Proteus ...	Quirk, T. W. ...	J. Milhouch, A. E. Martin, E. A. H. Gepp.	„	A. Holt ...	„ 20.11.28 to 24.4.29 ...	14.5.29
„ Pyrrhus ...	Adcock, F. ...	„ „ „ „ „ „	No. A.	„ „ „	Form 911 26.7.29 to 21.8.29 ...	27.9.29
*† Quiloa ...	Cave, S. G. ...	W. Welch ...	„ M.	British India... ..	„ 17.3.29 to 14.4.29 ...	9.7.29
†† Rajputana ...	Cadiz, F. G., D.S.O. ...	R. E. Tucker ...	„ M.	P. & O. ...	„ 18.8.29 to 9.10.29 ...	14.10.29
†† Ranchi ...	Brooks, C., D.S.O., R.D., Commr., R.N.R.	B. P. Skinner ...	„ M.	P. & O. ...	„ 3.5.29 to 22.5.29... ..	28.5.29
†† Ranpura ...	Furlong, G. H. S., R.D., Capt. R.N.R.	C. H. Hand ...	„ M.	P. & O. ...	„ 10.7.29 to 21.8.29 ...	28.8.29
†† Razmak ...	Harrison, R., D.S.O., R.D., Capt. R.N.R.	J. Elliott ...	„ M.	P. & O. ...	„ 24.8.29 to 12.9.29 ...	19.9.29
††60 Regina ...	Davies, E. ...	J. H. Walker, R. Crangle, C. W. R. Campbell.	W.T.	White Star - Dominion	„ 8.9.29 to 27.9.29... ..	30.9.29
*† Remuera ...	McKellar, A. W., R.D., Capt. R.N.R.	E. H. Hopkins, T. S. Marchington, R. C. Aldridge.	M.L.	New Zealand S.S. Co.	W.T. Reg. 8.9.29 to 27.9.29... ..	30.9.29
„ Rhezenor ...	Stout, G. L. ...	W. E. Barrett ...	No. A.	A. Holt... ..	Form 911 18.8.29 to 31.8.29 ...	30.9.29
„ Rhodesta Trans- port.	Bullock, F. W. H. ...	W. J. Griffiths ...	„ A.	Houlder Bros. ...	„ 2.2.29 to 6.6.29 ...	24.6.29
*† Rimutaka ...	Holland, E. A. ...	F. Pretty, F. Cooke, E. Foster	M.L.	New Zealand S.S. Co.	Met. Log. 24.1.29 to 9.6.29... ..	21.6.29
„ Ripley Castle ...	Aylen, C. E. H. ...	A. C. J. Hatt ...	No. A.	Union Castle... ..	Form 911 28.6.29 to 23.9.29 ...	8.10.29
„ Rother ...	Woodhead, T. H. ...	N. Thompson ...	„ A.	Goole Steam Shipping	„ 6.6.29 to 28.7.29... ..	9.8.29
*† Rotoma ...	Hunter, J. L. B. ...	L. Griffiths, H. Cockerrill, E. A. Burton, A. L. Nelson.	M.L.	New Zealand S.S. Co.	Met. Log. 16.3.29 to 4.7.29... ..	11.7.29
„ Royal Transport ...	Bowen, A. C. ...	G. R. Thomas ...	No. A.	Houlder Bros. ...	Form 911 7.2.29 to 12.5.29... ..	17.6.29
*† Ruapehu ...	Hunter, J. L. B., R.D., Capt. R.N.R.	H. N. Lawson, H. D. Horwood, T. S. Farrar.	M.L.	New Zealand S.S. Co.	Met. Log. 4.4.29 to 8.8.29 ...	16.8.29
*„ St. Albans ...	Diamond, S. L. ...	R. L. Harry, J. D. Kavanagh, F. O. Colvin, H. G. Stratford.	„	Eastern and Australian.	„ 29.3.29 to 3.7.29... ..	24.8.29
„ St. Helier ...	Richardson, L. ...	C. Bell ...	C.C.	G.W. Railway ...	Telegraphic Report 15.10.29 ...	15.10.29
„ St. Julien ...	Pitman, R. ...	C. W. Sanderson ...	„	„ „	„ 28.9.29 ...	28.9.29
„ St. Andrew ...	Bearpark, E. W. ...	J. Meade ...	No. A.	Rankin Gilmour ...	Form 911 16.6.29 to 27.8.29 ...	30.8.29
††38 Samaria ...	Malin, R. G., Lieut-Commr., R.N.R.	F. D. Thomas, D. MacMillan, P. G. Britten.	W.T.	Cunard ...	W.T. Reg. 5.9.29 to 21.9.29... ..	24.9.29
„ Sardinian Prince ...	Pearson, F. T. ...	G. A. Davies ...	No. A.	Prince ...	Form 911 29.8.29 to 18.9.29 ...	12.10.29
„ Saxon ...	Stuart, C. E., R.D., Capt. R.N.R.	W. Forsyth ...	„ A.	Union Castle ...	„ 10.8.29 to 29.9.29 ...	12.10.29
*† Scholar ...	Peterkin, A. G. ...	G. Baker ...	„ M.	Harrison ...	„ 18.5.29 to 23.7.29 ...	24.7.29
„ Scotia ...	Prichard, S. D., M.B.E.	W. H. Hughes ...	C.C.	L.M. & S. Railway ...	Telegraphic Report 11.10.29 ...	11.10.29
††33 Scythia ...	Irving, R. B., O.B.E., R.D., Capt. R.N.R.	R. Sell, G. H. Morris, J. G. Bradley.	W.T.	Cunard ...	W.T. Reg. 28.8.29 to 15.9.29 ...	18.9.29
„ „ „	Alexander, R. L., D.S.O., R.D., Capt. R.N.R.	„ „ „ „ „ „	„	„ „	Form 911 24.9.29 to 13.10.29 ...	16.10.29
„ „ „	„ „ „ „ „ „	„ „ „ „ „ „	„	„ „	„ 24.8.29 to 14.10.29 ...	17.10.29
„ Sheaf Mount ...	Groves, C. V. ...	A. Macarthur ...	No. A.	W. A. Souter ...	„ 25.4.29 to 14.5.29 ...	21.5.29
*† Shropshire, M.V.	Adamson, B. W. ...	W. L. Whiteside, R. Allen, A. D. Quayle, W. H. Brittain.	M.L.	Bibby ...	Met. Log. 1.6.29 to 12.8.29... ..	16.8.29
„ Silksworth ...	Blacklock, G. ...	„ „ „ „ „ „	No. A.	R. S. Dalglish ...	„ „ „ „ „ „	„
*„ Sinkiang ...	Stringer, C. B. L. ...	A. G. Parker ...	M.L.	China Navigation Co.	Met. Log. 3.1.29 to 16.4.29 ...	15.6.29
*† Somerset ...	Howell Price, J., D.S.O., D.S.C.	L. Malcouronne, A. Bamforth, C. Latch.	„	Federal... ..	„ 21.4.29 to 27.9.29 ...	2.10.29
†† Southern King ...	Williams, W. ...	J. S. Gardner ...	No. M.	Southern Whaling & Sealing Co.	Form 911 15.8.29 to 25.8.29 ...	19.9.29
*† Spero ...	Montgomery, H. ...	H. W. Vickers, G. B. Bray ...	M.L.	Ellerman Wilson ...	Met. Log. 19.1.29 to 29.6.29 ...	9.7.29
*† Statesman ...	Mowat, J. ...	C. V. Watts ...	No. M.	Harrison ...	Form 911 19.6.29 to 4.9.29 ...	11.9.29
„ Stephen ...	Evans, L. G. ...	F. G. Jones ...	„ A.	Booth ...	„ 12.9.29 to 23.9.29 ...	30.9.29
„ Stockwell ...	Smith, W. ...	F. Moore ...	„ A.	Brocklebank ...	„ 26.10.28 to 25.11.28 ...	28.12.28
*† Surrey ...	Mac Rae, A. B., Commr., R.N.R.	A. V. Pearce ...	M.L.	Federal... ..	„ 1.8.29 to 7.9.29 ...	11.9.29
„ Sutton Hall ...	Walmsley, R. J. ...	G. C. Parry ...	No. A.	Ellerman ...	„ 24.6.29 to 17.7.29 ...	20.7.29
„ Sylvafield, M.V.	King, J. E. ...	A. A. Tully ...	„ A.	Hunting & Son ...	„ 5.7.29 to 3.8.29 ...	18.8.29
*† Tainui ...	Clifton Mogg, W. P., Lieut. Commr., R.N.R.	L. J. Hopkins ...	M.L.	Shaw, Savill & Albion	„ 9.5.29 to 12.6.29... ..	20.6.29
„ Tahiti ...	Aldwell, B. M. ...	F. W. Bates ...	No. A.	Union S.S. Co. of N.Z.	„ 17.4.29 to 16.8.29 ...	12.9.29
*„ Taiping ...	Frame, A. M. ...	W. H. Reeve, A. C. Kennedy, E. S. Birrell.	M.L.	Yuill & Co. ...	Met. Log. 10.1.29 to 24.6.29 ...	11.9.29
*† Takada ...	Lindon, J. ...	„ „ „ „ „ „	No. M.	British India ...	„ „ „ „ „ „	„
*† Talma ...	Hocking, R. W., R.D., Lieut. - Commr., R.N.R.	G. H. Sprigge ...	„ M.	„ „ „	Form 911 8.8.29 to 1.9.29 ...	30.9.29

Name of Vessel.	Captain.	Observing Officers.	Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 18.10.29.	Date Received.
*† <i>Talhybius</i> ...	Wilson, R. J. ...	W. Kerr, W. Alderton, A. K. Sanderson.	M.L.	A. Holt ...	Met. Log. 24.1.29 to 8.4.29	18.6.29
†† <i>Tamaroa</i> ...	Hartman, W. H. ...	A. J. Galvin ...	No. M.	Shaw, Savill & Albion	Form 911 2.83.29 to 10.7.29	15.7.29
** <i>Tanda</i> ...	Pilcher, E. T., Lieut.-Commr., R.N.R.	H. Murday, J. F. Heddle, R. S. Millington.	M.L.	E. & A. S.S. Co.	Met. Log 26.2.29 to 29.5.29	25.6.29
*† <i>Tantalus</i> ...	Dodds, R. ...	F. C. Oppen ...	"	A. Holt ...	"	"
*† <i>Taranaki</i> , M.V. ...	Wood, C., D.S.C.	A. Chrystal, G. Campbell, F. Charnley.	"	Shaw, Savill & Albion	" 21.3.29 to 25.7.29	7.8.29
<i>Tarantia</i> ...	Fraser, A. ...	"	No. A.	Anchor ...	Form 911 11.5.29 to 9.7.29...	30.8.29
<i>Tetresias</i> ...	Wilkinson, W. H. ...	D. Law ...	" A.	A. Holt & Co. ...	" 16.7.29 to 5.9.29...	12.9.29
*† <i>Tekoa</i> ...	McNish, R. ...	T. K. MacDonald ...	" M.	New Zealand S.S. Co.	" 8.9.29 to 25.9.29...	7.10.29
<i>Telamon</i> ...	Willcox, J. H. ...	F. A. Brown ...	" A.	A. Holt ...	" 4.5.29 to 6.6.29 ...	15.6.29
<i>Tetela</i> ...	Brice, E. H. ...	H. Holmes ...	" A.	Elders & Fyffes	" 31.8.29 to 4.10.29	7.10.29
<i>Teucer</i> ...	Beswick, W., D.S.C., Lt.-Commr., R.N.R.	W. F. Cook, H. Rudd ...	" A.	A. Holt ...	" 31.1.29 to 30.3.29	4.4.29
†† <i>Themistocles</i> ...	Young, A. D. ...	S. A. Beith ...	" M.	Aberdeen Commonwealth	" 31.3.29 to 6.8.29...	18.8.29
<i>Theseus</i> ...	Carnon, C. G. ...	H. C. Large ...	" A.	A. Holt ...	" 2.9.29 to 19.9.29...	3.10.29
* <i>Thistleglen</i> ...	Whitfield, G. A., O.B.E.	"	M.L.	Allan Black & Co. ...	"	"
*† <i>Tilava</i> ...	Tallent, J. M. ...	N. Atkinson ...	No. M.	British India...	Form 911 23.6.29 to 12.8.29	16.9.29
*† <i>Tinhow</i> ...	Newton ...	J. S. King...	" M.	A. Weir & Co.	" 21.4.29 to 19.5.29	17.7.29
*† <i>Titan</i> ...	Power, J. J. ...	P. Cross, R. A. Shennan, E. Saville.	M.L.	A. Holt ...	Met. Log. 3.2.29 to 18.6.29...	26.6.29
*† <i>Tongariro</i> ...	Burton Davies, J. ...	E. A. Burton, A. E. Williams, H. Wilkinson, D. Baldwin.	"	New Zealand S.S. Co.	" 12.8.28 to 7.1.29...	18.1.29
<i>Transylvania</i> ...	Smart, R. W. ...	P. Middleton ...	No. A.	Anchor ...	Form 911 31.8.29 to 21.9.29	28.9.29
<i>Trefusis</i> ...	Hunt, D. ...	"	" A.	Hain S.S. Co. ...	" 26.8.29 to 30.8.29	12.10.29
*† <i>Trematon</i> ...	Mill, C. ...	J. Jenkyn, C. M. Quick, R. Stitson.	M.L.	Hain S.S. Co. ...	Met. Log. 1.2.29 to 23.8.29...	20.9.29
*† <i>Trojan Star</i> ...	Griffin, G. A. ...	"	No. M.	Blue Star ...	"	"
*† <i>Turakina</i> ...	Ashworth F. ...	A. M. Dowman...	" M.	New Zealand S.S. Co.	Form 911 20.7.29 to 29.8.29	2.9.29
†† <i>Tuscania</i> ...	Rome, W. R. ...	J. Noble ...	W.F.	Anchor ...	W.T. Reg. 26.8.29 to 14.9.29	18.9.29
					Form 911 23.9.29 to 12.10.29	16.10.29
					Form 911 25.8.29 to 12.10.29	17.10.29
*† <i>Tyndareus</i> ...	Hughes, R. T. ...	J. A. Evans, F. V. Smith, D. S. Bruce.	M.L.	A. Holt ...	Met. Log. 24.4.29 to 16.9.29	3.10.29
<i>Uffington Court</i> ...	Clarke, E. J. ...	"	No.	Halpin & Co. ...	"	"
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