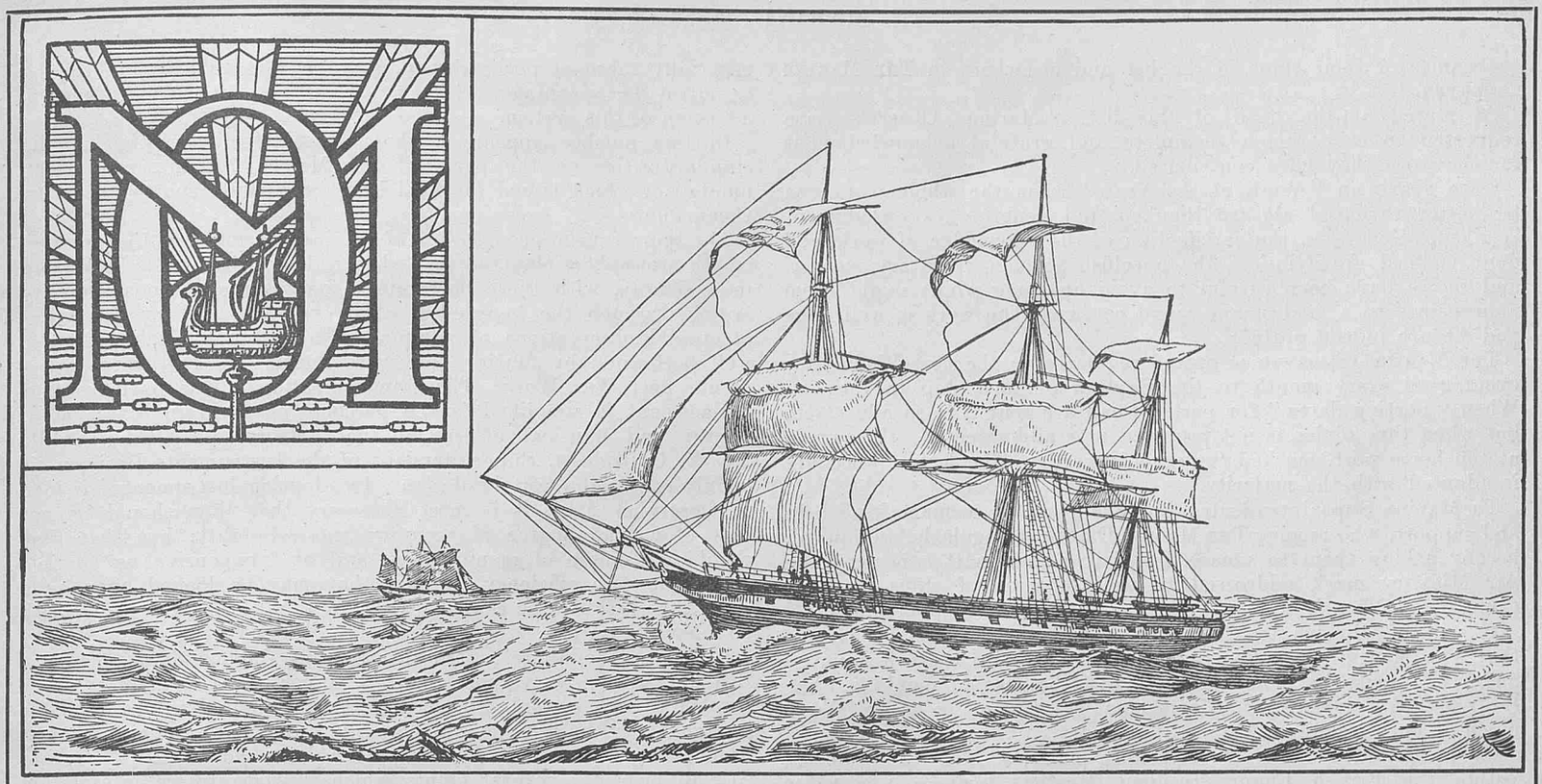

VOL. V. No. 50. THE MARINE OBSERVER. FEBRUARY, 1928.

TABLE OF PRINCIPAL CONTENTS.

THE CONDUCT OF THE WORK.

A FEW days ago among our callers was a young officer who handed me the Meteorological Log of his ship with his Captain's compliments.

Such courtesies are very much appreciated and are becoming quite a custom with many Marine Observers. Knowing as we do from years of sea service how short the time is in the home port for the many inevitable duties, the pull of the home strings with all too short leave in which to see one's people, these visits from Marine Observers give us the greatest encouragement.

I mention this particular call because it will help to illustrate what I said in "Work of the Year" in 1926:—"The regular reader of this journal will keep the most efficient log for he has the advantage of the experience of the whole corps." This is most important for the efficient conduct of the Work.

Having exchanged greetings and he having given me the pleasure—like a breath of good "salt air"—of a yarn with a sailorman returned from a voyage, our young friend, who is typical of the smart young modern officers who are putting new life into Marine Meteorology, drew my attention to certain suggestions which he had made in writing, with the approval of his Captain.

These same proposals had already been made by a large number of Commanders—proof of their soundness—and had been adopted and promulgated in this journal for the information and guidance of Marine Observers generally before his ship had last sailed from England. They had not seen these numbers of THE MARINE OBSERVER.

The log has since been subject to careful examination and its classification has been notified as "excellent." It is excellent in every respect except one and in just this one thing falls short, simply because the observing officers had not the information which would have enabled them to apply their work to the very best advantage and to show that they had done so by record in the log. Of course, this log is not penalized and this ship's name, with that of her Commander and principal observing officer, which has previously appeared in the Meteorological Committee s List of "excellent" awards will do so again at the end of the year.

Since 1st April, 1926, the classification of logs has been determined upon a competitive basis, about the best 40 in every 100 Meteorological Logs being selected, taking into consideration evidence of the practical application of meteorology to navigation, as well as observation, value of the information given, method and neatness.

Not only is it desirable that Commanders and their observing officers should see THE MARINE OBSERVER regularly each month as soon as it can be delivered on board, so that they may have the latest information for the efficient conduct of the work, but it is most desirable that they should have the acknowledgment and thanks for their work which is published month by month abreast

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the names of their ships in the list and elsewhere in THE MARINE OBSERVER.

As stated at the head of this list, "Marine Observers are requested to take this as complete and grateful acknowledgment for the work they have contributed."

Once yearly in "Work of the Year" when the whole work can be better reviewed all are thanked and general acknowledgment is given. Generally, the satisfaction of the knowledge of work well done is most gratifying to the unselfish seaman voluntary worker, and so we have been careful to avoid anything which might seem unnecessary to a modest and silent service. The work is well done and we are indeed grateful.

THE MARINE OBSERVER is posted regularly on the first Wednesday evening of every month to the Captain of each ship in the list. When "posting dates" for ports of call are sent it is so addressed, but when this advice is not provided it is addressed c/o the owners at the home port, marked "please forward.' The latter procedure is adopted with the majority.

To Marine Superintendents who have given us so much kind help and support, who receive THE MARINE OBSERVER regularly, we appeal, hereby asking them to please see that postal matter bearing the Air Ministry mark addressed to the Captains of ships at their Company's Office is always forwarded at the first opportunity.

It will be obvious to Commanders and their observing officers that THE MARINE OBSERVER can be most useful to them if received and read month by month instead of in batches of numbers when the seasonal value of the information is lost, and to assimilate so much at once is tedious.

At a limited number of important ports at home and abroad within the British Empire resident Master Mariners who show special interest in marine meteorology are appointed as Agents and these gentlemen assist us very greatly in the conduct of the work. Recently steps have been taken to make the Agencies better known and to give better support and information to the Agents. Marine Observers in observing ships which do not use the ports of London and Liverpool are thus kept in touch with, through the personal medium of experienced officers who thoroughly understand them and who are only too willing to give them the same advice and encouragement as is given direct from the Marine Division in the Port of London by the Visiting Officer and at Liverpool by the Port Meteorological Officer. There appears to have been some idea that it was not the concern of the Agents to attend to the needs of ships other than those specially equipped for keeping the Meteorological Log; that is not so. The Agents are only too willing to attend to the needs of the Commanders and officers of every ship whose name appears in our list, and they are advised as to the number of ships based on their ports which may be recruited. Indeed, they do much to make the work of the whole observing fleet, "Wireless and Weather selected ships" in particular, of service to shipping and seamen in general and they will in the future be able to help us make the work of assistance to aircraft and airmen.

In the last number of this journal we published an article entitled "The Extraction and Compilation of Marine Meteorological Data by Mechanical Methods." Space in my note in that number did not permit remarks upon this; these can be more appropriately made here. This system of extraction and compilation is the outcome of applying modern mechanical methods to old sea practice, based upon the International arrangements which were the outcome of the work of the meeting at Brussels brought about by MAURY. It gives a new opportunity for the assembling of prepared data in Marine Divisions, and for exchange, so that great volumes of observations may be made available for research and publication. The Agents, especially those at ports abroad, may be able to help in bringing to notice the advantages which may be gained by the more general adoption of this system.

In this number appears a short illustrated description of the standardization of the parts of the Marine Barometer, a small number of which issued for trial have been well reported upon by Commanders.

The improvement in accuracy of the measurement of the pressure of the atmosphere observed in a ship rolling, pitching or labouring in a seaway, with these barometers has been made possible very largely through the knowledge which was provided by the series of special observations of pumping so readily undertaken and so well performed by Marine Observers during the first three years of our post War Work. The standardization of the parts so that replacement is simplified is the outcome of the representation of Agents and nautical officers of the Meteorological Office, while Mr. E. G. BILHAM, Superintendent of the Instruments Division, is mainly responsible for the design. In adopting instruments for loan to Observing Ships it is most necessary that they should be not only of a high degree of accuracy and reliability, but that they should be simple of manipulation and as inexpensive as possible consistent with efficiency, so that they may be looked upon as a standard which can be copied with advantage throughout the British Merchant Service.

In this number there is also an article by Commander H. STRONG, R.N.R., written in response to my appeal in the January, 1927 number of this journal, when attention was invited to the need for interchange of information concerning the use of new instruments. In his article "Wireless Telegraphic Aids to Navigation" Captain STRONG mentions several points which indicate where information may be useful, and in due course endeavour will be made to supply it in this journal. His article is very timely and appropriate. It gives us his views formed on the great experience of a life's work at sea and just as he retires after obtaining the coveted position of Commodore of the UNION CASTLE LINE.

So that observation and the application of Marine Meteorology may yield the greatest possible advantages it is necessary that the voluntary work of the Corps of Marine Observers should follow lines which may be used throughout the sea services.

The question of Sea Training engages such general interest that we have to consider the bearing of our work upon the future training of officers.

The success of the Merchant Service in peace and war has been due to the resource and character of its officers and men, and its glorious achievements in the Great War were due to its training. That training was the natural training of the sailing ship, which developed character, resource, observation and judgment. Of late years strides have been made in education by the Technical Colleges and Training Establishments. Time can alone prove if under the conditions of commerce those characteristics which, with good education, are essential qualities in a sea officer, can be developed as well in mechanically propelled ships as under the natural compelling influence of life under square sail.

It is certain that in developing voluntary Marine Meteorological work we must use every endeavour to assist in maintaining this character. By developing Marine Meteorology as a branch of seamanship, not only will shipping and seamen be served, but by the increased interest and pride of our corps all who require Meteorological observations made at sea will gain by the quality of those observations, and all interests will be the better served.

MARINE SUPERINTENDENT.

London.
November 1st, 1927.

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.

CURRENTS IN GULF OF GUINEA.

THE following is an extract from the Meteorological Log of S.S. *Clan Macwhirter*, Captain J. WATERHOUSE, Cardiff to Lobito Bay. Observer, Mr. W. A. ROBBIE, 2nd Officer:—

"Attention is called to the currents experienced between 22nd February, 1927, and 2nd March, 1927, on the voyage from Cardiff to Lobito Bay. Very little Counter-Equatorial Current was experienced, and when the vessel passed Cape Palmas where this current is usually strong we only experienced a set of N. 45° E., 7 miles for

the 24 hours, recording a current of N. 85° E., 18 miles the next day however. Crossing from the Guinea to the Equatorial Current the vessel experienced N. 15° E., 8 miles, and from then until she arrived at Lobito Bay she was set to the north and east instead of to the W.N.W. as expected, experiencing as much as N. 63° E., 22 miles between noon 27th February, 1927, and noon 28th February, 1927. The currents experienced are not in accordance with those shown on the current charts and sailing directions."

DISCOLOURED WATER.

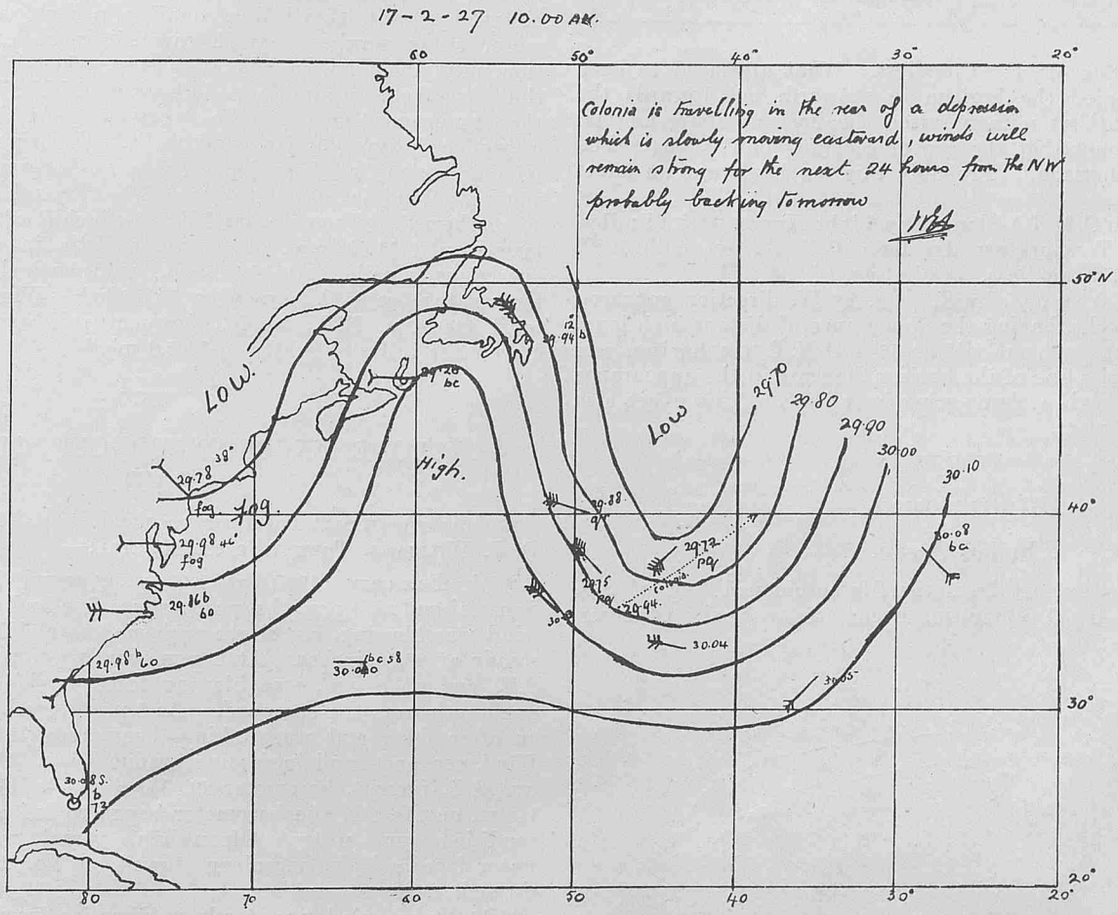
South Pacific.

THE following is an extract from the Meteorological Log of S.S. *Rotorua*, Captain J. L. B. HUNTER, Pitcairn Island to Balboa. Observer, Mr. E. H. LAWRENCE, 2nd Officer:—

"February 16th, 1927, 1840 G.M.T., 2.45 p.m. A.T.S., in Latitude 4° 35′ N. Longitude 81° 10′ W. Passed through area of discoloured water, about ¼ mile in breadth, and extending in an east and west direction. Discolouring took the form of streaks about 12 feet wide, and extending as far as could be observed, and having no apparent radiant point. Colour was a deep crimson. Numerous tide rips from various directions."

WEATHER CHART MADE AT SEA.

Weather Chart (one of a series) made on board C.S. *Colonia*, Commander G. F. CARLTON, O.B.E., R.N.R., from Colon to London, by Lieutenant W. E. ALLEN, R.N.R., 2nd Officer.



According to *Colonia's* Meteorological Log the wind remained from N.W. and N.W. by W. a moderate gale to strong breeze throughout the 17th February and until Noon on the 18th February.

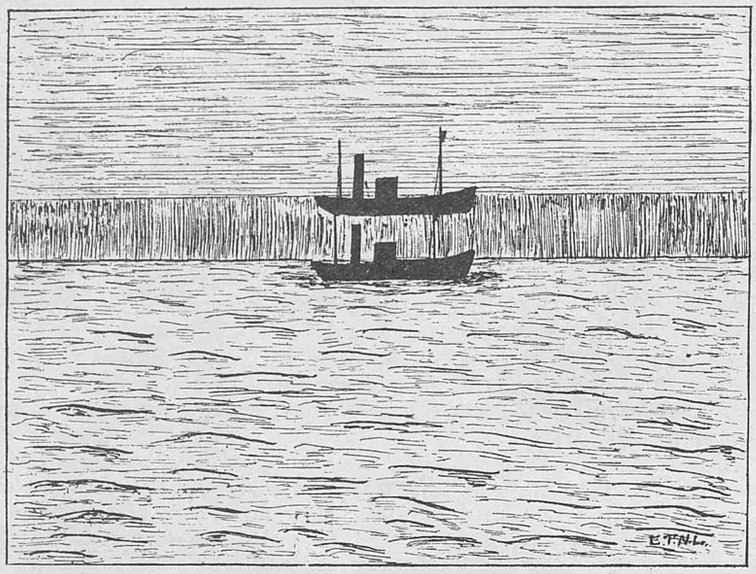
MIRAGE.

Off Cape of Good Hope.

THE following is an extract from the Meteorological Log of S.S. *Port Darwin*, Captain I. R. SAWBRIDGE, London to Melbourne, via Cape of Good Hope. Observers, Mr. E. T. N. LAWREY, 2nd Officer, and Mr. S. HEARN, 3rd Officer:—

"February 21st, 1927. Noon position, Latitude 33° 27′ S. Longitude 17° 28′ E. Wind S.S.W. force 1-2. Barometer 1008.6 mb. Temperature, dry bulb 63.0° F., wet bulb 61.8° F. Sea 66.5° F., cloudless.

"At 0.10 p.m. A.T.S. (11.13 G.M.T.) sighted Table Mountain bearing 122°, 57 miles. What appeared to be a fog bank extended around the horizon and Table Mountain was visible above this. At 3.45 p.m. A.T.S. (1446 G.M.T.), when 20 miles west of Table Bay a whaler bore N.E., distant about 3 miles. This whaler appeared as two vessels one on top of the other, as depicted in the accompanying sketch. The image of the whaler was quite distinct generally, but became distorted at times. Ascending to the upper bridge (7 feet higher) only the whaler itself was visible. Descending immediately I saw both whaler and image again, 4.0 p.m. A.T.S., position by land fix, Latitude 33° 57′ S. Longitude 18° 02′ E. Wind S.S.W. force 1. Barometer 1006.7 mb. Temperature dry bulb 64.9°F.,



wet bulb 61.5° F. Sea 61° F. Cloudless. What appeared to be a fog bank still occupied the horizon to seaward, but towards the land it was obvious that mirage raised the horizon above normal about the same amount that the top of the 'fog bank' was raised above the seaward horizon. Probably this fog bank was an effect of mirage.

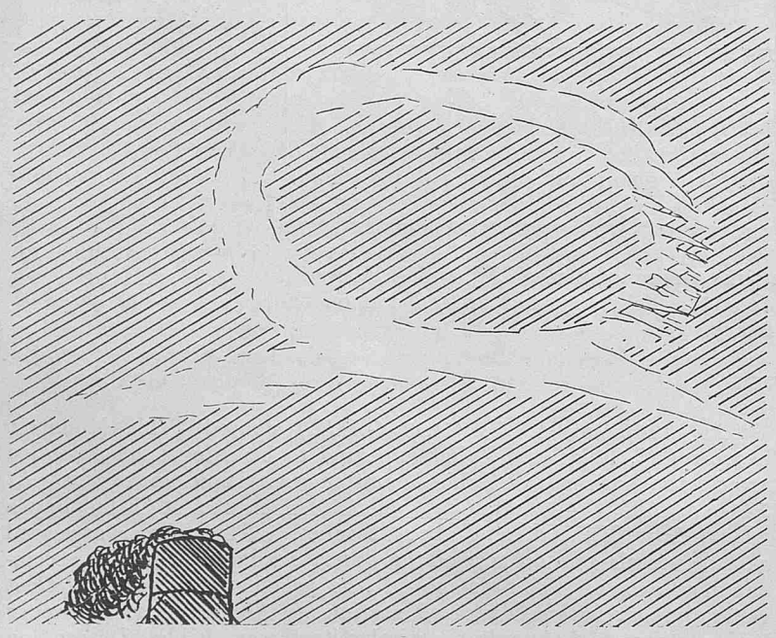
"1740 A.T.S. (1640 G.M.T.) Slang Kop Light House, 060°, 6¼ miles. Barometer 1006.2. Temperature dry bulb 63.7° F., wet bulb 61.2°. Wind S.S.E. force 1. Cloudless. Calm sea.

"The sea horizon from a S. by E. to S. by W. direction appeared raised in two hummocks, having the appearance of distant high land, which gradually flattened out till at 1645 G.M.T. the horizon was normal. Just below the line of the horizon the sea had the appearance of being viewed through a shimmering heat haze. This effect also disappeared shortly after."

CIRRUS RING.

Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Peshawur*, Captain H. G. WILDING, Fremantle to Suez. Observer, MR. J. K. CRONE:—



"12th February, 1927, 8.15 p.m. Position, Latitude 0° 21′ N, Longitude 67° 13′ E. Wind west, force 2. Barometer 1012 mb., steady. Bright moon. Observed a curious ring of Cirrus cloud moving up from south-east. The remainder of the sky was crossed by a few lines of Cirrus in a W.N.W.-E.S.E. direction. As the ring approached the zenith, it became larger and less distinct, finally merging into lines of Cirrus."

SQUALLS.

South Pacific.

THE following is an extract from the Meteorological Log of S.S. *Rotorua*, Captain J. L. B. HUNTER, Pitcairn Island to Balboa. Observer, Mr. R. G. REES, 3rd Officer:—

"February 7th, 1927, 8.00 p.m. A.T.S. (G.M.T. February 8th, 4.20 a.m.) in Latitude 22° 12′ S., Longitude 122° 10′ W., steering 66°, 14 knots. Wind N.W. by W., force 6, and freshening. Barometer was 1004.7 mb. and rising slowly. Temperature 79° F. Clouds, Alto-Stratus, thin, and Cumulo-Nimbus and heavy Nimbus, amount 8/9. Vivid sheet lightning to eastward and working round to south. At 9.00 p.m. wind slowly veered to N.W. and heavy Cumulo-Nimbus banked up to eastward. Thin Stratus overhead. At 9.30 p.m. observed a well-defined line squall approaching from west. Barometer rising slowly. Squall travelled in an east-north-east direction until about half a mile from ship, when it stopped, remaining thus for about five minutes following a N.N.W.-S.S.E. direction, then commenced to recede to westward. At 10.00 p.m. there was a sudden heavy shift to wind to N.N.E. bringing heavy Cumulo-Nimbus which had been banking up to eastward and violent rain squalls. Wind increased to force 8, and vivid lightning continued to southward. Temperature fell 2° with shift of wind. The squalls lasted until 11.00 p.m. decreasing a little in intensity with each successive squall. At 12.00 a.m. wind backed to N. by W. and temperature rose 1°, barometer 1005.8 mb. Wind backed gradually until 4.00 a.m. N.W. by N., frequent rain squalls and lightning. Barometer falling slightly to 1005.2 mb."

CYCLONE EXPERIENCED OFF QUEENSLAND COAST.

THE following report has been received from S.S. *Melusia*, Captain D. J. WILLIAMS, Townsville to Samarai:—

"7th February, 1927, at 1.00 p.m. vessel left Townsville for Samarai and at 4 p.m. the weather was fine and clear, a light E.S.E. wind was blowing, sea slight with moderate E'ly swell. Barometer steady at 29.55 inches. At 6 p.m. wind began to freshen from the S.E. and at 8 p.m. was blowing force 4 with increasing sea and swell both from the eastward. At 8 p.m. vessel began to ship water on after deck and was taking heavy sprays on board forward. Wind, sea and swell increasing gradually and at midnight the wind was S.E. force 5, barometer 29.53 inches, sky heavily clouded. At 1 a.m. on the 8th, the barometer began to fall steadily and weather conditions got worse. Meanwhile, vessel was shipping heavy water fore and aft, aeroplane stowed on No. 2 hatch broke adrift through stress of weather.

"At 4 a.m. wind was steady in direction from S.E. force 6, barometer 29.43 inches, sky overcast with frequent rain squalls. High sea and swell causing vessel to labour and roll heavily and at 5.55 a.m. cattle fittings on deck broke adrift. Vessel was hove to at 6.00 a.m., vessel rolling and labouring heavily under stress of weather. Similar weather conditions continued up to noon of the 8th, and during the forenoon seven mules were washed overboard and drowned. At 4 p.m. the barometer was 29.35 inches, wind S.E. force 6, sky heavily clouded with frequent heavy rain squalls, vessel hove to heading east and wind increased in strength to force 9 at midnight, when the barometer was 29.31 inches, vessel still labouring and rolling heavily and shipping heavy water fore and aft. Squalls became more frequent with very heavy rain.

"At 4 a.m. on the 9th wind was still S.E. force 10. Barometer had fallen to 29.20 inches, seventeen mules had been drowned during the night, and deck cargo had been washed adrift. Vessel rolling and straining heavily and shipping heavy water fore and aft.

"At 8 a.m. wind backed to east force 10, weather conditions continuing as before. At noon the ship's position was Latitude

17° 20′ S., Longitude 148° 15′ E., Wind E.N.E. force 10, barometer rising gradually, squalls becoming less frequent and weather showing signs of abating.

"Weather continuing to improve up till midnight when barometer was 29.45 in., wind E.N.E. force 9. After midnight, gradual and steady improvement and at 5-28 a.m. of the 10th vessel was able to proceed at full speed and continue on voyage."

CYCLONE EXPERIENCED IN THE NORTH PACIFIC.

THE following is an extract from a report received from S.S. *Scalaria*, Captain J. H. G. GRANT, San Francisco to Yokohama:—

"During the afternoon of Sunday, 6th February, 1927, tufted Cirrus clouds were observed lying north and south, the tufted ends south. Early on Monday morning a high W.N.W. swell developed; flashes of lightning to the S. and S.W. occasionally showed. During the afternoon the barometer fell, with the wind S. force 5, the latter veering by midnight to S.W. force 4. The wireless operator reports that the electric storm was developing throughout the day. The day finished with heavy rain squalls accompanied by intense lightning, the latter almost continuous from 11 p.m. to Midnight. (G.M.T., 8th, 10-11). These conditions eased considerably on Tuesday morning after about 1-0 a.m. (G.M.T., Noon), although the barometer continued to fall until 4-0 a.m. (G.M.T., 1500), when it read 29.63 in., the wind then being S.S.W. force 4-5. From then the barometer rose until noon (G.M.T., 2300), when it showed 29.80 in., whilst the wind veered through west force 6 to N.W. force 4. The very heavy N.W. swell continued. About 6-0 p.m. (G.M.T., 0500, 9th) the wind backed to S.W., and by 8-0 p.m. (G.M.T., 0705) was S.S.W. force 4. Another fall in the barometer took place, the reading being 29.59 in. Wind S.S.W. force 5 at midnight (1109 G.M.T.).

"During Wednesday a tremendous sea was running all day, and though mainly clear, occasional heavy rain squalls were met with. At 3-25 a.m. (G.M.T. 1434, 9th) the vessel's engine speed was reduced.

	A.T.S.	*G.M.T.*	*Wind. Direction.*	*Force.*	*Barometer corrected.*
February 9th	2–00	1306 9th	S.W.	6	29·47
	3–00	1406	W.S.W.	8	29·46
	4–00	1506	West	9	29·50
	8–00	1911	,,	8	29·64
	9–00	2011	W.N.W.	7	29·66
	Noon	2312	N.W.	5	29·72
	16–00	0314 10th	W.N.W.	3	29·70
	18–00	0514 wind shifted to	S.W.	4	29·70
	20–00	0715	,,	4	29·63
	22–00	0915	S.S.W.	5	29·58
	23–00	1015	S.W.	6	29·57
	Midn't.	1115	W.S.W.	4	29·55
February 10th	2–00	1318	West	5–6	29·53
	4–00	1519	,,	6	29–52
	8–00	1920	,,	7	29·60
	10–00	2122	W.N.W.	8	29·69
	Noon	2322	,,	7	29·69

"During the evening the wind dropped to force 4 after becoming squally, and conditions began to improve slightly. The tremendous sea, however, continued and the vessel proceeded with engines eased throughout the night. The ship was steered west (True) throughout and the noon positions were:—6th February, Latitude 28° 32′ N., Longitude 154° 00′ W.; 7th, Latitude 28° 32′ N., Longitude 158° 25′ W.; 8th, Latitude 28° 37′ N., Longitude 161° 54′ W.; 9th, Latitude 28° 29′ N., Longitude 164° 36′ W.; 10th, Latitude 28° 31′ N., Longitude 167° 09′ W.; 11th, Latitude 28° 32′ N., Longitude 169° 20′ W.

"A slight idea of the weather conditions may be gathered from the following extract from the Official Log:—

'6-23 p.m., 10th Feb., 1927, Lat. 28° 31′ N., Long. 167° 43′ W. Vessel eased down heading fierce N. Westerly gale. Tremendous sea running. Shipped a huge sea which swept all the after end of the vessel, striking just abaft the mainmast, flooding after deck, forcing up and displacing entire after section of fore and aft bridge, splintering planking at after end. Two handrail stanchions snapped, also two at fore end of bridge broken by strain on wire man rope. All brackets and pipes attached to bridge damaged, and both galley ports stove in. Seas running at the time were heaviest ever experienced by anyone on board.'"

WATERSPOUT.

South Pacific.

THE following is an extract from the Meteorological Log of S.S. *Port Melbourne*, Captain F. J. KEARNEY, Wellington, N.Z. to Balboa. Observer Mr. E. M. FENTON:—

"On February 1st, 1927, at 0249 G.M.T. in Latitude 26° 07′ S., Longitude 122° 33′ W., a waterspout was observed to the west distant 5½ miles approximately. When it was first seen it was connected to a large, heavy Cu-Nb cloud and was fully developed. Three minutes later contact was broken at about one quarter of the way up from the sea surface, just above the top of the spray and the spout seemed to disappear into the cloud. There were numerous passing squalls and the wind was unsteady. Later the wind freshened and heavy rain fell. Wind, E.N.E. Temperature, dry 77° wet 73°. Clouds, Cu/Cu-Nb, amount 3, weather b.p."

GENERAL NOTES ON WEATHER ON THE NATAL AND PONDOLAND COAST.

Based on the experience of four surveying seasons in H.M.S.A.S. Protea.

BY LIEUTENANT-COMMANDER A. F. B. WOODHOUSE, R.N.

General.—It can be stated generally that the wind follows the trend of the coast, blowing from a north-easterly or south-westerly direction alternatively. The north-easterly blows with a falling barometer, generally easing or dying away altogether as the barometer steadies. At the first sign of a rise the south-westerly wind comes away often with considerable force. The terms north-easterly and south-westerly are used here and elsewhere in a very general sense, the wind, as before stated, following the trend of the coast.

Land and Sea Breezes.—During fine weather land and sea breezes can be expected, the former from east to north-east, and the latter from north-west. The sea breeze begins at about 1000, lasting till after sunset, when it dies gradually away. The land breeze may not commence till 0300 in the morning, though more often it starts soon after the sea breeze has died away.

North-East Gales.—The diurnal range of the barometer is often very pronounced, and therefore other signs than a falling barometer are required to determine whether a north-easter can be expected, or whether an ordinary sea breeze is blowing. This is especially desirable, as a north-east gale rarely comes away quickly, but from a gentle breeze gradually increases in strength. A grey-white haze, looking like a distant fog bank, to the north-eastward, which increases until the visibility along the coast in that direction becomes very moderate, is a sure sign of a "north-easter," although the probable strength can only be judged by a careful watch on the barometer. As a general rule, the sky will be clear or clear quickly when a north-easter is due, though detached Cumulus are still about. This rule is not invariable. (*See* remarks on rain.) A heavy easterly or south-easterly swell with calm, fine weather, accompanied by the haze mentioned above, is almost a sure sign of north-east weather.

South-Westerly Gales.—These winds are the dangerous winds for this part of the coast. They come away at the first sign of a rise in the barometer, and increase rapidly to gale force.

A low barometer is a certain sign that sooner or later a strong "south-wester" can be expected; a low bank of Stratus cloud will form on the horizon between south and west, and often a few small patches of Cirrus will form overhead. The cloudbank rises slowly and becomes denser, with fine streamers projecting from its upper edge towards the east. The barometer will cease to fall, and the north-east wind (which is generally blowing) will gradually die away. Within a few minutes of the wind dying altogether the "south-wester" will come away with considerable force and increase

rapidly, and the cloudbank, which has risen to about 45-60 degrees above the horizon, will completely cover the sky. This may be accompanied by considerable haze over the land to the southward.

Later the sky may clear, but many times rain will follow when the wind eases. (*See* **rain.**)

South-westerly gales do not as a rule last for more than 36 hours to three days, but if the barometer is very low the south-west wind may continue for a week or more with varying force, giving the sea no opportunity to do down.

Sea.—With a north-east wind even of considerable force a dangerous sea is seldom met, and the sea will get up gradually. With a wind of gale force a bad sea can be experienced, which necessitates smaller vessels easing down to slow speed or possibly turning to run, but plenty of warning is given.

Owing to the Agulhas current a south-westerly gale may raise a very dangerous sea even for large ships. Within a few hours of the wind reaching gale force, the waves working against the current get heaped up to a steep breaking sea, in which small ships can only lie to, unless they have decided to turn at once. Large ships, unless they reduce speed considerably, may be seriously damaged.

The highest and most dangerous sea appears to be in the vicinity of the 100 fathom line. This may be due to the current striking the bank, which is very steep, and being slightly deflected thus causes the sea to break more heavily—or may be due to other unknown causes. A high and possibly dangerous sea will be met outside the 100 fathom line, but it appeared to me that in the vicinity of this contour the sea was most dangerous.

Considerably less sea is met if a ship can keep near the shore. A very marked reduction has been noted on many occasions, as a ship runs from the 100 fathom line towards the shore. Keeping about three miles, or less if possible, from the shore will more than compensate in reduced sea for the loss of favourable current.

Rain.—As a rule rain accompanies and follows a south-west wind when the barometer has risen considerably. A north-east wind following rain will clear the sky rapidly.

Rain is experienced at times with a north-east wind: in this case several days of wet weather can be expected. With south-west wind rain, as a rule, does not last for more than 24 hours, but if the barometer rises much above normal, several days of drizzle and intermittent rain may occur.

Should a south-westerly wind accompanied by rain shift to the south-eastward, very heavy and continuous rain can be expected.

Fine and Bad Weather Periods.—The finest and calmest period of the year is from about the middle of April to the middle of July. During this period land and sea breezes predominate, but strong gales from north-east or south-west may occur lasting for several days. The most changeable weather can be looked for in March and in August and September, when many days' unsettled weather may follow one another.

The rainy season can be said to extend from October to March, inclusive, but rain may fall during the Autumn and Winter. Floods occurred in March, 1925, when considerable damage was done and several bridges carried away, while again the worst floods known for years occurred in the latter part of May, 1905, when very great damage was done throughout Natal.

WIRELESS TELEGRAPHIC AIDS TO NAVIGATION.

By Commander H. Strong, R.N.R.

In pre-War days, when Wireless Telegraphy was in its infancy, a very able Pilot told the Master of the ship that he did not believe in the "new-fangled gadget," and produced many, to him, satisfactory reasons for his opinion. There was some foundation for only one of his reasons, which were mostly the ignorant doubtings of a curious mind, that condemned the use of binoculars as aids to "look-out" because "operas," as he called them, were bad for the eyes, but he was glad enough to avail himself of the keen look-out kept by the ship's officers with their binoculars when he was getting anxious about a Channel mark. He had never possessed a pair of binoculars, nor had he ever had the opportunity of applying Wireless Telegraphy, so as to appreciate its advantages at their full value.

So it is with some of us to-day, we were "Doubting Thomases," but we are all more familiar with Wireless Telegraphy, which has made such great strides since the War, and enters so constantly into our daily lives at sea, whatever the class of ship we are serving in, so there must be very few doubters among us now that we have been able to thoroughly test and know the great value in every way of Wireless Telegraphy, which enables us to communicate at distances undreamed of not so many years ago, to receive news of world happenings, the coming and passing of atmospheric depressions, dangers to navigation such as ice, derelicts or floating mines, of those in peril on the sea and where to find them, and so on through an almost endless category.

We have also come to very thoroughly appreciate the great value of such an application of Wireless Telegraphy as we now possess in Direction Finding. Very many of us have proved to the hilt the inestimable boon it is to the Navigator to be able to fix his position when fog blots out everything he wants to see for that purpose, especially in high-powered vessels bound up Channel under such conditions, with a spring flood tide adding, say, 3 to 4 knots to the speed over the ground, and the knowledge that the objective lies ahead, at a rapidly decreasing distance. The only other help in such trouble is the Lead, which, like the poor, we have, and always have had, with us. Far be it from me to detract in the slightest degree from its value. The Lead is an absolutely indispensable aid to safe navigation, and woe betide the navigator who neglects, either wholly or even partially, to make the most frequent use of such a very present help in trouble.

There surely cannot be to-day any navigator so smugly reliant on his ability to work up a dead reckoning, aided by the patent log and Smith's Engine Mileage Recorder, Lord Kelvin's Compass and Sounding Machine, &c., as to consider other aids extraneous. If such there be, let us point him to the W/T direction-finding apparatus. There are several well-tried shore W/T.D.F. stations round our own and the French coasts, which give splendid results by cross-bearings, by whose means many a ship has been kept in safety while under way or coming to anchor.

Here we may refer to that Pilot's one good reason. Land is not a complete obstacle to wireless waves, but reliable bearings can only be obtained when the two stations are entirely clear of land, because it deviates those ætheric waves, it may be ever so little, but enough to make all the difference to the accuracy of the resulting line or fix. Fortunately for the modern navigator, the good arcs for bearings of all W/T stations are set forth in Admiralty and Board of Trade publications, and it has been found that operators in W/T.D.F. Shore Stations often disregard requests for bearings if they cannot be taken and given clear of land.

There are also periods of daylight during which W/T bearings are unreliable, and must therefore be studiously avoided, i.e. an hour before and after sunrise and sunset, but between those times the bearings are reliable, if there is no land to refract them. Personal equation must to some extent enter into the question of the reliability of W/T bearings, as that depends on the individual taking the bearings of the ship's signals. Even under the most advantageous conditions, W/T.D.F. should be regarded only as a most useful and practical aid to safe navigation, to be checked as much as possible by the older methods, as well as being used to check them, rather than to be relied upon as in itself a means to the exact determination of a ship's position, even after the most precise corrections for convergency have been made. At night time wireless bearings are very unreliable, owing to what is technically known as "night effect," so the navigator must be specially on his guard at night, and cautiously treat all but close-up bearings by W/T given to him then from a station which is further away than, say, 20 miles.

Another development of Wireless Telegraphy is the W/T Beacon, the number of which on British coasts is small at the present time, but their number is being increased all to the great advantage and benefit of the navigators, as their existence will eliminate the jamming of the Shore W/T. D.F. Stations, which now so frequently takes place in fog, and often makes it impossible for all the ships

to obtain the bearings they all most urgently need, or at least causing irritating delays in getting them. Each Wireless Light-house or Beacon will have distinctive signals of its own, worked automatically, and easily to be distinguished by the deck officer, who with his untrained ears would have difficulty in picking out the signals of any particular shore W/T Station, near which the Direction-Finding apparatus is necessarily situated. All seamen will devoutly hope that W/T beacons round our coasts will soon be as comparatively numerous as light-houses and light-ships are to-day.

Yet another step in advance has been made in the march of science, and another benefit conferred on navigators, by the introduction of Ship W/T. Direction-Finding Sets, in which improvements are being constantly made. Placed in the chart room or within easy reach of the officer of the watch, or the deck officers in general, who will thus be enabled to train themselves in taking aural bearings of the W/T Beacons with as much ease and accuracy as they now take visual bearings of objects, a new era in fog navigation is opening up, when the anxious puzzle of a ship's exact position in the vicinity of land, with two W/T beacons available, will be readily and accurately solved; always having due regard to the old familiar friends Lead, Log and Look-out being made as much use of as of yore.

Another important use to be made of the Ship's W/T D.F. Set is in fog, by its means, the bearing of a neighbouring ship can be obtained from time to time. It is true that these ship D.F. sets are at present to some extent subordinate to the ship's main set, in that before the D.F. aerial can be brought into practical and reliable use, the main aerial must be disconnected, otherwise it will cause refraction in the bearings received by the smaller aerial, as well as dulling their reception. As it is obviously desirable to have the D.F. set available without delay, it is to be hoped that this may presently be made possible, and so enable those on the ship's bridge to have free and independent use of the ship's W/T D.F. set.

We have so far dealt with matters of fact, and now in conclusion reference may be made to another projected apparatus, of which however nothing more has been heard by the writer, since the mention of it by the inventor, some three years ago. The idea was to develop a small telephone set, with a range of about 50 miles, to be fitted on ships' bridges, to enable those in charge to talk to each other in fog, and so avoid misunderstandings, which might and probably often do result in collisions. An instrument of doubtful utility, perhaps the language question might defeat its object.

As this article is expected to appear in THE MARINE OBSERVER, the organ by means of which the Marine Division of the Meteorological Office of the Air Ministry addresses its many voluntary observers in the British Mercantile Marine, to whom Wireless Telegraphy, its uses and advantages to themselves, as well to aviators and humanity generally, is so well known, as to make it unnecessary in it to do more than to recognise the great boon and blessing it is to all of us, if it be properly used. Like all other good things it must not be abused. By its means many a good ship was saved during the War, and in Peace, who can question its commercial and numerous other advantages? To mention the most recent, though admittedly it does not come into the seafarer's life at sea, though with landsmen he may use it ashore, the Beam Wave, which has enabled cheap messages to pass over distances of 6,000 miles, and perhaps even further, which last year could only have been sent by cable at greater cost.

Without Wireless Telegraphy, data necessary to enable the Meteorological Office to issue to mariners twice daily, those eagerly looked for weather bulletins would be impossible, as it is, supplementary to the land organisation of the Meteorological Office, 28 Western Ocean Liners transmit to that Office by W/T, data of the greatest value for the purpose of forecasting weather probabilities, and perhaps one of the most sought for items in the newspapers, is the day's weather forecast, which all can understand, and perhaps but very few of the millions who read it, have any idea as how that paragraph is compiled, or of the organisation that makes it possible.

So let mankind bless HERTZ and MARCONI, and the many men who have applied and are still perfecting the application, of this great discovery of one of Nature's long and carefully guarded secrets, in such an universally beneficial way.

And let us seamen in particular, determine that we must now do our utmost to assist in this great work, of benefitting our fellow creatures and ourselves, by sending meticulously accurate data in our Meteorological Log Books or Sheets, to the great Office which digests all that is sent to it with such perfection, and still like OLIVER TWIST asks for more.

THE TRADE WINDS.

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

I. Historical and General.

THE object of this series of articles on the Trade Winds is to present the available knowledge on the subject, much of which exists in scattered form. In the subsequent articles the characteristics of the Trade Winds of the Atlantic, South Indian and Pacific Oceans will be considered in detail, followed by a short account of the general circulation of the air in Trade Wind regions. The Trade Winds is the name given to the winds which blow from the tropical high-pressure belts towards the equatorial region of low-pressure, from the north-east in the northern hemisphere and from the south-east in the southern hemisphere. They are, speaking generally, very regular, particularly over the open ocean where there are no disturbing influences from the continental land masses. The area of their greatest influence may be considered to extend from about Latitude 3° N. to 35° N., and from the Equator to Latitude 30° S., though the belts are actually somewhat narrower at any given season, owing to the fact that the whole system of winds in these latitudes has a north and south oscillation following the seasonal changes in the Sun's declination.

The question of the origin of the name "Trade" or "Trade Wind" is of considerable interest. It is certain that it was not applied in the sense of a wind which promoted voyages made for the purposes of commerce. The word apparently originated in the nautical phrase "to blow trade", meaning, to blow in a regular course or constantly in the same direction. This phrase was afterwards shortened by nautical usage to "trade." In the sense we are now considering, "trade" is closely allied to the words "track" and "tread" and it is possible that the word "trade" originated from the course or track of a ship. The modern use in the sense of commerce was a later development of the word, a divergence from the original meaning, many examples of which may be found in our language. The word "trade" is believed to have been taken into English in the fourteenth century from Hanseatic sources. Originally the Monsoons were grouped with the true Trade Winds under the name of Trades and this usage persisted until about the middle of the nineteenth century.

Other names were also applied to the Trade Wind. Thus, HAWKINS in the account of his voyage to Florida about the year 1565 refers to it as "the ordinary breeze," while in 1583 LINSCHOTEN speaks of the S.E. Trade as "general windt," the general wind, after the Portuguese "vento geral." From a book by BOHUN, published in 1671, referred to later in the present article, the following passage is taken:—"The *Generall* or *Trade* Wind continues all the year round with little variation. It is likewise call'd the *Tropicall*, *Levantine*, and Universall *Brise*: because it blows constantly from the *Eastern Points*: and makes no farre excursions beyond the Tropiques; commonly meeting our ships about the 30, 34, and in Summer oftentimes beyond the 36, degree of N. Latitude: always proportionably to the declination of the Sun." It is also interesting to note that in modern Spanish the Trade Winds are "vientos generales". The famous scientist and traveller, ALEXANDER von HUMBOLDT, referring to a voyage made in 1799, tells us that the Spanish sailors called the rough Trade Winds at Cartagena (Colombia) "los brisotes de Santa Martha," while those of the Gulf of Mexico were called "las brizas pardas," the cloudy north-east winds. They also had a name for the zone of constant Trades in the northern hemisphere, "el Golfo de las Damas," the Ladies' Gulf, an allusion, doubtless, to the ease and comfort of sailing therein.

Discovery and Early Descriptions of the Trade Winds.

On August 3rd, 1492, CHRISTOPHER COLUMBUS left the Spanish port of Palos on his first transatlantic voyage, landing on October 11th on an island which is now generally believed to have been Watling Island, Bahamas. During his voyage the existence of the N.E. Trade Wind was ascertained. We now know that, strictly speaking, COLUMBUS did not discover America as it had been discovered by the Northmen in the year 1000 and colonised by them in the eleventh century. The cultured nations of southern Europe in the fifteenth century had however no knowledge of this fact. All the crossings of the Northmen were in relatively high latitudes and their principal settlement was on the coast extending between New York and Boston. Thus they would not have encountered the Trade Winds. COLUMBUS therefore discovered Tropical America and the Trade Winds, albeit he maintained that he had sailed to eastern Asia. The regular winds which impelled this navigator along the new route by which he expected to reach India excited the fears of his associates who were struck with terror at the possibility that they would not be able to get back to Europe. Fortunately, COLUMBUS on his homeward voyage took pains to avoid the Trade Winds by steering to the north before he turned westwards. It is possible that he would never otherwise have returned to Spain, as his vessels were not weatherly and were poorly provisioned.

While the discovery of the N.E. Trade Wind blowing over the full extent of the Atlantic Ocean was undoubtedly made by COLUMBUS, it must be remembered that BARTHOLOMEU DIAZ de NOVAES, a Portuguese navigator, discovered and doubled the Cape of Good Hope in 1487, arriving at the Cape in May of that year. This discovery is sometimes wrongly attributed to VASCO de GAMA. DIAZ must therefore have encountered both the N.E. and S.E. Trades of the Atlantic but we do not know to what extent he regarded them as regular winds.

The existence of regular winds in the tropical regions of the ocean was quite unknown to ARISTOTLE and other classical authors. It is however well-known that the Phœnician seamen visited a considerable portion of the north-west coast of Africa, even beyond Cape Bojador and it is probable, though not certain, that the Canary Islands were known to them and to the Greeks, Romans and Carthaginians. It is possible that the Phœnicians navigated the Atlantic to about Longitude 30° W., there being a record that they came in thirty days sail with an easterly wind to the weedy sea, which HUMBOLDT identifies with the eastern extremity of the Sargasso Sea. These navigators were therefore probably familiar with the N.E. Trade off the African coast.

The S.E. Trade of the western Atlantic must have been encountered by the Spanish seaman PINZON, a companion of COLUMBUS, who discovered Brazil in February, 1499, while the Trades of the Pacific were probably first recognised by PIZARRO, who sailed down the coast of Peru and by MAGELLAN, in the early years of the sixteenth century. The Spaniards soon learned to appreciate the value of the regular winds and in later years the Spanish galleons always went from Acapulco (Mexico) to Manila, both nearly in the 15th parallel, with the help of the N.E. Trade of the Pacific. They voyaged almost without trimming sail and without wandering from their route and to this is attributed the fact that the Spaniards discovered few of the multitude of islands which the Pacific Ocean has since revealed.

One of the earliest, and perhaps actually the first, published account of the daily winds experienced during a voyage is that written by THOMAS FULLER, the master of the expedition of THOMAS CANDISH "to the South Sea and thence round the earth" made during the years 1586 to 1588. This account is given in "The Principal Navigations, Voyages, Traffiques and Discoveries of the English Nation," by RICHARD HAKLUYT. The description of the winds includes the N.E. and S.E. Trades experienced in the Atlantic and Pacific Oceans and ends when the Philippine Islands were reached. The Trade Winds are not referred to by name but merely by their direction.

During the second half of the seventeenth century interest in the Trade Winds appears to have increased, for several books and papers were written dealing with the descriptive or theoretical aspect of the subject. Knowledge of the Trades as a natural phenomenon was also sufficiently general for these winds to be mentioned in poetry. Thus we find the following passage in COWLEY's poem "To Drake's Ship," published in 1663:—

> "The breath of Fame, like an auspicious Gale
> (The great Trade-wind which ne'er does fail)
> Shall drive thee round the world."

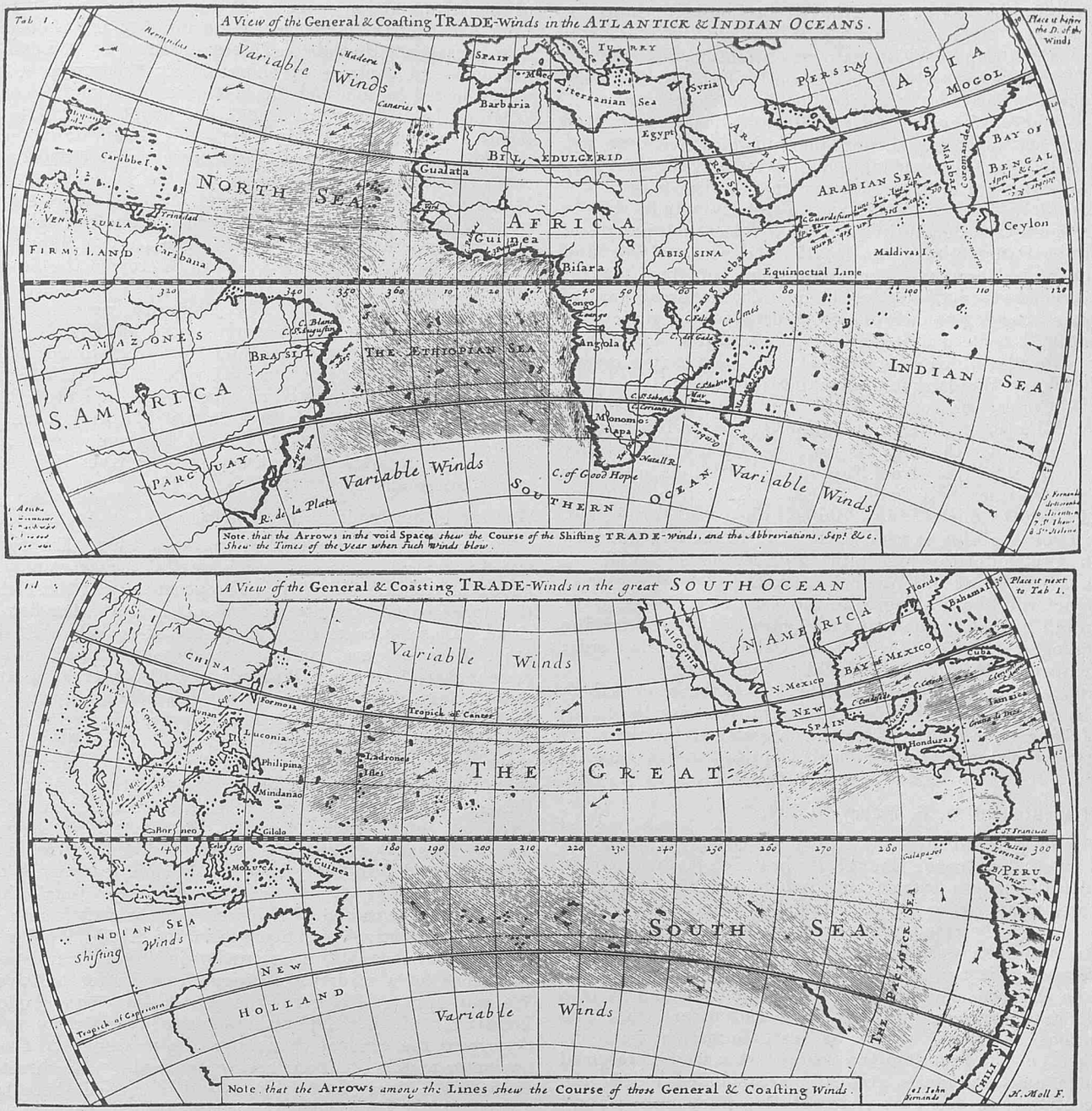
The work of R. BOHUN, "A Discourse concerning the Origine and Properties of Wind, with an Historicall Account of Hurricanes and other Tempestuous Winds," published at Oxford in 1671, was thus described by Mr. G. J. SYMONS, F.R.S.:—

"Noteworthy as among, if not absolutely, the first in which the theories of the winds, as propounded by ARISTOTLE and partly adopted by BACON, are compared with details of the trade winds, monsoons, typhoons and winds from other parts of the world, of which the classical authors knew nothing. The preface shows that the author might almost rank as a MAURY nearly two centuries before the great American promoted the Brussels Conference."

Two passages printed as quotations in this book are worth giving, as they represent probably the first published accounts of the character of the Trade Winds actually written by navigators making regular voyages. The first is by "a very skilfull navigator" who made voyages to the West Indies:—"The *Trade* Winds have their variations as well as others, though not so much: For betwixt the *Tropiques*, where wee are at the greatest certainty, they differ two or three points. Their most certain points are the *N.E. by N. and N.E. by E.* I have observ'd both outward, and homeward bound, that as wee came *Northerly*, so wee had the more *Easterly Winds* in the same Latitude: As for example, outward bound, in the Latitudes of 20, 21, 22 and 23, neere the *Tropique* of Cancer, and in the Longitude of 52, 53, and 54, beginning the said Longitude at the *Meridian* of London; I say, there wee found the Winds at *E.N.E.* and *E. by N.* and *E.* and sometimes *E.* and *by S.* and *E.S.E.* so likewise homeward bound, sayling along the *North* side of *Cuba*, in the *same Latitudes* above mention'd, neere the *Tropique*, wee found the Winds upon the same *points*, as aforesaid, though there were 35 degrees of Longitude difference: but after wee have passed these Latitudes, and sayling *neere the line*, wee shall then find the *Trade* Winds to incline more towards the *N.E.* as is above declared."

The second quotation is from one who made "two severall voyages to the *East Indies*":—"That from 34 degrees of N. Lat. towards the coast of *Afric*, or about the *Meridian* of the *Canaries;* the Winds seldome vary above two points from the North East; and so last to the 7 or 8: though sometimes the *Tornado* Winds have been met with from the 12th of *N. Lat.* and generally continue till within 4 degrees of the line. Moreover from the *African* shoare, 100 or 200 leagues *West;* the forementioned *North-East* Wind commonly inclines to the *East;* and 20 degrees off from the *meridian* of the *Azores*, will be most at *East North-East:* and as the Winds neer the continent of *Europe* are commonly between *East* and *North*, so at the *meridian* of the hithermost Azores, they hang between *South-West*, and *North-West.* The *S. East Winds* begin to take place between the *Aequator*, and the *Tropique* of *Capricorn:* and the nearer you are to the Coast of Afric, they are the more *Southerly:* and as you approach to the Coast of *Brasile*, it inclines more and more to the *East.* And there is not only variation in respect of the *Longitude*, but likewise of the *Latitude:* So that neere the *Aequator* the Wind is more towards the *South*, than it is in the same *Meridian* neer the *Tropique* of *Capricorn*, where it is constantly between S.E. *by* E. and S.E. *by* S."

In 1675 John SELLAR wrote an account of the Trade Winds and this was followed in 1699 by Captain WILLIAM DAMPIER who published "A Discourse of Trade-Winds, Breezes, Storms, Seasons of the Year, Tides and Currents of the Torrid Zone throughout the World," at the end of Volume II of his "Voyages and Descriptions." The discourse, which occupies 108 pages, and in fact the whole of the volumes describing his voyages, show that DAMPIER was a zealous observer and author. Captain DAMPIER's remarks on the Trades are divided into three chapters:—I "Of the General Trade-Wind," II "Of the constant coasting Trade-Winds", III "Of the coasting Trade-Winds that Shift". Two charts of the Trade Winds accompany the work and these have been photographed and are reproduced herewith. The above classification is essentially sound and might be reproduced in more modern terms as I Trade Winds of the open Ocean, II Local Coastal Winds, the Trades



as modified by the influence of the coast line and also by the mean pressure over the adjacent continent, III The Indian Monsoons and similar winds which occur, on a smaller scale, in the neighbourhood of other coasts.

The following extracts are taken from Captain DAMPIER's first chapter:—

"Trade-Winds are such as do blow constantly from one Point or Quarter of the Compass and the Region of the World most peculiar to them is from about 30d. North, to 30d. South of the Equator. . . . These general Trade-Winds are only in the Atlantick Ocean which parts *Africa* from *America*, in the *East Indian* Ocean, and in the *Great South-Sea*. In all these Seas, except just under or near the Line, they constantly blow without Intermission, as well to the South, as to the North of the Equator, but not with equal force at all Times, nor in all Latitudes; Neither do these constant Trade-Winds usually blow near the shoar, but only in the Ocean, at least 30 or 40 Leagues off at Sea, clear from any Land; especially on the West Coast, or side of any Continent: For indeed on the East side, the Easterly Wind being the true Trade-Wind, blows almost home to the shore; so near as to receive a check from the Land-Wind; and ofttimes to admit of the Sea-Breez, by which it is drawn from its Course frequently 4 or 5 Points of the Compass: . . . . In some Places, and particularly the South Seas, in South Lat. the true Eastern Trade is not found to blow within 150 or near 200 Leagues of the Coast, but in North Lat. in those Seas, it comes within 30 or 40 Leagues distance of the Shore: and this I shall give as a general Rule, That in North Lat. these Winds are commonly at E.N.E. in South Lat. at E.S.E.

"When we go from *England*, and are bound to the *East* or *West* Indies, or to Guinea, we commonly find these Winds in the Lat. of 30d. sometimes sooner, as in the Latitudes of 32 or 35. And it may so happen that we may meet with an Easterly Wind in 40d. or go out of our Channel with a North East Wind; which sometimes also fails us not till we come into a true Trade-Wind; but this is only accidental, therefore is not the wind that I speak of; but between 32 and 28 I did never know nor hear, that the true Trade-Wind failed.

"If in coming from *England*, we have a North Easterly Wind that brings us hither (i.e into the true Trade-Wind) it sometimes stays at North East, especially if we keep near the *African Shore*, as *Guinea* ships do, till we are near the Tropick of Cancer, and then comes to the E.N.E. where it settles, but commonly it settles there in 28d. if we are so far off Shore as to receive the true Trade. When the Wind is thus settled, we have commonly fair Weather, and a clear Sky, especially if the Sun in any Southern Sign; but if in a Northern Sign, the Weather is usually cloudy. On the contrary, when we are in South Lat. in the Atlantick, if the Sun is

in Northern Signs, the Sky is clear, but if in Southern Signs the Sky is cloudy."

The point to which Captain DAMPIER draws attention, that a north easterly wind in the Channel and to the south of the British Isles might blow down to latitudes in which the Trade is met, was well-known in the later days of the sailing ship and doubtless many a quick or record outward run during the nineteenth century was materially assisted by this combination of winds. The necessary condition is a large anticyclone covering the British Isles or the regions immediately adjacent, when north-easterly winds will be found on its south-east or south side. Space does not permit of quoting Captain DAMPIER at great length; the whole of his first chapter alone would occupy about two pages of THE MARINE OBSERVER. It is however interesting to note that a great part of the chapter is a true forerunner of our modern sailing directions, being occupied with quite definite instructions as to the best courses for the various voyages which were made at that time, having regard mainly to the Trade Winds, but also taking into account the position of the Doldrums, the coastal winds and even the Equatorial Current of the Atlantic. A further quotation is given in illustration. "And in the Sea under the Line between the *African* Promontory and the *American*, it is freer from Tornadoes and Calms, and more subject to fair Weather and fresh Breezes. Therefore both our *English* and *Dutch East India* Ships, when outward-bound, endeavour to Cross the Line as near as they can in the mid Channel, between both Promontories; and although they meet the Winds sometimes at S.S.E. or at S.S.W. or farther Easterly or Westerly; yet will they not run above a degree to the East, or a degree to the West of the mid Channel, before they tack again, for fear of meeting with the Soaking* Current on the West or Calms on the East side; either of which would be alike prejudicial to their Course.

"The *Portuguese* in their Voyages to *Brazil*, take the same method, and get to the South of the Line before they fall in with the Land, for fear of falling to leward of Cape St. Augustine, for there are so many things which make that a difficult Cape to pass, that hardly any Man would try to do it, but at a distance."

The Work of Lieutenant M. F. Maury, U.S.N.

This is not the place to give any extended account of the great work carried out by Lieutenant MAURY. He has been justly described as the founder of modern marine meteorology and the institution of the meteorological log by the Brussels Conference in 1853, for which he was primarily responsible, marked the beginning of the collection of marine meteorological data on a uniform plan, which in its later development is now so successfully carried out by ships in all parts of the Oceans. We have seen that Captain DAMPIER had a not inconsiderable knowledge of the Trade and other winds and their fluctuations and that, so far as his information went, he actually worked out the best shipping routes. It must be presumed that knowledge and experience gradually accumulated during the eighteenth century and the early part of the nineteenth century but it nevertheless remains true that during that time there was no collection of precise meteorological data by which the courses set by ships could be more accurately adjusted with the probability of shortening the passages. It was in this respect that MAURY's work had a direct influence on the rapidity and economy of sailing ship passages. He collected data obtained by the issue of special log books to captains of ships. Many thousands of observations were charted by him and the "Wind and Current Charts" and the "Sailing Directions" were published about the middle of the nineteenth century. In the latter work MAURY laid down the best routes for shipping, with the result that passages were shortened, in some cases considerably. In these routes the fluctuations of the Trade Winds were taken into account and the most important part of the work consisted in finding the shortest passage through the Doldrums at various seasons of the year. In the passage above quoted from DAMPIER'S book it was stated that ships crossed the Equator midway between Africa and South America and this practice was continued until MAURY showed that the Doldrums were narrower on the American side. Quicker passages were afterwards established by crossing on the western side and they were found to be perfectly safe in spite of the previous bad reputation of the neighbourhood of Cape St. Roque, where some transports were lost in the eighteenth century. As examples of the result of MAURY'S work, the average outward passage to Australia from England was shortened from 124 days to 97, while the average passage from New York to California was reduced from 183 days to 135.

Weather in the Trade Wind Regions.

The weather is usually fine in the trades. The form of cloud which is typical of the region is a small detached Cumulus commonly known as "Trade Cumulus." The peculiarity of these clouds is that the upper part is usually inclined obliquely to the flat base of the cloud. In some cases the Cumuli are of considerable size while at other times they are small. Often they degenerate into small dome or lens-shaped masses. Generally the clouds cover a comparatively small extent of the area of the sky but not infrequently a thin hard broken Strato-Cumulus extends over the sky with such regularity that when seen in perspective near the horizon the appearance of a series of bars is presented. Such cloud is often spoken of as rollers or Roll-Cumulus. The clouds die away in the evening and at night the sky is usually cloudless. The trade cumulus is formed at relatively low heights from about 500 feet to 2,000 feet. Moderate squalls are occasionally experienced in Trade Wind regions but they are not associated with heavy cloud. The chief features of these squalls are some increase of wind, with comparatively small shifts of wind direction, accompanied by slight showers or a little rain of moderate intensity. Relative humidity within the Trade Wind region is not constant but fluctuates considerably and it also varies with the latitude showing a moderate increase from higher to lower latitudes. We may appropriately conclude this section with a quotation from Lieutenant M. F. MAURY'S "Physical Geography of the Sea," describing the gradual changes in the weather experienced by the navigator as the Doldrums are approached. "He directs his course towards the Cape Verd Islands, and is carried there by the lively Trade Wind. Yet beyond the islands, sooner or later, according to the month, the clear skies begin to be clouded, the Trade Wind abates and becomes unsteady, the clouds heap up, the thunder is heard, heavy rains fall; finally, the stillness is death-like, and we have entered the belt of calms."

(To be continued.)

* "Soaking" is said to mean "flowing slowly," but is possibly used here in the sense of "steady."

STANDARDISATION OF THE PARTS OF THE MARINE BAROMETER.

It has been recognised for some time that marine mercurial barometers could be more efficiently and economically maintained if they were all of one pattern with interchangeable parts. The barometers at present in use have the same general form and all have passed the schedule of tests at the National Physical Laboratory so that the necessary standard of accuracy has been ensured. The makers were, however, allowed a considerable amount of latitude in matters of detail with the result that accessories such as glass covers to scale and vernier, attached thermometers, gimbal fittings and suspension arms were of many patterns. It has, therefore, been necessary for Agents and Observers, however far away from London, to return the whole barometer to the Meteorological Office in the case of a breakage or replacement.

About two years ago the Instruments Division of the Meteorological Office was asked to draw up specifications for a standardised marine barometer. This was done and a number of the instruments have subsequently been made and tested with very satisfactory results. The description of the new instrument given below has been prepared in the Marine Division from information kindly supplied by Mr. E. G. BILHAM, B.Sc., Superintendent of the Instruments Division.

In addition to the standardisation of parts there were several other points to be considered in the new instrument. One of the most important of these was the reduction of errors due to the rolling and pitching of the ship, and Marine Observers during recent years provided much useful data in the special observations of "pumping" taken under all conditions at sea. This question has been carefully

studied by experiments on the design of the barometer tube, the shape, size and material of the cistern and variation of the point of suspension. Another point was the replacement of the ordinary attached thermometer by the new form bearing the Gold correction slide.

The important points in the new instrument are not seen from the outside, the only striking difference from the older patterns being in the cistern, which is not black but is made of bright stainless steel. In the following brief account, therefore, the main features are explained.

The Barometer Tube.

This is made of English lead glass and is built up of several parts as shown in FIGURE 1. At the top is the part seen when reading the barometer, a plain cylinder the bore of which is .315 of an inch. Below this, in order, follow a tube of bore .063 of an inch, a length of fine capillary tubing, the air-trap, another length of .063 inch tubing and, lastly, the dipping tube which extends into the cistern. Generally speaking the wider the bore of the upper part of the tube the better, but it cannot be made very wide as the cistern would have to be very large to contain the mercury when the barometer is reading low. The bore of .315 of an inch, which is appreciably larger than in some of the old patterns, has been chosen as a convenient size, which also gives a good curvature to the upper surface of the mercury, hence rendering the instrument easy to read.

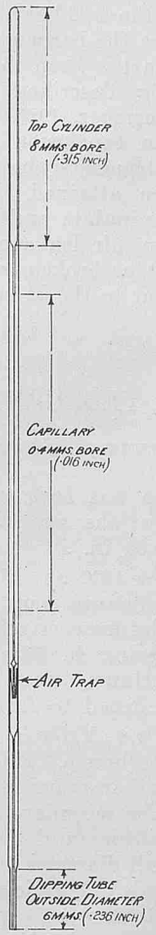


Fig. 1.—Tube of M.O. Standard Pattern Marine Barometer.

The fine capillary tube is for the purpose of reducing the amount of "pumping." In some old barometers the tube was merely pinched or constricted at a point. It is unfortunately impossible to reduce "pumping" without making the barometer sluggish, and therefore a marine barometer always indicates pressure changes a little later than they actually occur. This delay is called the "lagging time." For all practical purposes it may be assumed that a reading with one of the new barometers gives the accurate value of the pressure 4.5 minutes before the time of reading. These instruments have been constructed so that the "falling time" is exactly the same as the "lagging time." The "falling time" is found by inclining the tube until the mercury fills the top of the tube, bringing it back to the vertical, and then timing the fall of the mercury between two definite points on the tube. These points were chosen shortly after the introduction of the marine barometer in 1854 and were 1.5 and 0.5 inches above the undisturbed level of the mercury. In the new barometers the points are nearly the same; expressed in millibars they are 50 mb. and 18 mb. above the undisturbed reading. The old specification for marine barometers stated that the falling time must lie between 3 minutes and 6 minutes. In those instruments which had capillary tubes the lagging time was roughly equal to the falling time, the relationship not being as exact as in the new barometers.

The dipping tube which enters the cistern has an external diameter of .236 of an inch; the open end is located exactly at the centre of the cistern, this position being the best for the prevention of accidental admission of air.

The Cistern.

As is well known it is very important to keep the mercury of a barometer as clean as possible, otherwise the index error of the instrument will be altered, with a resulting error in the corrected reading. Stainless steel has been used for the cisterns of the new instruments as it has been found by experiment that it keeps the mercury cleaner. The new cistern is also larger than the old, thus giving the following advantages:—

(*a*) A lessened risk of getting air into the tube in transport, since the tube dips more deeply into the mercury.

(*b*) The scale is easier to read since the divisions are further apart (or as it is called, a more open scale).

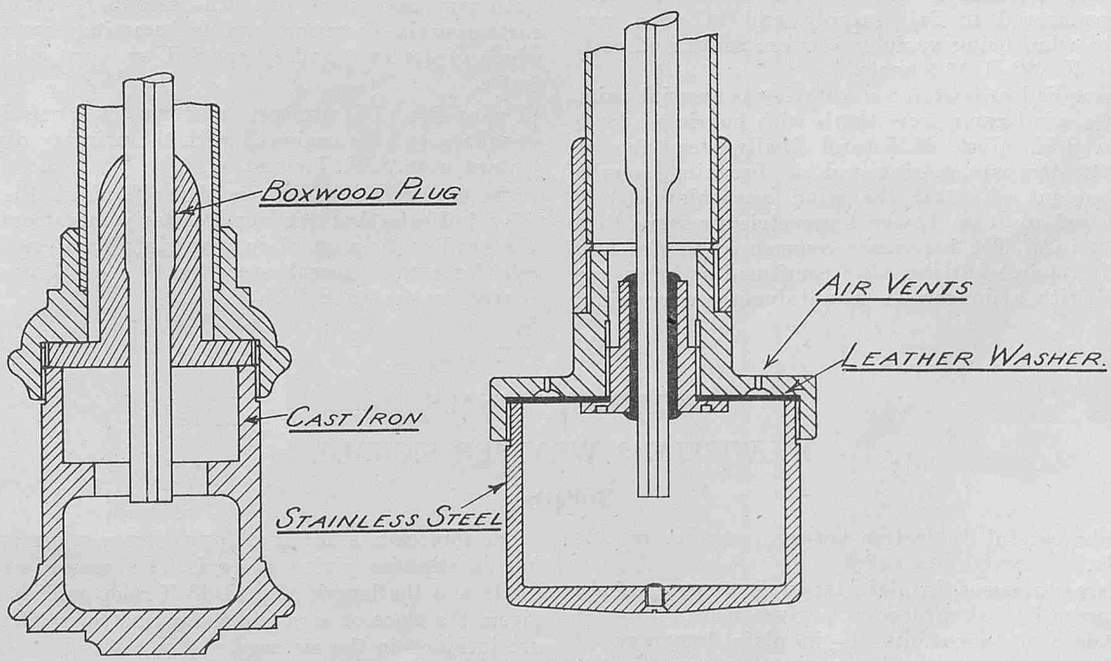
(*c*) The corrections are more uniform over the whole range of fluctuation of the mercury.

There is only one disadvantage in the use of a large cistern, namely the increase in weight due to the additional quantity of mercury. In the new instruments this increase is nearly compensated by making the walls of the cistern much thinner so that there is little noticeable increase in total weight.

FIGURE 2 illustrates the difference between the new cistern and a typical cistern from an old barometer. The flange shown in the old cistern was introduced mainly for the purpose of economising mercury. This it did at the expense of serious risk of admitting air when the barometer was in transit. The new cistern is simply a plain cup of stainless steel, and all unnecessary and undesirable complications are avoided.

The Brass Case and Accessories.

Apart from the tube and cistern, the marine barometer consists of a brass outer case, at the top of which the scale or scales are



Old Type of Cistern.

Cistern of Standard Pattern Barometer.

Figure 2.

engraved, and which also carries the glass shade, the vernier and its actuating screw, the gimbal ring and attached thermometer. Little need be said about these except that the best available designs have been adopted and the dimensions standardised. The gimbal ring is brazed to the tube for security, since it has to carry the entire weight of the barometer. Theory and experiment both indicate that the point of suspension of the barometer should be as high up the case as possible and the gimbal ring is, therefore, attached as near as may be to the pinion which actuates the vernier. A high point of support tends to reduce the error due to oscillation of the barometer when the ship is rolling or pitching.

The arm on which the barometer is supported when in use has been strengthened by the introduction of a ridge, giving it a T section. Its dimensions and those of the socket screwed to the bulkhead have, of course, been standardised. The socket can, if desired, be screwed to the inside of the box, the latter being attached securely to the bulkhead. A strong brass clip is provided inside the box so that the barometer can be lifted back and clipped into the box for security when the ship is in harbour. This method of stowage was fully described and illustrated in THE MARINE OBSERVER for December, 1925.

In conclusion it may be said that the certificates of the new instruments show that a very high standard of workmanship has been attained. The new marine barometer is easy to read and manipulate and is durable and accurate. It is as free as possible from air leakage during transport and any removable part that is lost or broken can be replaced without returning the whole instrument to the Meteorological Office.

NORTH ATLANTIC GALE, FEBRUARY, 1927.

PREPARED IN THE MARINE DIVISION BY J. HENNESSY, SENIOR NAUTICAL ASSISTANT.

R.M.S. *Orita*, Captain W. A. SPLATT, bound from Bermuda to Corunna, when in mid Atlantic on the 26th February, 1927, reported a sudden gale commencing with wind of hurricane force.

CHARTS No. I-IV covering the 26th to 28th February are made from reports of observing ships east of the 40th meridian and from data contained in the "Weather Shipping" Bulletin issued on those dates. The charts will be interesting to those who regularly use Wireless Weather Messages at sea and make their own simple weather charts as they show how a secondary depression moving along the equatorial side of a Low may cause much heavier weather than that of the primary system.

CHART No. I FOR THE MORNING OF 26TH FEBRUARY shows a large depression centred west of the British Isles in about Longitude 20° West, influencing the weather over the whole of the Eastern North Atlantic. The barometric changes reported by the shore stations are slight and though all ships shown on the chart are steering in a north-easterly direction their barometers are all steady with the exception of *Orita*, indicating that the depression is slowly moving in a north-easterly direction and filling in.

The strongest wind reported is N.W. force 5 and the trend of the isobars between *Port Melbourne*, Captain F. J. KEARNEY, and *Orita's* positions indicate the formation of a secondary depression.

Orita with light variable winds, overcast sky, rain, and slowly falling barometer would conclude that the secondary is slowly overhauling her and expect an increase of wind from a southerly direction, but the observations are insufficient to show the steepness of gradient within the secondary. During the forenoon watch *Orita's* barometer commenced to fall rapidly and at noon was 996 mb. (29.41 in.) the wind being variable between south and east, force 4, ship steaming N. 69° E. 13.5 knots.

At 1330 the wind steadied at east force 5 during torrential rain. Five minutes later the wind came from south with hurricane force veering gradually to S.W. West, N.W. and finally steadying at north eased to force 10, the rain ceasing and sky breaking, squalls were violent and frequent. At 1445 the wind remaining steady at north again increased to force 12 the barometric pressure then being 982.8 mb. (29.02 in.). The barometer commenced to rise and at 1530 was 987 mb. (29.14 in.) but the wind continued at hurricane force from north and with a dangerous, mountainous sea running, ship was hove to at 1550. At 1940 the wind eased to force 9 and ship was again put on her course, barometer reading 1004 mb. (29.65 in.).

At 1200 on this day *Cristales*, Captain J. M. ISAACSON, and *Port Melbourne* were situated N. 86° W. 207 miles and N. 14° W. 290 miles respectively from *Orita*. In the forenoon watch *Cristales* steering N. 55° E. 12 knots experienced light N.N.W. wind and continuous rain, her barometer falling slowly. At 1200 the wind freshened to force 6 when the barometer commenced to rise.

Port Melbourne steering N. 63° E. 12 knots had a fresh north-west breeze. From 1200 to 2000 her barometer fell slowly, but her weather remained unchanged.

The secondary therefore generated and rapidly developed between *Cristales* and *Orita's* positions in the forenoon watch, and was of small diameter but of great intensity, for while *Orita* was combating winds of hurricane force ships between two and three hundred miles distant were experiencing comparatively fine weather.

CHART No. II FOR THE EVENING OF 26TH FEBRUARY shows both the primary and secondary depressions to be moving in a north-easterly direction. *Orita* now situated in rear of the secondary's centre is experiencing a strong gale from west while those ships whose weather is influenced by the primary depression report nothing stronger than a fresh breeze.

CHART No. III FOR THE MORNING OF 27TH FEBRUARY shows the primary depression to be now centred over Ireland and from the barometric tendencies reported at the shore stations appears to be stationary and filling in. The secondary continues to move in a north-easterly direction and is becoming less deep, but there are winds of forces 7 and 8 reported by ships situated in rear of the centre.

CHART No. IV FOR THE MORNING OF 28TH FEBRUARY shows the secondary to have coalesced with the primary depression and is now centred over S.W. Ireland.

The barometric tendencies shown by both the shore stations and ships indicate that the north-easterly movement will be continued. The gradient is steepest in rear right hand quadrant and winds of gale force are general over the Bay of Biscay and south-western approaches to the British Isles.

WEATHER SIGNALS.

II. WIRELESS WEATHER SIGNALS.

Bulletins.

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

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

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

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

WIRELESS WEATHER BULLETINS, GREAT BRITAIN AND IRELAND.

C.W. ISSUES, "WEATHER SHIPPING" BULLETIN.

W/T Station, **Air Ministry.** Latitude 51° 27′ 50″ N.
Longitude 0° 01′ 35″ E.
Call sign **G.F.A.**
Wave length 4,100 metres, C.W.
Times of transmission 0900 G.M.T.* and 2000 G.M.T.

The message issued at 0900 G.M.T. is based upon 0700 G.M.T. observations. The message issued at 2000 G.M.T. is based upon 1800 G.M.T. observations.

During the time of S.O.S. lookout, from 0915 to 0918, and 2015 to 2018, there will be a pause in the transmission of these weather signals.

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

Part I. is a general inference of weather conditions over the British Isles, which usually includes information of the pressure system, with whereabouts, which influences the weather.

Part II. is a report in code giving actual observations, with station number, of barometric tendency, whether, visibility, barometric pressure, direction and force of wind, at the ten British stations shown upon the accompanying Chartlet numbered from 1 to 10 (the initial 1 being omitted in the case of Station 10).

* All times are G.M.T., the day commencing at Midnight, and the hours reckoned from 00 to 23.

Two stations not shown on the Chartlet also follow in this part. They are No. 1, Reykjavik, Latitude 64° 09′ N., Longitude 21° 55′ W. (approx.) and No. 2, Thorshavn, Latitude 62° 03′ N., Longitude 6° 45′ W. (approx.) preceded by the word "Foreign."

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

Part VI. commencing "*outlook*" is a general statement as to expectation of weather after the period of the forecasts, when it can be made.

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

Explanation of Chartlet.

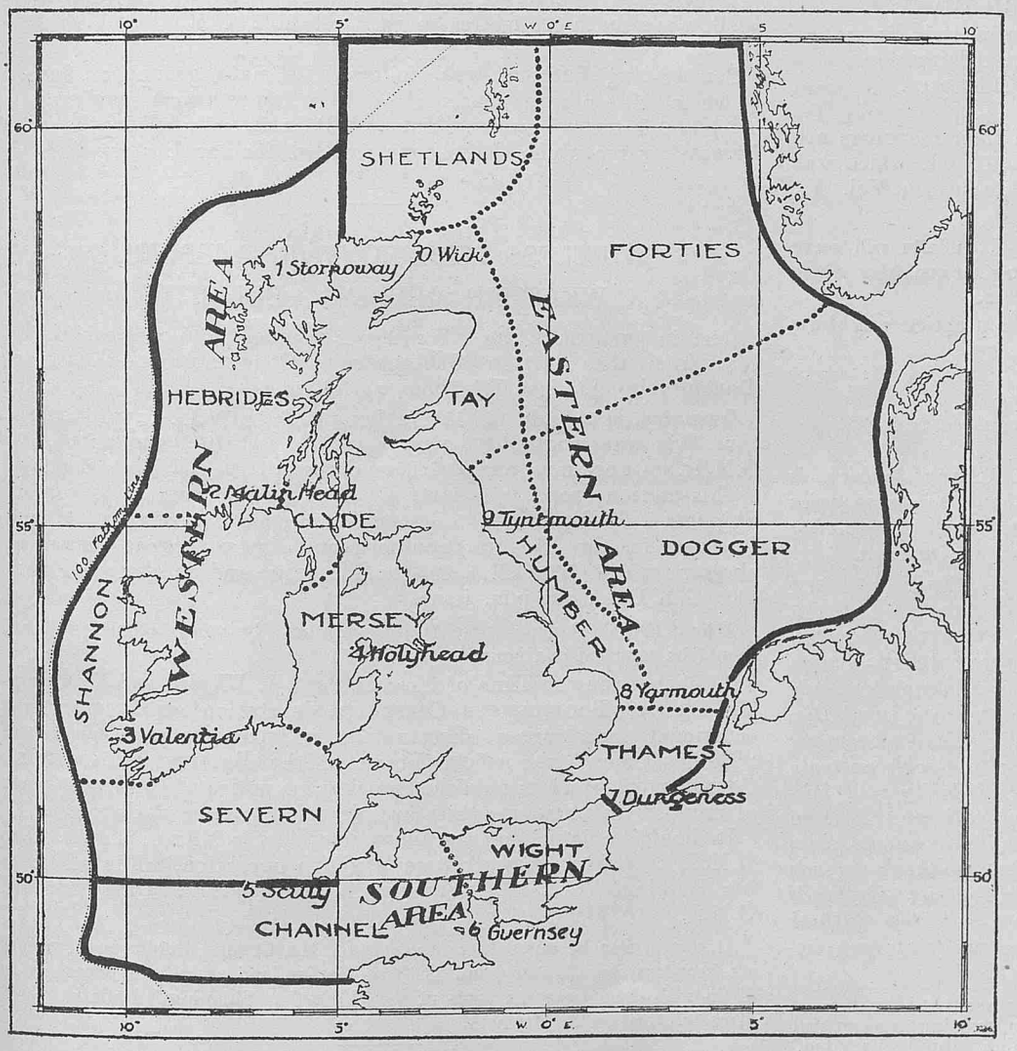
The numbers before the names of the stations indicate their code number (in the event of any station being substituted, the name of the substitute will be given in the message in place of this figure until such time as correction has been adequately made in Notices to Mariners and in THE MARINE OBSERVER).

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

These areas are sub-divided into districts, named after islands, rivers or banks within them, so that they may be readily memorised. The boundaries of these districts should only be taken as an approximate indication of their extent.

These districts are for the purpose of giving information of different weather within an area, without unduly lengthening the wording of a message.

CHARTLET SHOWING STATIONS, FORECAST AREAS AND DISTRICTS.



WESTERN AREA.

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

DISTRICTS.

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

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

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

MERSEY.—The Irish Sea and approaches.

CLYDE.—The North Channel and approaches to Clyde.

SOUTHERN AREA.

The English Channel from Dover to the 100 fathom line.

DISTRICTS.

CHANNEL.—West of Portland.

WIGHT.—East of Portland.

EASTERN AREA.

The North Sea south of Lat. 61° N., and east of Long. 5° W. to the north and to the Straits of Dover in the south.

DISTRICTS.

THAMES.—Thames Estuary and its approaches.

HUMBER.—East coasts from Yarmouth to Tweed.

TAY.—East coast of Scotland, including Moray Firth.

SHETLANDS.—Orkneys and Shetlands.

FORTIES.—Eastward to Norway and N. of line Tweed to Naze.

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

DESCRIPTION OF CODE AND INSTRUCTIONS FOR DECODING PART II.

The code is arranged in five-figure groups, which are paired. Each pair of groups refers to one station, and contains an odd and an even group.

Odd Groups. **The 1st Figure** indicates the station to which the pair of groups refers. From 1 to 9 and 0 for British stations. The Foreign groups being numbered 1 and 2 as above and indicated by the word "Foreign."

The 2nd Figure gives the Barometric tendency, **Table XII.**, p. 23, Vol. V., No. 49.

The 3rd and 4th Figures give the weather, **Table V.**, p. 21, Vol. V., No. 49.

The 5th Figure gives the visibility, **Table VI.**, p. 22, Vol. V., No. 49. Caution is necessary in the use of these visibility reports owing to the conditions of view to seaward at some stations. The two foreign stations' visibility reports are landward.

Even Groups. **The 1st and 2nd Figures** indicate the last two whole figures of the corrected barometer reading in millibars.* To convert to inches, see **Special Table, No. XXIII.**, p. 24, Vol. V., No. 49.

The 3rd and 4th Figures give the True Direction of the Wind, **Table III.**, p. 21, Vol. V., No. 49.

The 5th Figure gives the force of the wind by Beaufort scale. All forces 9 and above, as 9.

In all cases when a figure cannot be given, a hyphen (— - - - - —) is given to preserve the order.

It will be of assistance in memorising the code if the following initial letters of the various elements are committed to memory.

	$I_nK'wwV_s$	BB DD F.
Thus	I_n = Station.	BB = Barometric Pressure.
	K' = Barometric tendency.	DD = Wind Direction.
	ww = Weather.	F = Wind Force.
	V_s = Visibility.	

It will be noticed that the above symbols and their meanings are taken from the Abridged Key to the International Code which was published together with the necessary decode tables in Vol. V., No. 49, pp. 20 to 23.

This description of the British "Weather Shipping" Bulletin will serve as an example of the method of decoding Bulletins for other countries, where the International Code is in use, given in future numbers.

Though at first decoding may be tedious a little practice will show that this can be done with ease and rapidity.

A Sample Message.

Call Sign:—CQ CQ CQ V GFA GFA GFA (repeated twice).
Weather Shipping.
Inference.—A deep depression over the North Channel which is moving East North East will cause strong winds or gales in all districts with much rain at first. Improving weather will spread across the country in its rear.

Station	*17535*	*99041*	*2155–*	*93283*	*34117*	*12266*
Reports.	*46356*	*97208*	*55167*	*13267*	*65417*	*19185*
	77124	*15206*	*87526*	*14186*	*97275*	*99206*
	0856–	*00146*	*Foreign*	*1112–*	*96162*	*2012–* *05000*

Forecasts.—Western Area Districts Mersey Severn Shannon westerly gale veering and moderating visibility becoming good Districts Clyde Hebrides strong northerly winds moderating visibility moderate full stop Southern area strong westerly to north westerly winds District Wight visibility poor District Channel visibility becoming good full stop Eastern Area Districts Dogger Humber Thames southwesterly gales visibility poor Districts Tay Forties southerly winds strong to Gale backing visibility poor District Shetlands fresh easterly winds visibility moderate full stop Outlook Eastern Area northerly gales Western Area temporary improvement.

* It will be seen that the coded figures may represent two values of barometric pressure, but this only takes place with a very low or very high barometer, so that Mariners will be able to decide which value is intended.

Though these reports are intended for the use of ships at sea, they will be found useful to shipping and seamen at the ports, if intercepted by local wireless receiving stations and passed to Mercantile Marine Offices and Harbour Masters.

SPARK ISSUES.

"WEATHER SHIPPING" BULLETIN.

Certain portions of the "Weather Shipping" Bulletin described above are broadcast by coast W/T stations **on spark** as follows. The a.m. issues refer to 7 a.m. observations and p.m. issues refer to 6 p.m. observations, all times are G.M.T

For the Western Area.

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

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

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

For the Southern Area.

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

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

For the Eastern Area.

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

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

WIRELESS TELEPHONY (R/T) ISSUES.

"WEATHER SHIPPING" BULLETIN.

Certain portions of the "Weather Shipping" Bulletin are broadcast from the British Broadcasting Corporation's station at **Daventry** by Wireless Telephony as follows:—

Daventry. Latitude 52° 15′ N., Longitude 1° 08′ W. (approx.), call sign **5XX,** wavelength 1,600 metres (R/T). At 1030 and about 2130 G.M.T., on weekdays, and at 1030 and about 2100 G.M.T. on Sundays.

This station broadcasts Parts I, III, IV and V of the "Weather Shipping" Bulletin, *i.e.*, a general inference, followed by 12-hour forecasts for the Western, Southern and Eastern Areas, based on observations at 0700 G.M.T. for the a.m. issue and on observations at 1800 G.M.T. for the p.m. issue.

When British Summer time is in operation the above times of issue should be retarded one hour.

As changes in the Time of issue of Parts I, III, IV and V through the British Broadcasting Corporation's station at **Daventry** are occasionally necessary at short notice, mariners are referred to the "Radio Times," the official organ of the British Broadcasting Corporation, which is published weekly for notice of the exact times of issue of this message; these are also given in the daily press.

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

It should also be noted that forecasts for the General Public and Farmers are broadcast by Daventry, and as these are for land areas it is necessary to distinguish them from the parts of the "Weather Shipping" Bulletin which gives information to Mariners.

WIRELESS GALE WARNINGS.

Spark Issues.

These warnings are broadcast in plain language and refer to the area which lies within about 150 miles of the station broadcasting the warning.

The warnings are broadcast on a wavelength of 600 metres (spark) preceded by the **International Safety Signal TTT** (– – –) repeated at short intervals 10 times on full power; the warning being broadcast **one minute later, once only.**

Stations broadcasting these warnings.

Station.	Call Sign.	Latitude. (approx.)	Longitude. (approx.)
Niton (Isle of Wight) ...	**GNI**	50° 35′ N.	1° 17′ W.
Land's End	**GLD**	50° 07′ N.	5° 40′ W.
Fishguard	**GRL**	52° 01′ N.	4° 59′ W.
Seaforth (Liverpool) ...	**GLV**	53° 28′ N.	3° 01′ W.
Wick	**GKR**	58° 26′ N.	3° 06′ W.
Cullercoats	**GCC**	55° 02′ N.	1° 26′ W.
Valentia (Ireland) ...	**GCK**	51° 56′ N.	10° 21′ W.
Malin Head (Ireland) ...	**GMH**	55° 22′ N.	7° 20′ W.

Example.—"*Gale Warning.—Deep depression off N.W. Ireland moving East. Gales from S.E., backing North, probable North of Lat.* 54°. *Southerly gales veering N.W. other coasts.*"

Should the warning be broadcast during the period when one-operator ships do not keep watch it will be repeated in the next watch-keeping period for one-operator ships at either of the following times:—

Wick ...	G.M.T. 0800, 1200, 1600 or 2000.	**Cullercoats** ...	G.M.T. 0818, 1218, 1618 or 2018.
Land's End		**Niton**	
Seaforth ...		**Fishguard**... ...	
Malin Head		**Valentia (Ireland)**	

Gale warnings broadcast at 0800, 0818, 2000 or 2018 G.M.T. will follow the navigational warning, if one is broadcast.

NOTE.—For locating depressions the use of the words Ireland or Iceland is frequent and in order that they shall not be confused when Iceland is appropriate it will be repeated thus—Iceland Iceland.

Wireless Telephony (R/T) Issues.

Gale warnings will be broadcast as necessary by Radio Telephony, by the BRITISH BROADCASTING CORPORATION'S station at Daventry, call sign 5XX, on the wavelength of 1,600 metres as follows:—

Weekdays.

Immediately after the time signals at 1300 and 1600 G.M.T. and immediately following the ordinary weather report broadcast at 1830 G.M.T. Gale warnings issued at 1300 G.M.T. will be repeated both at 1600 and 1830 G.M.T. and a warning issued at 1600 G.M.T. will be repeated at 1830 G.M.T.

Sundays. At 1530 G.M.T. only.

When British Summer Time is in operation the above times should be retarded one hour.

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

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

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

Changes in the times of issue by R/T of these gale warnings for shipping are necessary at shorter notice than can be given by THE MARINE OBSERVER. Mariners are, therefore, referred to "The Radio Times," the official organ of the BRITISH BROADCASTING CORPORATION, published weekly, for the exact times of issue. The times given in "The Radio Times" are only G.M.T. when summer time is not in operation.

III. WIRELESS TIME SIGNALS.

C.W. Issue.

Commencing on December 19th, 1927, **Rugby** W/T Station, approximate Lat. 52° 22′ N., Long. 1° 11′ W., call sign **GBR,** broadcasts time signals on a wavelength of 18,740 metres (C.W.) at 1000 and 1800 G.M.T.

System Used.—Modified rhythmic type as recommended by the International Time Commission of 1925, consisting of a series of 306 signals emitted in 300 seconds of Mean Time (or alternatively 245 signals emitted in 240 seconds of Mean Time), the concluding signal being the exact hour.

In each series, Signals Nos. 1, 62, 123, 184, 245 (and 306 if the series extends for five minutes) are single dashes (–) of 0.4 sec. duration and commence at the exact minute. Each dash is followed by 60 dots (·) of 0.1 sec. duration.

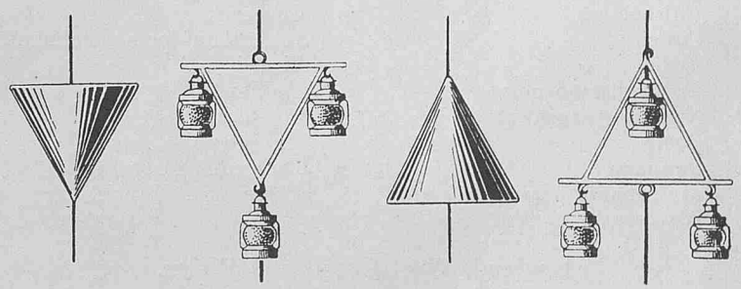
The commencement of successive signals, whether dot or dash, are equally spaced at intervals of 60/61 parts of one second of Mean Time, i.e.:—

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

This type of time signal will enable chronometer comparisons of extreme accuracy to be obtained, the method employed being to count the number of intervals from the first dash (–) until coincidence occurs between one of the rhythmic signals and the beat of the chronometer. It is not necessary actually to count the signals. Take the nearest second of each dash by the chronometer, and write down the chronometer time of coincidence. The difference gives the number of the rhythmic signal. For ordinary navigational purposes a comparison obtained by disregarding the dots and using the commencement of the dashes only (given at the exact minute) will be sufficiently accurate.

IV. VISUAL GALE WARNINGS.

Great Britain and Ireland.



Hoisted for Gales.

From S.E., veering to S.W., W., or N.W.	From S.E., E., or N.E., backing to N.
,, S.W., veering to W. or N.W.	,, N.W., veering to N., N.E., or E.
,, W., veering to N.W.	
And also from E., veering to S. or S.W.	,, N., veering to N.E. or E.
	,, N.E., veering to E.

When one of these signals is hoisted it indicates that a telegram has been received from the Meteorological Office by the station exhibiting the signal, that a gale is expected in the vicinity of the station.

The signal will be lowered when the gale has passed and it is anticipated that there will be a period of not less than 12 hours free from winds of gale force 8 and above. The cone is kept flying during a lull of the wind if a renewal of the gale is expected.

At present only those stations marked † in the list show the night signal.

The stations are as follows:—

England, East Coast.

Berwick-upon-Tweed
Holy island
Amble
Blyth
Tynemouth
North Shields
Souter point
Sunderland
Seaham
Hartlepool
Middlesbrough
Redcar
Whitby
Filey
Scarborough
Flamborough head
Bridlington
Aldborough
Spurn head
Hull
Goole
Grimsby
Mablethorpe
Boston
King's Lynn
Weybourne
Cromer
Yarmouth
Gorleston
Lowestoft
Southwold
Orfordness
Ipswich
Landguard
Gunfleet
Burnham
Kentish Knock light-vessel.
Greenhithe (H.M.S. *Worcester*)
Chatham
Sheerness
†Southend
Tilbury
Rotherhithe
Reculvers
Herne bay
Margate

England, South Coast.

Ramsgate
North Goodwin light-vessel.
Deal
Dover
Sandgate
Dungeness
Rye
Fairlight
Eastbourne
Beachy head
†Newhaven
Brighton
Littlehampton
Hayling island
Portsmouth
Southampton
Calshot
Cowes
Ryde
St. Catherine point
Needles (Freshwater)
Poole
Swanage
St. Alban's head
Weymouth
Portland
Jersey (Channel Is.)
Exmouth
Torquay
Dartmouth
Berry head
Prawle point
Salcombe
Plymouth
Devonport
Rame head
Portwrinkle
Looe
Fowey
Gorran haven
Mevagissey
Coverack
St. Anthony point (Falmouth)
Lizard
Mullion
Porthleven
Mousehole
Tol Peden Penwith
Scilly (St. Mary's)

England, West Coast, and Wales.

Sennen
Godrevy
St. Ives
Newquay
Trevose head
Padstow
Port Isaac
Lynmouth—Foreland
Bude
Hartland point
Lundy isle
Bull point
Ilfracombe
Weston-super-Mare
Avonmouth
Newport (Mon.)
Cardiff
Penarth
Nells point
Barry dock
Nash
Briton ferry
Mumbles
Rhos-sili

England, West Coast, and Wales.—*Continued.*

Burry port
Tenby
Caldy island
St. Ann's head
Fishguard
Newquay (Cardigan)
Aberystwith
Carnarvon
South Stack
Holyhead
Point Lynus
Hilbre island
Hoylake
New Brighton
Bar light-vessel
Formby light-vessel
Crosby light-vessel
Runcorn
Liverpool
Preston
Blackpool
Fleetwood
Heysham
Morecambe
Barrow
Walney island
Maryport
Whitehaven
Douglas (Isle of Man)
Ayre point (Isle of Man)
Ramsey (Isle of Man)

Scotland, West Coast.

Little Ross lighthouse
Stranraer
Mull of Galloway
Port Patrick
Corsewall point
Ballantrae
Ardrossan
Greenock
Kildonan
Campbeltown
Mull of Cantyre
Rinns of Islay
Rudha Mhail
Glas island
Rudh' Re' lighthouse
Stornoway
Ru Stoer

Scotland, North and East Coasts, with Orkneys and Shetlands.

Cape Wrath
Lerwick
Balta sound
Whalsey
Sumburgh head
Fair isle
Noup head
Kirkwall
Stronsay
Stromness (Orkney isles)
Cantick head
Broughness
Dunnet head
Wick
Helmsdale
Tarbetness
Cromarty
Nairn
Burghead
Lossiemouth
Buckie
Port Knockie
Portsoy
Banff
Fraserburgh
Peterhead
Collieston
Aberdeen
Law point
Girdleness
Stonehaven
Gourdon
Johnshaven
Montrose
Scurdyness
Arbroath
Fifeness
Anstruther
Methil
Port Edgar
Grangemouth
North Berwick
Dunbar
Cockburnspath
St. Abbs head
Eyemouth
Burnmouth

Ireland, North and East Coasts.

Malin head
Portrush
Ballycastle (Torr Head)
Blackhead lighthouse
Belfast
Bangor
Ballywalter
Killough
Kilkeel
Kingstown

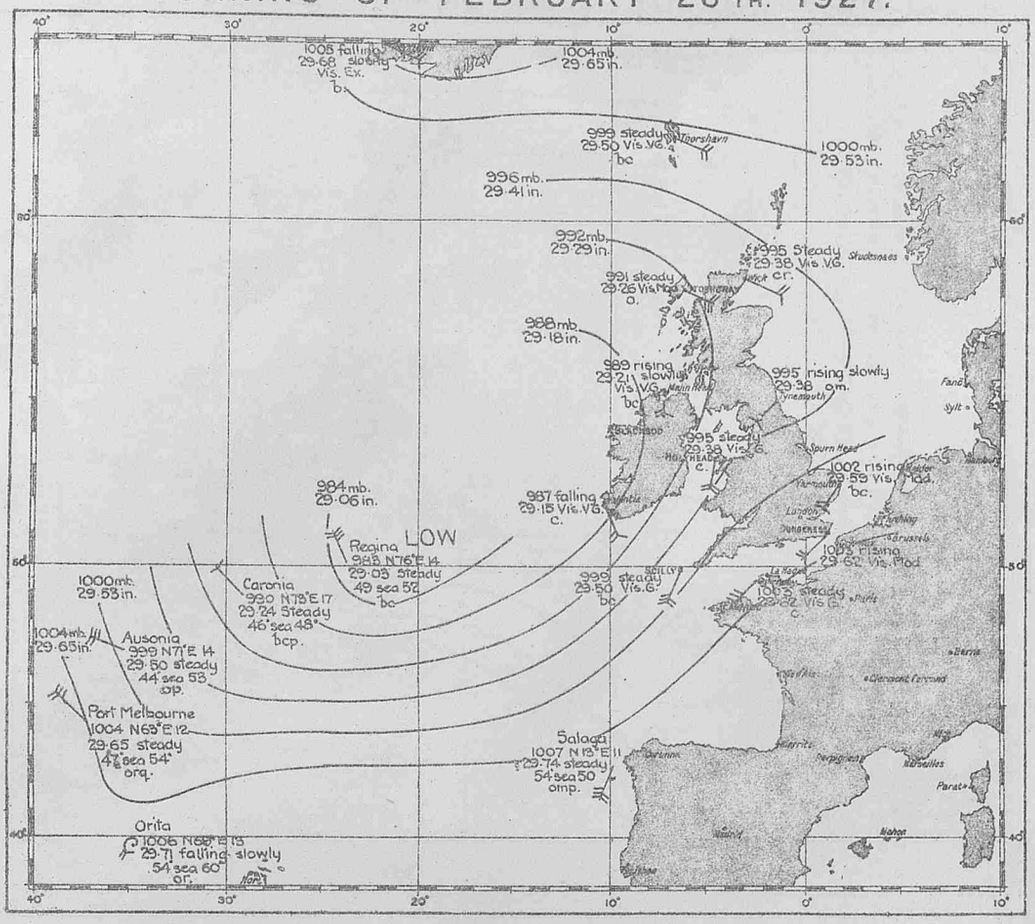
Ireland, South Coast.

Queenstown
Cork
Galley head

Ireland, West Coast.

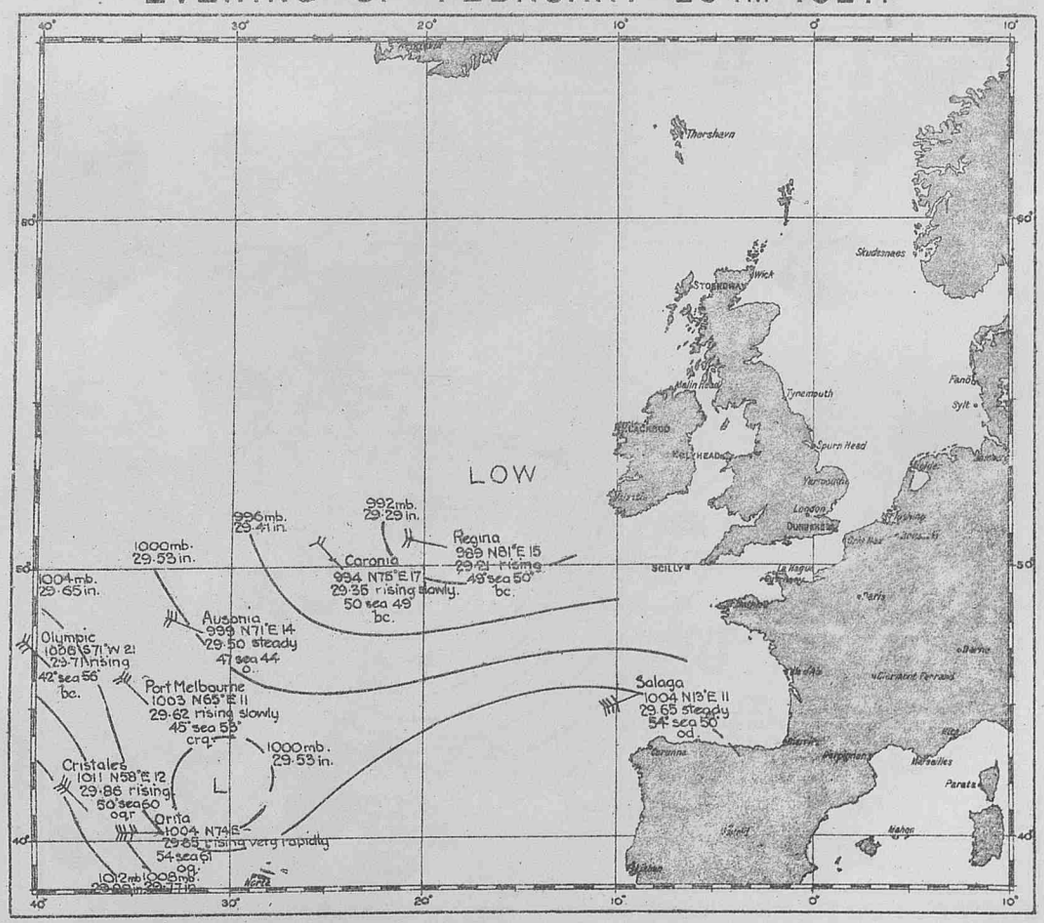
Killybegs (St. John's point)
Galway
Loop head

MORNING OF FEBRUARY 26TH. 1927.



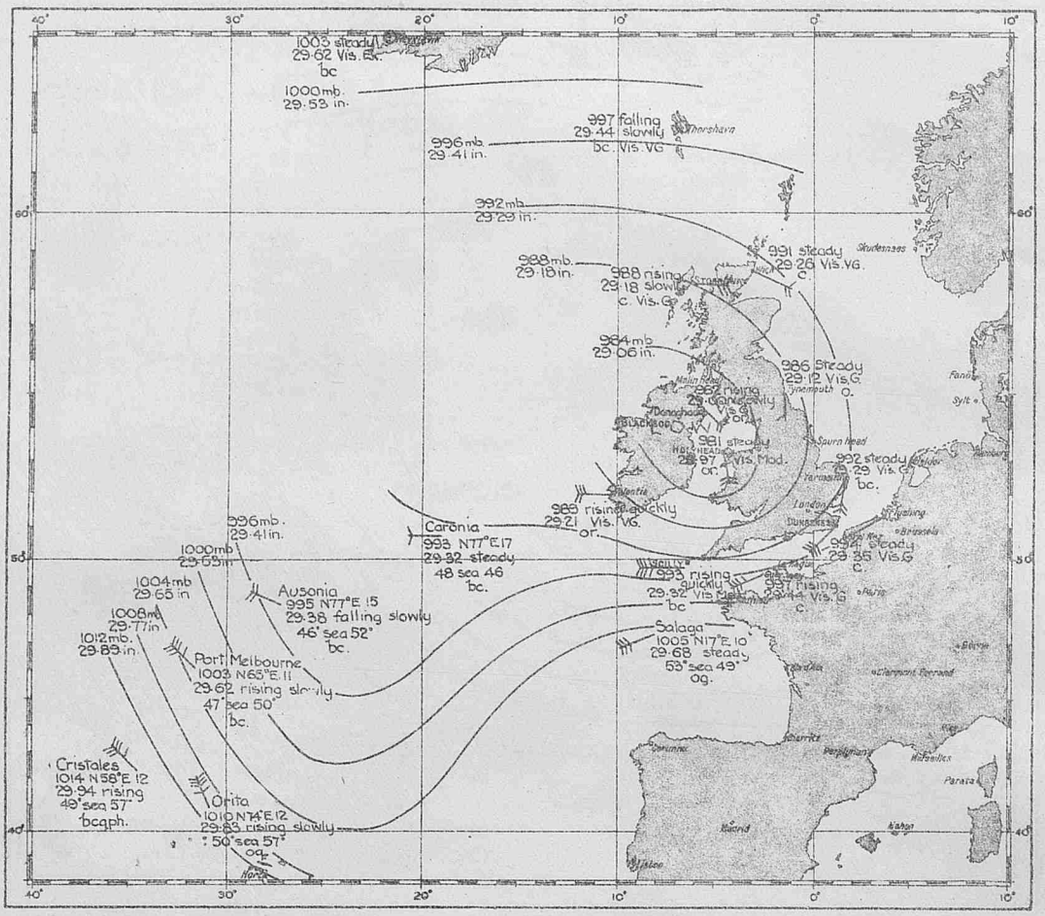
Weather Chart I

EVENING OF FEBRUARY 26TH. 1927.



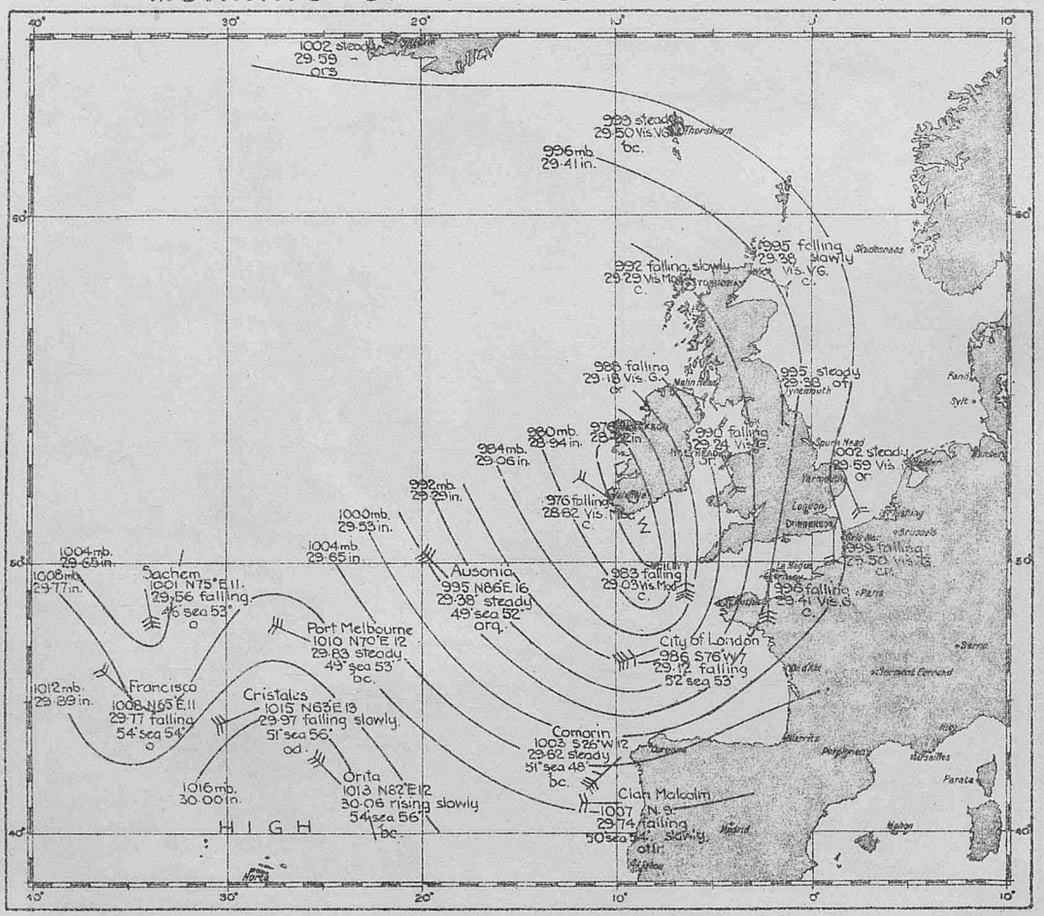
Weather Chart II

MORNING OF FEBRUARY 27 TH. 1927.



Weather Chart III.

MORNING OF FEBRUARY 28 TH. 1927.



Weather Chart IV.

WINDS ON THE TRACKS FROM PANAMA TO AUSTRALIAN AND NEW ZEALAND PORTS. (MIDDLE PORTION.)

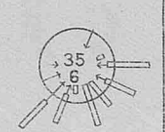
MARCH

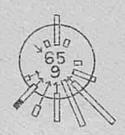
Observations of ships regularly observing for the British Meteorological Office 1920-1926.

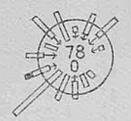
160° 150° 140° 130° 120°

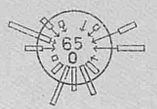
20° 30° 40°

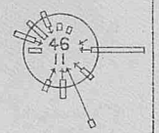
COOK ISLANDS
Rarotonga

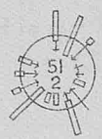




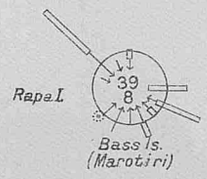






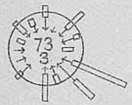


Maria Theresa Rf.

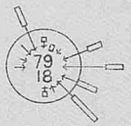


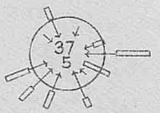
Rapa I.

Bass Is.
(Marotiri)

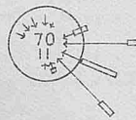


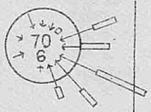
Pitcairn I.

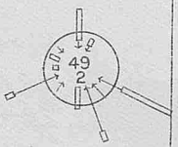




Henderson I.



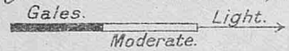




EXPLANATION OF WIND ROSE.

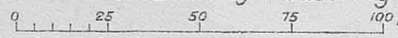
Each wind rose refers to the ocean areas enclosed by 5° of Latitude and Longitude.

The arrows which fly with the wind show by their length the frequency of the winds and by their thickness the various forces; light winds forces 1 to 3, moderate winds 4 to 7, and gales 8 to 12.



The circle supplies a scale for estimating the frequency of winds from any direction. From the heads of the arrows to the circumference of the circle represents 5 per cent of the whole number of observed winds (100 per cent = 2 inches). The upper figures in centre of wind rose are the total number of observations upon which the rose is based, the percentage of calms being given underneath.

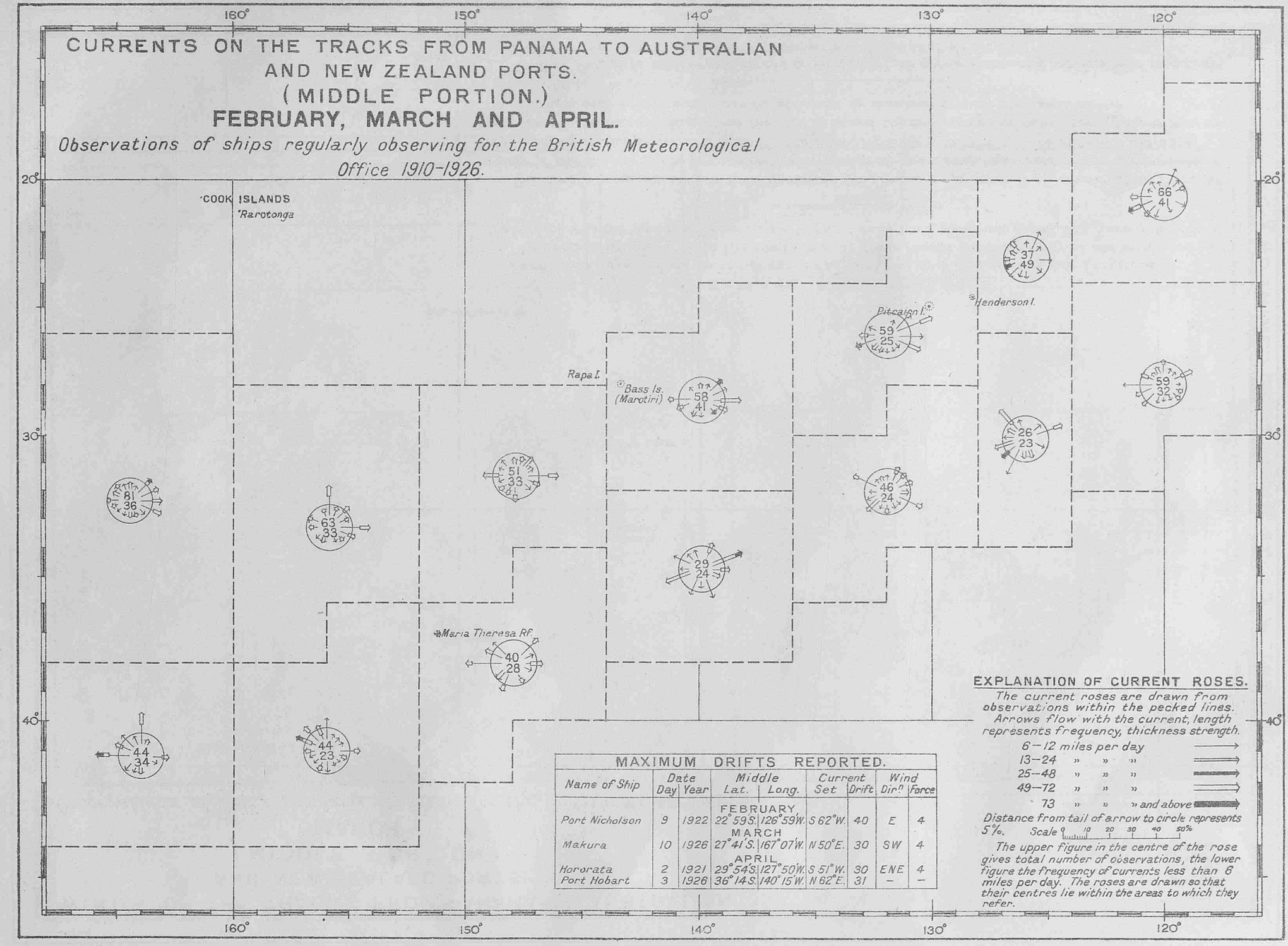
The frequency of the winds can be obtained by measuring with the scale below.



As 10° of longitude measures 2 inches on this chart an arrow measuring one degree of longitude in length represents 10 per cent of observations from that direction.

CURRENTS ON THE TRACKS FROM PANAMA TO AUSTRALIAN AND NEW ZEALAND PORTS.
(MIDDLE PORTION.)
FEBRUARY, MARCH AND APRIL.

Observations of ships regularly observing for the British Meteorological Office 1910-1926.



MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir^n	Wind Force
			FEBRUARY					
Port Nicholson	9	1922	22°59'S.	126°59'W.	S 62°W.	40	E	4
			MARCH					
Makura	10	1926	27°41'S.	167°07'W.	N 50°E.	30	SW	4
			APRIL					
Hororata	2	1921	29°54'S.	127°50'W.	S 51°W.	30	ENE	4
Port Hobart	3	1926	36°14'S.	140°15'W.	N 62°E.	31	—	—

EXPLANATION OF CURRENT ROSES.

The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength.

6—12 miles per day
13—24 " " "
25—48 " " "
49—72 " " "
73 " " " and above

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

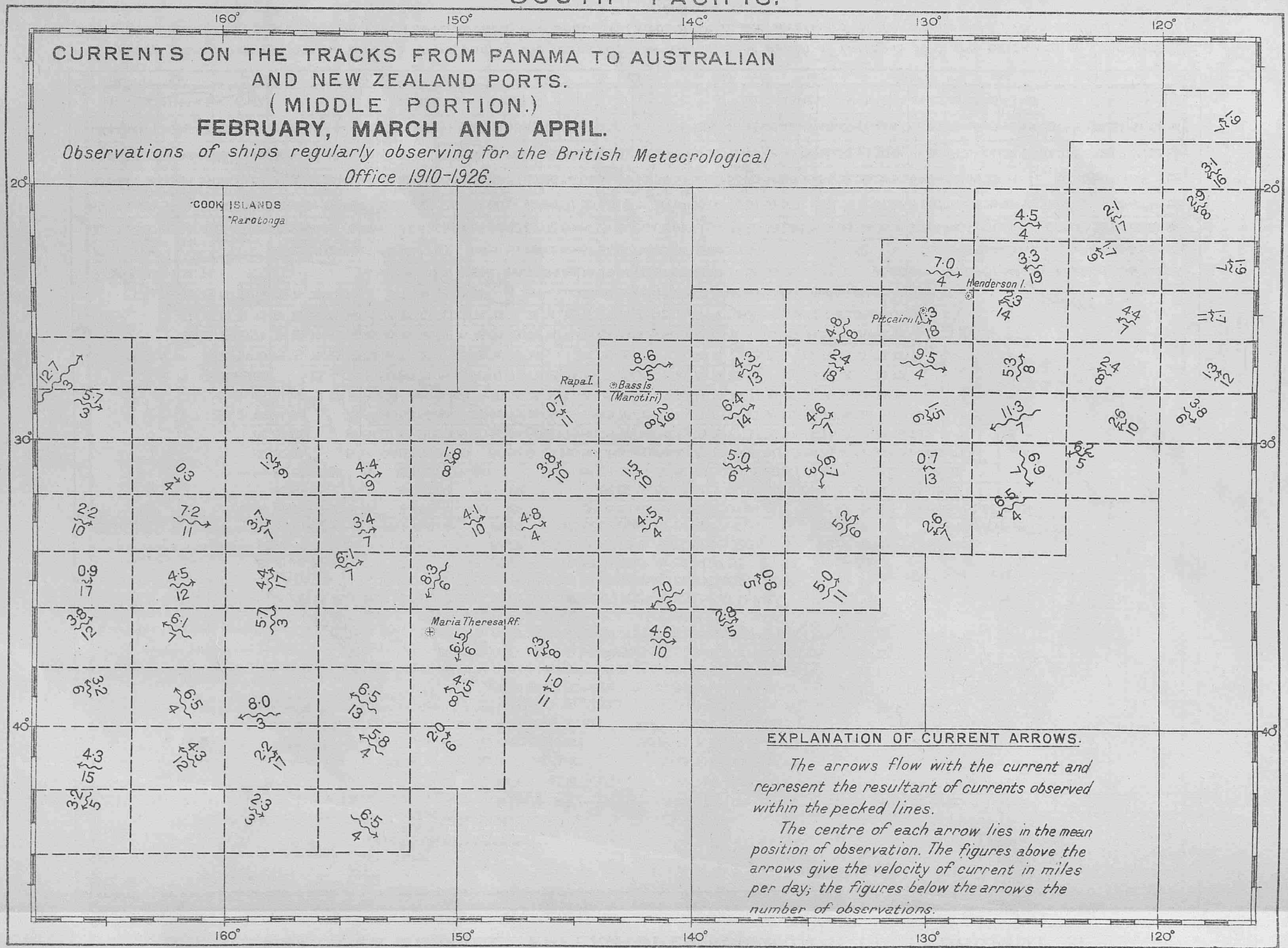
The upper figure in the centre of the rose gives total number of observations, the lower figure the frequency of currents less than 6 miles per day. The roses are drawn so that their centres lie within the areas to which they refer.

CURRENTS ON THE TRACKS FROM PANAMA TO AUSTRALIAN AND NEW ZEALAND PORTS.

(MIDDLE PORTION.)

FEBRUARY, MARCH AND APRIL.

Observations of ships regularly observing for the British Metecrological Office 1910-1926.



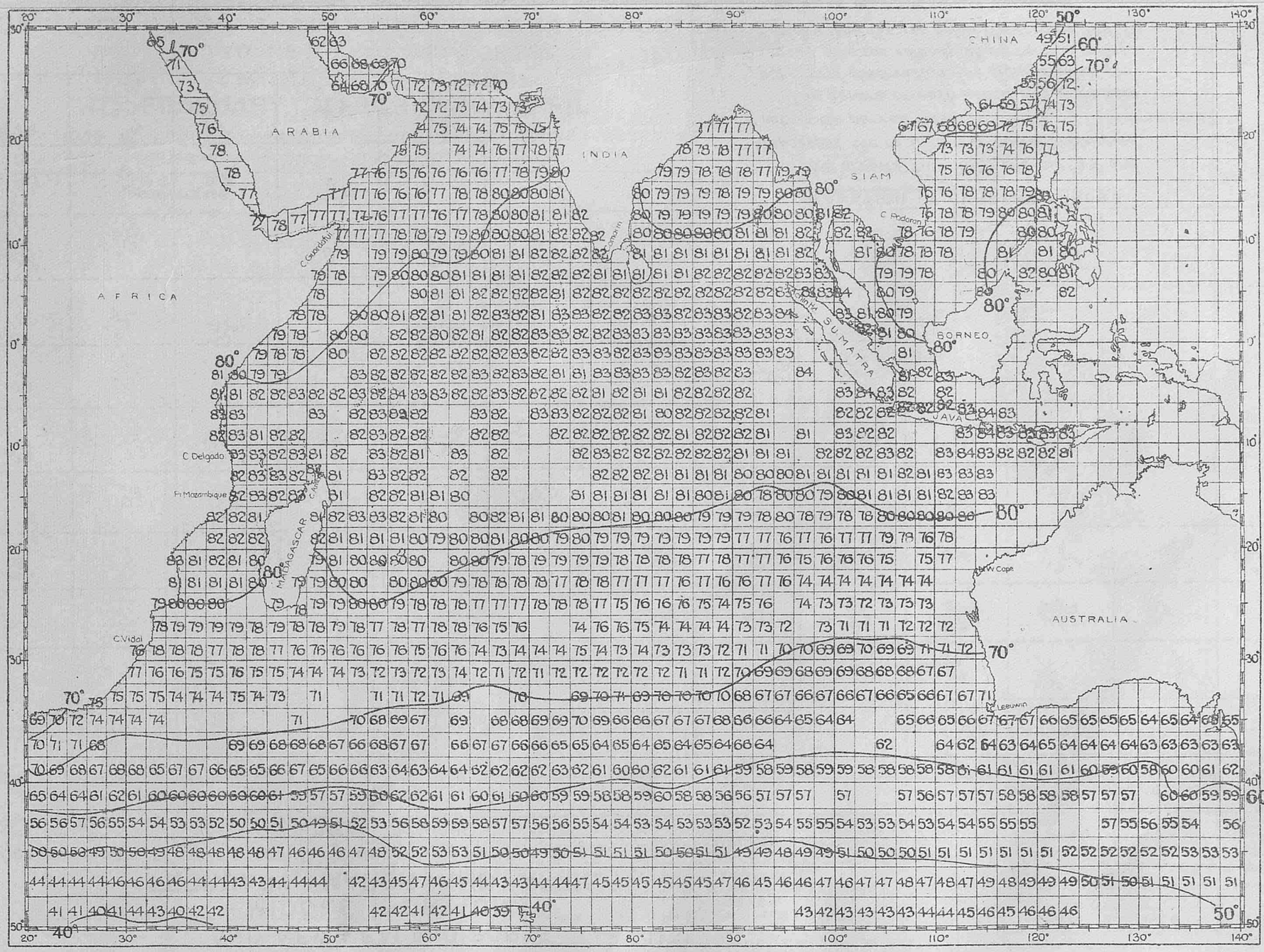
EXPLANATION OF CURRENT ARROWS.

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.

INDIAN OCEAN.

MEAN SEA SURFACE TEMPERATURES FOR MONTH OF FEBRUARY,



Computed from observations of British Ships during the years 1855 to 1917 except south of Latitude 30°S. and eastward of Longitude 40°E. where the observations are for the years 1855 to 1895; and south of Latitude 30°S. and westward of Longitude 40°E., 1855 to 1878.

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

Ps. 70/1603. We. 10A. D.I. 1300. 12/27.

NOTICES.

CURRENT OBSERVATION.

It is very desirable that good current data should be recorded. Spaces are provided for current experienced throughout the day and for current determined at shorter intervals in Meteorological Logs, while Form 911 provides for either or both.

Generally the difference between the *Dead Reckoning Position* at noon, reckoned from previous noon, and the *observed position* has been accepted as attributable to a single current for the whole 24 hours.

It is necessary to make careful distinction between *Dead Reckoning Position* and *Estimated Position*, the former being the position as reckoned from the last fix by courses steered and distances run, corrected for all known errors and disturbances *except* current. When a fix cannot be obtained, an estimation for current (when one is known generally to exist) is sometimes applied to the D.R.; the result may then be conveniently termed the *Estimated Position*.

If this estimated position is given in the Meteorological Log or Form 911, *it should be clearly stated*, otherwise it may be misleading.

Currents of varying velocity and direction may be experienced along the track made in 24 hours; therefore, when reliable fixes such as by Stellar observations at twilight are obtained, the current should be determined for the intervals, and all should be checked with the noon to noon result. Each of these currents determined at shorter intervals than 24 hours should be entered in the Meteorological Log in the appropriate column, and the time and latitude and longitude of each observation position should be given in the latitude and longitude columns. The times given on Form 911 indicate the interval. The period of short interval currents should usually not be less than, say, six hours. The best interval is probably from twilight to twilight.

It is desirable that whenever possible two methods of ascertaining the distance run through the water should be used, as recent investigation goes to show that with one means of measuring the speed the inclination has been to credit the ship. When possible it is recommended that both patent log and revolutions should be used.

For working out the set and drift of current the position *from* as well as the position *to* must always be *fixes*. Some observers have used an *estimated* position *from*, which makes the set and drift false. The same remarks apply to course allowances for set; the latter are naturally necessary to make an *estimated* course.

POSTAL ARRANGEMENTS.

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

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

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

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

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

ICE REPORTS.

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

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

COVER FOR MARINE OBSERVER.

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

The arrangement for assembling the numbers for binding was described in Volume IV No. 48 page 230.

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.

CONVERSION TABLE.

To Convert Inches into Millibars.

Inch.	mb.	Inch.	mb.	Inch.	mb.
27·50	931·2	28·65	970·2	29·85	1,010·8
27·55	932·9	28·70	971·9	29·90	1,012·5
27·60	934·6	28·75	973·6	29·95	1,014·2
27·65	936·3	28·80	975·3	30·00	1,015·9
27·70	938·0	28·85	976·9	30·05	1,017·6
27·75	939·7	28·90	978·6	30·10	1,019·3
27·80	941·4	28·95	980·3	30·15	1,021·0
27·85	943·1	29·00	982·0	30·20	1,022·7
27·90	944·8	29·05	983·7	30·25	1,024·4
27·95	946·5	29·10	985·4	30·30	1,026·1
28·00	948·2	29·15	987·1	30·35	1,027·7
28·05	949·9	29·20	988·8	30·40	1,029·4
28·10	951·6	29·25	990·5	30·45	1,031·1
28·15	953·2	29·30	992·2	30·50	1,032·8
28·20	954·9	29·35	993·9	30·55	1,034·5
28·25	956·6	29·40	995·6	30·60	1,036·2
28·30	958·3	29·45	997·3	30·65	1,037·9
28·35	960·0	29·50	999·0	30·70	1,039·6
28·40	961·7	29·55	1,000·7	30·75	1,041·3
28·45	963·4	29·60	1,002·4	30·80	1,043·0
28·50	965·1	29·65	1,004·0	30·85	1,044·7
28·55	966·8	29·70	1,005·7	30·90	1,046·4
28·60	968·5	29·75	1,007·4	30·95	1,048·1
		29·80	1,009·1		

ICE CHART.

WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

(B) From 1st February to 31st August, inclusive.

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

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

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

ROUTE NOTICES.

For latest information *re* Tracks *see* pages 78–9, Vol. IV., No. 40, of this Journal.

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.

Clarke City
Anticosti
Heath Pt. L.V.
Fame Pt.
Father Pt.
GULF OF ST LAWRENCE
NEWFOUNDLAND
C. Ray
Magdalen Is.
Grindstone I.
St. Paul
Grosse I.
Quebec
Prince Edward Is.
Cape Breton Is.
Sydney
St. John's
Virgin Rocks
Montreal
NOVA SCOTIA
Sable Is.
Lurcher Lt.V.
Sable
Boston
New York
Nantucket Lt.V.
VCL
VCN
VCO
VCE
VAR
VAV
VAU
VCT
VDR
HY5

FEBRUARY 1901 - 1927.

Limit of ice reported to Meteorological Office

PHENOMENAL DRIFT OF ICE.

Date.	Ship or Source of Report.	Position. Lat.	Position. Long.	Remarks.
Feb. 3, 1922	S.S. Weehawken ...	41°42'N.	58°59'W.	Ice (sustained bow damage).

Reports of Ice sighted between December 1st and December 31st, 1927, which have been received in the Meteorological Office, are shown by the Symbols plotted in position reported, the figures indicating the day of the month.

LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 12th December, 1927, was received from the Superintendent, Canadian Signal Service, Quebec :—

"Montreal to Saguenay river, light open ice everywhere. Father point, light open ice inshore. Other points, no ice in sight."

Ps 70/1603. Wt. 10A. D.I. 1100. 12/27.

H.M.S.O. Press, Kingsway, W.C.2.

NOTICES.

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 page 18 of Vol. V, No. 49.

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 2*s*.

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position. Latitude.	Position. Longitude.	Description.
	NORTH SEA.		
8.12.27	53°43′N.	0°47′E.	Capsized ships' lifeboat 20 feet long.
14.12.27	52°34′N.	2°54′E.	Spar attached to wreckage showing 3 to 4 feet out of water.
15.12.27	52°10′N.	1°51′E.	Two heavy spars, apparently attached to wreckage, dangerous to navigation.
17.12.27	54°43′N.	0°53′W.	Mast 40 feet long, attached to wreckage, dangerous to navigation.
	ENGLISH CHANNEL.		
8.12.27	3 miles N.W. from Corbierre Lt. Ho.		Drifting buoy with superstructure and fixed green light.
17.12.27	7 miles S.E. by E. (mag.) from Lizard.		Mud lighter drifting without lights, dangerous to navigation. No crew on board.
18.12.27	49°53′N.	4°45′W.	Drifting red conical light buoy, 15 feet above water.
	MEDITERRANEAN.		
2.12.27	42°23′N.	5°04′E.	Large target about 80 feet long, lattice wood-work standing.
	NORTH ATLANTIC.		
1.12.27	32°52′N.	68°41′W.	Black buoy, bell functioning no distinguishing marks.
3.12.27	60 miles E. of Sydney C.B.		Wreckage, railings and painted wood deck timbers.
3.12.27	32°—′N.	80°—′W.	Pile-driver barge about 100 feet by 40 feet wide.
6.12.27	4 miles S.S.E. of Ballycotton.		Cylindrical iron tank or buoy approximately 12 to 15 feet long heavily covered with barnacles.
6.12.27	31°38′N.	80°45′W.	Derelict about 185 feet long bottom up.
7.12.27	28°50′N.	78°10′W.	Abandoned cabin launch, number *V–16307*, hull grey, bottom, dark brown, cabin deck yellow, about 30 feet long and in good condition.
7.12.27	39°29′N.	74°10′W.	Black can buoy.
8.12.27	47°10′N.	7°55′W.	Cylindrical buoy painted red, old and rusty, danger to navigation.
8.12.27	45°24′N.	57°21′W.	Wreckage.
8.12.27	29°13′N.	71°16′W.	2 spars, projecting about 6 feet out of water, apparently, attached to submerged wreckage, apparently top of deckhouse floating near by.
8.12.27	20°10′N.	74°05′W.	Heavy tree trunk about 40 feet long.
12.12.27	48°21′N.	23°15′W.	Big black gas buoy with iron frame-work and lantern not burning.
14.12.27	47°09′N.	4°04′W.	Black drifting conical buoy with a cage and marked in white, *Lamouroux*.
	GULF OF MEXICO.		
5.12.27	25°56′N.	88°03′W.	Large derelict schooner bottom up.

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.
Mr. W. T. GRIEVES, Visiting Officer for the Port of London.

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Agents.

BELFAST ... ... Captain J. MCINTYRE, Harbour Master, Harbour Office.
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(*Telephone No.: Central 2283-4*).

Agents (*contd.*).

FREMANTLE, W. Australia. Captain J. J. AIREY, Deputy Director of Navigation, Dalgety's Buildings.
(*Telephone No.: B 1063*).

HONG KONG, China. Lieut. Commander O. C. G. LEVESON-GOWER, R.N., Superintendent, Admiralty Chart and Chronometer Depot, H.M. Dockyard.

HULL ... ... Captain Geo. B. STURDY, c/o Mr. W. HAKES, Commercial Road.

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

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

SYDNEY, New South Wales. Commander G. D. WILLIAMS, D.S.O., R.D., R.N.R., Deputy Director of Navigation, Customs House.

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

VANCOUVER, British Columbia. Mr. T. S. H. SHEARMAN, Room 40, Post Office Building.

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.

Unless otherwise stated, vessels on the following list are s.s.

M.L. = Equipped with tested Instruments for keeping Meteorological Log.

W.T. = Equipped with tested Instruments for making coded W/T reports to the Meteorological Office, London.

No. = Keeps Ships' Meteorological Report Form 911 with ship's instruments. Letter M after No. indicates ship's barometer Mercurial; A. ship's barometer Aneroid.

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

The numbers which appear before the names of ships equipped for making coded W/T reports to the Meteorological Office, London, are used for the purpose of identification when the observations are re-transmitted in synoptic messages by Wireless or Cable.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Aba	Yardley, H. A., D.S.C.	S. J. Bristowe, O. E. Jones, E. E. Roberts.	M.L.	Elder Dempster	Met. Log. 30.3.27 to 26.8.27	15.9.27
Aba	Williams, T. E.					
Abinsi	Millson, H. E.	H. A. Whitfield	No. A.	" "	Form 911 7.10.27 to 14.11.27	19.11.27
Achilles	Wilson, C. A.	J. Powell, L. Hutchinson, F. B. Allen.	M.L.	A. Holt	Met. Log. 24.5.27 to 18.10.27	28.11.27
Achilles	Dodds, R.					
Actor	Haylett, E.	A. Frew, J. McKay, G. Morrice.	"	Harrison	" 7.5.27 to 17.8.27	1.9.27
Adda	Toft, J. T.	A. E. Longlen	M.L.	Elder Dempster	Form 911 11.5.27 to 19.6.27	22.6.27
50 *Adriatic*	Hickson, V. W., Lieut Commr. R.N.R.	R. G. Roberts, O. V. Lucas	W.T.	White Star	W.T. Reg. 17.10.27 to 5.11.27	8.11.27
Aeneas	Wallace, W. K.	E. R. Owen	No. A.	A. Holt	Form 911 1.9.27 to 29.9.27	8.11.27
Agapenor	Ramsay, J.	S. G. Ellams	" A.	"	" 5.10.27 to 22.10.27	31.10.27
Aidan	Pym, J.	J. S. Thompson	" A.	Booth	" 22.10.27 to 8.11.27	8.12.27
Alban	Welch, A.	E. M. Lyons	" A.	"	" 23.9.27 to 7.10.27	26.10.27
Aleppo	Leggott, —		No.	Ellerman Wilson		
Alipore	Smith, H. E., R.D., Lt.-Commr., R.N.R.	D. A. C. Butler, C. H. Stokes	" M.	P. and O.	" 24.8.27 to 24.10.27	14.11.27
Almanzora	Clarke, E. C.	D. O. Llewellyn	" A.	R.M.S.P.	" 14.5.27 to 27.6.27	29.6.27
63 *Albertic*	Parker, W. H., C.B.E., R.D., Capt. R.N.R.	J. Farrell, R. Hawkins, J. W. Paine.	W.T.	White Star	" 5.11.27 to 21.11.27	1.12.27
					W.T. Reg 5.11.27 to 25.11.27	1.12.27
Alondra	Scott, L. S.	H. Peters	No. A.	Yeoward	" 24.9.27 to 13.11.27	15.11.27
Alynbank	Clayton, W. E.	R. Ardley	" A.	A. Weir & Co.	" 13.9.27 to 19.10.27	14.11.27
Ampetco	Vandenkerckhove, A.		" A.	American Petroleum	Form 911 3.11.27 to 2.12.27	8.12.27
Andalucia	Thomas, R. J.	C. W. Vaughan	" M.	Blue Star	" 2.10.27 to 12.11.27	22.11.27
Anchises	Woodgett, R. J.		" A.	A. Holt	" 1.10.27 to 21.10.27	14.11.27
Andes	Smith, W. E., D.S.O., R.D., Capt. R.N.R.	G. H. Elliott, H. G. Whittle	" M.	R.M.S.P. Co.	" 24.9.27 to 7.11.27	17.11.27
Antilochus	Clark, J. W.	O. P. H. Wynne	" A.	A. Holt	" 13.9.27 to 27.10.27	31.10.27
Aorangi	Crawford, R.	G. H. Kime, E. Anderson, E. V. Bilger, D. Richards.	M.L.	Canadian-Australasian	Met. Log. 1.6.27 to 15.9.27	11.10.27
30 *Aquitania*	Rostron, Sir A. H., K.B.E., R.D., Capt. R.N.R.	J. L. Croasdaile, J. Locke, D. MacLean.	W.T.	Cunard	W.T. Reg. 6.11.27 to 21.11.27	24.11.27
62 *Arabic*	Bulman, J. B.	J. M. Appleby, W. Jackman, W. N. Jenkins.	"	White Star	" 14.11.27 to 3.12.27	6.12.27
Arafura	Gordon, A. S.	R. Lloyd Harry, C. G. Knight, B. W. Dun, C. Stratford.	M.L.	Eastern and Australian	Met. Log. 30.4.27 to 26.7.27	5.10.27
Arawa	Summers, W. G.	D. Aitchison, A. C. Jones, J. Jackson.	"	Shaw, Savill and Albion	" 30.3.27 to 28.7.27	11.8.27
Archimedes	Downs, E. B.	E. R. Hartley	No. A.	Lamport & Holt	Form 911 22.8.27 to 12.9.27	22.9.27
Argyllshire	Wallace, J.	J. M. Crone	" M.	Federal	" 26.9.27 to 14.10.27	15.11.27
Ariguani	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	G. McKee, J. L. Owen, E. W. Jones.	M.L.	Elders & Fyffes	Met. Log. 24.5.27 to 17.9.27	9.11.27
Ariosto	Biggins, —		No.	Ellerman Wilson		
Armadale Castle	Imlah, C. B.	A. B. Connon, G. D. Pennick, J. Lecky, H. Bunn.	"	Union Castle	" 7.5.27 to 30.10.27	17.11.27
Arracan	Duncan, S. S.	J. Summers, J. Henderson, C. C. Weir.	"	P. Henderson	" 5.5.27 to 19.9.27	29.9.27
Arundel	Short, H.	Mr. Hill	C.C.	Southern Rly.	Telegraphic Report 9.12.27	9.12.27
Arundel Castle	Knight, A.	R. May	No. A.	Union Castle	Form 911 23.9.27 to 14.11.27	15.11.27
Astronomer	Richards, J.	A. Brown, C. C. Heaton, H. W. FitzSmian.	M.L.	Harrison	Met. Log. 15.7.27 to 17.10.27	21.10.27
Ascanius	Agnew, J.	C. Houghton, R. Singleton, J. B. Marshall.	"	A. Holt	" 22.5.27 to 26.9.27	3.10.27
Athenic	Binks, J. W.	W. Hill	No. A.	White Star	Form 911 20.10.27 to 3.11.27	24.11.27
Atreus	Salter, G. H.	J. C. Stratford	" A.	A. Holt	" 6.9.27 to 4.10.27	8.10.27
Atsuta Maru	Narui, N.	K. Fuse	" A.	Nippon Yusen Kaisha	" 16.7.27 to 15.8.27	19.11.27
Auditor	Owen, W. T.	T. E. Steel	" M.	Harrison	" 2.7.27 to 22.7.27	3.8.27
Autolycus	Dunlop, J. K.	T. Bell	" A.	A. Holt	" 17.11.27 to 28.11.27	8.12.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Ausonia	Stafford, W., D.S.C., R.D., Lt.-Commr., R.N.R.	J. J. Wiseman	No. A.	Cunard	Form 911 21.8.27 to 8.10.27	11.10.27
Avon	Hannam, F. S. ...	E. S. Dunch	„ M.	R.M.S.P.	„ 10.11.26 to 20.1.27... ...	8.2.27
Balfour	Carr Jones, D. J. ...	W. J. Roberts	„ A.	Canadian Pacific ...	„ 30.10.27 to 30.11.27 ...	5.12.27
Balranald	Townshend, W. P., Commr., R.N.R.	C. Hannen, F. Ward, R. E., Cowell, J. C. Davis. L. S. Bailey.	M.L.	P. & O. Branch ...	Met. Log. 9.6.27 to 13.10.27	22.11.27
51 *Baltic*	White, E. R., R.D., Commr., R.N.R.	J. Boyce, J. Law, N. E. Banks	W.T.	White Star ...	W.T. Reg. 31.10.27 to 19.11.27 ...	22.11.27
					Form 911 31.10.27 to 19.11.27 ...	22.11.27
Bampton Castle ...	Hutchings, A. H. ...	... ...	No. A.	Union Castle	„ 17.9.27 to 14.10.27... ...	24.10.27
Banbury Castle ...	Swiney, W. A. ...	C. G. Cuthbertson	„ A.	„	„ 21.4.27 to 9.5.27	9.6.27
Banffshire	Wynne, R. H.... ...	W. F. Lockhead	„ A.	Turnbull Martin ...	„ 30.10.27 to 2.12.27... ...	8.12.27
Baradine	Rollo, W.	S. Gibson, C. Bowden, J. Alleyne, D. Buckley.	M.L.	P. & O. Branch ...	Met. Log. 17.3.27 to 22.6.27	26.7.27
Barpeta	Strachan, J.	B. R. Faithfull	No. M.	British India	Form 911 28.9.27 to 27.10.27... ...	14.11.27
Barrabool	Rhodes, H. R. ...	C. W. Mayne	„ M.	P. & O. Branch ...	„ 18.9.27 to 30.10.27... ...	3.11.27
Baychimo	Cornwall, S. A. ...	W. H. Deans	„ A	Hudson's Bay Co. ...	„ 7.7.27 to 14.9.27	13.10.27
59 *Belgenland* ...	Morehouse, W. A. ...	F. Good, F. Clitty, F. Daxter	W.T.	Red Star ...	W.T. Reg. 10.10.27 to 29.10.27 ...	1.11.27
					Form 911 9.10.27 to 29.10.27... ...	1.11.27
Beltana	Allin, C. H. C. ...	D. M. Stafford	No. M.	P. & O. Branch ...	„ 24.9.27 to 14.10.27... ...	7.11.27
Benalder	Cole, J. H., D.S.C. ...	A. J. Leckie	„ A.	Ben Line	„ 30.9.27 to 9.11.27	14.11.27
Bendigo	Nicholl, R. N. C. ...	... ...	„ M.	P. & O. Branch ...	„ 14.10.27 to 25.10.27 ...	3.11.27
Benefactor	Jones, C. W.	A. Watson	„ M.	Harrison	„ 13.10.27 to 13.11.27 ...	15.11.27
Bengloe	McCorquodale, A. ...	J. W. Gordon	„ A.	Ben Line	„ 21.9.27 to 10.11.27 ...	28.11.27
31 *Berengaria* ...	McNeil, S. G. S., R.D., Capt. R.N.R.	J. A. Myles, W. C. A. Robson, S. A. T Bullock.	W.T.	Cunard	W.T. Reg. 13.11.27 to 29.11.27 ...	3.12.27
Berrima	Short, C. E.	A. Hughes	No. M.	P. & O. Branch ...	Form 911 7.10.27 to 12.11.27... ...	16.11.27
Berwyn	McCombie, G. ...	D. Dunn	„ A.	Canadian Pacific ...	„ 23.1.27 to 19.3.27	24.3.27
Bintang	Morzer Bruyns, M. F.	M. C. Altins	„ M.	Nederland	„ 26.2.27 to 25.3.27	29.3.27
Bogota	Pape, E. R.	S. E. Ayland	„ M.	R.M.S.P. Co.	„ 9.10.27 to 31.10.27... ...	4.11.27
Bolingbroke ...	Murray, M. F. ...	J. B. Hewson, F. G. Webster, N. Scallon, R. Davidson.	M.L.	Canadian Pacific ...	Met. Log. 16.9.26 to 23.3.27	25.5.27
Borda	Holland, R.	... ...	No. M.	P. & O. Branch ...	Form 911 18.2.27 to 28.6.27	7.7.27
Bothwell	Rothwell, A. J. ...	— Biggs	„ A.	Canadian Pacific ...	„ 6 3.27 to 14.4.27	20.4.27
Brecon	Rothwell, A.	E. H. Coleman	„ A.	„ „ ...	„ 5.5.27 to 6.6.27	14.6.27
Brenda	Lamont, A.	N. Ross	„ A.	Scottish Fishery Board.	„ 1.11.27 to 29.11.27	5.12.27
Brighton	Hill, A.	Mr. Munton	C.C.	Southern Railway ...	Telegraphic Report 8.12.27	8.12.27
British Engineer	Joures, F. W.	W. Evans	No. M.	British Tankers ...	Form 911 11.2.27 to 26.2.27	25.5.27
British Progress ...	Putt, R. O.	... ...	No.	„ „ ...	... ...	...
British Soldier ...	... ...	H. J. Crangle	„ A.	„ „ ...	„ 17.11.26 to 10.12.26 ...	3.1.27
Bronte	Crapper, J. S.... ...	J. B. Scott	„ A.	Lamport & Holt ...	„ 2.10.27 to 5.11.27	5.12.27
Bulysses M.V. ...	Carey, J.	A. J. Clatworthy	„ M.	Anglo-Saxon Petroleum Co.	... ...	...
Cambria C.S. ...	Sherwood, C. A., D.S.C.	A J. English, B. C. Farrow, C. F. St. John.	No.	Eastern Tel. Co. ...	Met. Log. 9.9.26 to 25.1.27	23.2.27
Cambria	Telfer, J. E., O.B.E ...	V. S. Phillips	C.C.	L.M. & S. Rly	Telegraphic Report 8.12.27	8.12.27
Cameronia	Gemmell, W.	... ...	No. A.	Anchor	Form 911 6.11.27 to 27.11.27... ...	1.12.27
Camito	Forrester, W. T., O.B.E.	H H. Dunning, J. McIntyre, C. M. Schofield.	M.L.	Elders & Fyffes ...	Met. Log. 2.8.27 to 26.9.27	1.12.27
Canadian Importer	Forson, A.	G. R. Randall	No. A.	Canadian Gov. Mercantile Marine.	Form 911 18.8.27 to 19.9.27	20.10.27
Canadian Inventor	Boulton, F. W. ...	O. D. Alcorn	„ A.	„ „ „	„ 17.9.27 to 30.10.27... ...	19.11.27
Canadian Scottish	Wallace, C.	... ...	„ A.	„ „ „	„ 26.5.27 to 11.7.27	19.8.27
Canadian Skirmisher.	Millar, W. H.	... ...	„ A.	„ „ „	„ 19.11.26 to 5.1.27	11.1.27
Canadian Winner	Hocking, N. P. ...	R. J. Watson	„ M.	„ „ „	„ 18.9.27 to 17.10.27... ...	11.11.27
Canonesa	Brodie, W. H. ...	F. W. Kent	„ M.	Furness Houlder ...	„ 3.10.27 to 15.10.27... ...	21.10.27
35 *Carmania* ...	Brown, F. G., R.D., Capt., R.N.R.	W. M. Stewart, P.L. Williams, D. E. Sibson.	W.T.	Cunard ...	W.T. Reg. 30.10.27 to 19.11.27 ...	21.11.27
					Form 911 7.8.27 to 26.8.27	30.8.27
Carnarvon Castle ...	Hague, J.W., Commr., R.N.R. / Strong, H., R.D., Commr., R.N.R.	B. Simpson, H. A. Causton, G. Gorringe, H. A. Deller.	M.L.	Union Castle ...	Met. Log. 29.4.27 to 21.8.27	27.8.27
34 *Caronia*	Hossack, W. H., R.D., Capt., R.N.R.	P. F. Collins, H. G. Hayward.	W.T.	Cunard ...	W.T. Reg. 23.9.27 to 4.11.27	17.11.27
					Form 911 24.9.27 to 4.11.27	17.11.27
Casanare	Steidelmann, H. ...	R. O. Jones	No. A.	Elders & Fyffes ...	„ 25.6.27 to 11.9.27	16.9.27
Cavina	Riseley, A. D.... ...	W. J. Dodd, J. W. Kendall, R. M. Cossentine.	„ A.	„ „ ...	„ 22.10.27 to 27.11.27 ...	1.12.27
52 *Cedric*	Smith, R. G.	S. S. Fieldwood, D. W. Chamberlain, F. Patchett.	W.T.	White Star ...	W.T. Reg. 7.11.27 to 27.11.27... ...	29.11.27
					Form 911 6.11.27 to 27.11.27... ...	28.11.27
53 *Celtic*	Berry, G.	T. Pratt, A. Thompson ...	„	„ „ ...	W.T. Reg. 26.9.27 to 13.11.27... ...	15.11.27
					Form 911 25.9.27 to 13.11.27... ...	15.11.27
Centaur	Rose, A. F.	L. Johnstone	No. M.	A. Holt & Co. ...	„ 22.12.26 to 2.2.27	14.3.27
Ceramic	Roberts, J., C.B.E., D.S.O., R.D., Capt., R.N.R.	... ...	„ A.	White Star	„ 20.8.27 to 6.12.27	8.12.27
Changte	Gambrill, F. C. ...	D. D. Tyer, A. Johnston ...	M.L.	Yuill & Co.	Met. Log. 15.4.27 to 9.8.27	5.10.27
Changuinola ...	Thorburn, R. A., R.D., Commr., R.N.R.	C. K. Harrocks...	No. A.	Elders & Fyffes ...	Form 911 16.10.27 to 19.11.27 ...	1.12.27
China	Sudell, F., R.D., Commr., R.N.R.	L. Porter	„ M.	P. & O.	„ 25.7.27 to 11.8.27	8.10.27
Chindwin	Esslemont, C. ...	... ...	„ A.	Henderson	„ 4.9.27 to 16.11.27	5.12.27
Chirripo	McColm, F.	... ...	No.	Elders & Fyffes ...	... ...	...
City of Baroda ...	McMillan, J.	A. Beaton, E. H. Routledge, — Field.	M.L.	Ellerman	Met. Log. 5.7.27 to 29.9.27	10.11.27
City of Benares ...	Anderson, W. W. ...	F. Forsyth	No. A.	„	Form 911 4.8.27 to 3.9.27	26.9.27
City of Brisbane ...	Seaborne, F. O., D.S.C.	D. W. F. Reilly	„ A.	„	„ 28.9.27 to 30.10.27... ...	4.11.27
City of Canterbury	Bremner, D. M. ...	R. H. Hodgson	„ A.	„	„ 18.9.27 to 26.10.27... ...	7.11.27
City of Carlisle ...	Mordue, J. A. ...	... ...	„ A.	„	„ 6.7.27 to 5.9.27	17.10.27
City of Chester ...	Letton, F. W. ...	C. C. Duncan, A. J. Barnett, R. Mowbray.	M.L.	„	Met. Log. 28.4.27 to 22.9.27	28.10.27
City of Edinburgh	Wyper, J.	G. Hummell	No. M.	„	Form 911 3.11.27 to 22.11.27... ...	5.12.27
City of Hong Kong	Walton, H. L., O.B.E., R.D., Commr., R.N.R.	S. J. Nash	„ A.	„	„ 26.6.27 to 30.8.27	1.9.27
City of London ...	Parker, F. W., R.D., Commr., R.N.R.	J. McHattie	„ A.	„	„ 26.2.27 to 8.5.27	28.5.27
City of Rangoon ...	Jones, P.	E. R Wildermoth, R. H. Stewart, G. T. Willet.	M.L.	„	Met. Log. 22.1.27 to 4.6.27	29.6.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
City of Venice ...	Lee, A.	... ...	No. A.	Ellerman	Form 911 2.3.27 to 17.3.27	4.5.27
City of Yokohama	Singleton, J. G. ...	... ...	„ A.	„	„ 28.8.27 to 20.9.27	5.12.27
Clan Alpine ...	Lyall, A. B.	H. J. Winchester	„ A.	Clan	„ 11.7.27 to 19.10.27... ...	28.11.27
Clan Lamont ...	Urquhart, P., D.S.C.	P. de Gruchy	„ A.	„	„ 13.9.27 to 14.10.27... ...	21.10.27
Clan Lindsay ...	Giles, H. J., R.D., Commr., R.N.R.	E. P. Smith	„ A.	„	„ 29.10.27 to 3.11.27... ...	5.12.27
Clan MacBean ...	Worthington, J. H. ...	... ...	No.	„	... ...	...
Clan Macbeth ...	Young, A. H., R.D., Lieut. - Commdr R.N.R.	J. M. Lorimer	„ A.	„	„ 23.8.27 to 19.9.27	5.10.27
Clan Macfadyen ...	Stenson, F. J. R.D., Capt. R.N.R.	C. M. B. Cumberlege	„ A.	„	„ 5.6.27 to 6.9.27	17.10.27
Clan Macfarlane ...	Redford, —	... ...	„ A.	. ...	... ...	...
Clan Macgillivray	West, W. F.	R. W. Roberts	„ A.	„	„ 27.4.27 to 24.5.27	20.6.27
Clan Macindoe ...	West, W. F.	D. McAllister	„ A.	„	„ 23.9.27 to 15.10.27... ...	7.11.27
Clan Mackellar ...	Smith, W. P.	G. A. A. Grant	„ A.	„	„ 16.8.27 to 3.11.27	10.11.27
Clan Macphee ...	Gourlay, J. B. ...	D. S. Rae, A. F. Martin, W. A. Shewan.	M.L.	„	Met. Log. 14.5.26 to 2.5.27	9.6.27
Clan Macnaughton	Simpson, A. W. ...	D. D. Ingram	No. A.	„	Form 911 14.8.27 to 11.9.27	3.10.27
Clan Mactaggart ...	Mee. F. T.	E. A. Hewson	„ A.	„	„ 18.10.27 to 22.11.27 ...	28.11.27
Clan Macwhirter ...	Waterhouse, J. ...	W. A. Robbie, E. A. Brown. D. Timms.	M.L.	„	Met. Log. 11.2.27 to 15.8.27... ...	23.8.27
Clan Macwilliam	Thompson, W. ...	J. H. Mellor	No. A.	„	Form 911 13.8.27 to 26.9.27	2.11.27
Clan Malcolm ...	Neill, G. A.	D. A. Stark, H. V. Whitman. A. R. Macdonald.	M.L.	„	Met. Log. 7.4.27 to 23.7.27	27.8.27
Clan Morrison ...	Porterfield, W. M. ...	L. C. Higgins	No A.	„	Form 911 5.7.27 to 2.8.27	3.8.27
Clan Murdoch ...	Miller, W.	H. F. M. Preston	„ A.	„	„ 24.8.27 to 4.11.27	28.11.27
Clan Ranald ...	Laird, C.	... ...	„ A.	„	„ 15.9.27 to 11.10.27... ...	20.10.27
Clan Ross	Openshaw, L. G. ...	J. R. Elliott	„ A.	„	„ 14.10.27 to 1.11.27 ...	28.11.27
Clan Sinclair ...	George, L. S.	N. Macleod	„ A.	„	„ 31.8.27 to 23.9.27	7.11.27
Clan Urquhart ...	Baker, E. W.	F. E. Woodall	„ A.	„	„ 20.9.27 to 15.10.27... ...	18.10.27
Colonia, C.S. ...	Carlton, G. F., O.B.E., Commr., R.N.R.	W. E. Allen, W. F. Anderson, F. B. Bolingbroke.	M.L.	Telegraph Construc-tion & Maintenance.	Met. Log. 4.12.26 to 25.2.27	8.3.27
Colonian	Gittins, R. P.	W. J. Wright	No. A.	Leyland	Form 911 11.11.27 to 20.11.27 ...	5.12.27
Comorin	Miller, E. C., R.D., Commr., R.N.R.	E. C. White	„ M.	P. & O.	„ 11.8.27 to 22.9.27	26.9.27
Concordia	Telfer, J. H.	T. Philip, W. Law, L. H. Hobson.	M.L.	Anchor Donaldson ...	Met. Log. 5.2.27 to 11.7.27	14.7.27
Corinthic	Hart, F.	E. Burt, M. Bennett, S. A. Macnaughton.	„	White Star	„ 24.4.27 to 6.8.27	10.8.27
Cornwall	Haines, F. P.	H. S. White	No. A.	Federal	Form 911 26.1.27 to 28.2.27	12.4.27
Craftsman	Gibbings, W.	J. Williams	„ A.	Harrison	„ 18.8.27 to 8..1127	11.11.27
Crawford Castle ...	Morgan, A. O., R.D., Commr., R.N.R.	J. A. Wilson	„ A.	Union Castle	„ 22.7.27 to 4.9.27	3.10.27
Culebra	Rathkins C.E. ...	P. Cooper, R. N. Fletcher, G. Ferguson.	M.L.	R.M.S.P. Co.	Met. Log. 15.8.27 to 17.10.27... ...	4.11.27
Cumberland ...	Macmillan, D. ...	J. D. Marks	No. A.	Federal...	Form 911 13.7.27 to 20.8.27	26.8.27
Cuthbert	Barlow, F. P.... ...	... ...	„ A.	Booth	„ 25.8.27 to 18.9.27	22.9.27
Cyclops	Cosker, W.	J. R. C. Evans	„ A.	A. Holt	„ 26.7.27 to 17.9.27	22.9.27
Dardanus	Williams, D. T. ...	... ...	„ A.	„	„ 27.9.27 to 9.11.27	5.12.27
Darian	Masters, W.	... ...	„ A.	Leyland	„ 12.11.27 to 24.11.27 ...	5.12.27
Darro	Matthews, G. P. ...	W. Halder-Campe	„ M.	R.M.S.P. Co.	„ 6.8.27 to 30.9.27	3.10.27
Demerara	Willan, F. G. L., R.D., Capt., R.N.R.	S. T. Whiteside	„ M.	„	„ 4.10.27 to 24.11.27... ...	1.12.27
Demosthenes ...	Ogilvy, A.	J. Cruickshank	„ M.	Aberdeen	„ 12.7.27 to 31.10.27... ...	2.11.27
Deseado	Hannam, F. S. ...	L. D. Jennings, A. Barff ...	„ M.	R.M.S.P. Co.	„ 20.8.27 to 14.10.27... ...	25.10.27
Desna	Green, J.	L. G. Peterson	„ M.	„	„ 3.9.27 to 25.10.27	3.11.27
Deucalion	Melling, C. F.... ...	R. Wilson...	„ A.	A. Holt	„ 22.9.27 to 20.10.27... ...	24.10.27
Dieppe	Marmery, S.	Mr. Parsons	C.C.	Southern Railway ...	Telegraphic Report 30.11.27... ...	30.11.27
Dimboola	Roy, C. M.	... ...	No. A.	Melbourne S.S. Co. ...	Form 911 1.10.27 to 26.10.27... ...	28.11.27
Discoverer	Ling, J. T.	H. W. Gostage	„ M.	Harrison	„ 8.4.27 to 9.7.27	12.7.27
Domala, M.V. ...	Kitson, A. G.	J. G. Wallace	„ M.	British India	„ 8.7.27 to 18.9.27	10.10.27
Dominia, C.S. ...	Campos, V., O.B.E., Lt.-Commr., R.N.R.	S. A. Garnham, C. Bullock. L. J. Hegarty, R. Johnson.	M.L.	Telegraph Construc-tion & Maintenance.	... ...	...
Dominic	Harris, F. C. P. ...	C. C. Beal...	No. A.	Booth	Form 911 22.7.27 to 5.8.27	5.9.27
61 *Doric*	Bolton, S., D.S.C., R.D., Commr., R.N.R.	B. Harrison, A. E. Dyer, G. T. Kavanagh.	W.T.	White Star ... {	W.T.Reg. 30.10.27 to 19.11.27 ...	24.11.27
				{	Form 911 30.10.27 to 19.11.27 ...	1.12.27
Doric Star ...	Thomas, R. T. ...	L. McDermott	No. A.	Blue Star	„ 22.11.26 to 20.12.26 ...	10.1.27
Dorington Court ...	Clarke, E. J.	P. Jones	„ A.	Haldin & Co.	„ 19.6.27 to 29.9.27	11.10.27
Dromore Castle ...	MacMahon, J. ...	D. P. Klasen	„ A.	Union Castle	„ 8 10.27 to 20.10.27... ...	12.11.27
Dryden	Major, T. W.	... ...	„ M.	Lamport & Holt ...	„ 3.10.27 to 22.10.27... ...	16.11.27
Duendes	Pape, E. R.	S. E. Ayland	„ M.	P.S.N. Co.	„ 9.7.27 to 23.7.27	5.8.27
Dunaff Head ...	Milner, T. F. R.D., Lt.-Commr., R.N.R.	S. Duff	„ A.	Ulster S.S. Co. ...	„ 4.10.27 to 9.11.27	11.11.27
Dundrum Castle ...	Weller, H. E.	H. H. F. Trew	„ A.	Union Castle	„ 21.8.27 to 23.9.27	24.10.27
Dunrobin	Ramsay, J. D. ...	C. H. Kendall	„ A.	Glen & Co.	„ 17.9.27 to 21.10.27... ...	3.11.27
Duquesa	Ellis, F., D.S.C. ...	E. W. Denman	„ M.	Furness Withy ...	„ 25.8.27 to 18.10.27... ...	24.10.27
Durenda	Beeching, P. H. ...	... ...	„ M.	British India	„ 19.10.27 to 17.11.27 ...	8.12.27
Edinburgh Castle	Owen, S.	T. N. McAllen	No. A.	Union Castle	„ 5.8.27 to 25.9.27	3.10.27
Egori	Sola, P., D.S.O. ...	F. J. Croft	No. A.	Elder Dempster ...	„ 9.10.27 to 28.10.27... ...	19.11.27
Egyptian Prince ...	Ord, T.	... ...	„ A.	Prince	„ 13.1.27 to 7.3.27	31.3.27
El Paraguayo ...	St. Pierre, P.	S. B. Wright	„ M.	Houlder Bros.	„ 22.5.27 to 13.7.27	9.8.27
Elpenor	Gordon, A. L.... ...	M. Robertson, C. Kavanagh	M.L.	A. Holt	Met. Log. 27.3.27 to 30.7.27	18.8.27
Elysia	Duncan, A. R. ...	A. Laidlaw, H. C. Fry, J. Herbert.	„	Anchor	„ 28.7.27 to 2.10.27	17.10.27
Empress of Asia ...	Douglas, L. D. R.D., Lt.-Commr., R.N.R.	R. H. Foley, L. C. Hogg, T. M.W Golby, M. Fawcett.	„	Canadian Pacific ...	„ 9.6.27 to 1.10.27	4.11.27
Empress of Canada	Hailey, A. J.	A. G. Simmons	„	„ „ „ ...	„ 30.6.27 to 22.10.27... ...	28.11.27
Empress of France	Griffiths, E.	O. F. Pennington, E. Roberts, W. Ewens.	„	„ „ „ ...	„ 30.4.27 to 18.10.27... ...	31.10.27
Empress of Russia	Hosken, A. J.... ...	F. A. R. Dobbin	„	„ „ „ ...	„ 25.12.26 to 8.5.27	13.6.27
Endeavour	Commr. S. A. Geary-Hill, D.S.O., R.N.	C. S. E. Lansdown	M.L.	His Majesty's Ship ...	„ 14.3.27 to 11.7.27	19.7.27
Essequibo	Kite, E....	J. H. Lowe	No. M.	R.M.S.P. Co.	Form 911 6.10.27 to 15.11.27... ...	5.12.27
Eumaeus	Read, J. W.	... ...	„ A.	A. Holt	„ 3.6.27 to 1.12.27	8.12.27
Euripides	Collins, P. J., O.B.E.	H. S. Cox, K. D. Fisher, P. Congdon.	M.L.	Aberdeen	Met. Log. 1.1.27 to 8.5.27	14.5.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Euryades	Stewart, J. R.... ...	... ...	No. A.	A. Holt	Form 911 9.10.27 to 19.10.27... ...	27.10.27
Explorer	Ling, J. T.	A. M. Hughes	„ M.	Harrison	„ 6.8.27 to 4.11.27	15.11.27
Explorer	Allan, J.	F. O. Sheehy	„ A.	Scottish Fishery Board.	„ 1.11.27 to 30.11.27... ...	5.12.27
Ferndale	Daniel, F.	C. P. Marquand	„ M.	Commonwealth Govt.	„ 24.8.27 to 29.9.27	10.11.27
Flandria	Maars, L.	T. Doornbosch	„ M.	Holland Lloyd ...	„ 15.4.27 to 2.6.27	9.6.27
Francisco	Scales, H.	F. Elgin	„ A.	Ellerman Wilson ...	„ 25.9.27 to 29.10.27... ...	3.11.27
Freya	Angus, W.	W. Pirrie	„ A.	Scottish Fishery Board.	„ 1.11.27 to 30.11.27... ...	8.12.27
Gaika	Jackson, C. R. ...	L. G. May	„ A.	Union Castle	„ 11.9.27 to 4.11.27	7.11.27
Galtymore	Yeoman, J. T. ...	... ...	„ M.	Furness Withy ...	„ 25.9.27 to 24.11.27... ...	1.12.27
Garoet	Visser, C. W.	C. J. Vandenboom	„ M.	Rotterdam Lloyd ...	„ 26.6.27 to 15.7.27	25.7.27
Garth Castle ...	Jackson, C. R. ...	W. S. J. Aldous	„ A.	Union Castle	„ 28.5.27 to 18.6.27	22.6.27
Gelria	Veldkamp, C. J. ...	J. Doornbosch	„ M.	Holland Lloyd ...	„ 16.9.27 to 3.11.27	7.11.27
Geranium	Bennett, H. T., D.S.O., Commr. R.A.N.	... ...	„ M.	His Majesty's Australian Ship.	... ...	...
Glamorganshire ...	Spriddell, F. G., R.D., Commr., R.N.R.	T. G. S. Cairns	„ M.	R.M.S.P. Co.	Form 911 21.10.27 to 27.11.27 ...	8.12.27
Glenamoy, M.V. ...	Homan, C. E.... ...	R. H. Bishop	M.L.	Glen Line	„ 17.8.27 to 22.10.27... ...	4.11.27
Glengarry	Angier, J.	C. S. Brewer	No. M.	„	„ 6.9.27 to 30.10.27	2.11.27
Glenluce	Kennett, W. H. ...	H. B. Porter	„ A.	„	„ 19.9.27 to 22.11.27... ...	8.12.27
Glenshane	Beer, E.	... ...	„ A.	„	„ 21.5.27 to 21.8.27	15.9.27
Gloucestershire ...	Robin, E.	H. R. Mackay	„ A.	Bibby	„ 3.7.27 to 11.9.27	15.9.27
Gorgon	Hughes, J. W. ...	A. E. Bowlt, E. W. Powell, J. M. T. Edward, A. McK. Wright.	M.L.	A. Holt & Co.	Met. Log. 15.4.27 to 2.9.27	26.10.27
Grantully Castle ...	Whitfield, G. T. ...	R. Wren	No. A.	Union Castle	Form 911 3.6.27 to 14.8.27	17.8.27
Greenbrier	McColm, F.	J. B. Wookey	„ A.	Elders & Fyffes ...	„ 24.7.27 to 28.8.27	5.9.27
Halesius	Samuels, C.	R. W. Cook	„ A.	R. P. Houston ...	„ 20.8.27 to 23.9.27	14.11.27
Haliartius	Marsh, L. V.	... ...	„ A.	„ „ ...	„ 25.6.27 to 19.7.27	15.8.27
Harmonides ...	Hughes, W. F. ...	S. S. Davidson	„ A.	„ „ ...	„ 10.4.27 to 2.5.27	16.5.27
Hatimura	Lane, S. R., R.D., Capt., R.N.R.	F. Dolton, K. G. Pullman ...	No. M.	British India	„ 5.9.27 to 10.10.27	31.10.27
Hauraki, M.V. ...	Frew, J. D.	B. F. Fisher	M.L.	Union S.S. Co., N.Z....	Met. Log. 11.8.26 to 6.3.27	9.6.27
Henry Holmes, C.S.	Bicker Caarten, A. ...	M. A. Green	No. M	W. I. & Panama Telegraph Co.	Form 911 15.10.27 to 3.11.27... ...	5.12.27
Herald	Haselfoot, F.E.B., Capt., R.N.	D. G. V. Williams	M.L.	His Majesty's Ship ...	Met. Log. 21.6.27 to 17.10.27... ...	15.11.27
Herefordshire ...	Mann, R. P.	... ...	No. A.	Bibby	Form 911 14.7.26 to 28.8.27	1.9.27
Herminius	Roberts, T. V. ...	O. C. Hayles	„ A.	Shaw, Savill & Albion	„ 24.2.27 to 10.4.27	15.8.27
Herschel	Watson, W. W. ...	J. F. Maurey	„ A.	Lamport & Holt ...	„ 13.4.27 to 3.7.27	25.7.27
Hertford	Urquhart, D.	A. Robertson	„ A.	Federal	„ 22.5.27 to 13.6.27	25.7.27
Hibernia	Tanner, E. B., O.B.E.	R. Woodall	C.C.	L.M. & S. Railway ...	Telegraphic Report 19.11.27... ...	19.11.27
Highland Laddie ...	Jones, T. J.	N. F. Seaton	No. A.	Nelson	Form 911 1.8.27 to 17.9.27	26.9.27
„ *Piper* ...	Collings, D.	S. E. Jackson, R. G. Owen, A. Southgate.	M.L.	„	Met. Log. 13.5.27 to 4.11.27	1.12.27
„ *Pride* ...	Robinson, R. H. ...	... ...	No. A.	„	Form 911 23.9.27 to 21.11.27... ...	28.11.27
„ *Prince* ...	Davies, J.	S. A. Wheaton	„ A.	Prince	„ 12.10.27 to 30.10.27 ...	10.11.27
„ *Rover* ...	Ashby Graves, F. ...	C. C. Legg	„ A.	Nelson	„ 17.7.27 to 3.9.27	22.9.27
Hildebrand ...	Maddrell, J.	... ...	„ A.	Booth	„ 17.9.27 to 30.10.27... ...	9.11.27
Hobson's Bay ...	Kydd, O. J.	R. Pearce, R. Bodman, G. Newton, H. Hendy.	M.L.	Commonwealth Govt.	Met. Log. 31.5.27 to 10.9.27	17.9.27
Holbein	Gough, W. A.... ...	H. L. Rudd	No. A.	Lamport & Holt ...	Form 911 9.7.27 to 26.9.27	18.10.27
54 *Homeric*	Holme, A.	H. G. Morgan, S. B. Morfee, W. T. Poustie.	W.T.	White Star	W.T. Reg. 3.11.27 to 18.11.27... ...	21.11.27
Hororata	Holland, E.	... ...	No. A.	New Zealand S.S. Co.	Form 911 4.6.27 to 6.10.27	17.10.27
Hubert	Evans, L.	... ...	„ A.	Booth	„ 16.9.27 to 23.10.27... ...	7.11.27
Huntingdon ...	Ashworth, W. ...	... ...	„ A.	Federal...	„ 29.7.27 to 3.9.27	5.9.27
Huntsman	Russell, H.	J. Richardson	„ M.	Harrison	„ 1.8.27 to 12.10.27	20.10.27
Hurunui	Burton Davies, J. ...	J. Oxnard, F. Longheed, L. Cann, K. Goldsworthy.	M.L.	New Zealand S.S. Co.	Met. Log. 2.1.27 to 23.6.27	28.6.27
Ingoma	Barrow, R. K. ...	D. G. Russell	No. M.	Harrison	Form 911 15.10.27 to 27.11.27 ...	5.12.27
Inkum	Meetham, J. T. ...	H. Johnson	„ A.	J. H. Welsford ...	„ 13.9.27 to 11.10.27... ...	17.10.27
Iris, C.S.	Hughes, H. R. ...	W. Oliver, D. Bruce, D. MacDonald, T. Vickers.	M.L.	Pacific Cable Board...	Met. Log. 17.11.26 to 24.3.27... ...	11.10.27
Iroquois	Jackson, A. L. Commr., R.N.	H. L. Jenkins	„	His Majesty's Ship ...	„ 4.4.27 to 1.8.27	13.9.27
Ixion	Reed, G. C.	E. C. Radford	No. A.	A. Holt	Form 911 9.10.27 to 20.10.27... ...	28.10.27
Javanese Prince ...	Naylor, E.	W. Venn	„ A.	Prince	„ 23.9.27 to 25.10.27... ...	12.11.27
Jervis Bay	Chaplin, W. R. ...	R. W. Laycock	„ M.	Commonwealth Govt.	„ 9.10.27 to 31.10.27... ...	9.11.27
Kaisar-i-Hind ...	Morton, A. J.	... ...	„ M.	P. & O.	„ 17.9.27 to 9.11.27	12.11.27
Kalyan	Cornewall Jones, B.	S. Gerranson	„ M.	P. & O.	„ 13.8.27 to 15.9.27	19.9.27
Kamo Maru ...	Enya, S.	... ...	„ A.	Nippon Yusen Kaisha	„ 16.9.27 to 19.10.27... ...	25.10.27
Kangaroo	{ Buckeridge, G. ... { Turner, J. E. ...	E. Hutchinson, J. Kavanagh, H. Brackenridge.	M.L.	State Service Australia.	Met. Log 4.5.27 to 5.9.27	25.10.27
Karapara	Miller. A. C.	J. W. Knight	No. M.	British India	Form 911 24.11.26 to 7.1.27	24.1.27
Kashmir	Mallalue, R., R.D., Lt.-Commr., R.N.R.	A. J. McHattie	„ M.	P. & O.	„ 17.9.27 to 29.11.27... ...	8.12.27
Kenilworth Castle	Chave, Sir B., K.B.E.	R. C. Longman, L. A. J. Keeble, W. Dryden, W. Wyeth.	M.L.	Union Castle	Met. Log. 18.4.27 to 8.8.27	19.10.27
Khiva	Cooper, C. P., O.B.E., R.D., Capt., R.N.R.	G. W. Wood, D. Meakle, E Allen, V. A. Nicolls.	M.L.	P. & O.	„ 8.6.27 to 14.8.27	19.8.27
Khyber	Hester, C. W., R.D., Commr., R.N.R.	C. S. Pirie J. D. Hornidge, H. T. Toon.	„	P. & O.	„ 29.7.27 to 6.11.27	16.11.27
Kia Ora	McIntosh, A.	E. A. Hickling	„	Shaw Savill & Albion	„ 30.1.27 to 15.6.27	20.6.27
Knight Companion	Cox, B. T.	A. Lamb, D. W. Williams ...	No. M.	A. Holt	Form 911 16.3.27 to 31.7.27	3.8.27
Koolinda, M.V. ...	Norris, H.	J. S. Airey	„ M.	State Service, Australia.	„ 26.8.27 to 26.9.27	31.10.27
Kovno	Dossor, W. A. ...	A. Snowdon, S. N. Stokes, N. W Glendenning.	M.L.	Ellerman Wilson ...	Met. Log. 30.10.26 to 13.6.27... ...	18.7.27
37 *Laconia*... ...	Britten, E. T., R.D., Commr., R.N.R.	J. Ashcroft, E. W. Connell, J. O. Chambers.	W.T.	Cunard ... {	{ W.T. Reg. 13.11.27 to 4.12.27... ... { Form 911 16.10.27 to 6.11.27	8.12.27 { 9.11.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12 27.	Date Received.
Laguna	Kirkwood, J. H. ...	R. H. A. Clark	No. A.	Pacific S.N. Co. ...	Form 911 19.10.27 to 6.11.27... ...	9.11.27
Lahore	Dawson, E. N. ...	W. G. Stevenson	„ M.	P. & O.	„ 27.11.26 to 31.12.26 ...	5.1.27
Lalande	Hamill, H.	A. E. Warburton	„ A.	Lamport & Holt ...	„ 18.7.27 to 18.10.27... ...	3.11.27
Lancashire	Griffiths, C. A. ...	R. Allen	„ A.	Bibby	„ 31.7.27 to 7.10.27	12.10.27
36 *Lancastria* ...	Oram, B. B., R.D., Capt., R.N.R.	R. P. Cambell, L. R. Sharp, F. G. Russell.	W.T.	Cunard ... {	W.T. Reg. 6.11.27 to 26.11.27 ...	1.12.27
				{	Form 911 5.11.27 to 26.11.27 ...	1.12.27
Laomedon	Beswick, W., D.S.C., Lt.-Commr., R.N.R.	H. A. Standfield	No. A.	A. Holt...	„ 17.10.27 to 2.11.27... ...	5.12.27
La Paz, M.V. ...	Benson, C. W... ...	D. Beamer	„ M.	Pacific S.N. Co. ...	„ 18.9.27 to 3.10.27	21.10.27
Laplace	Hickman, V. G. ...	A. L. Murray, R. D. Cottam	„ A.	Lamport & Holt ...	„ 15.4.26 to 28.6.27	30.8.27
55 *Lapland*	Thomas, A. J. ...	C. Cornellie, F. Wills	W.T.	Red Star ... {	W.T. Reg. 31.10.27 to 18.11.27 ...	21.11.27
				{	Form 911 30.10.27 to 19.11.27 ...	21.11.27
64 *Laurentic* ...	Trant, E. L., R.D., Commr., R.N.R.	... ...	„	White Star	... ...	... ...
Lautaro, M.V. ...	Dunn, R. E., O.B.E....	E. Sandon	No. M.	Pacific S.N. Co. ...	„ 29.6.27 to 25.7.27	8.9.27
Leicestershire ...	de Legh, P.	R. S. Evans, H. G. Walton, J. K. Gemmell, G.W. Hunter.	M.L.	Bibby	Met. Log. 10.9.27 to 18.11.27... ...	24.11.27
Leighton, M.V. ...	Lindesay, J. M. ...	J. T. A. Thomson	No. A.	Lamport & Holt ...	Form 911 22.7.27 to 10.8.27	22.8.27
Leitrim	Kemp, E. R.	C. R. Brown	„ A.	Dowie, J., & Co. ...	„ 2.11.27 to 17.11.27... ...	23.11.27
Llandaff Castle ...	Morton Betts, W. ...	R. Bayer, M. J. Castle... ...	„ A.	Union Castle	„ 7.9.27 to 27.9.27	28.10.27
Llandovery Castle	Kerbey, K. H. ...	C. H. Williams, G. Moon, E. M. Betts.	M.L.	„ „	Met. Log. 25.8.27 to 9.11.27	11.11.27
Loch Katrine ...	Buret, T. J. C. ...	W. Gelling	No. M.	R.M.S.P. Co.	Form 911 21.7.27 to 15.10.27... ...	9.11.27
London Commerce	Young, H. J., D.S.C....	W. Edmonds	„ A.	Furness Withy ...	„ 19.8.27 to 19.9.27	26.9.27
London Importer ...	Fowler, W. H. ...	J. S. Williams, J. H. Metcalfe, J. G. Freeman.	M.L.	„ „ ...	Met. Log. 19.5.27 to 5.8.27	19.8.27
Lord Antrim ...	Jarvis, F. E.	L. G. Kirwan	No. A.	Ulster S.S. Co. ...	Form 911 27.4.27 to 10.5.27	23.5.27
Loriga, M.V. ...	Clapham, E. C. ...	R. W. Gill	„ A.	Pacific S.N. Co. ...	„ 19.5.27 to 1.9.27	5.9.27
Losada, M.V. ...	Ross, J....	J. T. Denley	„ M.	„ „ ...	„ 29.6.27 to 1.10.27	13.10.27
Macedonia	Potter, H. W., R.D., Commr., R.N.R.	C. J. L. Hayward	„ M.	P. & O.	„ 10.9.27 to 30.9.27	24.10.27
Macharda	Tyers, W. O.	W. Cowie...	„ M.	Brocklebank	„ 15.9.27 to 6.10.27	31.10.27
Maharani ...	Elliott, G. F.	M. Haslett	„ M.	Asiatic S.N. Co. ...	Form 911 7.9.27 to 9.10.27	31.10.27
Maihar	Charlton, W. L. ...	C. Shaw, C. Cadwallader, S. S. Slade.	M.L.	Brocklebank	Met. Log. 9.6.27 to 31.8.27	29.9.27
Maimyo	Smith, G. C.	H. M. Drummond	No. A.	„ ...	Form 911 16.7.27 to 8.10.27	11.10.27
Maiwara	Brown, T. M.... ...	... ...	M.L.	Burns Philp	... ...	... ...
58 *Majestic*	Metcalfe, G. R. ...	W. W. Pearson, L. Thompson, W. T. Fitz Gerald.	W.T.	White Star	W.T. Reg. 17.11.27 to 1.12.27... ...	5.12.27
Makambo	Brown, T. M.... ...	F. C. Vogelmann, R. W. Holmes, T. MacRae.	M.L.	Burns Philp	Met. Log. 15.3.27 to 15.8.27	11.10.27
Makura	Mawson, J.	A. Champion. D. Burgess. W. J. Weber, A. Gell.	„	Canadian-Australasian	„ 16.6.27 to 30.9.27	28.11.27
Malabar	Hillman, E. J. ...	R. Morris	„	Burns, Philp & Co. ...	Met. Log. 6.1.27 to 9.5.27	11.10.27
Malakuta	Adamson, F. L. ...	N. Grayson	No. M.	Brocklebank	Form 911 11.9.27 to 6.11.27	16.11.27
Malancha	Whitham, F.	R. Humble, J. Butterworth, H. Kelly.	„ M.	„ ...	„ 2.10.27 to 31.10.27... ...	11.11.27
Malda	Gray, T. N.	S. G. James	„ M.	British India ...	„ 20.10.27 to 25.11.27 ...	5.12.27
Maloja	Warner, S. C.... ...	A. D. Dennis	„ M.	P. & O.	„ 22.10.27 to 13.11.27 ...	5.12.27
Mamari	Falconer, H.	P. Campbell	„ A.	Shaw, Savill & Albion	„ 19.7.27 to 22.9.27	27.9.27
Manchester Brigade	Stott, C. H.	W. S. Eustance	„ A.	Manchester Liners ...	„ 24.9.27 to 23.10.27... ...	27.10.27
Manchester Corporation	Williams, H.	H. J. P. Nelson	„ A.	„ „ ...	„ 18.9.27 to 30.10.27... ...	8.11.27
Manchester Hero ...	Riley, J. E.	H. Anderton	M.L.	„ „ ...	Met. Log. 16.2.27 to 27.6.27	7.7.27
Manchester Regiment	Foale, J. R.	P. D. Barr	No. A.	„ „ ...	Form 911 1.10.27 to 29.10.27... ...	4.11.27
Manchester Shipper	Raper, E. W.	C. A. Walker, A. Ricketts, L. Southern.	M.L.	„ „ ...	Met. Log. 25.6.27 to 30.11.27... ...	6.12.27
Manipur	Cochran, G. N. ...	R. Penston, C. Perry	No. M.	Brocklebank	Form 911 24.9.27 to 24.10.27... ...	14.11.27
Manistee	Steidelmann, H. ...	... ...	M.L.	Elders & Fyffes ...	... ...	... ...
Manora	Hudson, H. T., R.D., Commr., R.N.R.	... ...	No. M.	British India... ...	... ...	... ...
Mantua	Randell, G. G. ...	D. B. Leader, H. Tee ...	„ M.	P. & O.	Form 911 6.8.27 to 29.9.27	3.10.27
Marella	Mortimer, S.	A. G. Hill, R. Duddell, A. G. Thomas.	M.L.	Burns Philp	Met. Log. 4.5.27 to 28.9.27	28.11.27
Marengo	Procter, A.	F. Barnard, H. Bryon, J. Ford	„	Ellerman Wilson ...	„ 18.6.27 to 14 11.27... ...	17.11.27
Maresfield	Jones, T. E.	T. Conolly	No. A.	Woods, Tyler & Brown	Form 911 21.9.27 to 28.10.27... ...	31.10.27
Margha	Milne, R. A., R.D., Commr., R.N.R.	P. Wright, H. E. Evans, R. M. Wyatt, D. G. Woods.	M.L.	British India... ...	Met. Log. 2.7.27 to 1.10.27	13.10.27
Marquesa	Smiles, R. S.	... ...	No. M.	Furness Houlder ...	Form 911 8.9.27 to 27.10.27	31.10.27
Matakana	Thurston, H. P. ...	J. Hart, J. Dickson, C. E Mayer.	M.L.	Shaw, Savill & Albion	Met. Log. 15.4.27 to 1.9.27	5.9.27
Mataram	Voy, W.	V. V. Edmonds...	No. A.	Burns, Philp & Co. ...	Form 911 26.12.26 to 20.1.27... ...	28.2.27
Mataroa	Kershaw, W. A. R. ...	T. T. Oliver, J. J. Nicoll, G. Lindsay.	M.L.	Shaw, Savill & Albion	Met. Log. 25.3.27 to 10.7.27	12.7.27
Matheran	Ison, W. A.	L. Jeans, H. Simpson, J. Richardson	„	Brocklebank	„ 2.2.27 to 29.4.27	30.5.27
Matiana	Green, F. V.	... ...	No. M.	British India... ...	Form 911 8.9.27 to 26.10.27... ...	5.12.27
Maunganui... ...	Davey, A. H.	F. Gibson, V. Knight, H. Kemp.	„ M.	Union S.S. Co. of N.Z	„ 29.4.27 to 22.7.27	5.9.27
32 *Mauretania* ...	Diggle, E. G., R.D., Capt., R.N.R.	J. A. Quarrie, G. Duguid C. B. Osborne.	W.T.	Cunard	W.T. Reg. 20.11.27 to 5.12.27... ...	8.12.27
Medic	Jones, W. H.	W. Nicoll...	No. A.	White Star	Form 911 10.3.27 to 18.4.27	21.4.27
Megantic	Trant, E. L., R.D., Commr., R.N.R.	... ...	„ A.	„ „	„ 30.7.27 to 20.8.27	24.8.27
22 *Melita*	Stewart, A.	J. Shearer	W.T.	Canadian Pacific ...	W.T. Reg. 14.11.27 to 1.12.27... ...	8.12.27
Memnon	Dougall, W. T. ...	... ...	No. A.	A. Holt...	Form 911 23.10.27 to 6.11.27... ...	16.11.27
21 *Metagama* ...	Freer, A., Capt., R.N.R.	R. Walker, T. Gillette, G. Mowatt.	W.T.	Canadian Pacific ...	W.T. Reg. 16.10.27 to 5.11.27... ...	8.11.27
Middlesex	MacRae, A., D.S.C., Lt.-Commr., R.N.R.	C. Roberts	No. M.	Federal...	Form 911 10 11.27 to 26.11.27 ...	1.12.27
Minna	Mackenzie, G. G. ...	A. M. Campbell	„ A.	Scottish Fishery Board.	Form 911 24.10.27 to 19.11.27 ...	1.12.27
Minnesota	Finch, E., Pollard, W. F., D.S.O., Capt., R.N.R.	A. J. Smith	No M.	Atlantic Transport...	„ 21.8.27 to 8.10.27	11.11.27
Minnetonka ...	Gates, T. F., C.B.E. ...	H. E. Macartney	„ M.	„ „ ...	„ 25.9.27 to 12.11.27... ...	15.11.27
Minnewaska ...	Claret, F. H., C.B.E., Commr., R.N.R.	F. J. Mummery	„ M.	„ „ ...	„ 7.11.27 to 26.11.27... ...	1.12.27
Mirror, C.S. ...	Gibson, L.	A. G. Watts	„ M	Eastern Tel. Co. ...	„ 8.3.27 to 17.3.27	8.4.27
Mississippi	Wylie, J. T. J.... ...	... ...	„ A.	Atlantic Transport ...	„ 6.11.27 to 15.11.27 ...	26.11.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Moldavia	Burleigh, C. W., D.S.O., R.D., Capt., R.N.R.	W. L. Dobbin	No. M.	P. & O.	Form 911 8.9.27 to 19.10.27	24.10.27
Mongolian Prince	Edwards, W.... ...	V. E. Palmer	„ A.	Prince	„ 19.4.27 to 5.9.27	19.9.27
24 *Montcalm* ...	Hamilton, G.	H. McFadyen	W.T.	Canadian Pacific ...	W.T. Reg. 5.11.27 to 24.11.27... ...	28.11.27
25 *Montclare* ...	Webster, G. S., R.D., Lt.-Commr., R.N.R.	A. Mansey, C. L. de H. Bell, A. Easton.	„	„ „ ...	„ 25.9.27 to 11.11.27... ...	14.11.27
Montferland ...	Van Noppen, C.D. ...	... ...	No. M.	Holland Lloyd ...	Form 911. 13.10.27 to 24.11.27 ...	1.12.27
27 *Montnairn* ...	Notley, A. H., R.D., Commr., R.N.R.	N. A. Goater, J. Roche, K. Hutchings.	W.T.	Canadian Pacific ...	W.T. Reg. 5.11.27 to 23.11.27... ...	28.11.27
Montoro	Hillman, E. J. ...	R. M. Blunt	No. A.	Burns, Philp & Co. ...	Form 911 22.9.27 to 25.10.27... ...	5.12.27
26 *Montrose* ...	Landy, E.	A. Watt	W.T.	Canadian Pacific ...	W.T. Reg. 30.10.27 to 17.11.27 ...	28.11.27
20 *Montroyal* ...	Sibbons, H.	R. Antrobus	„	„ „ ...	„ 27.9.27 to 8.11.27	12.11.27
Moresby	Edgell, J. A., O.B.E., Capt., R.N.	W. H. Martin	M.L.	His Majesty's Australian Ship.	Met. Log. 4.4.27 to 14.8.27	4.10.27
Morvada	Mills, T. L., O.B.E., R.D., Commr., R.N.R.	D. S. Johnston	No. M.	British India	Form 911 20.7.27 to 16.10.27... ...	24.10.27
Mulbera	Steadman, W. R. ...	S. Broomhead	„ M.	„	„ 5.10.27 to 10.11.27... ...	16.11.27
Nagara	Foster, E.	J. Watson	„ M.	R.M.S.P. Co.	„ 15.1.27 to 24.5.27	1.6.27
Nagoya	Bedwell, L. A. ...	T. A. Sergeant	„ M.	P. & O.	„ 16.10.27 to 4.11.27... ...	26.11.27
Naldera	Dayas, C.	C. H. Hand, W. T. Banks, H. M. Askin.	M.L.	„	Met. Log. 21.9.27 to 3.11.27	7.11.27
Nardana	Moth, F. L.	J. N. McMillan, F. G. Sharp...	No. M.	British India	Form 911 31.7.27 to 4.9.27	10.10.27
Nellore	Hignett, A. H., R.D., Lt.-Commr., R.N.R.	A. J. Brown	„ M.	P. & O.	„ 29.9.27 to 30.10.27... ...	1.11.27
Nerbudda	Williams, B. N. ...	P. Harrison, T. Barnard, J. H. Robottom.	„ M.	British India	„ 9.10.27 to 30.10.27... ...	21.11.27
Nestor	Houghton, G. K. ...	J. Milhench, G. Shennan, N. Anderson.	M.L.	A. Holt	Met. Log. 16.7.27 to 5.11.27	10.11.27
Newby Hall ...	Storey, J. K.	... ...	„	Ellerman	„ 16.4.27 to 14.10.27... ...	1.12.27
Newfoundland ...	Westgarth, W. A., D.S.C.	R. F. Handley, E. Sainty, S. Moore, E. B. Burke.	„	Furness Withy ...	„ 20.5.27 to 29.9.27	5.10.27
Niagara	... ...	T. Haulton, J. M. Hood, D. Rollo, R. N. Turner.	„	Canadian-Australasian	„ 10.2.27 to 19.8.27	10.9.27
Ningchow	Beale, H. E.	R. A. Crozier	No. A.	A. Holt...	Form 911 16.7.27 to 13.9.27	14.11.27
Norfolk	Robinson, F. W. ...	J. W. Thompson, A. M. Downan.	„ A.	Federal	„ 3.10.27 to 18.10.27... ...	7.11.27
Norna	Wright, J. W.... ...	T. R. Ness	„ A.	Scottish Fishery Board	„ 9.11.27 to 28.11.27... ...	5.12.27
Norseman, C.S. ...	Barter, H. O., R.D., Commr., R.N.R.	R. W. Greenfield	„ M.	Western Tel. Co. ...	„ 24.9.27 to 14.10.27... ...	7.11.27
Northumberland ...	Upton, H. L.	... ...	M.L.	Federal	... ...	...
Nova Scotia ...	Furneaux, S.	... ...	No. A.	Furness Withy ...	Form 911 21.9.27 to 17.10.27... ...	18.10.27
Nowshera	Schleicher, J. W. ...	W. D. L. Reeves	„ M.	British India	„ 16.10.27 to 26.11.27 ...	8.12.27
Nubian	Watmough, T. M. ...	... ...	„ A.	Leyland	„ 19.8.27 to 30.10.27... ...	11.11.27
Oaklands Grange	St. Clair, C., D.S.C. ...	C. F. Foxwell	„ A.	Houlder Bros. ...	„ 19.10.27 to 9.11.27... ...	26.11.27
57 *Olympic*	Marshall, W., C.B., D.S.O., A.D.C., R.D., Commodore, R.N.R.	A. Fisher, H. J. C. Day, A. E. Weller.	W.T.	White Star ...	W.T. Reg. 10.11.27 to 24.11.27 ... Form 911 9.11.27 to 24.11.27... ...	28.11.27 1.12.27
Orama	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	W. Elliot, C. K. Blake, H. Tanner.	M.L.	Orient	„ 24.7.27 to 25.10.27... ...	1.11.27
Oranian	Hoskins, W.	W. R. Atkinson...	No. A.	Leyland	„ 22.7.27 to 19.10.27... ...	25.10.27
Orbita	Dominy, R. H., C.B.E., Commr., R.N.R.	J. Lloyd Jones	„ M.	R.M.S.P. Co.	„ 9.8.27 to 17.10.27	28.10.27
Orcoma	Pearse, A. W.... ...	T. Naylor, G. Gerety, R. T. Hales.	M.L.	Pacific S.N. Co. ...	Met. Log. 17.2.27 to 4.5.27	24.8.27
Orduna	Daniel, T.	E. Hicks	No. M.	R.M.S.P. Co.	Form 911 12.7.27 to 18.9.27	26.9.27
Orestes	Flynn, G. A.	... ...	„ A.	A. Holt...	„ 5.10.27 to 20.10.27... ...	14.11.27
Orita	Duncan, E. E. ...	D. W. Hutchinson, F. Carter, H. D. Griffiths.	M.L.	Pacific S.N. Co. ...	Met. Log. 20.6.27 to 1.12.27	8.12.27
Ormonde	Rice, W. V., D.S.O., D.S.C., Commr. R.N.	H. P. Price	„	His Majesty's Ship ...	„ 2.7.27 to 29.10.27	28.11.27
Ormonde	Sarson, M. J.	... ...	No. M.	Orient	Form 911 8.10.27 to 30.10.27... ...	5.12.27
Oronsay	Owens, A. L., R.D., Commr., R.N.R.	R. K. Rogerson, R. S. Hawker, J. D. Archer.	M.L.	„	Met. Log. 22.5.27 to 30.9.27	6.10.27
Oroya	Ridyard, A.	S. Lewis	No. M.	Pacific S.N. Co. ...	Form 911 28.8.27 to 31.10.27... ...	7.11.27
Orsova	Cameron, E. P., R.D., Commr., R.N.R.	H. Schofield, L. J. Vesty, A. Croft Cohen, H. A. Whittle, A. Addison.	M.L.	Orient	Met. Log. 21.8.27 to 23.11.27... ...	26.11.27
Orvieto	O'Sullevan, F. R. ...	G. L Carter, T. L. Shurrock, R. C. Warner.	„	„	„ 1.5.27 to 4.8.27	27.8.27
Osterley	Hayes, I. J., R.D., Commr., R.N.R.	S. Burnnand	No. A.	„	Form 911 25.8.26 to 28.9.27	5.10.27
Otaki	McNish, R.	C. R. Brown	„ A.	New Zealand S.S. Co.	„ 24.12.26 to 7.2.27	10.2.27
Otira	Wood, C., D.S.C. ...	D. N. MacGregor	„ M.	Shaw, Savill & Albion	„ 18.7.27 to 30.9.27	6.10.27
Otranto	Staunton, H. G., C.B.E., R.D., Commr., R.N.R.	... ...	„ M.	Orient	„ 20.1.27 to 1.4.27	19.4.27
Oxfordshire ...	Forster, W. L. ...	M. D. Louttil	„ A.	Bibby Bros.	„ 16.7.27 to 24.9.27	27.9.27
Pacific Shipper, M.V.	Campbell, H.... ...	... ...	„ A.	Furness Withy ...	„ 12.10.27 to 25.11.27 ...	5.12.27
Pacuare	Sapsworth, S. A. ...	V. R. Watkins	„ A.	Elders & Fyffes ...	„ 17.9.27 to 4.10.27	28.10.27
Pakeha	W. P. Clifton Mogg ...	E. T. Baker, R. E. Nicholson, A. J. Tillot.	M.L.	Shaw, Savill & Albion	Met. Log. 21.12.26 to 29.4.27... ...	7.5.27
Pancras	Peregrine, D.	... ...	M.L.	Booth	... ...	... ...
Pareora	Evans, J. O.	A. J. Ellis...	No. A.	Hain S.S. Co.	Form 911 6.7.27 to 2.8.27	15.9.27
Paris	Cook, C. L.	Mr. Biles	C.C.	Southern Rly. ...	Telegraphic Report. 31.7.27 ...	31.7.27
Patia	Makepeace, S. ...	J. Kinsley	No. A.	Elders & Fyffes ...	Form 911 19.6.27 to 23.7.27 ...	3.8.27
Patrol, C.S. ...	Welsh, T. K.	J. S. Browne	No.	Eastern Extension (A. & C.) Telegraph Co.	Met. Log. 18.10.26 to 15.11.26 ...	9.2.27
Peisander	Slater, H	D. L. Hoare	No. A.	A. Holt...	Form 911 19.9.27 to 17.10.27... ...	14.11.27
65 *Pennland*... ...	Harvey, H.	L. A. Williams	W.T.	Red Star	„ 24.10.27 to 12.11.27 ...	14.11.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Peshawur	Wilding, H. G. ...	J. C. Mellonie. J. K. Crone, R. G. Wood.	M.L.	P. & O.	Met. Log. 27.4.27 to 28.9.27	5.10.27
Piako	Kettlewell. C. R. ...	E. W. Smith, M. Rose, H. N Lawson.	„	New Zealand S.S. Co.	„ 7.12.26 to 20.5.27	26.5.27
Polycarp	Jackson, T. H. ...	C. W. Smethurst	No. A.	Booth	Form 911 22.9.27 to 4.10.27	31.10.27
Port Adelaide ...	Williams, R.	E. N. Rogerson	M.L.	Commonwealth & Dominion.	Met. Log. 13.1.27 to 20.6.27	12.7.27
Port Albany ...	Needham, R.	G. W. Horton	„	„ „ „	„ 1.6.27 to 25.11.27	8.12.27
„ *Auckland* ...	Durham, R. S. ...	G. L. Hazlewood, C. F. Post, J. H. Sloan, H. E. Braine.	„	„ „ „	„ 4.3.27 to 31.7.27	10.8.27
„ *Bowen* ...	Hearn, G. W.	W. R. Johnston	No. A.	„ „ „	Form 911 24.8.27 to 29.9.27	18.10.27
„ *Caroline* ...	Hoad, A. C.	A. E. Fishwick, C. A. Hodson, J. Stannard.	M.L.	„ „ „	Met. Log. 6.7.27 to 5.11.27	10.11.27
„ *Darwin* ...	Sawbridge, I. R. ...	S. Hearn, W. Lynd, E. T. N. Lawrey.	„	„ „ „	„ 28.1.27 to 29.6.27	4.7.27
„ *Denison* ...	Ferris, J.	P. J. Howe	„	„ „ „	Form 911 25.5.27 to 7.7.27	9.7.27
„ *Dunedin* ...	Farmar, F.	E. G. Jones, H. M. Post, N. M. Muzzell.	M.L.	„ „ „	Met. Log. 20.5.27 to 25.9.27	28.9.27
„ *Fremantle* ...	Kearney, F. J. ...	... ...	No.	„ „ „	... ...	...
„ *Gisborne* ...	Hutchinson, — ...	... ...	No. A.	„ „ „	... ...	...
„ *Hacking* ...	Higgs, H. E.	F. W. Elgar, J. A. Fairbairn, E. Luker.	M.L.	„ „ „	Met. Log. 1.1.27 to 14.6.27	16.6.27
„ *Hobart* ...	Craven, R.	R. Carter, L. Copeland. G. G. Langford, C. L. Webb	„	„ „ „	„ 22.7.27 to 6.11.27	14.11.27
„ *Hunter* ...	Cottell, S. C.	A. Cooper, A. McClounan, J. T. Weldin.	„	„ „ „	„ 22.6.27 to 6.10.27	11.11.27
„ *Huon*	Compton, J.	J. A. Fairbairn	No. A.	„ „ „	... ...	...
„ *Melbourne* ...	Brown, A. H.	D. G. H. Bradley, L. H. B. Bloye, P. H. Pedrick, C. J. Galey.	M.L.	„ „ „	Met. Log. 31.3.27 to 12.10.27... ...	19.10.27
„ *Napier* ...	Jones, C. N.	... ...	No. A.	„ „ „	Form 911 25.2.27 to 12.4.27	21.4.27
„ *Nicholson* ...	Jack, J.	J. G. Lewis, G. L. H. Dean, P. A. Munday, C. Jolly.	M.L.	„ „ „	Met. Log. 26.2.27 to 24.7.27	11.8.27
„ *Pirie*	Kippins, T.	... ...	„	„ „ „	„ 26.3.27 to 2.9.27	13.9.27
„ *Sydney* ...	Higgs, W. G.	H. G. Boys Smith, E. E. Roswell, K. D. Morgan.	„	„ „ „	„ 1.4.27 to 17.8.27	1.9.27
„ *Victor* ...	Swan, L. H.	L. M. R. Bayly, J. B. Watson, A. Brown.	„	„ „ „	„ 8.12.26 to 8.6.27	13.6.27
„ *Wellington* ...	Hayter, S. W. ...	D. F. Morgan	No. A	„ „ „	Form 911 16.7.27 to 20.8.27	26.9.27
President Jackson	Griffith, J.	P. Treanor, J. A. Cartwright.	„ A.	Pacific Mail S.S. Co...	„ 26.7.27 to 12.10.27... ...	23.11.27
President Jefferson	Nichols, F. R	C. Hansson, C. H. Moen ...	„ A.	Admiral Oriental Line	„ 6.8.27 to 25.9.27	10.10.27
Protea, H.M.S.A.S.	Woodhouse, A. F. B., Lt.-Commr., R.N.	J. Schlee, R. J. Whitley, H. Leftwich, R. Pearson.	M.L.	South African Naval Service.	„ 1.4.27 to 29.7.27	11.10.27
Protesilaus	Nelson, T. B.	... ...	„	A. Holt	Met. Log. 8.4.27 to 7.9.27	11.10.27
Pyrrhus	Elford, W. J.	R. E. Wilks	No. A.	„	Form 911 6.11.27 to 15.11.27... ...	24.11.27
Ranpura	King, A. M., D.S.C. ...	H. Morgan	„ M.	P. & O.	„ 8.10.27 to 26.10.27 ...	31.10.27
60 *Regina*	Davies, E.	F. W. Laws, V. Evans, R. C. Cochrane.	W.T.	White Star - Dominion	„ 13.11.27 to 3.12.27... ...	7.12.27
					W.T. Reg. 13.11.27 to 3.12.27... ...	8.12.27
Reindeer	Langdon, C.	... ...	C.C.	G.W. Railway ...	Telegraphic Report 8.12.27	8.12.27
Remuera	Cameron, J. J. ...	D. Hughes, P. L. Shakespear	No. A.	New Zealand S.S. Co.	Form 911 6.5.27 to 20.8.27	24.8.27
Rhevenor	Stout, G. I.	... ...	„ A.	A. Holt...	... ...	...
Rhodesian Transport.	Bullock, F. W. H. ...	F. D. Betts	„ A	Houlder Bros. ...	„ 16.7.27 to 29.10.27... ...	3.11.27
Rimutaka	Hemming, F. A. ...	H. A. Fryer, M. A. D. Stewart, G. O. Saul, H. Vernon.	M.L.	New Zealand S.S. Co.	Met. Log. 10.6.27 to 19.10.27... ...	25.10.27
Risaldar	Matthews, E. G. ...	... ...	No. M.	Asiatic S.N. Co. ...	Form 911 14.9.27 to 28.10.27... ...	5.12.27
Rotorua	Hunter, J. L. B. ...	E. Lawrence, R. G. Rees, H. Cockerill.	M.L.	New Zealand S.S. Co.	Met. Log. 9.4.27 to 26.7.27	5.8.27
Royal Fusilier ...	Dawson, J.	J. Fraser	No. A.	London & Edinburgh S.S. Co.	Form 911 19.5.27 to 7.7.27	11.7.27
Royal Transport ...	Dove, J.	R. W. Wass	„ A.	Houlder Bros. ...	„ 7.5.27 to 15.8.27	19.8.27
Ruapehu	McKellar, A. W., R.D., Capt., R.N.R.	H. M. Selmer, W. J. Glassborow, T. M. Devitt.	M.L.	New Zealand S.S. Co.	Met. Log. 4.2.27 to 9.6.27	15.6.27
St. Albans	Smith, G. L., Commr., R.A.N.R.	R. S. Millington, J. Kavanagh, R. L. Harry.	„	Eastern and Australian.	„ 1.7.27 to 27.9.27	17.11.27
St. Helier	Mulhall, W.	C. Bell	C.C.	G.W. Railway ...	Telegraphic Report 25.10.27... ...	25.10.27
St. Julien	... ...	C. Joy	„	„ „ ...	„ „ 15.11.27... ...	15.11.27
St. Andrew ...	Bearpark, E. W. ...	... ...	No. A.	Rankin Gilmour ...	Form 911 24.10.27 to 22.11.27 ...	1.12.27
Salaga	Jones, W.	C. V. Evans	„ A.	Elder Dempster ...	„ 19.3.27 to 4.6.27 ...	15.6.27
38 *Samaria*	Malin, R. G., Lieut.-Commr., R.N.R.	C. S. Williams, A. B. Fasting, W. B. Tanner.	W.T.	Cunard	„ 31.10.27 to 20.11.27 ...	24.11.27
					W.T. Reg. 31.10.27 to 20.11.27 ...	24.11.27
Samarinda ...	Flack, Z. W.	K. F. Kikhert	No. M.	Rotterdam Lloyd ...	Form 911 5.7.27 to 2.8.27	10.11.27
Sardinian Prince ...	Brown, J. F.	J. F. Wedgwood	„ A.	Prince	„ 7.9.27 to 7.10.27	20.10.27
Saxon	Gardner, G. F., O.B.E.	G. H. Pickering	„ A.	Union Castle	„ 17.9.27 to 6.11.27	7.11.27
Scholar	Egerton, J. J.	... ...	„ M.	Harrison	„ 17.9.27 to 28.11.27... ...	5.12.27
Scotia	Prichard, S. D., M.B.E.	O. W. L. Jones	C.C.	L.M. & S. Railway ...	Telegraphic Report 3.12.27	3.12.27
Scottish Bard ...	McDonnell, S. ...	J. W. Lilley	No. A.	Tankers Ltd.	Form 911 22.11.26 to 3.12.26... ...	3.1.27
33 *Scythia*	Irving, R. B., O.B.E., R.D., Capt., R.N.R.	G. Overton, G. H. Morris, P. G. Britten.	W.T.	Cunard	W.T. Reg. 7.11.27 to 27.11.27... ...	5.12.27
Sheaf Mount ...	Groves, C. V.	W. Thomson	No. A.	W. A. Souter	„ 5.6.27 to 14.7.27	20.7.27
Sheaf Spear ...	Whitfield, G. A., O.B.E.	S. J. Dring, T. B. Fishley ...	M.L.	„	Met. Log. 4.2.27 to 25.7.27	17.9.27
Shropshire, M.V. ...	Adamson, B. W. ...	W. L. Whiteside, R. V. Brown, W. H. Brittain, P. F. Fullerton.	„	Bibby	„ 23.9.27 to 3.12.27	7.12.27
Socrates	Taylor, F. C.	W. E. Jordan	No. A	Lamport & Holt ...	Form 911 2.7.27 to 14.9.27	26.9.27
Somerset	Howell Price, J. ...	W. Redwood	„ A.	Federal...	„ 25.7.27 to 3.9.27	13.10.27
Spero	Montgomery, H. ...	D. Millward	M.L.	Ellerman Wilson ...	Met. Log. 24.12.26 to 3.7.27	8.7.27
Stockwell	Thowless, E.	R. A. Kneen	No. A.	Brocklebank	Form 911 14.11.27 to 25.11.27 ...	5.12.27
Surrey	Lamb, C. B.	S. C. Bradley	„ A.	Federal...	„ 28.3.27 to 15.8.27	19.8.27
Suwa Maru ...	Gotoh, M.	... ...	„ A.	Nippon Yusen Kaisha	„ 26.6.27 to 25.7.27	4.8.27
Sylvafield	Biddick, E.	E. Holmes	„ A.	Hunting & Son ...	„ 17.8.27 to 26.8.27	30.8.27
Tainui	Elford, H. C.	P. S. Horwood	„ A.	Shaw, Savill & Albion	„ 4.10.27 to 9.11.27	14.11.27
Tahiti	Aldwell, B. M. ...	G. M. Coote, H. A. Litchfield.	„ A.	Union S.S. Co. of N.Z.	„ 5.10.27 to 24.11.27... ...	8.12.27
Taiping ... {	Frame, A. M.	F. Stratford, S. Moore, A. C. Kennedy.	M.L.	Yuill & Co.	Met. Log. 15.1.27 to 8.6.27	15.9.27
{	Thomas, R.					
Talthybius	Hatfield, J.	G. D. Jones	No. A.	A. Holt	Form 911 4.9.27 to 27.9.27	13.10.27
Tamaroa	Hartman, W. H. ...	F. W. Lutyens	„ M.	Shaw, Savill & Albion	„ 27.8.27 to 2.10.27	6.10.27
Tanda	Pilcher, E. T., Lieut.-Commr., R.N.R.	G. C. Smith, H. Munday, H. E. Nuzum, J. Heddle.	„ M.	E. & A. S.S. Co. ...	„ 3.6.27 to 30.8.27	26.10.27
Tarantia	Upton, —	... ...	No.	Anchor	... ...	...
Teiresias	Wilkinson, W. H. ...	... ...	„ A	A. Holt & Co.	9.4.27 to 7.8.27	12.8.27

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 9.12.27.	Date Received.
Tekoa	Barnett, H.	D. J. Murray	No. M.	New Zealand S.S. Co.	Form 911 6.11.27 to 15.11.27	23.11.27
Telamon	Willcox, J. H.		„ A.	A. Holt	„ 4.8.27 to 16.8.27	19.9.27
Tetela	Bostock, R. J.	F. L. Brealy	„ A.	Elders & Fyffes	„ 2.10.27 to 5.11.27	11.11.27
Teucer	Hodgson, R. N.	R. N. Inkster	„ A.	A. Holt	„ 24.8.27 to 12.11.27	14.11.27
Themistocles	Young, A. D.	H. C. Howe	„ M.	Aberdeen	„ 31.7.27 to 9.9.27	21.11.27
Theseus	Jones, E.	W. A. Fyffe	„ A.	A. Holt	„ 11.11.27 to 25.11.27	5.12.27
Titan	Power, J.	D. MacTavish, G. W. Best, C. F. Bailey.	M.L.	„	Met. Log. 4.4.27 to 10.8.27	5.9.27
Tongariro	Williams, J. M.	E. A. Quick	„	New Zealand S.S. Co.	Form 911 7.6.27 to 12.7.27	21.7.27
Transylvania	Bone, D. W.	P. Middleton	No. A	Anchor	„ 30.10.27 to 20.11.27	24.11.27
Traveller	Worthington, B.	E. L. Stockley, R. L. Williams	„ M.	T. & J. Harrison	„ 31.7.27 to 29.10.27	1.11.27
Trematon	Evans, B.	J. Jenkyn, C. Warren, E. Griffin.	M.L.	Hain S.S. Co.	Met. Log. 20.5.27 to 6.9.27	14.9.27
Turakina	Hamilton, E. S.		No. M.	New Zealand S.S. Co.	Form 911 19.9.27 to 10.10.27	25.11.27
11 *Tuscania*	Smart, R. W.	J. Hamilton	W.T.	Anchor	„ 24.9.27 to 15.10.27	19.10.27
Tyndareus	Williams, R. J.	A. G. Phillips, F. Howe, A. R. McDavid.	M.L.	A. Holt	Met. Log. 16.12.26 to 18.5.27	2.7.27
Ulimaroa	Wylie, W. J.	C. Rasmussen	No. M.	Huddart Parker, Ltd.	Form 911 26.8.27 to 26.9.27	10.11.27
Ulysses	Owen, R. D., O.B.E.	A. Studholme	„ A.	A. Holt	„ 2.3.27 to 10.7.27	13.7.27
Umvolosi	Barnes, E. W.	R. A. Dyns	„ A.	Bullard King	„ 12.10.27 to 1.11.27	5.12.27
Valacia	Inch, F.	G. Meggitt	„ M.	Cunard	„ 28.7.27 to 26.8.27	1.9.27
Vardulia	Robinson, F.W., D.S.O. R.D., Commr., R.N.R.	L. D. W. Rand	„ A.	„	„ 27.10.27 to 15.11.27	1.12.27
Vigilant	Simpson, E. S. S.		„ A.	Scottish Fishery Board.	„ 1.11.27 to 30.11.27	5.12.27
Waiotapu	Todd, D.		„ M.	Canadian - Australasian.	„ 13.9.27 to 12.10.27	21.11.27
Wairuna	Ryan, J.	C. C. Waters, G. H. George, L. B. Ehlert.	M.L.	Union S.S. Co. of N.Z.	Met. Log. 24.4.27 to 13.9.27	28.11.27
Walmer Castle	Lang, T. W. Stuart, C.B.	A. E. Denn	No. A.	Union Castle	Form 911 30.9.27 to 20.11.27	22.11.27
Wangaratta	Scutt, W.	T. W. Wordingham, S. R. Millard, A. G. Brooks, J. K. Rigden.	M.L.	British India	Met. Log. 3.4.27 to 27.8.27	3.9.27
Warfield	Steel, R.	C. M. Quick	No. A.	„	Form 911 9.9.27 to 23.9.27	3.10.27
War Nizam	Moncrieff, T.	B. Kieran	„ A.	British Tankers	„ 19.9.27 to 30.10.27	9.11.27
Westmoreland	Gardner, H. W.	C. P. Jackson, A. L. Warren, G. A. Shepherd.	M.L.	Federal	Met. Log. 11.7.27 to 16.11.27	22.11.27
William Scoresby, R.S.S.	De la Motte, J. B. B., Lieut., R.N.		„	Falkland Islands Government.		
Windsor Castle	Stanley, W. F., R.D., Commr., R.N.R.	A. J. Tweddell, F. Norfolk, — Montgomery.	„	Union Castle	„ 11.6.27 to 2.10.27	17.10.27
Winifredian	Harrocks, W.	A. Crone	No. M.	Leyland	Form 911 15.9.27 to 17.10.27	31.10.27
Wonganella	Suffern, H.	G. F. Phillips	„	W. Crossby & Sons	„ 28.7.27 to 3.9.27	13.10.27
Woodarra	Reilly, J. V.	H. Goater, B. W. Smith, D. B. Lattin, G. F. Alexander.	M.L.	British India	Met. Log. 26.6.27 to 18.11.27	24.11.27
Yorkshire	Millson, G. E.	W. M. C. Higginson, R. Allen	No. A.	Bibby	Form 911 23.4.27 to 4.7.27	9.7.27
Zent	Roberts, —		„	Elders & Fyffes		
Conway H.M.S.	Richardson, F. A., D.S.C., Commr., R.N.	The Senior Cadets	Cadets' M.L.		Cadets' Met. Log. 8.5.27 to 23.7.27	27.7.27
Pangbourne Nautical College	Tracy, A. F. G., Commr., R.N.	„ „	„		Cadets' Met. Log. 1.5.27 to 22.7.27	27.7.27
Worcester, H.M.S.	Sayer, M.B., C.B.E., R.D., Capt., R.N.R.	„ „	„		Cadets' Met. Log. 6.5.27 to 27.7.27	30.7.27
Abaco		The Keepers	Lighthouse Register.		Lighthouse Register 1.7.26 to 20.10.26	20.4.27
Cay Lobos		„	„		Lighthouse Register 1.1.27 to 11.7.27	29.9.27
Double Headed Shot		„	„		Lighthouse Register 1.7.26 to 31.12.26	20.4.27
Inagua		„	„		Lighthouse Register 24.1.27 to 3.7.27	29.9.27
Sombrero		„	„		Lighthouse Register 1.1.27 to 30.6.27	10.8.27
Watling Island		„	„		Lighthouse Register 10.9.26 to 30.6.27	29.9.27
Cape Pembroke (Falkland Is.).		„	„		Lighthouse Register 1.1.27 to 30.6.27	18.10.27

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

Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., received up to 30.11.27.	Date Received.
Casanare	Steidelman, H.	R. O. Jones	Elders & Fyffes	Water Samples	15.9.27
Darro	Matthews, G. P.	W. Halder-Campe	R.M.S.P. Co.	„ „	6.10.27
Deseado	Hannon, F. S.	J. N. Duncan	„	„ „	20.10.27
Hildebrand	Maddrell, J.	A. Allan	Booth	„ „	5.11.27
Tetela	Bostock, R. J.	J. S. Bell	Elders & Fyffes	„ „	10.11.27

February, M.O., 1928.

LIST OF SOME OF THE PUBLICATIONS PUBLISHED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE AND BY THE HYDROGRAPHIC DEPARTMENT OF THE ADMIRALTY.

MARINE METEOROLOGY, ATLASES AND MEMOIRS.

CHARTS:—

ATLANTIC:—

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

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

ATLANTIC (NORTH):—

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