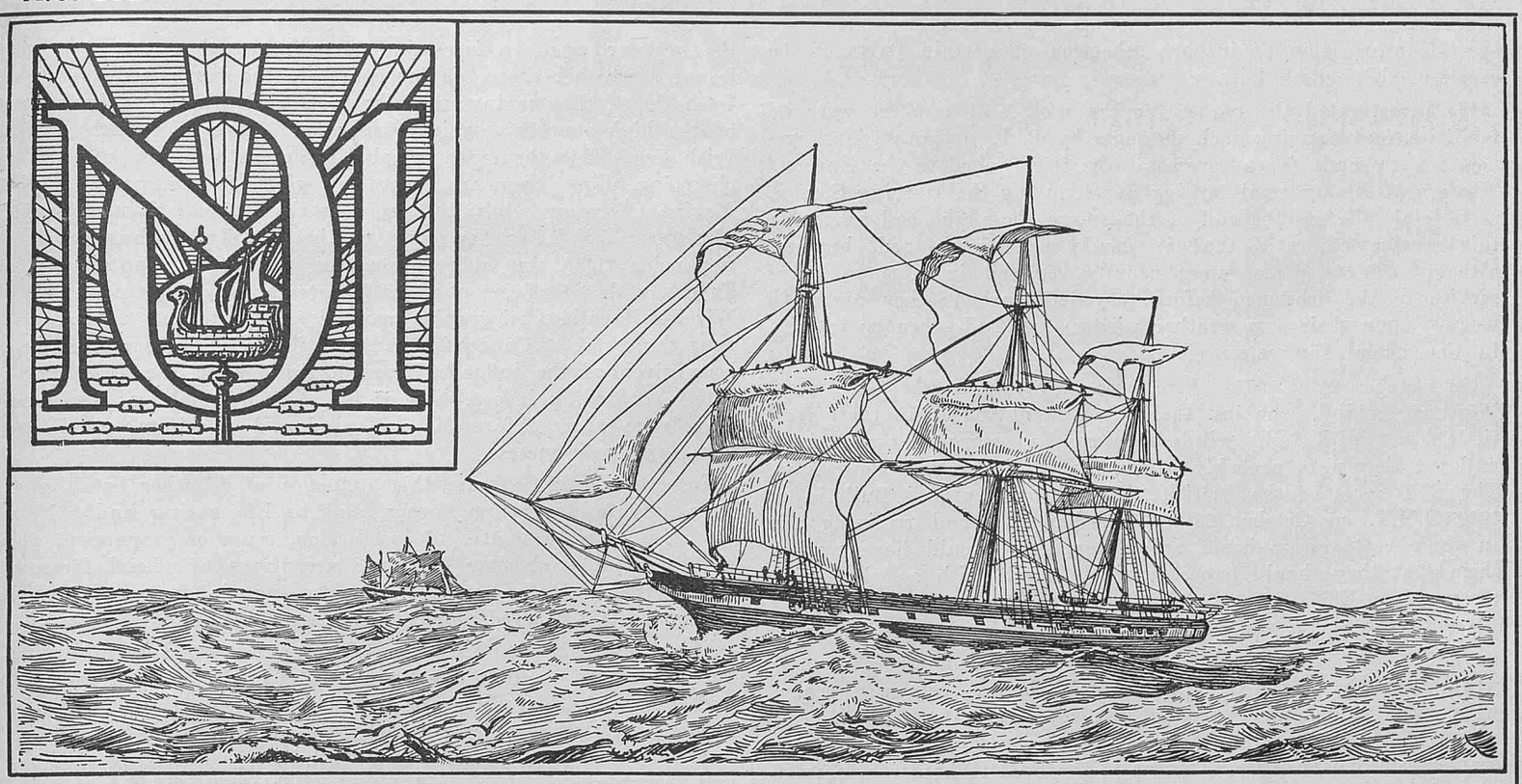

VOL. V. No. 58. THE MARINE OBSERVER. OCTOBER, 1928.

TABLE OF PRINCIPAL CONTENTS.

INTELLIGENCE OF WEATHER, TIDE, CURRENT AND ICE, AND SAFETY OF LIFE AT SEA.

In October the season of Winter gales commences in Northern Latitudes, December and January being the stormiest months in Home Waters.

Last year an exceptionally heavy gale occurred towards the end of October which will be remembered as the Fleetwood Gale of October, 1927, and in this Number, Lieutenant-Commander CRESSWELL, R.N.R., gives us a short account of it and continuing his investigation of Wind and Tidal Height in the Irish Sea tells how it was responsible for increasing the height of High Water at Fleetwood by no less than 7 feet 8 inches and flooding that town and neighbouring country. It is such accounts of heavy weather, unusual tides and abnormal currents and collisions with floating Ice, with the experiences of Mariners, given first hand in the Marine Observer that help in the development of measures for safety of Life at Sea.

In Home Waters the chief concern of the Meteorological Office is to promote the utility of the Weather Service for the personnel of small craft, for they are most in need of it as a means towards Safety of Life at Sea. The Corps of Marine Observers and the Marine Division are concerned with **the work** in every part of the World where ships sail under the British Flag and it is this work which is indispensable to the Weather Service in Home Waters, for the benefit of our brethren in small craft. By the information provided through the work of the Corps of Marine Observers in ships on our list in all seas, and by their example, the use and efficiency of the service in small craft can best be achieved. Without this work and example set in Ocean going ships and in Cross Channel Steamers Officered by our Corps, the highly scientific work of Mr. DINES and his assistants of the Forecast Service would, of necessity, be far less effective. It is sometimes not easy to persuade those who sail in Fishing Boats and small craft that Weather Intelligence other than that which they see in local signs may be any good to them at all. They cannot be blamed; customs and traditions are passed on from father to son, and who has enlightened them?

In the Spring of 1927, the BRITISH BROADCASTING CORPORATION, at the suggestion of an Inspector of Fisheries, asked the Meteorological Office to provide a suitable daily weather forecast for the

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special information of inshore fishermen on certain parts of the coasts of the British Isles.

We investigated the request on the spot, and as there were no facilities for receiving such messages by R/T, temporary arrangements were made for a forecast to be telegraphed to the Harbour Masters at certain small fishing ports during the Herring Season, as a trial. Before the end of the season those who had asked for this service requested that it should be discontinued, because, although the telegrams were usually received in time to be of service to the fishermen before they left harbour they preferred to rely upon their own weather wisdom and had taken no interest in the official forecasts.

On October 28th, 1927, when those unfortunate fishermen in the West of Ireland, who lost their lives, went to sea in their frail little craft with light winds they saw no signs to warn them, and yet they were probably in the centre of this deep depression. The R/T issue of the British "Weather Shipping" Bulletin at 1030 G.M.T. on October 28th, 1927,—had they had receiving sets in their cottages or boats and listened in—would have warned them that they should expect variable winds with a gale coming away, from N.W.

All those officers who have practiced Wireless and Weather, an Aid to Navigation, and are in the habit of making and using weather charts at sea with CHART XXI before them will realize with what confidence this gale was forecast. Here was a case where with understanding of the methods used, every experienced seaman could have little doubt as to the need to heed the forecast, preceded as it was with the inference amounting to a warning:—

"An intense cyclonic system off South West Ireland moving North East . . ."

A village priest who heard the "Weather Shipping" Bulletin inference and forecast for the Shannon District on his receiving set went to the pier, but the boats were out of hail and signalling was impossible. The suddenness of the N.W. gale overwhelmed the little craft or dashed them on the rocks of a lee shore, rescue being impossible.

During this gale 14 of the Royal National Lifeboat Institution lifeboats were out round our coasts. The St. Mary's Lifeboat, *Elsie*, went to the rescue of the crew of the Italian S.S. *Iscabo* on Scilly Rocks, saving 4 men; 28 were saved by shore boats and 6 lost their lives.

The Malbrough, Anglesey, Lifeboat *Charles Elizabeth Laura* saved three men out of the ketch *Excel*, one of the lifeboat's crew died of exposure during the eighteen hours spent in this heroic struggle, and at Courtmacsherry on the South Coast of Ireland a shore boat rescued 6 men from a lighter wrecked outside the harbour.

No evidence of advantages gained from weather signals, wireless or visual, by the Lifeboat service during this gale has come to hand but we hope that information of any cases which may occur may be reported, and surely foreknowledge of the probable shifts of wind, etc., may be useful to a District Officer or coxswain in deciding upon where to launch and what course to steer. At another small port not far from the Fishing Harbours where the special forecasts were telegraphed during the 1927 Herring Season with such poor results, we have a friend in the Harbour Master, a deep sea master mariner, who is interested in marine meteorology and he has been interesting the masters of small coasting steamers. The result is that a number of these vessels have installed R/T receiving sets, and we are informed that the information given from the "Weather Shipping" Bulletin and Gale Warnings has been used to advantage. The master of a small coaster leaving Liverpool in fine weather with a northerly wind bound to a port on the coast of Antrim received information which indicated that a westerly gale might be expected later. Acting upon this information, instead of shaping a direct course he steamed to the westward and when it began to blow hard from the westward made a fair wind of it in smooth water under the lee of a weather shore, on his course to the northward along the Irish Coast, thus saving many hours steaming and the discomfort of the high short sea which runs where there is a fetch in the Irish Sea. But the most valuable examples are those of regular observing ships, they are constantly given in the pages of the Marine Observer. Only in last month's Number, Commander J. HENNESSY, R.N.R., in his report on the West Indian hurricanes of September, 1927, was able to place on record that Captain F. C. TAYLOR and the officers of S.S. *Socrates* had by the use of Ships' Wireless Weather telegraphy avoided the vortex of a hurricane near the tropic of Cancer in the Atlantic, and many examples have been given of the influence upon navigation in the direction of safety, regarding information of fog, currents and ice; also cases of salvage where information of wind and tide have contributed very largely to success.

To extend and increase this influence of Weather Intelligence towards safe navigation firstly, and to life saving and salvage secondly, is all a matter of instruction, sense of proportion, and confidence. To advocate the blind acceptance of official forecasts to sailormen is folly but give them the essential facts upon which the forecasts are based and confidence is gained.

The Agents, Marine Observers, Harbours Masters and Nautical Instructors are asked to call the attention of the Masters, Skippers and coxswains of small craft and fishing vessels in Home Waters to the fact that weather forecasts and gale warnings may be received in their vessels at sea by installing a receiving R/T set and to explain the Law of Storms and the methods of forecasting as shown in WIRELESS AND WEATHER AN AID TO NAVIGATION.

Some Steam Trawlers and Coasting Steamers are fitted with Wireless Telegraphy and they can receive and use the coast station reports and reports of selected ships in exactly the same way as is done by many ocean going vessels.

Now as we have said, it is **the work** and example of the Corps of Voluntary Marine Observers and those of "Selected Ships" in particular which is indispensable to the Weather Service in Home Waters, where so many of our brethren in small craft need this aid to safe navigation; and weather intelligence is not only useful to them but to all who the Meteorological Office can serve, airmen, farmers, engineers, medical men, all the services of the Crown and the Great British Public.

Information in these Islands of weather coming from the sea is valuable and so it is in varying degree in every country in the world. The question of organization of Ships' Wireless Weather Telegraphy is therefore of tremendous importance. In my note "The Selected Ship organized British Ships' Wireless Weather Telegraphy" in the August Number, it was stated that we had been engaged in consultation with Marine Observers and Wireless Officers in drawing up a report for the furtherance of an International Scheme. Since then there have been International Conferences and though it may be that exact details may not be published for some little time and possibly a world wide scheme cannot be fully completed until after the forthcoming International Conference of Safety of life at sea, yet it is in the interests of all concerned that Marine Observers should have information in these pages of the main principles upon which it is probable that the organization of Ships' Wireless Weather Telegraphy may proceed.

It is hoped that each maritime nation will maintain a proportion of 1,000 "selected ships" according to tonnage. Experience shows that when organized, 35 per cent. of "selected ships" are at sea in positions along the trade routes favourable to report, so that with 1,000 "selected ships" well organized there should be about 350 "selected ships" distributed along all the trade routes in all oceans at any time.

Referring to CHART III of "Work of the Year" in the June 1928 MARINE OBSERVER it will be seen how 254 British "selected ships" were distributed on 1st June, 1927, 89 being at sea in all parts of the world and when this service is organized with 1,000

"selected ships" of all nations, with care and agreement, it should be possible to have a network of "selected ships" along the trade routes over all the oceans which should be sufficient to provide routine reports of observations to meteorological centres and all ships every day.

The following table gives the total merchant tonnage of steam and motor vessels over 100 tons according to "Lloyd's Register Book 1926-27," also the number of "selected ships" required to be maintained and the number of ships that are fitted for C.W. transmission long range.

Country.	Steamers and Motor Vessels.		Percentage of World Tonnage.	Number of "Selected Ships" required.	Number of Ships Fitted for C. W. transmisson.
	Number.	Gross Tons.			
Argentine	209	215,625	0·3	3	—
Belgium	222	503,083	0·8	8	3
Brazil	338	464,549	0·7	7	3
British Empire ...	9,923	21,952,460	35·0	350*	180
Chile	120	164,080	0·3	3	—
Danzig	36	140,058	0·2	2	—
Denmark	661	1,049,386	1·7	17	3
Finland	219	148,028	0·2	2	—
France	1,498	3,324,397	5·3	53	12
Germany	1,928	3,062,095	4·9	49	29
Greece	457	921,861	1·5	15	—
Holland	1,061	2,552,613	4·1	41	19
Italy...	1,099	3,150,246	5·0	50	13
Japan	2,087	3,967,617	6·3	63	—
Norway	1,802	2,806,544	4·5	45	5
Portugal	185	251,037	0·4	4	5
Russia	354	314,881	0·5	5	—
Spain	802	1,126,284	1·8	18	13
Sweden	1,205	1,294,576	2·1	21	2
Turkey	173	136,306	0·2	2	—
United States of America.	3,718	13,821,143	22·1	221	59
Yugoslavia ...	136	195,444	0·3	3	—
Other Countries ...	859	1,109,624	1·8	18	13 (Unclassified).
World Total ...	29,092	62,671,937	100·0	1,000	359

* The British Empire number of selected ships to be allotted amongst Great Britain and the Dominions by arrangement.

It will be obvious to Marine Observers why the number of C.W. ships is included in the table and why the instruction to Agents referred to in my note in the August Number was given, to give preference in filling vacancies in the list of observing ships to those British ships having long range Wireless Telegraphy apparatus and a Mercurial Barometer. At present there are 89 "selected ships" of the 180 British ships fitted for C.W. transmission. We hope to convert the 89 C.W. "selected ships" to 180 C.W. "selected ships," and with the co-operation of the Dominions and Colonies that the British Empire number of 350 "selected ships" may be complete by the time the scheme is put into force.

The times of observation recommended for the future for international use at sea in all longitudes for routine Wireless Weather Reports are 0, 6, 12 and 18 hours G.M.T. which will make for synchronization over very large portions of the globe even if "selected ships" do not all report at all four times. Such are the outlines of two important recommendations which have been received favourably and may become international practice. The question of international organization for communication is more difficult. Through force of circumstances in some parts of the world "selected ships" have been requested in these pages to address their report to a specific shore station and all ships. This is not a desirable procedure, and British Marine Wireless experts have advocated that C.W. "selected ships" should address their reports to the appropriate C.W. station at certain times so that all ships may intercept them, and that spark "selected ships" should address their reports to all ships at certain times so that selected shore stations may intercept them.

These times for communication must naturally follow the observation times as closely as possible giving sufficient time for making up the reports. It has been very strongly represented on behalf of the British Merchant Navy that "selected ships" which have not two officers in each watch should not be required to report in the hours of darkness because at night the single officer of the watch cannot record the necessary observations and make out the message for which he is responsible to the master without neglecting his duty of lookout, the chief measure of safety of life at sea.

With the four routine times of observation recommended for the future 0, 6, 12 and 18 hours G.M.T. it is possible to fix two for the longitudes included in each Wireless Operator Watch Zone which will usually fall in daylight. With such an arrangement it would be a simple matter for all "selected ships" to make two reports a day while "selected ships" which have two officers in a watch could report four times daily when desired.

Upon such an understanding British Marine Wireless experts have suggested that selected ships should report on C.W. to selected C.W. stations after 18 minutes past observation time just following the S.O.S. silence period and that spark ships should report to All Ships after 30 minutes past observation time. When observation times do not fall in Single Operator Watch the reports should be made or repeated after 18 and 30 minutes respectively, past the hour of commencement of the next Single Operator Watch.

The C.W. reports being made on the wave length allotted to the stations addressed, and the spark reports being made on 600 m. wave length. Thus instead of having a system worked according to zones of 15 degrees of longitude as suggested in the December 1925 Number, this will mean a system worked according to the Wireless Operator Watch Zones and the areas included in the range of selected C.W. stations which seems simpler and is based upon the present wireless procedure and capacity.

In the North Atlantic between Latitude 40° and 55° N. there will always be a large number of "selected ships" and it is proposed that here the British receiving C.W. station should be provided daily with a list of chosen "selected ships" who would be notified of their turn for making their reports. Thus in this congested area regulating the wireless weather report traffic and obtaining the best possible geographical distribution of reported observations for use at meteorological centres and in all ships at sea from distances up to 1,500 miles and with uniform despatch.

Meanwhile "selected ships" are requested to carry on as at present using the observation times given in Chapter III of "Wireless and Weather an Aid to Navigation," and on page 17 of Volume V, No. 49 MARINE OBSERVER. That is, the same Greenwich Mean Time used for Weather Telegraphy Observations at the nearest coast.

MARINE SUPERINTENDENT.

London.

5th July, 1928.

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.

TRACK FROM APIA, SAMOA TO PANAMA.

The following remarks were received from Captain J. WATERHOUSE, S.S. *Clan Macwhirter*, under date 25th November, 1926, before the consultation on South Pacific Route and Currents was opened:—

"Regarding the track from Western Samoa to Panama Canal. The track I took was not direct. I made the longer distance to make the quickest passage. From Apia, Samoa, I steered to 7° 30′ North, 140° 00′ West (then due east), keeping free the Fresh Trade wind until clear of it. On arrival in Latitude 7° 30′ North, I experienced heavy swell, S. Ely., moderating as we made easting, showing me that winds and sea were strong on the direct track, some 780 miles south. The ship was carrying 10,000 tons D.W. and was getting foul after being in these Coral Seas. We had some 2,500 tons of cargo Chrome Ore and this takes away speed owing to close density of stowage, 13 cubic feet per ton. When in 7° 30′ North, we came down to 8½ knots per log, but were getting favourable current from 20 to 45 miles daily. Had we been crossing direct, we would have logged 7½ to 8 knots and with the adverse current in the Trades, Equatorial current, may have made 7 to 7½ knots, for the passage, whereas I made an average speed of 9½ knots, a speed in excess considerably of the ship's logging. As this track is not much used, I took particular care to record the Current experienced, and the Currents sent in on the Form 911 are as accurate as it was possible to calculate the same. We made a distance of 5,983 miles, as against a direct distance per Admiralty tables of 5,709 miles, 274 miles excess. The favourable current was 341 miles to Cape Mala. The passage was made in 26 days, as against a possible passage of 32 or 33 days. One of our steamers same speed, same conditions of cargo, actually made 33 days on this passage.

When we were in the Counter Equatorial Current, to check speed, I used the speed graph from revolutions, and besides the Patent Log which was practically new, I towed a second new Patent Log, one on each quarter, hauling the logs in daily to see that they were running all clear, and not in any way foul. The logs only showed a difference of 2 miles daily, over a period of 800 miles, the average was taken. From 140° west to Cape Mala we had mostly S. to S.W. winds, fair wind, occasionally doldrums."

NOTE.—The following are the set and drift of currents logged by *Clan Macwhirter* during this passage. With the exception of the current observed on November 14th–15th, 1926, towards the end of the passage these observations were outside the area being charted in THE MARINE OBSERVER, the last set and drift recorded was of course incorporated in the chart which appears in this Number.

1926.	From		To		From		To		Wind.		Set.	Drift.
Month.	Day.	Time.	Day.	Time.	Latitude.	Longitude.	Latitude.	Longitude.	Direction.	Force.		
October ...	20	7.30 p.m.	21	Noon	Apia		12° 14′ S.	169° 43′ W.	8 p.m. E'ly. 8 a.m. S.E.	1 3	N. 68° W.	8
	21	Noon	22	Noon	12° 14′ S.	169° 43′ W.	10° 05′ S.	166° 26′ W.	8 p.m. E.N.E. 8 a.m. N.N.E.	2 3	N.	4
	22	Noon	23	Noon	10° 05′ S.	166° 26′ W.	8° 05′ S.	163° 20′ W.	8 p.m. N.E.-E. 8 a.m. N.E.	3 3	S. 20° W.	3
	23	Noon	24	Noon	8° 05′ S.	163° 20′ W.	6° 05′ S.	160° 12′ W.	8 p.m. N.E.-E. 8 a.m. N.E.-E.	3 2	S. 39° W.	6
	24	Noon	25	Noon	6° 05′ S.	160° 12′ W.	3° 53′ S.	157° 27′ W.	8 p.m. E. 8 a.m. E.-N.	3 4	N. 67° W.	21
	25	Noon	26	Noon	3° 53′ S.	157° 27′ W.	1° 53′ S.	154° 45′ W.	8 p.m. E. 8 a.m. E.N.E.	4 4	N. 79° W.	23
	26	Noon	27	Noon	1° 53′ S.	154° 45′ W.	0° 16′ N.	152° 05′ W.	8 p.m. E.N.E. 8 a.m. E.S.E.	4 3	S. 78° W.	16½
	27	Noon	28	Noon	0° 16′ N.	152° 05′ W.	2° 29′ N.	149° 22′ W.	8 p.m. S.E.-S. 8 a.m. S.E.-S.	3 4	N. 57° W.	20
	28	Noon	29	Noon	2° 29′ N.	149° 22′ W.	5° 13′ N.	146° 35′ W.	8 p.m. S.S.E. 8 a.m. E.S.E.	2 3	N. 21° W.	57
	29	Noon	30	Noon	5° 13′ N.	146° 35′ W.	6° 27′ N.	142° 50′ W.	8 p.m. S.E. 8 a.m. N.E.	2 3	S. 75° E.	21
	30	Noon	31	Noon	6° 27′ N.	142° 50′ W.	7° 21′ N.	138° 58′ W.	8 p.m. S.S.E. 8 a.m. S.E.	4 3	N. 45° E.	21
	31	Noon	2 Nov.	Noon	7° 21′ N.	138° 58′ W.	7° 39′ N.	131° 00′ W.	8 p.m. S.E. 8 a.m. S.S.W.	2 2	N. 73° E.	61
November ...	2	Noon	3	Noon	7° 39′ N.	131° 00′ W.	7° 39′ N.	127° 13′ W.	8 p.m. N.E. 8 a.m. S.E.	2 2	(Sun obscured N	ov. 1st.)
	3	Noon	4	Noon	7° 39′ N.	127° 13′ W.	7° 30′ N.	123° 21′ W.	8 p.m. S.E. 8 a.m. S.E.	3 2	E.	18
	4	Noon	5	Noon	7° 30′ N.	123° 21′ W.	7° 34′ N.	119° 24′ W.	8 p.m. S.E. 8 a.m. S'ly.	1 1	S. 70° E.	26
	5	Noon	6	Noon	7° 34′ N.	119° 24′ W.	7° 38′ N.	115° 31′ W.	8 p.m. S.E. 8 a.m. S.S.W.	1 3	N. 82° E.	28
	6	Noon	7	Noon	7° 38′ N.	115° 31′ W.	7° 12′ N.	111° 48′ W.	8 p.m. S.S.W. 8 a.m. S.S.W.	5 4	N. 82° E.	30
	7	Noon	8	Noon	7° 12′ N.	111° 48′ W.	7° 14′ N.	108° 04′ W.	8 p.m. S.S.W. 8 a.m. W.S.W.	4 4	S. 84° E.	10
	8	Noon	9	Noon	7° 14′ N.	108° 04′ W.	6° 59′ N.	104° 08′ W.	8 p.m. W.S.W. 8 a.m. W.S.W.	4 4	N. 26° E.	8
	9	Noon	10	Noon	6° 59′ N.	104° 08′ W.	6° 52′ N.	100° 14′ W.	8 p.m. W.S.W. 8 a.m. E.-S.	3 2	E.	17
	10	Noon	11	Noon	6° 52′ N.	100° 14′ W.	6° 53′ N.	96° 22′ W.	8 p.m. S. 8 a.m. S.S.W.	2 2	S. 86° E.	15
	11	Noon	12	Noon	6° 53′ N.	96° 22′ W.	6° 52′ N.	92° 34′ W.	8 p.m. S.S.W. 8 a.m. S.S.W.	2 3	N. 85° E.	12
	12	Noon	13	Noon	6° 52′ N.	92° 34′ W.	6° 59′ N.	89° 03′ W.	8 p.m. S.E. 8 a.m. E.S.E.	4 1	N. 66° E.	16
	13	Noon	14	Noon	6° 59′ N.	89° 03′ W.	7° 00′ N.	85° 16′ W.	8 p.m. E. 8 a.m. S.	1 3	N. 48° E.	23
	14	Noon	15	Noon	7° 00′ N.	85° 16′ W.	6° 42′ N.	81° 22′ W.	8 p.m. S.S.W. 8 a.m. S.S.W. 8 p.m. S.S.W. 8 a.m. W.	4 4 2 4	N. 42° E. N. 51° E.	25 5

PANAMA CANAL TO WELLINGTON.

Current, Temperature and Minute Sea Creatures.

The following is an extract from a report on Currents of the South Pacific Ocean, forwarded by Captain RICHARD CRAVEN, M.V. *Port Hobart* under date 7th January, 1927, before the consultation on S. Pacific Route and Currents was opened:—

"Commenting on the accompanying abstracts of currents experienced by above Vessel during her three Trans-Pacific voyages, I wish to draw your attention to the following:—

"**Panama Canal to Wellington.** Note the wonderful current we carried for some days after sailing from Panama Canal, and this seemed to be heralded by a peculiar 'nip' in the air, notwithstanding that the shade temperatures on deck were good. Most of the passengers and the writer re-donned warm 'woollies' underneath ere we had crossed the Equator.

"I commented on this in conversation with some passengers that travelled out in a steamer three days behind us, and they complained that it 'was bitterly cold and chilly' and that they were wearing top coats, crossing the Equator.

"A few months ago I read that much concern was occasioned owing to many thousands of the Cormorants or Guano Birds dying from starvation on the islands adjacent to the coast of Chili on the West Coast of South America. I mention all this because it shews that this Antarctic Current that sweeps northward along the western Coast of South America (carrying with it myriads of animalculae and living creatures on which these guano birds feed) is a 'Periodic Stream' and not a constant quantity, it is unreliable in strength, though its direction may be fairly constant.

"During the 8 to 12 p.m. watch on October the 2nd, the engineers had to stop the engines several times during that watch to clean out the 'Condenser strainers' which had become tightly chocked with small jellies and small fish (this was chocked ten times or more) and is a very interesting point to note, as it may point to a re-establishment of the full strength of the Antarctic Stream when judged with the excellent favourable stream we enjoyed setting fair with us for some days."

CURRENT.

East Australian Coast.

The following is an extract from the Meteorological Report of S.S. *Montoro*, Captain E. J. HILLMAN, Rabaul and Mandated Territories to Sydney. Observer, Mr. R. M. BLUNT, 3rd Officer:—

"A strong current setting south (true) was experienced on Friday, 21st, and Saturday, 22nd October, 1927. The current appeared strongest between the Saumares and Swain Reefs. At Noon on the 21st (Latitude 18° 06′ S., Longitude 152° 25′ E.) the observed position was 22 miles ahead of the log distance, and on noon 22nd (Latitude 23° 13′ S., Longitude 153° 25′ E.) the ship was 13 miles ahead of the log distance for the preceding 24 hours' run. This southerly set is well defined and is experienced by us on each voyage regularly. This southerly set is our first favourable current on the run from Samarai to Sydney. After Marion Reef is passed the effect of the southerly current continues to be felt practically all the way till arrival in Sydney."

NOTE:—This current lies off the Queensland Coast to the North of the region covered by THE MARINE OBSERVER Charts of Currents on the Tracks from Panama to Australian and New Zealand Ports. The East Australian Coast Current flows inshore south of Sandy Cape and the current experienced by S.S. *Montoro* is possibly a kind of forerunner of the main current but more observations of current will be required before this can be established and Marine Observers using this route are requested to provide the data in the manner asked in a notice headed "Current observations" frequently given in THE MARINE OBSERVER and on the flyleaf of the "Original Note Book."

Off South Coast of Cuba, West Indies.

The following is an extract from the Meteorological Report of S.S. *Zent*, Captain R. C. GREENHOUGH, Liverpool to Tela, Honduras. Observer, Mr. B. R. WICKHAM-TARR, 3rd Officer:—

"30th October, 1927, 4 a.m. A.T.S. Cape Maysi light bore 326°, distant 12 miles, course 258°, speed 10.0 knots. Light S.W. wind and slight S.W. swell, at 6 a.m., taking position by cross bearings, vessel was found to have set 3 miles off from the land, and was then in a position about 8 miles off the mouth of Seco river. Course was altered to 263° and + 5° allowed for set. At 7.0 a.m. it was found necessary to allow + 8° for set to make good the course (263°) and at 8.0 a.m. + 10° was allowed. Current was now setting from the land at a rate of approximately 2 knots. At 10.55, Windward point lighthouse. (Guantanamo Bay) bore 000°, distant 2 miles. Altered course to 270° + 10° allowance for set. At this time there was a moderate S.W. swell, and sea was breaking heavily on shore. Shoal water was plainly visible along the coast, a light blue in contrast to the dark blue of the deep water. At 1.30 p.m. altered course 280° + 10° allowance for set. There was now a fresh S.W. wind, with rough sea and rough S.W. swell. At 2.0 p.m. in a position 2 miles off Daiquiri Bay course was altered to 252° and no set was allowed for. By star observation at 5.45 p.m., vessel was found to have had a set of 310° distant 5 miles, since 2.0 p.m. The vessel was hauled out from the land at 2.0 p.m. owing to the weather coming in thick with heavy rain."

NOTE:—In the Current Charts for the Tracks to and from the West Indies and Panama (Western Portion), third quarter published at the end of THE MARINE OBSERVER, Volume IV, No. 45, 1927, the mean current in the region of latitude 18° to 20° N., longitude 74° to 78°W. is shown as 4.4 miles per day N.W. setting obliquely on to the land. The current rose however shows that of the observations received up to the time the charts were made, 11 per cent. had a W.S.W. set and 4 per cent. a S.W. set. Of the W.S.W. sets the majority attained a drift of from 13 to 24 miles per day.

ROLLERS.

South Indian Ocean.

The following is an extract from the Meteorological Report of S.S. *Clan Macnaughton*, Captain A. W. SIMPSON, Durban to Singapore. Observer, Mr. D. D. INGRAM:—

"On the afternoon of October 22nd at 12.30 G.M.T., 3.0 p.m. A.T.S., there commenced a series of rollers which came from the S.E., by 4 p.m. there was a moderately high swell running and by 6.30 a high mountainous sea and swell and the waves broke with great violence against the vessel. This continued till 8.40 p.m. when the sea and swell moderated as quickly as it had sprung up and by 10 p.m. the sea was slight and swell moderate. During this period the wind varied from a gentle breeze to light breeze and at no time did it blow hard or in any way contribute to the sea and swell running. The weather was fine and clear, barometer 30.12 in. Temperature 74°, sea temperature 77°. Approximate positions between Latitude 23° 36′ S., Longitude 36° 46′ E., at 3.00 p.m. A.T.S. and Latitude 22° 56′ S., Longitude 38° 18′ E., at 10 p.m. On reviewing the situation we could come to no definite reason for this disturbance except that it was the aftermath of a storm situated around St. Mary Madagascar."

NOTE:—The notes upon Precursory Signs of Tropical Revolving Storms given in Chapter IV of "Wireless and Weather an Aid to Navigation" may be of interest to those encountering heavy swell in this region.

ABNORMAL TIDAL STREAM AT MAKALLA, ARABIAN COAST, GULF OF ADEN.

THE following was reported by letter from the Captain of the Dutch S.S. *Soekaboemi* to Lieutenant-Commander P. M. VAN RIEL, R.H.M. of the Dutch Meteorological Office, De Bilt.

Any information from ships using this port, with regard to observed abnormalities of weather and tides, will be welcomed.

On October 15th, 1927, at the turn of the tide, when anchored in 10 fathoms at about 2 to 3 cables S. ½ W. from the Lighthouse at Makalla, S.S. *Soekaboemi* swung to the current, dragged her anchor, with 45 fathoms of cable, about two ship lengths and took the ground.

Before slack water, which lasted a short time, the tidal current was weak, setting north-westerly. At 11 a.m. the east going stream made suddenly with considerable force.

Though the Captain of the *Soekaboemi* had anchored at Makalla several times he had never heard about strong tides and bad holding ground there; and asks for information about the tidal streams at Makalla, and an explanation of these apparent abnormal tides.

PHOSPHORESCENCE.

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Culebra*, Captain C. E. RATHKINS, Nuevitas to Havre. Observer, Mr. R. N. FLETCHER, 2nd Officer:—

"October 7th, 1927, 0130 A.T.S., Latitude D.R. 34° 25′ N., Longitude D.R., 50° 53′ W. Sky clear, except over horizon, stars dull, sea perfectly smooth. Wind N.E. by E., force 1. The bow wave and breaking water as far aft as the bridge exceptionally brilliant with phosphorescence. Remarkable inasmuch as only the thin extreme edge of bow wave and turning water to bridge was affected, giving the appearance of thin ribbons of flame, electric blue. No sign of phosphorescence was noticeable in the disturbed water along ship's side or astern. Apparently only the surface of the sea was affected. By 0330 this phenomenon ceased."

Indian Ocean.

THE following is an extract from the Meteorological Report of S.S. *Leitrim*, Captain E. R. KEMP, Colombo to Suez. Observer, Mr. C. R. BROWN, 3rd Officer:—

"During passage between Colombo and Minikoi Isd. 20th October, 1927, 20.00 hours, A.T.S., Latitude 8° 00′ N., Longitude 74° 07′ E., steering 282°, 11 knots. Observed large patches of phosphorescence, evidently disturbed by ship's displacement, rising from depths of about 40 to 50 feet which on nearing the surface, rapidly spread out with a tremendous brilliancy. This phenomenon continued at intervals of about 6 seconds, between successive patches until about 2145 A.T.S. when the phenomenon ceased."

NORTHERN LIGHTS.

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Port Pirie*, Captain T. KIPPINS, Hartlepool to Philadelphia. Observer, Mr. W. G. JONES:—

"22nd October, 1927, 0000 American E. Standard Time, Nantucket Light Vessel bearing N. 55° E. 14 miles, wind N.W., force 4, visibility 8, sky cloudy, amount 6. The sky to N.E. appeared to brighten, very similar to effect produced by moon just prior to rising. Shortly afterwards extending to N.W., several bright shafts of light appeared, the highest bearing N.N.W. (T) and about 20° in altitude. These shafts, lasting for 20 minutes, were continually altering in appearance and were ragged. The bright effect lasted some time afterwards till the sky became overcast. Although the night was very dark Stratus Cloud could be seen to the northward low down on the horizon."

THE following is an extract from the Meteorological Report of S.S. *Benalder*, Captain J. H. COLE, D.S.C., Panama to Hampton Roads. Observer, Mr. A. J. LECKIE, 2nd Officer:—

"October 23rd, 1927, 0000 to 0100 observed Aurora of slight intensity, bearing between N. 5° W., to N. 15° E. This phenomenon may be of interest owing to the low latitude of the observations. At first it was not thought to be Aurora at all as it was observed over the land from seawards. We made enquiries of the Hampton Roads Pilot to find out if there were any other reason, such as blast furnaces, etc., in this locality. The main part of the Auroral light was in the shape of a crown with its base on the horizon. The rays were continually fading and reappearing and scintillating as moonlight on a placid water surface. The light did not attain any great intensity and disappeared shortly after 1 a.m. The height was about 7°.

"Ship in Latitude 36° 56′ N., Longitude 76° 02′ W., wind S.W., force 5. Barometer 29.82 (corr.). Thermometer 65°. Clear and cloudless."

THE following is an extract from the Meteorological Log of S.S. *City of Chester*, Captain F. W. LETTON, New York to Port Said. Observer, Mr. A. J. BARNETT, 2nd Officer:—

"23rd October, 1927, 1 a.m. A.T.S., in Latitude 40° 10′ N., Longitude 70° 00′ W. On northern horizon observed low lying bank of Stratus, otherwise sky cloudless. Very bright diffused light (as if moon was rising) and then appeared groups of rays in fan shape form, gradually gaining brilliance and then fading, this occurred several times and finally disappeared about 30 minutes later."

SOUTHERN LIGHTS.

Southern Ocean.

THE following is an extract from the Meteorological Log of S.S. *Port Auckland*, Captain R. S. DURHAM, London to Melbourne via Cape of Good Hope. Observer, Mr. J. H. SLOAN:—

"October 12th at 8.0 p.m., approximate position, Latitude 45° 20′ S., Longitude 102° 30′ E. Course N. 87° E., speed 12 knots, a pale greenish glow was observed over southern horizon, stretching from a point bearing S.E. to a point bearing S.S.W. Occasional streamers of bright green light appeared in S.E. which moved rapidly to westward fading gradually until finally disappearing at a point bearing south. This phenomenon lasted about 20 minutes. At 9.45 p.m., a dull red glow appeared in the zenith and a thin streamer of creamish coloured light stretching from almost horizon to horizon in an E.N.E./W.S.W. direction through the zenith. As these brightened other creamish coloured streamers appeared radiating from the red light to the southward so that in appearance it was like a huge fan. The creamish light changed to bright green gradually. The diameter of the red light across the base of the fan was 22° and the length of the streamers varied between 10° and 45°. This moved slowly to the westward and faded gradually and finally disappeared at 10.05 p.m. the centre of the red glow having then an altitude of about 35°. As this disappeared a thin streak of reddish colour appeared in the east and grew rapidly brighter till it was a wine colour and then rapidly faded again. The time between the appearance and disappearance was 3 minutes and the length at the brightest period was 25°. Lights similar to those at 8.0 p.m. were frequently observed through the night. These were of varying brightness."

South Pacific.

THE following is an extract from the Meteorological Report of S.S. *Banffshire*, Captain R. H. WYNNE, Port Kembla to Melbourne. Observer, Mr. W. F. LOCHEAD, 3rd Officer:—

"12th October, 1927, 11 p.m., Latitude 35° 45′ S., Longitude 150° 46′ E., observed a deep red lurid glow in the sky bearing South extending over an arc of the horizon from S.E. to S.W. and gradually moving towards the eastward. Its altitude was about 20° above the horizon and 15′ in diameter and shafts of light appeared at intervals. The glow lasted for about 12 minutes and gradually lessened in brilliance.

"The night was fine and clear with a bright moon and a cloudless sky. The sea was smooth with a moderate swell and its surface reflected red which made the whole very fascinating. Barometer 29.92 in., temperature 60°.

"I called the Captain who also witnessed the above."

The following is an extract from the Meteorological Report of S.S. *Tahiti*, Captain B. M. ALDWELL, Rarotonga to New Zealand. Observer, Mr. G. M. COOTE, 4th Officer:—

"October 21st, 10.22 p.m. A.T.S. (G.M.T. 22d. 10h. 12m.), in Latitude 37° 32′ S., Longitude 179° 27′ W., observed Aurora Australis. When first observed the glow was brick red in colour with two shafts of white light resembling the beams of a search light, only much fainter."

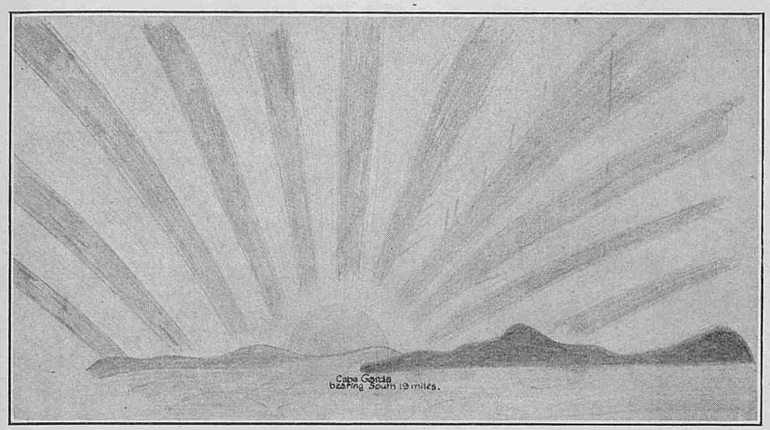
RADIATING CIRRUS CLOUD.

Mediterranean Sea.

THE following is an extract from the Meteorological Report of S.S. *Nagoya*, Captain L. A. BEDWELL, London to Calcutta via Suez. Observer, Mr. T. A. SERGEANT:—

"On 22nd October, 1927, off Cape Garde at about 5.30 a.m., observed remarkable cloud formation consisting of radiating streaks of Cirrus cloud forming complete evenly spaced arcs terminating in approximately the true north and south points of the horizon. It gave the sky a wonderful domed appearance and lasted until after sunrise (about 6.45 a.m.), the formation gradually broke up merging into Alto-Stratus.

"I have endeavoured to give a rough idea of the above in the accompanying sketch."



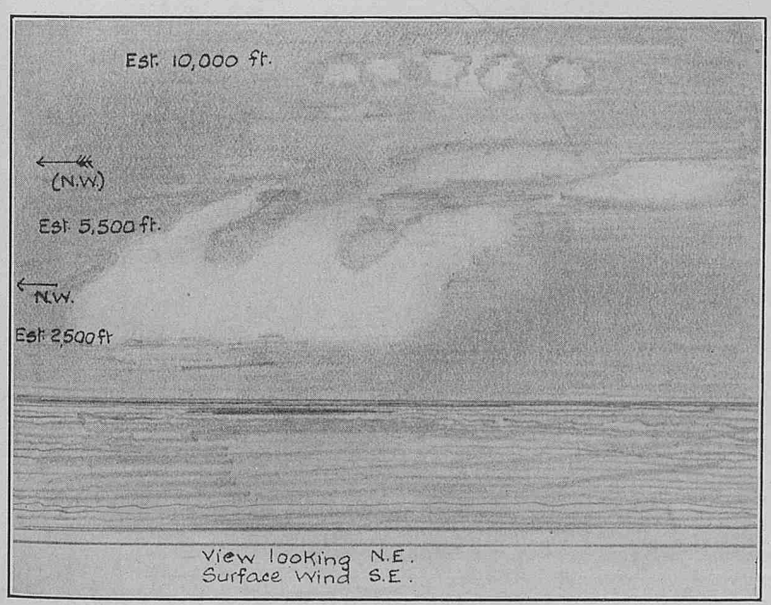
Radiating Arcs of Cirrus Cloud from due South right across the sky to cease in a similar formation on the Northern Horizon, 6.30 a.m. A.T.S., October 22nd, 1927.

TRADE CUMULUS.

South Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Naldera*, Captain T. C. E. DAYAS, Sydney to London. Observer, Mr. C. H. HAND, 2nd Officer:—

"October 6th, 1927, Latitude 19° S., Longitude 101° 30′ E., wind S.E., force 4 to 5. The Cumulus clouds travelling from S.E. were observed to be leaning back as their height increased. The tops of the clouds were flat and in most instances detached themselves from the main body of the cloud in form of St-Cu eventually becoming Alt-Cu and moving from the northward."



LINE SQUALL.

Queensland Coast.

THE following is an extract from the Meteorological Log of H.M.A.S. *Moresby*, Captain J. A. EDGELL, O.B.E., R.N., Surveying East Australian Waters. Observer, Lieutenant G. A. GOULD, R.A.N.:—

"14th October, 1927, at anchor off Toogoom Beach (approximate, Latitude 25° S.). From 1600 hours a heavy bank of Nimbus was observed working up from southward. At 1700 hours a line squall formation was distinctly visible extending about 40°. The height of the Nimbus clouds at their highest point would be about 5°. At 1715 the Nimbus had lifted to about 15° and rain was falling heavily about 1 mile to the S.W. The wind, which had been E.S.E., force 2, now veered to south and freshened to force 3. The effect of the sun behind rain and clouds gave a very pronounced and peculiar brownish or saffron colour to the atmosphere.

"At 1730 the wind freshened and became squally, force 7-8, and torrential rain fell. The clouds overhead were very low (being not more than 200 to 300 feet) and were moving very rapidly. Their upper surfaces were extremely agitated as if disturbed by an upper air current moving in the opposite direction.

"The squall remained at its height for about 15 minutes and then gradually eased until at 1815 it had completely passed, giving conditions of visibility 8 to the southward. Wind south, force 2. Visibility to the east was exceptional but to the N. and W. were isolated rain squalls. At 1715 the temperature suddenly fell 5° (from 74° to 69° F.). From 1700 to 1800 barometer rose rapidly. At 16.00, barometer 1009.1 mb., temperature, dry 74°, wet 71°."

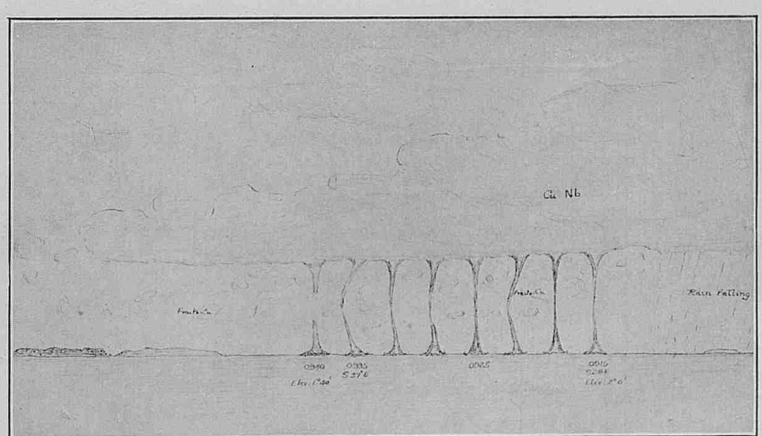
WATERSPOUT.

Maldive Islands, Indian Ocean.

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

"19th October, 1927, at Ihavandiffulu Atoll, Maldive Islands, at 09.15 (04.21 G.M.T.) observed waterspout S. 28° E., elevation 2° 0′. Estimated track of spout N.N.W. This waterspout appeared very dark in colour, almost black, and during its passage altered its shape several times from a vertical column to a gentle curve bending north. The estimated distance of waterspout from ship was 2½ miles. Waterspout broke up at 09.35, bearing S. 37° E., elevation 1° 40′. On breaking up, spout appeared to bend very considerably to the north, tapering to a fine line about one-third of its height. The majority of the water seemed to be gathered up into the cloud. During the whole passage the swirl of water at base of column was very conspicuous.

Barometer 1015.0 mb. Wet bulb 80.5° F., dry bulb 88.0° F., sea 83° F. Weather:—sultry, sky cloudy, wind, light airs, sea calm. The accompanying sketch shows approximately the eight different shapes of the waterspout from time of appearance to breaking up."



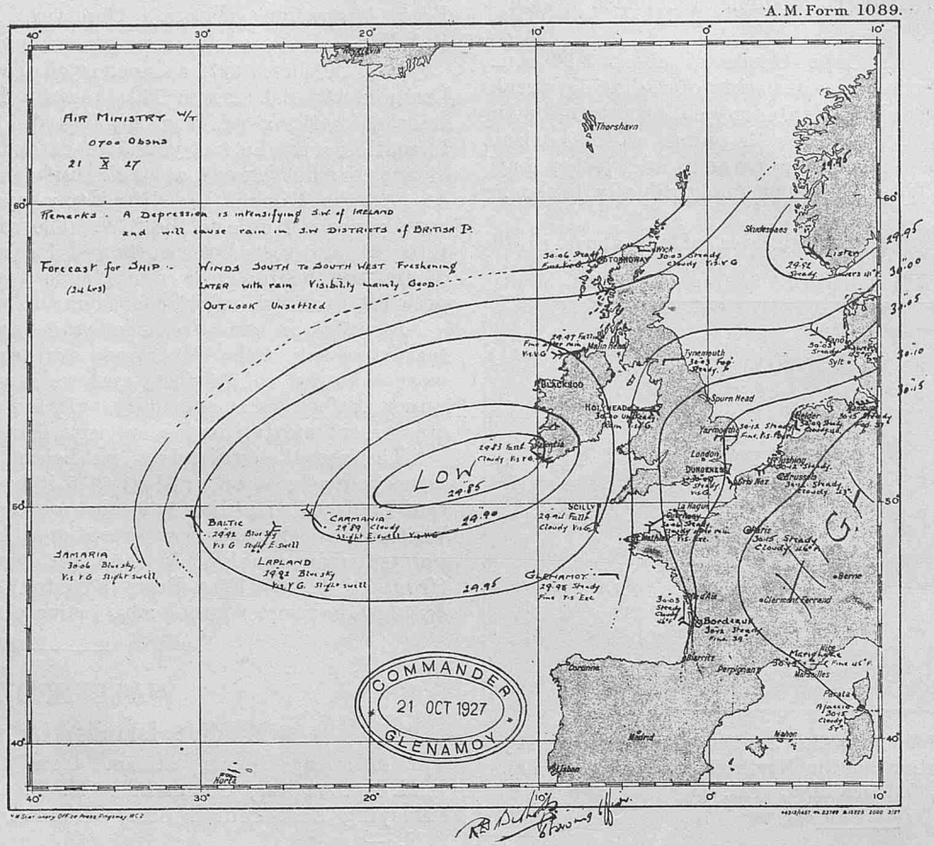
H.M.S. Ormonde: 19.10.27. Successive aspects of Waterspout. Maldive Islands.

WEATHER CHARTS MADE AT SEA.

Eastern North Atlantic.

Weather Chart (one of a series) made on board M.V. *Glenamoy*, Captain C. E. HOMAN, Port Said to London, by Mr. R. L. V. BISHOP, 2nd Officer.

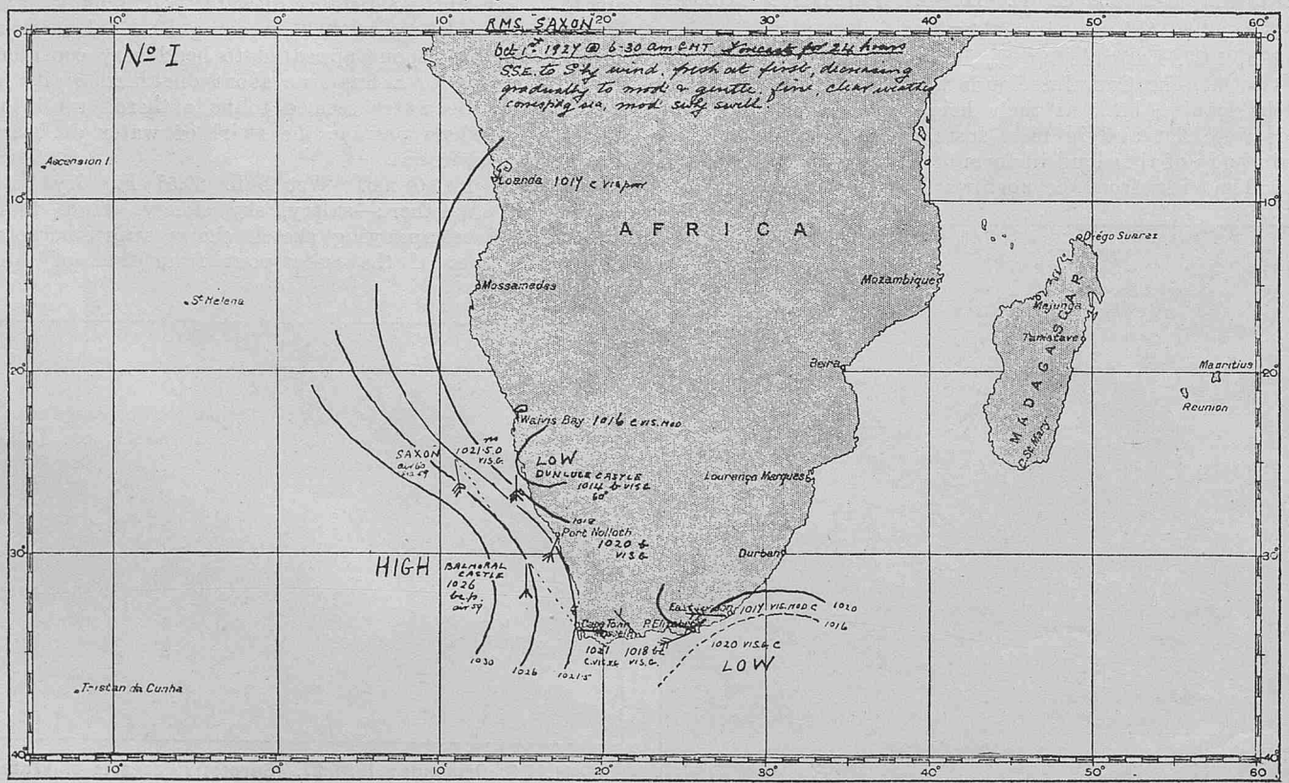
A.M. Form 1089.



According to *Glenamoy's* Meteorological Report, wind was S.E. force 2 at 8 p.m., 21st October, and S.E. by S. force 4–5 at 8 a.m. next day. Drizzle set in at 9 p.m. on the 21st.

In South African Waters.

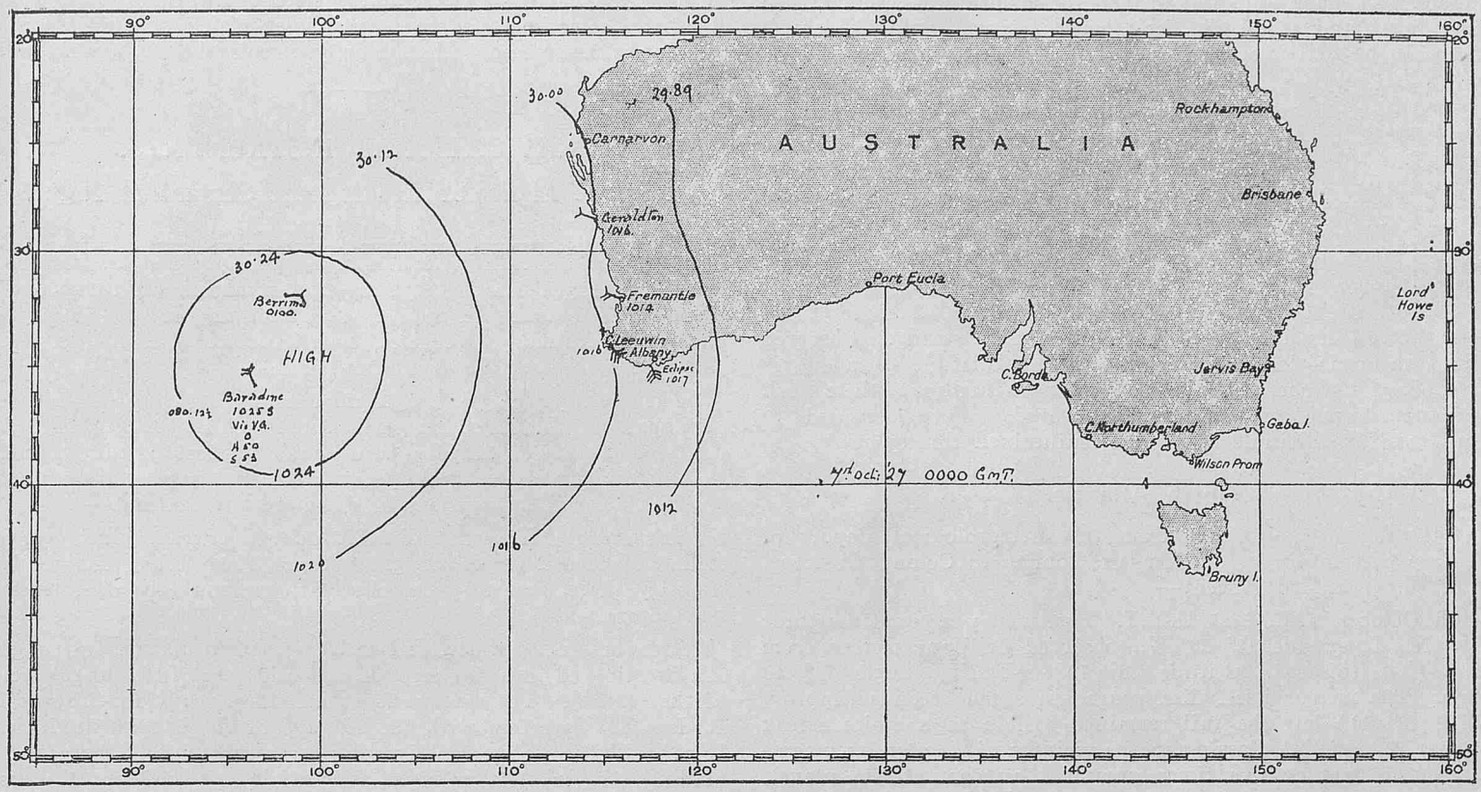
Weather Chart (one of a series) made on board R.M.S. *Saxon*, Captain G. F. GARDNER, O.B.E, R.N.R., Southampton to Cape Town, by Mr. G. H. PICKERING, 4th Officer.



According to *Saxon's* Meteorological Report, wind was S. by E. force 4 at 8 p.m, 1st October, and S.S.W. force 2 at 8 a.m. of the 2nd. Weather at 8 p m., 1st October, fine and clear.

In Australian Waters.

Weather Chart (one of a series) made on board S.S. *Baradine*, Captain W. ROLLO, Cape Town to Fremantle, by Mr. C. B. ROCHE, Chief Officer.

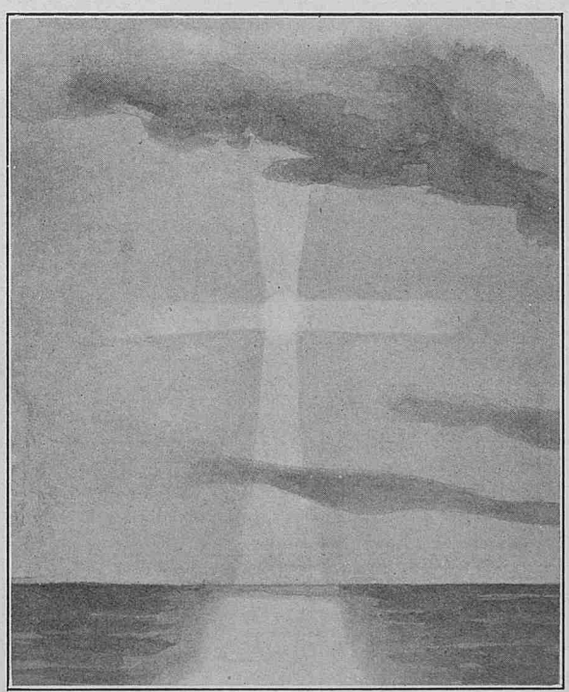


LUNAR CROSS.

Off East Africa.

THE accompanying sketch of a lunar phenomenon has been received with the Meteorological Log of S.S. *Llandovery Castle*, Captain G. OWENS, Beira to Dar-es-Salaam. Observer, Lieutenant C. H. WILLIAMS, R.N.R., 2nd Officer:—

NOTE.—The appearance of a cross as here shown is occasionally observed in the case of either the sun or the moon, which is situated in the centre. It is produced by the ice-crystals composing the Cirrus haze and forms one of the numerous varieties of halo phenomena associated with this cloud. The upper vertical part of the cross is not infrequently observed towards the time of sunset and is then known as a sun-pillar. The horizontal ray is a portion of the mock sun ring.



Peculiar appearance of Moon at 4 a.m., 10th October, 1927, off Caldeira Pt., Portuguese East Africa. Wind N.E. 3. Sky bc. Cirrus haze.

RISING OF PLANET VENUS.

Mediterranean.

THE following is an extract from the Meteorological Log of S.S. *Khiva*, Captain R. H. STRINGER, O.B.E., R.D., R.N.R., London to Port Said. Observer, Mr. D. MEIKLE, 3rd Officer:—

"17th October, 1927, at about 0310 G.M.T. a bright object was suddenly observed bearing east (true) altitude 2°, and as suddenly disappeared. After a second or two it appeared once more, gradually becoming brighter, and finally glowing with great brilliance, changing colour the white from yellow to red, orange yellow and pure white. It then slowly faded away and became invisible; this was repeated four times until at an altitude of $3\frac{1}{2}$° the object remained visible. It was afterwards found to be *Venus*. The sky at the time was cloudless from the horizon to an altitude of about 12°, and the visibility was excellent. All night there had been vivid lightning playing incessantly round the E. horizon. Position of ship, approximately, Latitude 36° 24′ N., Longitude 2° 06′ W. Course N. 83° E., speed 14 knots."

METEOR.

South Indian Ocean.

THE following is an extract from the Meteorological Log of S.S. *Llandovery Castle*, Captain G. OWENS, Kilindini to Aden. Observer, Lieutenant C. H. WILLIAMS, R.N.R., 2nd Officer:—

"17th October, 1927, in Latitude 2° 14′ S., Longitude 41° 40′ E. Wind E.S.E., 4, weather b. Barometer 1012.9 mb. Temperature, wet 77°, dry 74°.

"2.47 a.m. (2352 G.M.T.) Observed bright and very fast meteor, of pale blue colour, shoot from near *Capella* towards *Cassiopeia*, leaving a white track which persisted for 70 seconds.

"Track was sharp and well defined for about 15-20 seconds, then became faint and cloud-like, and could be seen with the ship's telescope to be drifting slowly past the stars, in a westerly direction."

North Atlantic.

Meteoric Flash.

THE following is an extract from the Meteorological Report of S.S. *Orduna*, Captain T. DANIEL, Vigo to Bermuda. Observer, Mr. W. PEARCE, 2nd Officer:—

"18th October, 1927, at 3.50 a.m. at ship, G.M.T. 0730, in Latitude 33° 04′ N., Longitude 56° 04′ W. Wind S.E., force 3, sea smooth. Swell moderate, barometer 29.97 in., steady. Observed brilliant meteoric flash bearing 250° at an altitude of about 7° of arc above the horizon. It appeared as a brilliant white flash which turned red and slowly disappeared. Time occupied 10 seconds, and the altitude of 7° was maintained throughout."

North Atlantic.

THE following is an extract from the Meteorological Report of M.V. *Loriga*, Captain E. C. CLAPHAM, London to Colon. Observer, Mr. R. W. GILL, 3rd Officer:—

"30th October, 1927, 2327 G.M.T. Position by account Latitude 45° 44′ N., Longitude 13° 26′ W., observed brilliant meteor from near ι *Ceti* (approx. altitude 38° 10′). Falling angle 75° to horizon. The meteor itself disappeared in a few seconds (approx. altitude 18° 10′) but the tail remained visible as a white streak for about 35 seconds. Passing in the vicinity of *Jupiter* its magnitude seemed four or five times greater than that of the planet. Although only visible for a few seconds the impression formed was of a ball of red flame changing to green."

SOLAR HALO.

Caribbean Sea.

THE following is an extract from the Meteorological Report of S.S. *Orduna*, Captain T. DANIEL, Havana to Cristobal. Observer, Mr. R. D. ECKFORD, 3rd Officer:—

"October 25th, 1927, at 10.36 a.m. A.T.S. (1536 G.M.T.) in Latitude 16° 10′ N., Longitude 81° 41′ W., approximate altitude of sun 52° of a great circle, an arc of about 30° of a solar halo became visible between the sun and the zenith. The radius of the arc by measurement was 23° of a great circle to its remote edge.

"By 10.44 a.m. the cloud patch (attenuated Ci/Ci. St moving slowly from N.W.), causing the phenomenon, had passed off and the halo had disappeared, nor was it seen again.

"The colours, in order from the remote edge from the sun were green, orange, and purple, with also a very narrow band of yellow between the orange and green.

"Another person, in addition to myself, examined the colours and we agreed as to their order. There cannot therefore be any doubt whatsoever that these colours did really exist in the order named.

"The appearance of the purple at the inner edge of the ring led me to examine the halo very carefully. As a result, I would like to submit the theory that the intense blue rays of the sky beyond were passing through the thin cirroform clouds and intermingling with the true colours of the halo, gave the appearance of purple and green, where in reality red and yellow should have been.

"If this were true, why was the orange band pure?"

NOTE.—The order of colours seen when a solar halo is of sufficient intensity to show colour is always as given above, green, orange and yellow, reckoning towards the sun from the outer edge of the halo. At the inner edge of the halo a ray pure red should be formed. It is possible that this, in combination with the blue of the sky, would account for the purple colour, but no colours are formed in a halo unless it is of considerable intensity and in this case one would not expect the blue sky to show much colour through the cloud. On the outer edge of the halo a very faint blue may sometimes be seen, but violet which should be outside the blue is never seen. The majority of solar halos show no colour.

NAVIGATIONAL INSTRUMENTS.

Electric Light for Reading the Sextant at Night.

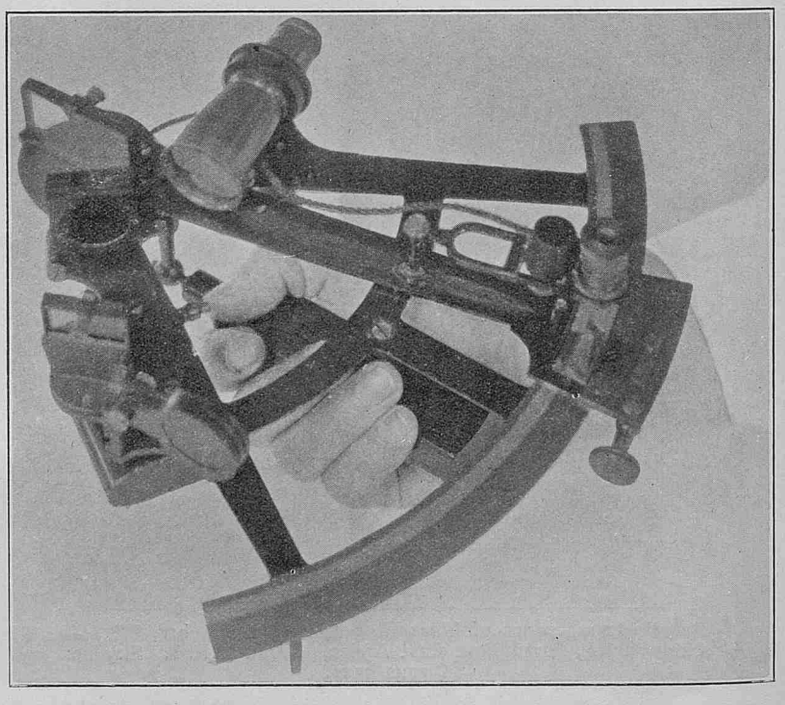
THE following description and photographs are contributed by Captain A. J. HOSKEN, of R.M.S. *Empress of Russia*. Somewhat similar arrangements for lighting the sextant or the compass card, when using an azimuth mirror, have been in use for many years, and, if our memory is correct, such a device was patented by an officer of the ORIENT LINE in about 1904:—

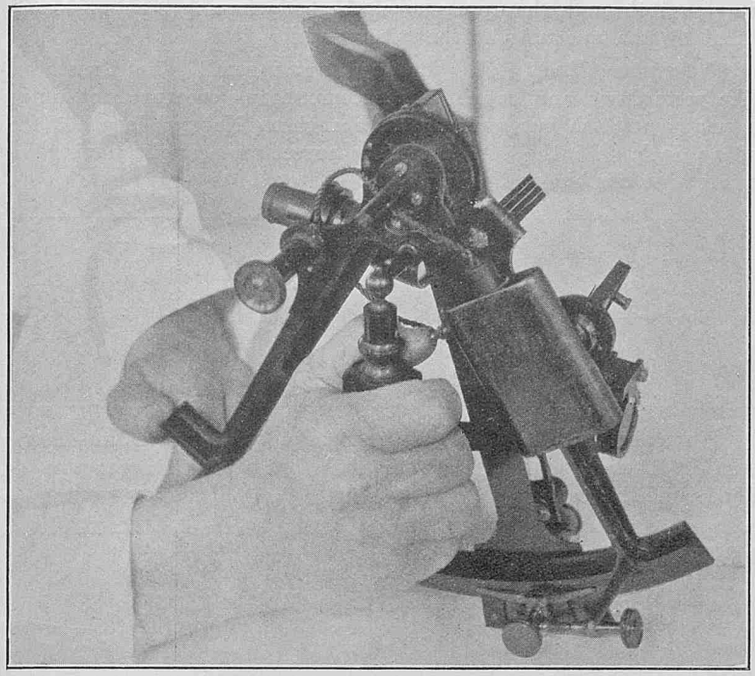
"The accompanying photographs are of a lighting device I have developed for use in stellar navigation. This arrangement I have used for a number of years and found it most useful. Probably the advantages of this simple contrivance have not been fully realized. The following may be of interest to seamen:—

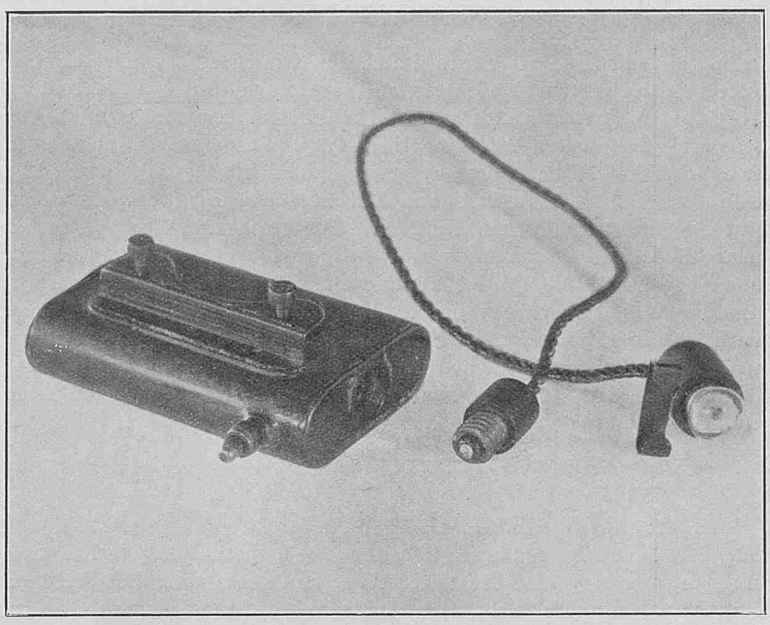
"For calculating set and drift due to current, fixes by good stellar observations are of great value. Anything that tends to simplify the taking of these observations should be of interest to Navigators.

"This device as illustrated is a permanent fixture, although it can be removed in a few seconds. It adds very little to the weight of the sextant. The sextant is at all times ready for instant use. It does not interfere with the stowage of the sextant in its case. It could, I believe, be readily adapted to any type of sextant. The reading lamp shows the right amount of light without the disadvantage of getting the eyes dazzled, it therefore enables the observer to obtain sights quicker and with greater precision. It is not only useful for reading off the altitude when the sight has been taken, but also for setting the sextant to any desired altitude which may have been obtained previously from a star globe. The small battery lasts for several months and refills can be obtained almost anywhere.

"The following is a description of this device and how it is fitted:—To an ordinary small pocket flash-light, a piece of Z-shaped brass is soldered. This piece of brass having two threaded screw holes in it. In the sextant frame two holes are bored, the battery case is then secured underneath the frame of the sextant by two screws, in such a position that the small push-button can be conveniently pressed by the thumb of the right hand when the sextant







is in use. The electric light slides on to the carrier-arm of the vernier reader behind the refractor glass. The connection plug and light socket are made of vulcanite. There should be little trouble in having this device fitted.

"For any who object to having holes bored in their sextant frames, the following contrivance which can be fitted up by anyone, would be of service. To a piece of insulated flexible wire about five feet long, connect to one end a dry battery, to the other end a small electric light. About 18 inches from the light connect a pear-shaped bell-push. The battery may then be put into the pocket, the electric light slipped underneath an elastic band on the carrier arm of the vernier reader, the push-button held between the first and second fingers of the right hand while holding the sextant, the thumb of the right hand is then ready to press the button when required. This simple contrivance I have found to work well, although not so neat or handy as the device shown in the illustration.

"Possibly a further explanation of how this reading light can be used to the best advantage may interest some. The intersection of two position lines as near a right angle as possible, obtained from simultaneous or nearly simultaneous observations at twilight, will determine the ship's position with great accuracy. To realize these ideal conditions, the use of a star globe is most useful, for then the best stars for observation can be seen at a glance, together with their altitude and azimuth. In the evening, very shortly after sunset, when it is practically daylight and the horizon is clearly defined, the altitude of one of the stars is set on the sextant, the star will be seen near the horizon even before it is visible to the naked eye, the sight is taken and immediately the altitude of the next star to be observed is set on the sextant, the sight taken as before. If a reading light as described is used, it only takes about 30 seconds to take observations of two stars. By adopting this method, there is not the bother of bringing down the star to the horizon, the sextant can be read or reset as often as required, the eyes are not dazzled, valuable time is saved, and observations obtained at the best time with a minimum amount of trouble."

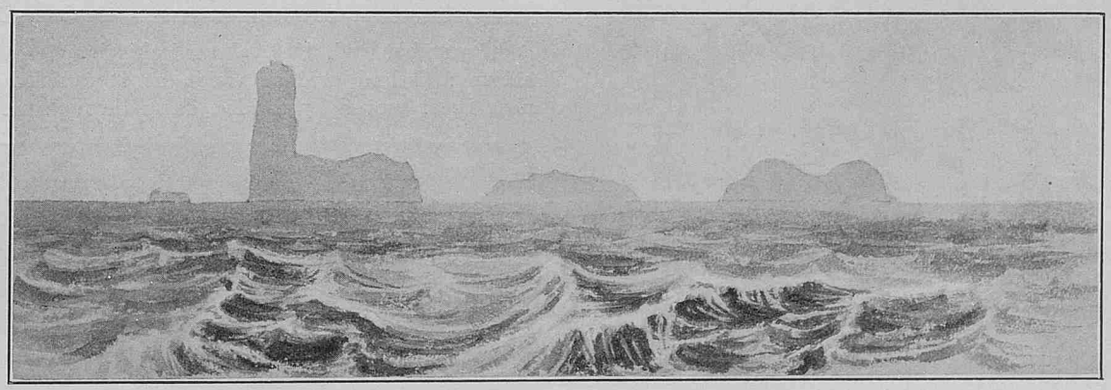
OLD TIME MARINE OBSERVER'S LOG.

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

SKETCH OF FERNANDO NORONHA.

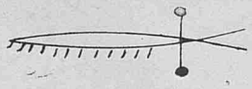
THE following is an extract from the Meteorological Register No. 439, kept on board the wooden ship *Gloriana*, 1057 tons, Captain HENRY TOYNBEE from London to Madras, under date 26th September, 1856:—

"6 p.m., Fernando Noronha from S.E. ½ E. to S.E. ¼ S. distant 25 miles. The first bearing is of the pyramid a very remarkable piece of land. I subjoin a sketch of all the land visible as seen through a spy glass."



SEA INSECTS.

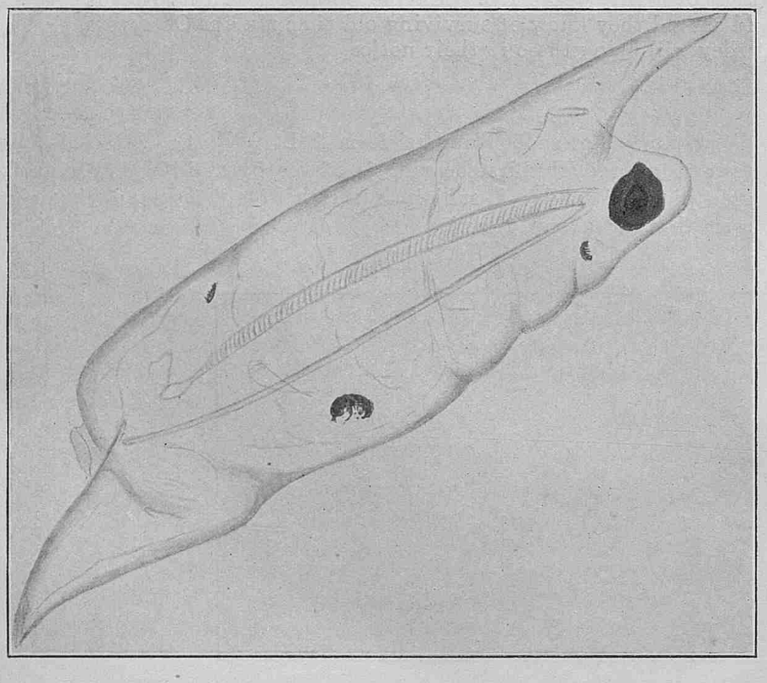
In the same Register are numerous beautiful sketches of Sea Insects drawn from the water and examined under a microscope by Captain TOYNBEE. He says "The Crustaceæ abound in all the seas we have visited, some of them very phosphorescent, one even so much so as to be caught by its own light in the day time. The cold water on the Agulhas Bank had more life in it than the warm water current that runs round it. In calm and rainy weather near the Equator numerous and very various insects were found, one very small but in colour and markings resembling a turtle, another was transparent but as it turned in the water it shone with the most brilliant prismatic colours and several small fish with multiplex eyes attached in the most remarkable ways to their bodies; one with the eyes even projecting in this proportion from its body,



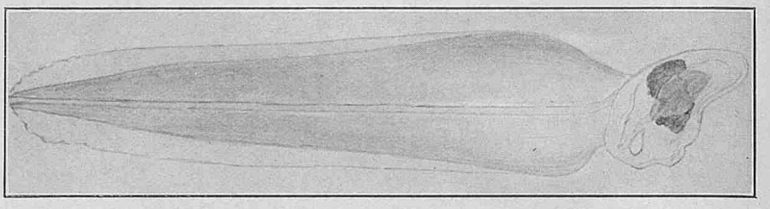
"In the North Atlantic we found a great variety amongst the *Sargapum* chiefly coloured like the weed, principally crabs and shrimps, too large for the microscope, and these were not sketched because I suppose that they have often been noticed before. Whilst in the calms of the Horse Latitudes, the net being six or seven feet below the surface, we found shells for the first time, they were most delicate and minute, some of a most beautiful rose colour and others lilac varying to deep purple; sketches were taken of them and their inhabitants which may be seen if desired. We may have missed the microscopic shells before as we were attracted by the beautiful rosy colour of what appeared a mere speck of dust to examine it when it proved to be a shell. In all Latitudes we have constantly found little notionless sheaves or circles of fibres; they are motionless, but under the microscope distinct cells are visible in each fibre."

NOTE.—In the Register the sketches drawn by Mrs. TOYNBEE are executed in beautiful colours which we are unable to reproduce in the specimens given here:—

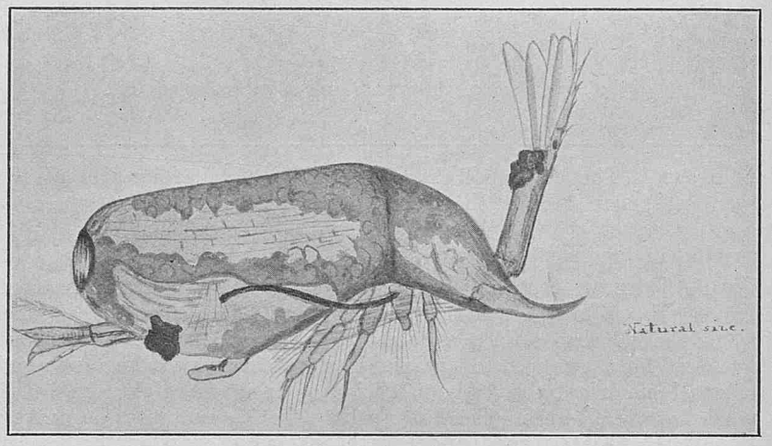
"**November 13th, 1856.** Towed the net astern and caught great numbers of *Acalepha* or jelly fish, they floated by in strings varying from one to four feet in length, the different individuals united obliquely, the head of one resting on the side of the next. They varied from half an inch to 8 inches in length. Almost all had one or more scarlet shrimps passing freely about in its hollow body. It progressed by forcibly ejecting the water by the aperture here seen through the upper horn, the body having been previously filled by the aperture at the other end."



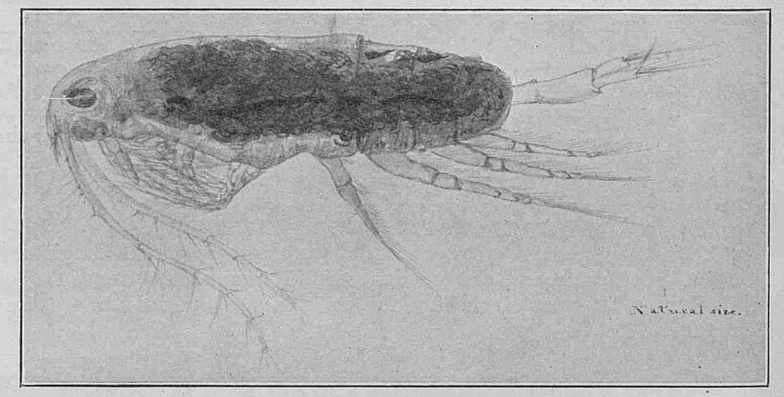
"**November 22nd, 1856.** Pumped up a small blue Crustacean like yesterday's and caught the accompanying creature not unlike a small cuttlefish but wanting the branches. Natural length 2/12th of an inch. On the 28th a similar insect was caught having red where this has blue colouring."



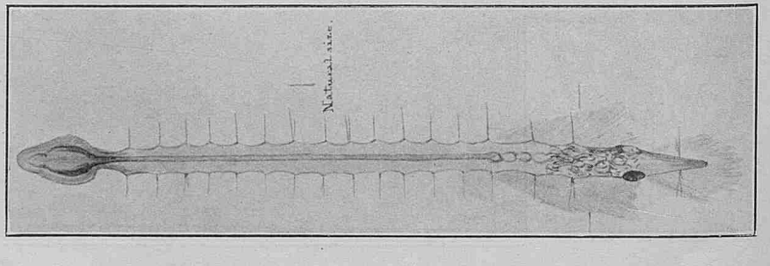
"**November 29th, 1856.** Pumped up this crustacean nearly similar to the one found on the 25th, but its eyes are better defined and the tail very remarkable."



"**December 1st, 1856.** This long backed crustacean was taken from the bucket at 3 p.m. It swam very heavily in the water, often resting on the bottom and jumping up perpendicularly keeping up a motion like treading water. The net work of legs under the fore part of the body retained the shape given in the sketch, but were in constant motion. Very few of the other specimens have had eyes as well as horns."



"**December 2nd, 1856.** Found this long creature which was very active and had evident vision as it avoided any object brought near it, it moved by sudden darts through the water."



On December 11th, 1856, Captain TOYNBEE made the following entry in his log:—

"Finding that the labour of copying the sea insects for this log and for that which I keep for Lieutenant MAURY is too great, the original drawings only will be made for the rest of the voyage, but I shall be happy to send them in for the inspection of the Board of Trade if so desired."

CURRENT BETWEEN TORY AND BELLE ISLE.

THE following is an extract taken from the Meteorological Register No. 2495, kept on board the iron Auxiliary Barque, *Moravian*, Captain ROBERT BROWN from Liverpool to Quebec under date January 14th, 1870:—

"On the Great Circle Track between Tory and Belle Isle I never found any current except surface current caused by the winds. I sometimes find that half a point is not too much to allow when the wind has been blowing strong for any length of time from the northward or southward. What I mean by no current is 'no regular current.' Of course there is no doubt about the Arctic Current, but with a stong southerly wind I have found it contracted so much that I have made nothing within the limits of this current which accounts to a certain extent for the loss of so many vessels about Cape Race, they, allowing for the usual southerly current which is checked and counteracted by the wind blowing from the opposite quarter; you can hardly call it leeway, yet it is applied in the same way to the dead reckoning."

REPORT OF THE TYPHOON OF THE 22ND AND 23RD SEPTEMBER, 1874.

THE following report is taken from the Meteorological Register No. 3499, kept on board H.M.S. *Princess Charlotte*, Commodore JOHN E. PARISH, R.N., at Hong Kong. Observer, Nav. Lieut. T. W. WEBSTER, R.N.

"The morning of the 22nd commenced fine with the barometer at 29.80 the average of the previous four days. As the day advanced the atmosphere became unsettled, and notwithstanding that the wind was N.W. it was accompanied by an oppressive heat, the thermometer being 85°. The barometer began to fall about noon and steadily went down until at 4 p.m. it was 29.69.

"The wind, which at this time was about N.N.W., began to blow in fitful gusts across the harbour and it became evident that a typhoon was approaching. Warnings were sent to all ships and junks to prepare for it or to get into a safe berth. The barometer continued to fall slowly until 10.30 p.m. when it stood at 29.40, the wind having veered to north.

"Between 10.30 p.m. and 2 a.m. the barometer fell upwards of half an inch and stood at 28.83, its lowest range, for about an hour. At 2 a.m. the wind suddenly shifted to N.E. and then to E.N.E. and blew with terrific violence. The strength of the wind brought an immense volume of water into the harbour, not a tidal wave but a rapid rise which continued for about an hour, flooding the Praya (i.e., the embankment) and ground floor of houses to a height of four and five feet for some distance in shore. Although according to ordinary calculation it should have been low water at 2 a.m., by 3 o'clock the water had risen from five to six feet above its high water level, or a rise of 10 feet had taken place. As the storm subsided the wind gradually veered to S.E., the barometer rose steadily and at 7 a.m. it was fine. From the log books of ships which have experienced this typhoon at sea I have been able to ascertain that it blew with great violence in the neighbourhood of the Pratas shoal, the American Barque *Highlander*, having them in sight when the centre passed over her, and two other vessels being close to at the same time, namely, between the hours of 4 and 6 p.m. of the 22nd. The storm travelled thence in a north-westerly direction, the Spanish Steamer *Formosa*, in Latitude 20° 50′ N., and Longitude 115° 20′ E., being on its western limit. The centre passed but just south of Hong Kong at about 2 a.m. of the 23rd, but its full burst being apparently expended at Macao where it raged about 4 a.m., the barometer at that place registering then 27.95 or nearly one inch lower than it was at Hong Kong. The place is a heap of ruins and the people are in great distress.

"We rode it out off Kowloon very easily, owing, I have no doubt, to the precautions taken in mooring the ship. We laid with 100 fms. of 2¼ chain on a 95 cwt. anchor backed by a 40 cwt. anchor in a good bottom of soft blue mud, and never started an inch. H.M.S. *Elk*, who was moored near us, drifted a long distance notwithstanding her having three anchors down and steaming full speed.

"The scene from the ship at daylight was horrible, hardly a ship or vessel had rode it out. The French Mail Steamer *Ava* and the English Barque *Charlotte Andrews* being, I think, the only two that had escaped; the sea all around as far as the eye could reach was covered with wreckage of junks and sampans, steamers and vessels lying sunk or dismasted in all directions. The loss of life is very great, over 200 Europeans drowned alone, but amongst the floating population it must be enormous; about a thousand bodies have been buried, but as a great many went down in their vessels or have floated out to sea, it is estimated that there are not less than 3,000 victims to this terrible typhoon.

"It will be noticed that in this typhoon and also in the tail end of one which we experienced on the 21st of September last year, and I see by the log it also occurred in the typhoon of 3rd September-1871, that the wind shifted from left to right, commencing at N.W., working through North to East and finishing at S.E., contrary to what you are told in every book in the 'Law of Storms'."

NOTE.—In 1874, when the above report was written, the tracks of typhoons had not been investigated. Typhoons generally advance in a N.W.'ly direction when approaching Hong Kong, the shifts of wind experienced depending on the observer's position with reference to the storm's centre. In the cases mentioned, *Princess Charlotte* was evidently situated north of centre and would experience the wind shifting to the right.

HEAVY GALE IN THE EASTERN NORTH ATLANTIC.

THE following extract is taken from the Meteorological Register No. 3473a, kept on board the Wooden Three-masted Schooner *Glenesk*, 205 tons, Captain J. T. SUNDERLAND, from Uruguay River to England, under date 10th and 11th December, 1874:—

"December 10th, Midnight. In Latitude 49° 32′ N., Longitude 16° 08′ W. Wind west, force 11. Hove to safely.

"December 11th. At 4 a.m. the hurricane had increased, the sea running past all description. At 7.30 a.m. a fearful sea broke on board abaft mizzen rigging starboard side, smashing in bulwarks. Sweeping aft, tore away boats' davits, rails, companion, skylight, wheel. Tearing up poop deck, filling cabin, smashing in lockers and doors.

"Fortunately no life has been lost, the man at the wheel being lashed, but was cut, bruised and wounded. We saved the second mate in the wreck alongside, who was senseless and cut fearfully about the head and face.

"Got tiller secured and staysail set on mizzen mast and lashed to the half-round aft shut up the holes in the poop with sails nailed over the openings.

"I have thereby lost the thermometer screen with Nos. 68, 69 and 72. The barometer, being in the cabin a little aft of the skylight, I do not think has received any serious injury, but as it also must have suffered a severe shock amongst the wreckage and debris which filled the cabin, I expect it will be better to have it compared before going to sea on another voyage. However, I regret very much that I am now unable to keep the log for the remainder of the voyage, as three out of our small crew are laid up helpless and the safety of the vessel and steering engrosses all my time; having lost wheel and compasses and short-handed, with all stores destroyed and the vessel a wreck abaft the mainmast, it will be seen that it is beyond my powers.

"It is so far fortunate these logs have not been damaged, all my other books, etc., being thoroughly saturated and destroyed."

SPEED OF A CLIPPER SHIP.

THE following extract is taken from the Meteorological Register No. 3481, on board the Iron Ship *Golden Fleece*, 1,257 tons, Captain A. F. GUN, from Liverpool to Calcutta, under date 5th May, 1874:—

Hour.	Latitude.		Longitude.		Ship's Head.	Wind.		Remarks.
	Observed.	D. R.	Observed.	D. R.		Direction.	Force.	
"Noon.	2° 11′ S.	1° 58′ S.	21° 15′ W.	21° 27′ W.	S. 45° W.	S.S.E.	4-5	Going 11 knots in the puffs. Royal staysails and main skysail set.
4	—	—	—	—	S. 23° W.	S.E.	4-5	
							5	6 p.m. Going 11¾ knots in the puffs with three Royals set. Difficult to estimate force of wind according to scale between 3 and 5, 3 being 3 or 4 knots with Royals. (5) Ship goes 11 knots easily."
8	—	—	—	—	S. 34° W.	S.E. by S.	4	

NOTE.—The scale referred to in the above remarks is the Beaufort notation, which is as follows for numbers 2-6:—

2 Light breeze	Or that in which a well-conditioned man-of-war with all sail set and clean full would go in smooth water from	1–2 knots.
3. Gentle ,,		3–4 ,,
4. Moderate ,,		5–6 ,,
5 Fresh ,,	Or that to which she could just carry in chase full and by	Royals, etc.
6. Strong ,,	,, ,, ,, ,,	Single reefed topsail and topgallant sails.

In this log it is recorded that when homeward bound from Calcutta to Trinidad in the S.E. Trades of the Indian Ocean on September 1st, 1874, *Golden Fleece*, carrying a force 6 breeze one point abaft the beam, with three Royals set throughout, made 302 miles in 24 hours, an average of 12.6 knots.

WIND AND TIDAL HEIGHT IN THE IRISH SEA.

PREPARED BY M. CRESSWELL, PORT METEOROLOGICAL OFFICER, LIVERPOOL.

The investigation of which I wrote in the August 1926 Number of this Journal has been continued, using the Irish Sea ports of Holyhead, Fleetwood, Preston and Belfast. As before, through the courtesy of the harbour authorities, the tide gauge readings have been used with the predicted heights of high water given in the Admiralty "Tide Tables," and the wind and pressure records of the Meteorological Office.

Tabulations have been made so that the conditions at all four ports can be compared at each high water.

The main tidal undulation from the Atlantic approaches the British Isles from the south-westward, and divides on reaching the south-western extreme of Ireland, one portion passing up to the Irish Sea, through St. George's Channel, and the other passing up the west and north coasts of Ireland and entering the Irish Sea by the North Channel. Finally these tide waves meet again in the neighbourhood of the Isle of Man. The direction of the principal flood lines of the tidal streams in the Irish Sea is shown by FIGURE 1.

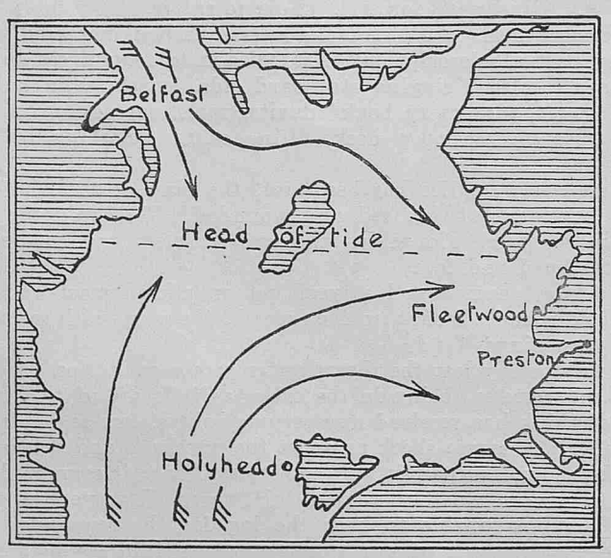


Figure 1.

From (FIGURE 1) it can be seen that the triangular disposition of the ports used is such that Holyhead comes under the influence of the tide wave which flows through St. George's Channel, Belfast under that which enters by the North Channel, and Fleetwood and Preston under the combined influence of both tide waves, as it is near the line known as the "Head of Tide."

In the previous article a comparison was made between the height of predicted high water as published in the tide tables, and the actual height registered by the tide gauge, for the ports mentioned. Local wind and pressure conditions were compared with the excess or deficiency noted between the difference of predicted and actual height of high water, throughout the whole of the year 1921.

This indicated that in most cases any variation from the predicted heights of high water occurred at these ports at the same time. The excess above or deficiency below predicted heights was really surprisingly small, as much as two feet being noted upon eight occasions only during 1921, which was an abnomally dry year, with mean pressure above the normal.

Similar comparisons made during later years appear to confirm the results obtained for 1921. They also show that the effect of wind force associated with a rapid change of pressure (i.e., sudden gale) alters the sea level more quickly and to a greater extent than with a more gradual change of wind and pressure.

The outstanding feature of 1927 was the excessive wetness of the year as a whole, with mean pressure below the normal, and in comparison with recent years it was shown that the observed heights of the tide were less in agreement with the predicted heights. On one occasion the difference being as much as 10 feet in excess, on October 28th-29th, 1927, during the passage of a heavy gale.

The Fleetwood Gale and Floods, October 28th–29th, 1927.

A depression first indicated north of the Azores on October 27th, 1927, moved in a north-easterly direction and deepened. On the morning of the 28th it had arrived off the South-West of Ireland. WEATHER CHART No. XXI, 0700 G.M.T. October 28th, 1927, shows the depression to be a vigorous one, and that it would cause widespread gales as it moved north-eastwards across the British Isles, the direction of its path being indicated by the barometer falling in advance, quickly at Valentia, and slowly at stations to the north-east.

The morning W/T issue of the "Weather Shipping" Bulletin from G.F.A. and the R/T issue by word of mouth from Daventry, on the morning of October 28th, were broadcast as follows:—

"An intense cyclonic system off South-West Ireland is moving north-east and will cross Ireland and near the Scottish Borders to the North Sea. A severe south-west gale will occur on the south side of the track and rain will be general.

"**Forecast**—Western Area District Hebrides wind backing to east and freshening District Clyde wind south-east strong at times Districts Mersey and Severn wind south veering to south-west and increasing to strong gale District Shannon wind variable finally north-west a gale at times locally. Whole area visibility moderate to good."

It was possible to approximately fix the position of the centre at 1300 G.M.T. from a W/T message received at the Meteorological Office, London, from *Alaunia* a vessel not on the list of regular Voluntary Observers:—

"At 1250 G.M.T. approximate position 51° 28′ N., 14° 04′ W. wind was south force 6 barometer having fallen steadily to 28.69 inches (971.5 mbs.). At 1320 G.M.T. in approximate position 51° 26′ N., 13° 52′ W. wind suddenly shifted to west-north-west and increased to force 11 the barometer rising rapidly until now at 1450 G.M.T. it stands at 29.00 inches (982.0 mbs.) the wind maintaining its direction and force."

This report from a position near the centre of the depression, and the wind force 11 after the veer, added useful information to the working chart at the Meteorological Office.

Weather Chart No. XXII, 1800 G.M.T. October 28th, 1927, shows the centre over North-West Ireland and moving north-east, with strong gales on the south side of the track and light winds near the centre. In Weather Chart No. XXIII at 0100 G.M.T., October 29th, 1927, the centre is shown over Scotland, with gales reported at most stations in Ireland, Wales and England. At this time the gale in North-West England reached its greatest intensity. A gust of 96 miles per hour was recorded at Southport shortly before. It then travelled more to the eastward across the North Sea, and Weather Chart No. XXIV, 0700 G.M.T. October 29th, 1927, shows the depression centred off the Norwegian Coast, from whence it passed to Denmark on the 30th. The British Isles was traversed by this intense cyclonic system in well under 24 hours.

The rise of the barometer in the rear of this depression was remarkable, and in consequence the gales which followed were particularly violent. The velocity of the wind increased with great suddenness. At Liverpool the trough passed at 2100 G.M.T. on the 28th, and the barometer then commenced to rise until 1000 G.M.T. on the 29th, during which time it had risen from 986 mbs. to 1014 mbs. the rate of rise being seven millibars in three hours.

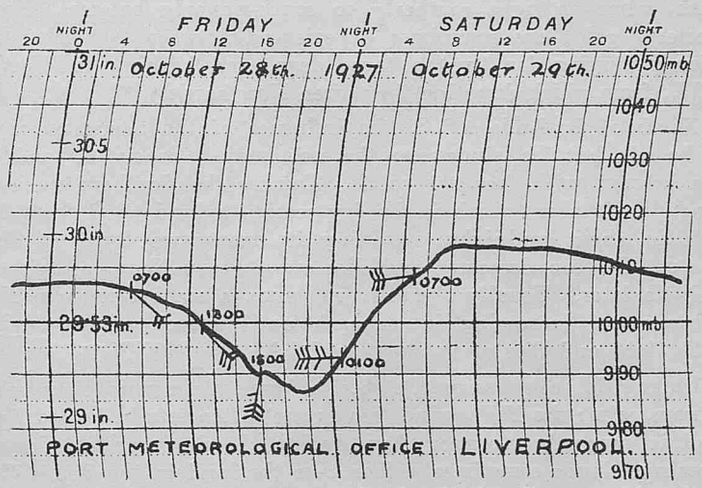


Figure 2.

Graph showing wind and barometer during the passage of the depression, October 28th–29th, 1927, at Liverpool.

In the Irish Sea the rapid effect of wind force upon the sea-level was well demonstrated. On the days previous to the passage of this cyclone there had only been a few inches of departure from the predicted heights of high water. On October 28th during the gale one high water on all shores of the Irish Sea was greatly in excess of predicted height, the amounts at the four ports used in my investigation being as follows:—

Holyhead, 3 ft. 4 ins.	Fleetwood, 7 ft. 8 ins.
Preston, 10 ft. 2 ins.	Belfast, 3 ft. 2 ins.

An excess was not maintained, as comparisons at the following high water showed again only a few inches' departure from predicted heights.

A possible relationship between amounts at Holyhead and Belfast will be noted, but this similarity has not been found consistent over long periods.

The severity of the gale was such that many lives were lost and great damage done to property, at sea and ashore.

At Preston the water rose 10 ft. 2 ins. above predicted height causing the River Ribble to overflow its banks, with consequent flooding. At Fleetwood the excess of 7 ft. 8 ins. backed up by a wind with a mean velocity of 70 miles per hour, caused a sea wall in course of construction to give way, and the town and surrounding country, for an area of about two square miles, became deeply inundated, it being estimated that the volume of flood water amounted to four and a half million tons. All communication was cut off, the main road being five feet under water, and a number of persons were drowned, the disaster being so great that a relief fund was opened.

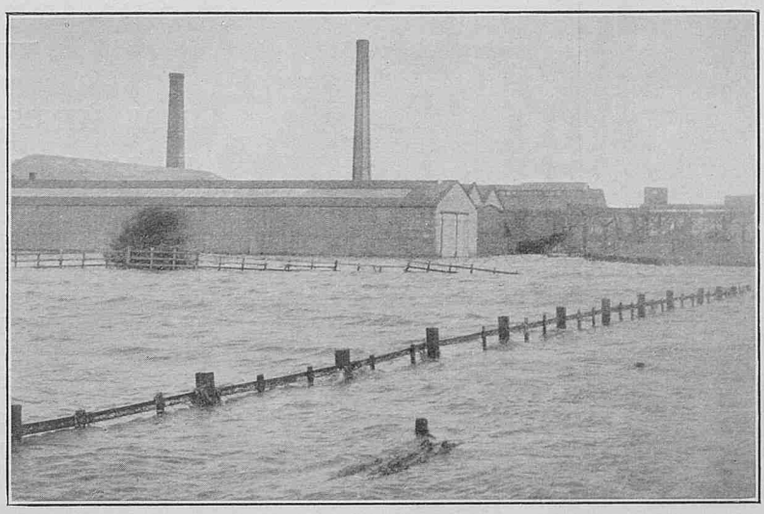


Figure 3.

Flooding at Fleetwood, October 29th, 1927.

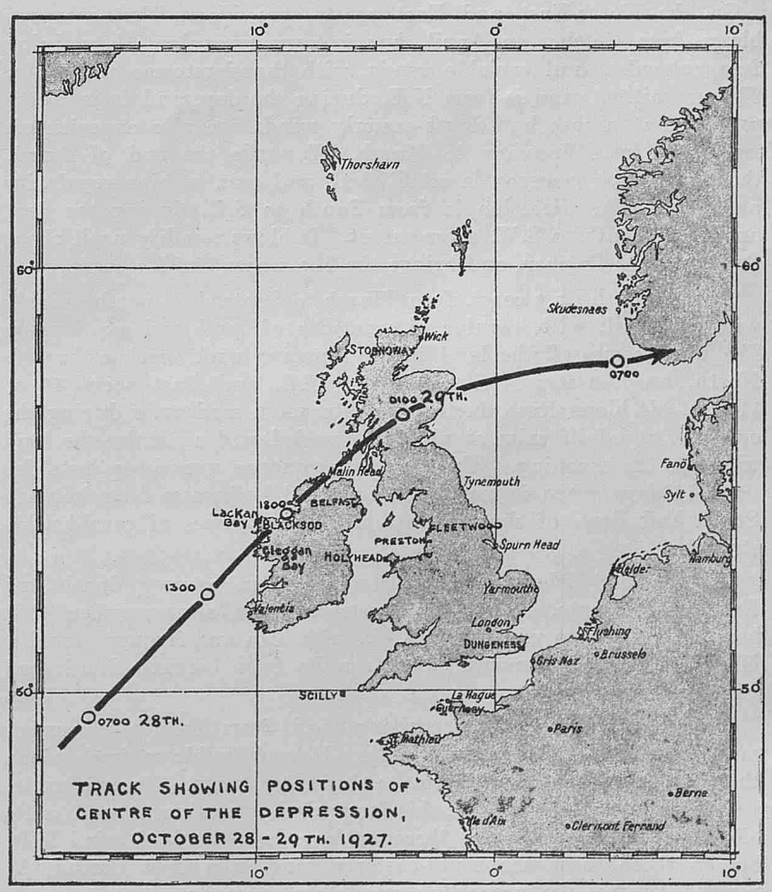


Figure 4.

Track of the centre of the Storm.

As before mentioned, light winds were experienced during the passage of the centre across Ireland, and the sudden manner with which the velocity of the wind increased in the rear of this depression was responsible for widespread casualties to shipping, especially fishermen.

WEATHER CHART No. XXII, 1800 G.M.T., evening of October 28th, 1927, shows the depression centred over North-West Ireland, with light winds extending over a large area. It was at about this time, when the night was fine and starry and the wind light, that the fishing fleets from Lackan Bay and Cleggan Bay, on the West Coast of Ireland, put to sea.

The storm track as shown by FIGURE 4 passed between Lackan and Cleggan shortly before 1800 G.M.T., and as the depression moved away to the north-eastward, the fishing fleet came under the influence of the hurricane winds in the rear of the centre, and whilst fishing the storm suddenly broke upon them. Many lives were lost and nearly all the vessels were destroyed.

The writer has no knowledge of the local conditions on the West Coast of Ireland regarding the reception of broadcast weather information for seamen, but the thought comes that had it been possible for the Daventry issue of the " Weather Shipping " Bulletin to have been received, it would have been known locally that conditions as described in the Shannon District forecast were likely to take place, and the sailing of the fishing fleets might have been delayed in consequence.

The above are only a few of the disastrous results due to this October gale, during which British lifeboats on all coasts rescued over 30 lives.

LOCAL WINDS, INDIAN OCEAN.

V.—Islands of the Indian Ocean.

Madagascar.—Madagascar, the principal island of the Indian Ocean, is about 1,000 miles long, with an average breadth of 250 miles, and with its high mountain ranges greatly influences the prevailing wind in this part of the Indian Ocean; while close to the coasts the winds are for the most part of the nature of land and sea breezes.

The South-East Trade Wind, which is constant in the eastern part of the Indian Ocean, does not regularly extend to the coast of Madagascar; and the northern half of the island lies within the region of what are known as the North-West and South-East monsoons, the latter being an extension of the South-East Trade, while the former is mainly governed by the area of low pressure existing over Africa during the southern summer.

On the North-East and East coasts, the North-West monsoon blows from October to April, but is very irregular, there being frequent calms and variable winds, with thunderstorms and rains. The prevailing wind is from N.E. during the day, and from North to N.W. at night; but South-easterly winds are also experienced, especially from January to March. Towards the end of April, the South-East monsoon is established, and soon attains regularity and force. Its direction is from South to S.E. during the day, and from South to S.W. after sunset. It blows steadily until about September or October, and brings the fine season on this coast.

On the South-East coast, from March to September, north-easterly winds prevail, with regular alternations of land and sea breezes. The wind comes off the land in the morning and, veering through North, becomes steady from between N.E. and East about 10 or 11 a.m. It blows fresh during the afternoon, moderates during the evening, and falls calm at night, being followed again by the land wind in the morning. This regular sequence sometimes lasts for 12 to 15 days, when it may be interrupted by breezes from between South and East, of short duration, but sometimes of considerable strength.

Between September and March winds from between South and East predominate, except in December and January when they have a tendency to veer to the S.W., with rain and frequent squalls. March is the worst month, when squalls from between South and East are most violent.

On the South coast, the prevailing winds from April to November are from between East and South. It usually blows fresh along the coast every day from 10 a.m. to about 7 or 8 p.m., then moderates and draws more off the land, this land wind extending 12 to 15 miles off shore. Occasionally for three or four days the land wind fails, but in those cases the south-easterly wind falls light during the night. At times the prevailing winds are interrupted by moderate breezes from S.W. to West.

From November to March the winds are more changeable, both in direction and force, and often blow from between South and West. Gales are frequent in December and January, during which period westerly winds blow, often for several days consecutively, between the southern end of Madagascar and Reunion. In February and March violent squalls may be expected, backing from West through South to East.

On the West coast of Madagascar, south of Latitude 20° S., the winds are variable and calms are very frequent. From May to September, the fine season, winds are generally from between S.S.W. and S.S.E. by day, and off the land by night, but seldom reach the force of a fresh breeze.

From October to April, it is wet and unsettled, the prevailing winds being from between North and East, always light, alternating with calms or light southerly to south-westerly breezes. North-westerly gales are sometimes experienced between November and March, lasting for two to three days, and backing to West or S.W., from which direction they often blow hardest.

North of Latitude 20° S. the influence of the monsoons begins to be felt, but the winds near the coast mainly consist of land and sea breezes, with frequent calms. During the Southern monsoon, April to October, which is the dry season, a land wind from S.E. sets in about midnight, attaining its maximum force at about 8 a.m. It then decreases and dies away about Noon, occasionally a little later. Usually about 1 or 2 p.m., a sea breeze from N.W. springs up, increasing in strength until sunset, after which it falls light and dies away about midnight.

During the rainy season, October to April, the mornings are nearly always calm; the N.W. wind (sea breeze) often sets in before Noon, and is generally stronger than during the dry season. Towards evening, clouds sometimes gather over the land in the South East, and sudden squalls, similar in character to West African tornadoes, come from that direction, with heavy rain, lightning and thunder. These are most common during January and February.

Reunion, Mauritius and Rodriguez.—These islands are within the limits of the South-East Trade Wind throughout the year, but there are seasonal changes as the trade wind belt moves north and south.

At Reunion, from April to November, the fine season, the Trade Wind blows steadily from between S.S.E. and E.S.E., generally freshening at 9 a.m., and falling lighter at 4 p.m. The nights are usually calm, but if the Trade Wind persists during the night, it is almost certain to blow strongly the next day.

During the bad weather season, November to March, south-easterly winds still prevail, but they are generally lighter, and subject to interruption by calms and winds from West to N.W. During this

season there are also gales at times, which are frequently followed by calms or light westerly winds, which in turn are quickly succeeded by the prevailing south-easterly wind.

At Mauritius the winds are very similar. The predominant direction of the wind is from S.E. to E. throughout the year, its average force being three, on the BEAUFORT Scale. It is lightest between midnight and 8 a.m. and reaches its greatest force between Noon and 4 p.m. The Trade Wind attains its maximum strength during July and August, while during the rainy season, December to April, the wind frequently backs to north of East.

At Rodriguez the South-East Trade is more or less continuous all the year round. From June to October, the season of most settled weather, the wind blows from between S.E. and East, with a force of from 3 to 6, but generally fresh. During the rainy season, December to April, the weather is unsteady, and the wind often backs to N.E., frequently remaining from that direction continuously for some days. Calms occasionally occur at this season, but are of short duration.

The prevailing winds of Madagascar, Reunion and Mauritius are subject to interruption, especially between November and May, by the occurrence of tropical cyclones, which originate in the western part of the Indian Ocean between Latitude 6° S. and 16° S. They usually travel first in a W.S.W. direction, subsequently recurving to the S.E. Full information of the frequency and tracks of these cyclones is given in the November, 1927, Number of this Journal.

Seychelles and Chagos Archipelago.—The winds experienced amongst these islands are of a seasonal character, the South-East Trade, here known as the South-East monsoon, blowing during the fine season, and the North-West monsoon during the rainy season.

At Seychelles the South-East Trade blows from May to October, from between South and S.E., reaching its greatest strength in August. From November to April, the North-West monsoon blows, its predominant direction being N.W. Its average force is light, and calms are frequent, though from November to January, there are at times violent squalls with almost continuous rain.

At Chagos, from April to September, the South-East Trade blows steadily, but is not so strong as at Seychelles. During the remaining six months, the North-West monsoon prevails, the wind direction being from between N.W. and West.

At Seychelles cyclones are of rare occurrence; and only one is known to have passed over the Chagos Archipelago, in January, 1891.

Islands of Arabian Sea and Bay of Bengal.—In the Laccadive Islands the South-West monsoon sets in during May and lasts until September, when the wind veers to N.W., and remains from between N.W. and North until the end of October. In November, the prevailing direction of the wind is between N.N.W. and N.N.E. In December the wind veers to the north-eastward; and by the beginning of January the North-East monsoon is at its height, but though steady, it is of little strength, seldom reaching the force of a moderate breeze, unless the wind backs to North or west of North, when a fresh breeze may occur for a day or two. During February and March, the wind's direction gradually changes back through North to N.W. April is a very unsettled month, with S.E. squalls alternating with strong N.W. winds for 3 or 4 days at a time. These gradually back to S.W. in May when the steady South-West monsoon begins.

The Maldive Islands occupy an area covering eight degrees of latitude, the northern groups lying in the region of the South-West and North-East monsoons of the Arabian Sea, while the southern groups come partly under the influence of the North-West and South-East monsoons.

In the northern portion the South-West monsoon begins in May and lasts until September, when the winds become north-westerly with squalls and rain. October is a month of variable winds, becoming northerly in November; and the North-East monsoon sets in as a steady wind in December, and lasts to the end of February. During March and April, the winds are northerly and north-westerly, gradually backing to S.W. in May.

In the Southern portion from May to the middle of December the winds are from between West and S.S.E., with much rain and squalls. About the middle of December, which is the time of onset of the North-West monsoon south of the Equator, hard squalls and gales from West and W.N.W. occur, sometimes lasting for several days. From January to March winds are generally from North and N.E., but occasionally from west of North.

In the region of the Andaman and Nicobar Islands the South-West monsoon commences in May and lasts to mid October, its direction being from between S.W. and West. Towards the end of October the North-East monsoon sets in and persists until April. Its direction varies from N.E. to North and N.W., except during the height of the season, December and January, when the predominating direction is N.E.

Normal conditions in the Laccadive and Andaman Islands are disturbed at times by the passage of tropical cyclones, the season of maximum frequency at the former being May to June, and October to November; while at the Andaman Islands the cyclone season extends from May to November. Full particulars of these tropical storms will be found in the July 1926 and November 1927, Numbers, of this Journal.

Cocos and Christmas Islands.—At Cocos Island the South-East Trade wind prevails for about 300 days in the year, its direction varying between South and East, and being strongest in August. Between November and February, the period of maximum frequency of cyclones in the South Indian Ocean, the trade wind is less steady, being interrupted by calms, storms, and variable northerly and westerly winds.

At Christmas Island, 500 miles to the eastward, the South-East Trade blows almost uninterruptedly from May to December, but during the remaining months of the year, the North-West monsoon blowing in the Eastern Archipelago, sometimes reaches the island, the wind coming from the northward, occasionally blowing very hard and bringing heavy rain.

Islands of the Southern Ocean.—These islands, Kerguelen, the Crozets, Prince Edward Islands, St. Paul and Amsterdam Islands, are all within the region of the westerly winds of the Southern Ocean.

At St. Paul and Amsterdam Islands, westerly winds prevail throughout the year, the direction varying from W.N.W. to S.S.W.; but during December to February, easterly winds are sometimes experienced. Gales are frequent during the winter months June to September.

In the vicinity of Kerguelen, the Crozets, and Prince Edward Islands, the weather is generally boisterous. Strong westerly or north-westerly winds prevail, occasionally interrupted by calms or light easterly winds which do not however last long. Westerly gales are frequent and usually of long duration. Gales due to the passage of cyclonic depressions travelling eastward usually begin from N.N.E. or North, and back through West to South, the wind usually dying away when reaching S.S.W.

WEATHER SIGNALS.

II.—WIRELESS WEATHER SIGNALS.

WIRELESS WEATHER BULLETINS.

AUSTRALIA.

WEATHER reports and forecasts issued by the Commonwealth Meteorological Bureau are broadcast *en clair* by Australian W/T stations as follows, special reports and warnings being broadcast immediately on receipt by the W/T Stations serving the area affected, when dangerous weather prevails or is expected.

Perth W/T Station.

Approximate, Latitude 32° 02′ S. Longitude 115° 49′ E.

Call sign, **VIP.** Wavelength 600 metres (I.C.W.).

At 0415 and 1300 G.M.T., Mondays to Saturdays, inclusive, weather forecasts are broadcast.

Each forecast is for the following 24 hours, except on Saturdays when it is for 48 hours.

At 0415 and 1300 G.M.T., on Sundays, supplementary forecasts for the following 24 hours are broadcast.

In addition to the above, 0100 and 0700 G.M.T. observations of barometric pressure, wind direction and force, weather, and state of the sea at Fremantle and Cape Leeuwin on week-days and 0100 and 1000 G.M.T. observations of the same elements on Sundays, are broadcast. Other coastal reports and reports from shipping are included when necessary.

At 0030 G.M.T., on 2,400 metres (I.C.W.), weather forecast of the previous evening is broadcast for the information of distant shipping. The 0100 G.M.T. observations of barometric pressure wind and weather from Kupang (Timor) are included when available.

Geraldton W/T Station.

Approximate, Latitude 28° 47′ S. Longitude 114° 36′ E.

Call sign, **VIN.** Wavelength 600 metres (spark).

At 0300 and 1300 G.M.T., Mondays to Fridays, inclusive, weather forecasts for the following 24 hours are broadcast.

At 0300 G.M.T. on Saturdays, a weather forecast for the following 48 hours is broadcast.

In addition to the above 0100 and 0700 G.M.T. observations of barometric pressure, wind direction and force, weather and state of the sea, at Fremantle and Cape Leeuwin are broadcast, Mondays to Fridays; 0100 G.M.T. observations on Saturdays; 0100 and 1000 G.M.T. observations on Sundays. When available, the 0100 G.M.T. observations of barometric pressure, wind and weather, at Kupang (Timor) are also broadcast.

Broome W/T Station.

Approximate, Latitude 18° 00′ S. Longitude 122° 12′ E.

Call sign, **VIO.** Wavelength 600 metres (spark).

At 0300 and 1400 G.M.T., Mondays to Fridays, inclusive, and on Saturdays at 0300 G.M.T., weather forecasts are broadcast.

From 16th April to 16th December no separate forecast is broadcast for Sundays; the forecast issued on Saturdays is therefore for the following 48 hours.

When available, the 0100 G.M.T. observations of barometric pressure, wind and weather at Kupang (Timor) are also broadcast.

Wyndham W/T Station.

Approximate, Latitude 15° 35′ S. Longitude 128° 18′ E.

Call sign, **VIW.** Wavelength 600 metres (I.C.W.).

At 0300 and 1300 G.M.T., Mondays to Fridays, inclusive, weather forecasts for the following 24 hours are broadcast.

At 0300 G.M.T. on Saturdays, a weather forecast for the following 48 hours is broadcast.

When available, the 0100 G.M.T. observations of barometric pressure, wind and weather at Kupang (Timor) are also broadcast.

Darwin W/T Station.

Approximate, Latitude 12° 27′ S. Longitude 130° 48′ E.

Call sign, **VID.** Wavelength 600 metres (spark).

At 1200 G.M.T., broadcasts a 24 hours Weather forecast for the N.W. coast of Western Australia, Gulf of Carpentaria and E. coast of Queensland. From 16th December to 16th April the 2300 G.M.T. weather report for the coast of Queensland, and a forecast for the ensuing 24 hours, are issued by Brisbane Weather Bureau on Sunday mornings. During the remainder of the year Sunday forecasts are suspended. The forecast broadcast on Saturdays is therefore for the following 48 hours.

Thursday Island W/T Station.

Approximate, Latitude 10° 35′ S. Longitude 142° 13′ E.

Call sign, **VII.** Wavelength 600 metres (I.C.W.). Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a forecast for the ensuing 24 hours upon application to the above W/T Station.

Cooktown W/T Station.

Approximate, Latitude 15° 28′ S. Longitude 145° 15′ E.

Call sign, **VIC.** Wavelength 600 metres (spark).

Ships may obtain weather information similar to above (Thursday I.) upon application to Cooktown W/T Station.

Townsville W/T Station.

Approximate, Latitude 19° 15′ S. Longitude 146° 50′ E.

Call sign, **VIT.** Wavelength 2,400 metres (C.W.).

At 1100 G.M.T. The 0500 G.M.T. weather report for the coast of Queensland and a forecast for the following 24 hours is broadcast daily, except Sundays.

At 1100 G.M.T. on Sundays, from 16th December to 16th April, only, the 2300 G.M.T. weather report for the coast of Queensland, and a 24 hours' forecast issued by the Brisbane Weather Bureau are broadcast. If an atmospheric disturbance is mentioned the broadcast is made immediately upon receipt of the information from the Weather Bureau. The forecasts on Saturdays from 16th April to 16th December are for the ensuing 48 hours.

Willis Islets W/T Station.

Approximate, Latitude 16° 18′ S. Longitude 149° 59′ E.

Call sign, **CGI.** Wavelength 600 metres (spark).

From about mid November to 30th April this W/T station broadcasts particulars of barometric pressure, wind direction and force, amount of cloud, weather, state of sea and swell at Willis Island, *en clair*, as follows:—

At 0645 G.M.T.,	containing	observations	of	0500 G.M.T.
At 1045 G.M.T.,	,,	,	,,	0800 ,,
At 2330 G M.T.	,,	,,	,,	2300 ,,

During stormy weather the 1045 G.M.T. broadcast will contain 1000 G.M.T. observations.

Rockhampton W/T Station.

Approximate, Latitude 23° 25′ S. Longitude 150° 31′ E.

Call sign, **VIR.** Wavelength 600 metres (spark).

Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a forecast for the ensuing 24 hours, upon application to the above W/T Station.

Brisbane W/T Station.

Approximate, Latitude 27° 26′ S. Longitude 153° 07′ E.

Call sign, **VIB.** Wavelength 600 metres (I.C.W.).

Between 0200 and 0230 G.M.T., broadcasts, the 2300 G.M.T. coastal weather report and a 6 hours' forecast. Ships can also obtain this information on request.

At about 1200 G.M.T. daily (except Sundays), or earlier if requested, the 0500 G.M.T. coastal weather report and a forecast for the ensuing 24 hours are broadcast. On Saturday the forecast is for 48 hours.

Sydney W/T Station.

Approximate, Latitude 33° 46′ S. Longitude 151° 03′ E.

Call sign, **VIS.** Wavelengths as given below.

Between 2300 and 0030 G.M.T. this W/T station broadcasts on a wavelength of 2,400 metres (C.W.) a 2300 G.M.T. weather report of coastal conditions and a 24 hours' forecast if the Weather Bureau is in receipt of sufficient information in time; if not, the report and forecast will be broadcast between 0200 and 0300 G.M.T. on a wavelength of 600 metres (I.C.W.). The foregoing broadcasts are made daily, except Sundays.

At 1030 G.M.T., repeated at 2230 G.M.T., on wavelengths of 600 metres (I.C.W.) and 2,400 metres (C.W.), respectively, a summary of the coastal weather reports and a 24 hours' forecast are broadcast. Ships may also obtain this information on application to Sydney W/T Station after 0630 G.M.T. daily, except on Saturdays and Sundays. On Sundays at 1030 G.M.T., repeated at 2230 G.M.T., a 24-hour forecast and coastal weather report are broadcast on 600 metres (I.C.W.) and 2,400 metres (C.W.) respectively.

Melbourne W/T Station.

Approximate, Latitude 37° 50′ S. Longitude 144° 59′ E.

Call sign, **VIM.** Wavelength 600 metres (I.C.W.).

At 0200 G.M.T. (1) The 2300 G.M.T. observations of barometric pressure, wind direction and force, weather, state of the sea at Cape Borda, Cape Northumberland, Wilson's Promontory, Bruni Island and Jervis Bay. Reports from other coastal stations or from ships are on occasion broadcast in lieu of reports from one or more of the usual stations, or may be supplied in addition thereto.

(2) Brief information regarding any disturbance affecting, or likely to affect, weather in the Great Australian Bight, south-eastern Australian waters, or the Tasman Sea.

(3) A forecast for the ensuing 24 hours.

The foregoing broadcasts are made daily except on Sundays.

At 1100 G.M.T. daily, including Sundays, a weather forecast for the ensuing 24 hours is broadcast. In special circumstances this forecast is sometimes accompanied by reports from selected coastal stations.

Flinders Island W/T Station.

Approximate, Latitude 40° 01′ S. Longitude 147° 54′ E.

Call sign, **VIL.** Wavelength 600 metres (spark).

Soon after 2300 G.M.T. broadcasts the 2300 G.M.T. observations of barometric pressure, wind direction and force, weather, state of the sea in the Commonwealth word code.

Hobart (Tasmania) W/T Station.

Approximate, Latitude 42° 52′ S. Longitude 147° 19′ E.

Call sign, **VIH.** Wavelength 600 metres (spark).

Ships may obtain a summary of 2300 G.M.T. coastal weather reports on application to the W/T Station, after about 0030 G.M.T., daily (Sundays excepted). A 24 hours' forecast may also be obtained on application after about 0330 G.M.T. The forecast issued on Saturdays is for the ensuing 48 hours.

Adelaide W/T Station.

Approximate, Latitude 34° 52′ S. Longitude 138° 31′ E.

Call sign, **VIA.** Wavelength 600 metres (I.C.W.).

Ships may obtain a summary of 2330 G.M.T. coastal weather reports and a 24 hours' forecast on application to the W/T Station, after 0230 G.M.T. daily, except on Sundays.

A later forecast is broadcast at 1130 and 1330 G.M.T. daily, including Saturdays and Sundays.

Esperance W/T Station.

Approximate, Latitude 33° 53′ S. Longitude 121° 54′ E.

Call sign, **VIE.** Wavelength 600 metres (spark).

At 0300 and 1300 G.M.T., Mondays to Fridays, inclusive; Saturdays at 0300 only; broadcasts weather forecasts for the following 24 hours. Saturday's forecast is for the following 48 hours.

In addition to the forecasts, observations of barometric pressure, wind direction and force, weather, state of the sea at Fremantle and Cape Leeuwin are broadcast. These observations are taken at 0100 and 0700 G.M.T., Mondays to Fridays; at 0100 G.M.T. on Saturdays; and at 0100 and 1000 G.M.T. on Sundays.

British New Guinea (Papua).

Port Moresby W/T Station.

Approximate, Latitude 9° 28′ S. Longitude 147° 09′ E.

Call sign, **VIG.** Wavelength 600 metres (spark).

Soon after 2300 G.M.T., daily. The 2300 G.M.T. observations of barometric pressure, temperature (dry and wet bulb, maximum and minimum) amount of rainfall, wind direction and force, state of the sea, are transmitted in the Australian Commonwealth word code. Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a 24 hours' forecast on application to the W/T Station.

Samarai W/T Station.

Approximate, Latitude 10° 37′ S. Longitude 150° 40′ E.

Call sign, **VIJ.** Wavelength 600 metres (spark).

Soon after 2300 G.M.T., the 2300 G.M.T. observations of barometric pressure, wind direction and force, and weather, are transmitted in the Australian Commonwealth word code. Ships may obtain a weather forecast on application to the W/T Station.

New Britain—Rabaul (Bitapaka) W/T Station.

Approximate, Latitude 4° 24′ S. Longitude 152° 18′ E.

Call sign, **VJZ.** Wavelength 2,400 metres (C.W.).

At about 0600 G.M.T., daily. The 2300 G.M.T. weather report for the coast of Queensland and a 24 hours' forecast are broadcast. Ships may also obtain this information on application to the W/T Station. From 16th April to 16th December, no forecast is broadcast on Sundays; the forecast issued on Saturdays is therefore for 48 hours.

NEW ZEALAND.

Awanui W/T Station, approximate Latitude 35° 05′ S., Longitude 173° 15′ E., call sign **VLA,** broadcasts the New Zealand weather report (particulars of which have not been received) at 1000 G.M.T. on a wavelength of 600 metres (spark).

SOUTH PACIFIC OCEAN ISLANDS.

During the Hurricane Season (November 1st to April 30th).

Fiji Islands.

Suva W/T Station, approximate Latitude 18° 09′ S., Longitude 178° 28′ E., call sign **VPD,** broadcasts a weather bulletin, containing observations taken at 0330 and 2030 G.M.T., at the following stations,

on a wavelength of 600 metres (spark), directly after the Apia broadcast (see below) at 0830 and 2330 G.M.T. :—

	Latitude (approx.).	*Longitude* (approx.).
Apia, Samoa	13° 51′ S.	171° 48′ W.
Nukualofa (Tonga Islands) ...	21° 08′ S.	175° 12′ W.
Fila (New Hebrides)	16° 00′ S.	168° 00′ E.
Norfolk Island	28° 58′ S.	168° 03′ E.
Suva (Fiji Islands)	18° 09′ S.	178° 28′ E.
Awanui (New Zealand) ...	35° 05′ S.	173° 15′ E.
Vavau (Tonga Islands) ...	18° 39′ S.	173° 59′ W.
Rarotonga (Cook Islands) ...	21° 12′ S.	159° 48′ W.
Papeete	17° 29′ S.	149° 29′ W.

NOTE.—Only the 0330 G.M.T. observations are included from Rarotonga and Papeete.

The bulletin is sent *en clair* and consists of:—

Name of the observation station.

Barometer reading (corrected) in inches and hundredths.

Dry and wet bulb thermometer readings (in whole degrees F.).

Direction (True) and force of the wind (Beaufort Scale).

State of weather by Beaufort Scale.

Example:—

Suva 30.08 79 75 E.N.E. 5 or, break sign **(– - - - –)**

Apia 30.16 80 78 E.N.E. 3 bc, break sign

Nukualofa, etc., etc., the bulletin ending with the observation time, 0330 or 2030 G.M.T., as the case may be.

Samoa.

Apia W/T Station, approximate Latitude 13° 51′ S., Longitude 171° 48′ W., call sign **VMG,** broadcasts a similar bulletin to that explained above at 0830 and 2330 G.M.T. on a wavelength of 2,000 metres (spark).

During the period May 1st to October 31st.

Only one bulletin is broadcast by Suva and Apia at 0830 G.M.T. containing observations taken at 0330 G.M.T.

I.—Ships' Wireless Weather Signals.

"Selected Ships," i.e., ships in the Fleet List with the Letters M.L. or M. appearing in the equipment column when at sea in the South Pacific are invited to make their routine weather reports to "all ships" as usual.

When within range of **Suva** or **Apia W/T Stations** "Selected Ships" should address their reports to **VPD** or **VMG** as well as to **CQ.**

The times of Wireless Weather Telegraphy **Observation** from Longitude 160° E. to Longitude 130° W. between the Equator and Latitude 30° S. are 0330 and 2030 G.M.T.

For particulars and sample of Ship's Wireless Weather reports see Chapter I of "Wireless and Weather an Aid to Navigation" and pages 16-18, Vol. V, of this Journal.

WIRELESS STORM WARNINGS.

AUSTRALIA.

Storm warnings are broadcast by the Australian W/T stations as follows:—

For approximate positions of the Stations *see* pp. 214–5.

Geraldton, call sign **VIN,** wavelength 600 metres (spark).
Broome, „ **VIO,** „ „ „
Wyndham, „ **VIW,** „ 600 metres (I.C.W.).

These W/T Stations broadcast special warnings of the approach of cyclonic storms of tropical origin, including information regarding barometric pressure at stations on the N.W. coast of W. Australia, immediately upon receipt from the Weather Bureau.

Darwin, call sign **VID,** wavelength 600 metres (spark), broadcasts special warnings of the approach of cyclonic storms of tropical origin immediately upon receipt from the Weather Bureau. In the case of cyclonic storms affecting the tropical seaboard of W. Australia the warnings include information of barometric pressure at stations on the N.W. coast of W. Australia.

Thursday Island, call sign **VII,** wavelength 600 metres (I.C.W.).
Cooktown, „ **VIC,** „ 600 metres (spark).
Rockhampton, „ **VIR,** „ „ „
Brisbane, „ **VIB,** „ 600 metres (I.C.W.).

These W/T Stations broadcast special storm warnings, immediately upon receipt from the Weather Bureau, and thereafter during the regular W/T watches kept by coastal vessels until receipt of later informaion from Brisbane Weather Bureau.

Special storm warnings may also be obtained, if the information is available, upon application to any of the W/T stations.

Sydney, call sign **VIS,** wavelength 600 metres I.C.W. and 2,400 metres C.W., broadcasts special storm warnings, immediately on receipt. They are repeated at intervals until receipt of later information from the Weather Bureau.

Melbourne, call sign **VIM,** wavelength 600 metres (I.C.W.), broadcasts special storm warnings immediately on receipt from the Weather Bureau.

Hobart (Tasmania), call sign **VIH,** wavelength 600 metres (spark), broadcasts special storm warnings, immediately on receipt from the Weather Bureau and at hourly intervals thereafter until 1000 G.M.T.

Adelaide, call sign **VIA,** wavelength 600 metres (I.C.W.).
Esperance, „ **VIE,** „ 600 metres (spark), broadcast special storm warnings immediately on receipt from the Weather Bureau.

British New Guinea (Papua).

Port Moresby, call sign **VIG,** wavelength, 600 metres spark, broadcasts special warnings of disturbances on the Queensland coast on any hour when occasion warrants.

Samarai, call sign **VIJ,** wavelength 600 metres (spark) broadcasts special storm warnings immediately on receipt and thereafter in the regular watches kept by coastal vessels, until further information is received fom the Brisbane Weather Bureau.

New Britain.

Rabaul, call sign **VJZ,** wavelength, 2,400 metres (C.W.) broadcasts special warnings of disturbances on the Queensland coast at any hour when occasion warrants.

NEW ZEALAND.

Awanui W/T Station, call sign **VLA,** repeats the hurricane warnings broadcast by Apia (Samoa) W/T station, after the New Zealand Weather Report at 1000 G.M.T. on a wavelength of 600 metres (spark).

SOUTH PACIFIC OCEAN ISLANDS.

During the Hurricane Season (November 1st to April 30th).

Fiji Islands.

Suva W/T Station, call sign, **VPD**, broadcasts hurricane warnings, when necessary, immediately after the weather bulletins which are transmitted soon after 0830 and 2330 G.M.T., on a wavelength of 600 metres (spark).

Samoa.

Apia W/T Station, call sign, **VMG**, broadcasts when necessary, information concerning hurricanes in addition to the weather bulletins at 0830 and 2330 G.M.T., on a wavelength of 2,000 metres (spark). The message is sent *en clair* and commences with the general call to all stations, e.g.:—

QST. "Hurricane centre 200 miles N.W. of Suva at noon, 27th February, Apia time and date, travelling south."

French Oceania.

Papeete (Tahiti), approximate Latitude 17° 29′ S., Longitude 149° 29′ W., call sign, **HVX**, broadcasts information concerning hurricanes &c. at 0500 and 2200 G.M.T. and at other times when necessary. The danger signal **TTT**, repeated at short intervals ten times on full power, is first sent out followed by the message which is repeated three times with intervals of ten minutes.

III.—WIRELESS TIME SIGNALS.

AUSTRALIA.

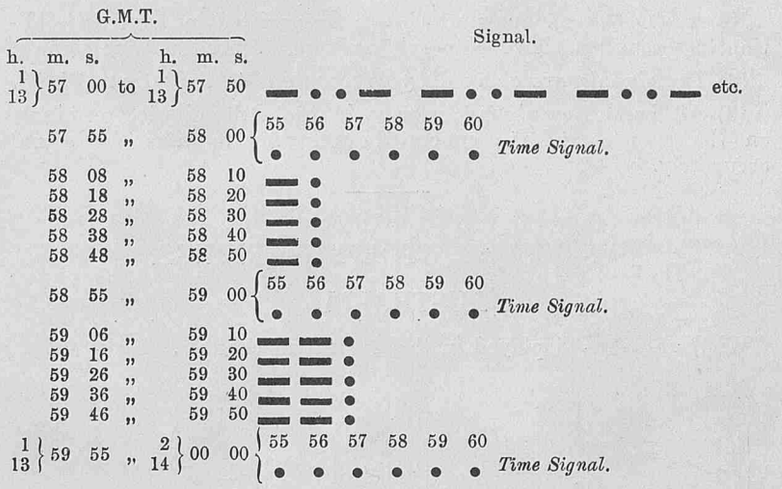
Station.	Call Sign.	Wave-length (metres).	G.M.T.	System.
Perth Lat. 32° 01′ 51″ S. Long. 115° 49′ 31″ E.	VIP	600 (I.C.W.).	0257–0300 1457–1500	(*See* Time Signal Figure, p. 122, Vol. V, No. 54). Controlled by Perth Observatory.
Adelaide Lat. 34° 51′ 14″ S. Long. 138° 31′ 55″ E.	VIA	600 (I.C.W.).	0227–0230 1427–1430	(*See* Fig. as above). Transmitted automatically by the standard clock of the Adelaide Observatory.

Melbourne W/T Station, Latitude 37° 46′ 56″ S., Longitude 144° 52′ 09″ E., call sign, **VIM**, wavelength 600 metres (I.C.W.).

Wireless time signals are broadcast from Melbourne W/T Station in accordance with the New International System of W/T time signals at the following times:—

G.M.T.					
h.	m.	s.		h.	m.	s.
1	57	00	to	2	00	00
13	57	00	„	14	00	00

The transmission of each series of signals is similar, the procedure being as follows:—



NEW ZEALAND.

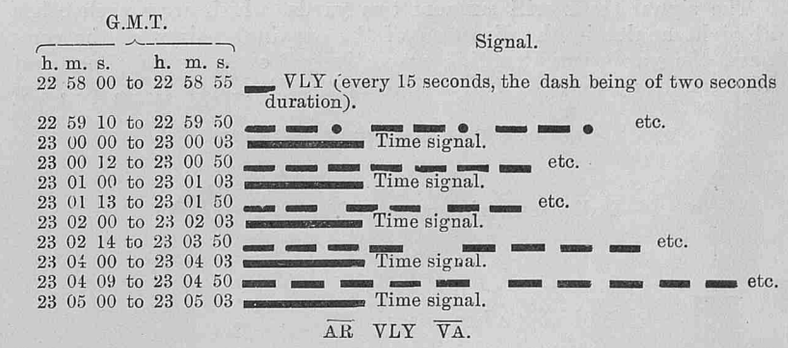
The Dominion Observatory, Wellington, Latitude 41° 17′ 04″ S., Longitude 174° 46′ 04″ E., call sign, **VLY**, broadcasts time signals daily, on 600 metres (I.C.W.) as follows:—

The transmitting key at the W/T station is automatically operated by the Standard Time Clock of the Dominion Observatory (Latitude 41° 17′ 03.8″ S., Longitude 174° 46′ 04.0″ E.).

The first time signal is at 23h. 00m. 00s., G.M.T., and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 23h. 03m. 00s.

Each time signal commences exactly at the beginning of the minute and lasts for *three seconds*, approximately:—



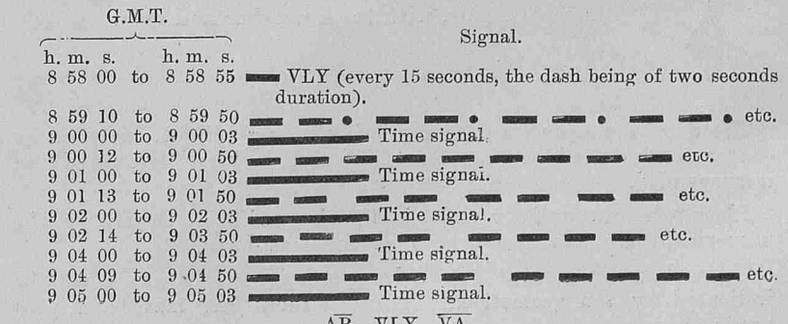
In addition to the above, the undermentioned time signals are broadcast on Tuesdays and Fridays, except on New Zealand Government holidays, by the Dominion Observatory, Wellington.

The conditions governing the transmission are similar to those given above.

The first time signal is at 9h. 00m. 00s. (G.M.T.), and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 9h. 03m. 00s. Each signal commences exactly at the beginning of the minute, and lasts for *three seconds*, approximately.

The signals are transmitted in the following manner:—



NOTE.—(1) Other signals which are transmitted by hand in addition to the automatic time signals must *not* be used as time signals.

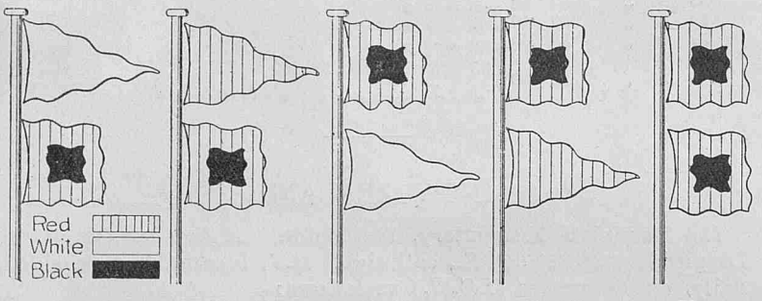
(2) The signals are relayed by **Wellington W/T Station (VLW).**

(3) All hand Key signals, except in the 58th minute, terminate on the 50th second, to enable the observer to take the signal accurately.

IV.—VISUAL STORM WARNINGS.

AUSTRALIA.

Wind warnings displayed in the Australian capitals.



North-westerly winds. | North easterly winds. | South-westerly winds. | South-easterly winds. | Very severe gales.

New South Wales.

The existence of gales which are likely to endanger shipping will be signalled at the principal telegraph stations on the coast of New South Wales in the following manner, viz.:—

The signal staffs will support two yards, which cross each other at right angles in the direction of the cardinal points of the compass, the yard-arms denoting respectively North, South, East and West; midway between North and East will denote N.E., &c., &c.

Symbols used and their Meanings.


Indicates a violent squall.


Indicates a heavy sea.


Indicates a gale, with clear weather.


Indicates a gale, with thick weather and rain.

The direction from which the gale is blowing will be indicated by the particular yard-arm between which and the mast-head the signal is suspended.

Place where squall or gale is blowing will be shown by the numerical pennants (*see* below) at the mast-head.

Gales that are general over a large portion of the coast will be indicated by the geometrical figures without the mast-head pennants.

Numerical Pennants.—The following pennants are used at the signal stations of New South Wales to indicate the numbers representing the place where a gale is blowing:—

1. Red.
2. Yellow and blue, horizontal, 2 divisions.
3. Blue, yellow, red, vertical.
4. Red and white, in opposite corners.
5. White, with 5 blue crosses.
6. Blue and yellow, 6 horizontal stripes.
7. Blue, with 7 white crosses.
8. Blue and white, 8 triangles.
9. Red and white, 10 vertical stripes.
0. Blue, white ball in centre.

Substitute, White.

Numbers representing Ports:

10. Torres strait.	48. Corner inlet.	80. Keppel bay.
11. Cleveland bay.	49. Port Phillip.	81. Port Denison.
37. Wilson promontory.	54. Launceston.	82. Wollongong.
40. Sydney.	55. Hobart.	83. Wide bay.
41. Moreton bay.	56. Gulf of Carpentaria.	84. Port Curtis.
42. Clarence river.	61. Shoalhaven.	88. Port Fairy or Warrnambool.
43. Port Macquarie.	68. Richmond river.	
44. Port Stephens.	70. Macleay river.	97. Hawke bay.
45. Newcastle.	72. Gabo island.	98. Kiama.
46. Jervis bay.	75. Manning river.	99. Wallaroo.
47. Twofold bay.	76. Circular head.	101. Port Mackay.

NOTE.—Other numbers signify ports outside the eastern colonies from which a vessel arrives; they are not inserted as they would not be used for storm signals.

These signals are also used to indicate the place from which a vessel arrives.

Queensland.

Storm signals are shown from the following stations in Queensland:—Cape Moreton and Cowan; Cowan Point, in Moreton bay; Double Island point; Woody Island; Sandy Cape, Goode island, Torres Strait.

The signals are made from the quarters of the yards; the balls and cones are of large size and must not be mistaken for tidal signals, which are made from the yard-arms.

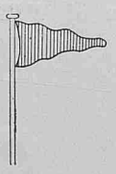
Symbols as follows:—


Indicates strong winds from S.S.W. or south, through S.E. to E. or E.N.E.


Indicates strong winds from W.N.W. or west, through S.W., to south or S.S.E.


Indicates strong winds from N.N.W. or north, through N.E., to east or E.S.E.


Indicates strong winds from N.N.E., or north, through N.W., to west or W.S.W.


Red Pennant.

Indicates that a weather report concerning a tropical disturbance or a storm warning is available. (*See* below.)

The red pennant when hoisted at certain coastal stations indicates that a weather report concerning a tropical disturbance is available at the local Post Office.

When hoisted at the following lighthouse stations, viz.:—Goode island, Archer point, Cape Cleveland, Cape Capricorn, Bustard head, Sandy cape, Double Island point, Caloundra head, and Cape Moreton, the red pennant indicates that a storm warning will be signalled to vessels *on demand*.

When hoisted in the port of Brisbane by day or if a red light is hoisted at Fort Lytton by night, it indicates to vessels leaving port that a storm warning is available to them, at the Pile light, *on demand*.

NEW ZEALAND.

Storm signals are exhibited from Cape Maria Van Diemen, Tiri Tiri, Matangi island, Cape Campbell, Farewell spit lighthouse, Nugget point and the lighthouse on Stephens island. They are not to be considered as covering a distance greater than 200 miles from the place at which they are hoisted, those hoisted with the red pennant below as covering only a distance of 50 miles from the place at which they are hoisted.

Symbols used and their Meanings.

Northerly gales.

Hoisted when strong winds or gales are probable from N., that is, from about N.E., changing through north towards west.

NOTE.—This change of wind is usually followed by strong winds or gales from the southward.

Westerly gales.

Hoisted when strong winds or gales are probable from W., that is from about N., changing through W. towards S.W.

NOTE.—After these gales have moderated the wind generally shifts to N.W. or to N.

Easterly gales.

Hoisted when strong winds or gales are probable from E., that is, from about N., changing towards E. and S.E.

NOTE.—This change of wind denotes a "black North-Easter" and an approaching cyclone.

South-easterly gales.

Hoisted when strong winds or gales are probable from E., changing, through S., towards S.W.

Southerly gales.

Hoisted when strong winds or gales are probable from about W., changing, through S., towards S.E.

Unusual gales.

Hoisted when strong winds or gales are probable from about S., changing, through E., towards N.

MODERATE WEATHER is indicated by the International code signals, but only in reply to inquiry and if meteorological conditions admit.

NOTE.—(1) A *red* pennant hoisted below any of the above signals made between the hours of 8 a.m. and noon indicates that the signal refers to the previous day.

(2) Signals hoisted without the *red* pennant refer to the day on which they are hoisted.

(3) The red pennant when hoisted alone, indicates that the forecast for the day has not been received at the station from the Meteorological Office, Wellington.

(4) Whenever the wind at any of the signal stations has changed in such manner that the forecast for the previous day will not apply no signal is displayed until the forecast for the day has been received at the station.

(5) When it is observed that the storm signals are not being shown at a storm signal station, the Dominion meteorological forecast for the same day may be obtained by hoisting the signal ZK.

SOUTH PACIFIC OCEAN ISLANDS.

Fiji Islands.

During the hurricane season (from November 1st to April 30th) storm signals as defined below will be exhibited at the signal station, Suva, and at the Government Wharf, to denote that a dangerous depression in the atmospheric pressure appears to be approaching the group. The signals will be displayed until conditions improve.

Between sunrise and sunset: Two *black* circles disposed vertically.

Between sunset and sunrise: Two *red* lights disposed vertically.

At the Wharf, Suva, attention will be drawn to the first exhibition of the signals by a detonator being fired twice, with an interval of one minute.

Weather reports are posted up outside the Harbour Master's office during the hurricane season.

Special Notices Regarding Personnel.

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

Captain F. A. Hemming.

Captain F. A. HEMMING, Commander of the NEW ZEALAND SHIPPING COMPANY'S S.S. *Rimutaka*, has retired from active service after 48 years' service afloat.

Captain HEMMING commenced his sea career as a cadet in the ships of Messrs. HAMILTON BROS. of Liverpool, which he joined in 1880.

He obtained his Second Mates' certificate in 1885 and joined the CANADIAN GOVERNMENT FISHERY SERVICE as a 2nd Lieutenant. After two years in this service he transferred to the steamers of Messrs. CARLISLE & CO., of Belfast, in order to put in the necessary time for mate. Passing for his Mates' certificate in 1888 he served with Messrs. ANGIER BROS. until passing for Master in 1890.

On obtaining his Masters' certificate Captain HEMMING joined the CANADIAN AUSTRALASIAN ROYAL MAIL CO., as a junior officer in the S.S. *Miowera* and rising through the succeeding ranks was appointed in command of the same steamer in 1898. The Company was then absorbed by the NEW ZEALAND SHIPPING CO., Captain HEMMING retaining his command until 1907, when he was appointed to the *Moana* and later to the *Whakatane*.

In 1911 he was transferred to the *Rimutaka*, retaining command of this ship to the date of his retirement, over a period of 18 years.

Captain HEMMING has been a member of the Voluntary Corps of Marine Observers since 1898 and has contributed no fewer than 37 full Meteorological Logs, many of which were classed "excellent." Marine Observers will join with the Marine Division in wishing Captain HEMMING long life and happiness in his well earned retirement.

Obituary.

The death of Captain R. K. BARROW, which took place on board his ship S.S. *Ingoma* at sea on July 16th, when on passage from West Indies to London, is noted with regret.

On completion of his time which he served in the ship *Caradoc*, Captain BARROW sailed for a voyage in the S.S. *Spheroid* of the SCRUTTON LINE. He then joined the RENNIE LINE which was later taken over by Messrs. T. & J. HARRISON, and has commanded many ships of the Company's fleet.

When reporting his death, one of his officers states: "We of the Merchant Service lost one whom we could ill-afford to lose, a seaman who at all times endeavoured to place the service on a higher level."

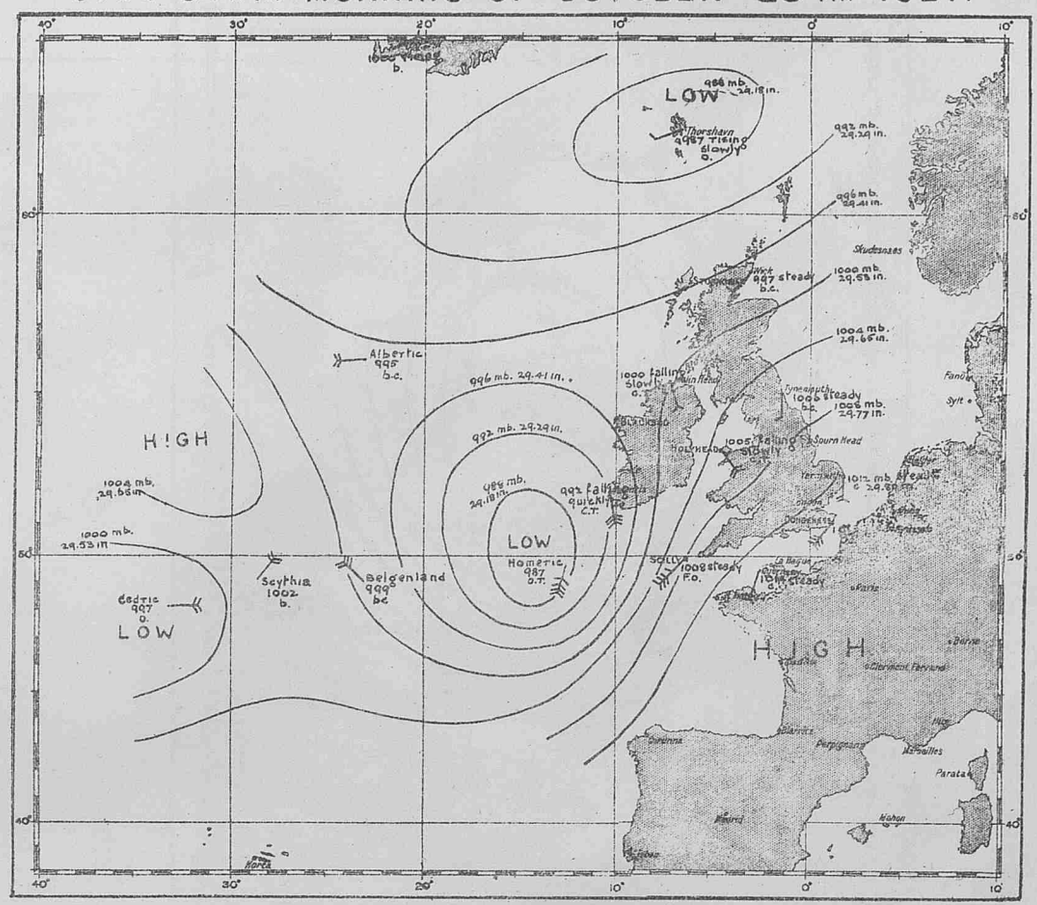
Captain BARROW had been a regular member of the Corps of Voluntary Marine Observers since 1922.

The death of Mr. ALFRED LAIDLAW, second officer of the Anchor Liner *Elysia*, which took place at sea on May 26th, is noted with regret.

Mr. LAIDLAW served his apprenticeship with the BEN LINE of Leith and on obtaining his Second Mates' certificate in 1915 served in the S.S. *Dunedin* of the HENDERSON MACINTOSH LINE, transferring to the SHEAF LINE after passing for Mate in 1917. In 1919 he passed for Master when he joined the ANCHOR LINE as a Junior Officer, and obtained an Extra Masters' Certificate two years later.

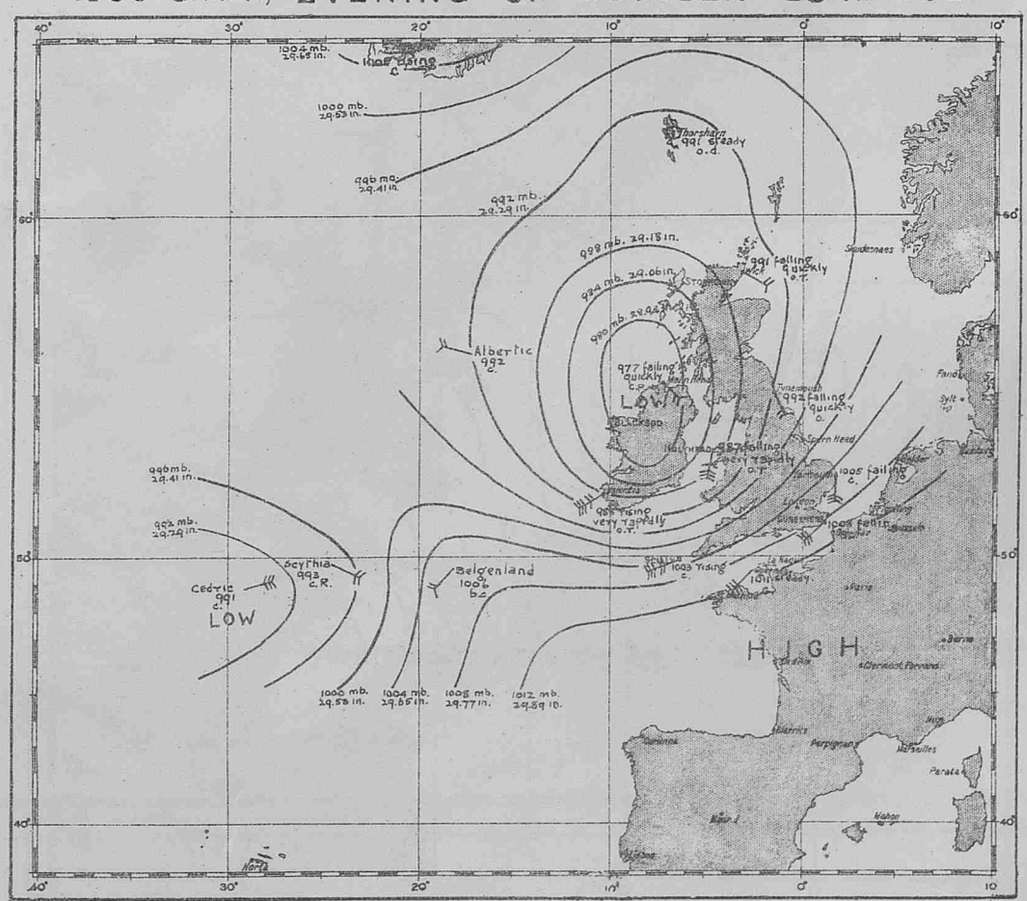
Mr. LAIDLAW became a member of the Corps of Voluntary Marine Observers in 1919 and up to the time of his death had assisted in keeping seven Meteorological Logs, all of which were classed "excellent."

0700 G.M.T.. MORNING OF OCTOBER 28 TH. 1927.



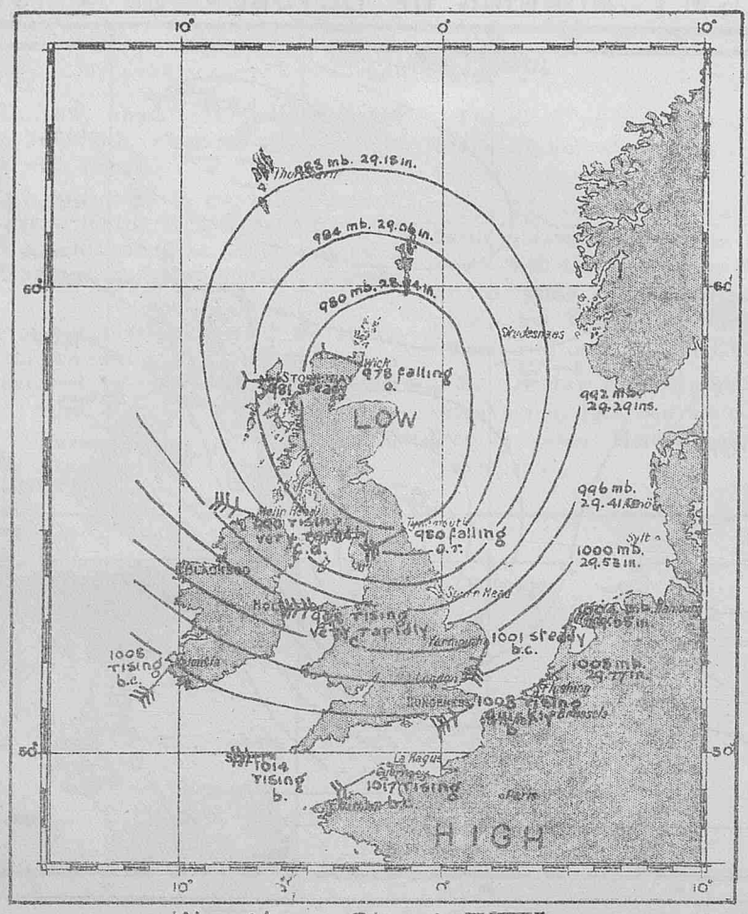
Weather Chart XXI

1800 G.M.T., EVENING OF OCTOBER 28 TH. 1927.



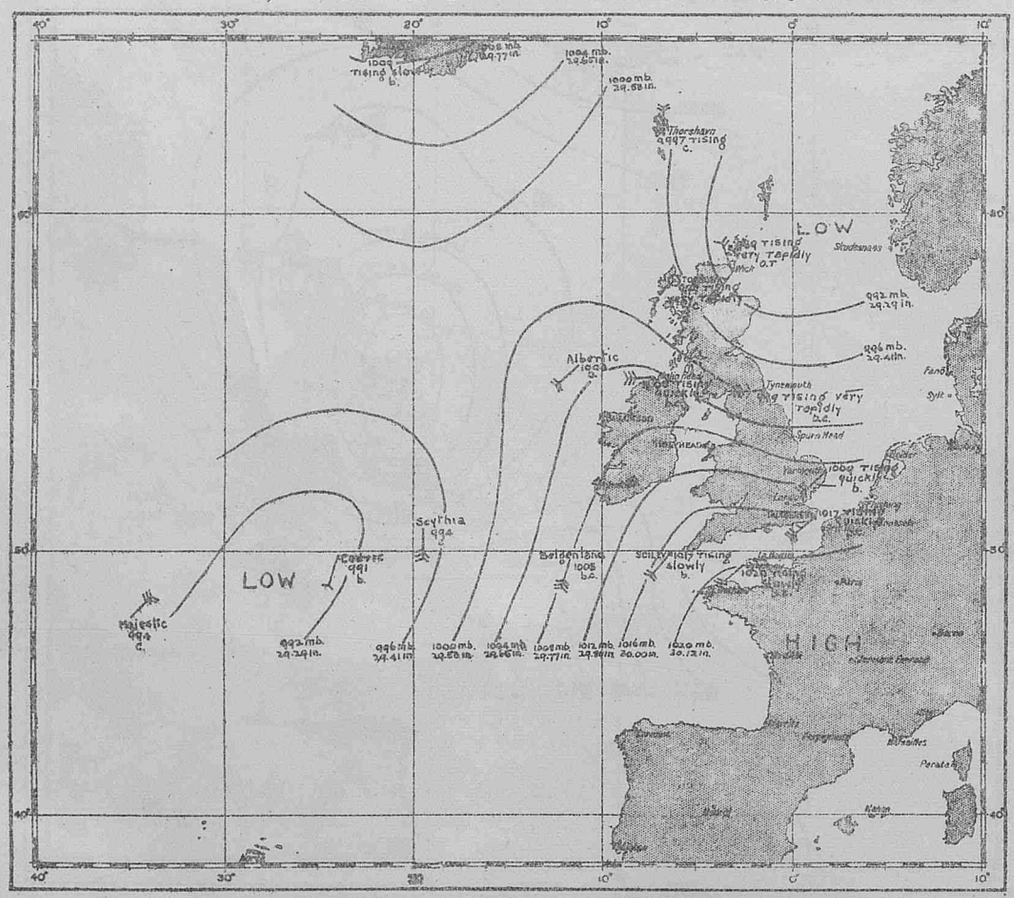
Weather Chart XXII.

0100 G.M.T., MORNING OF OCTOBER 29 TH. 1927.



Weather Chart XXIII.

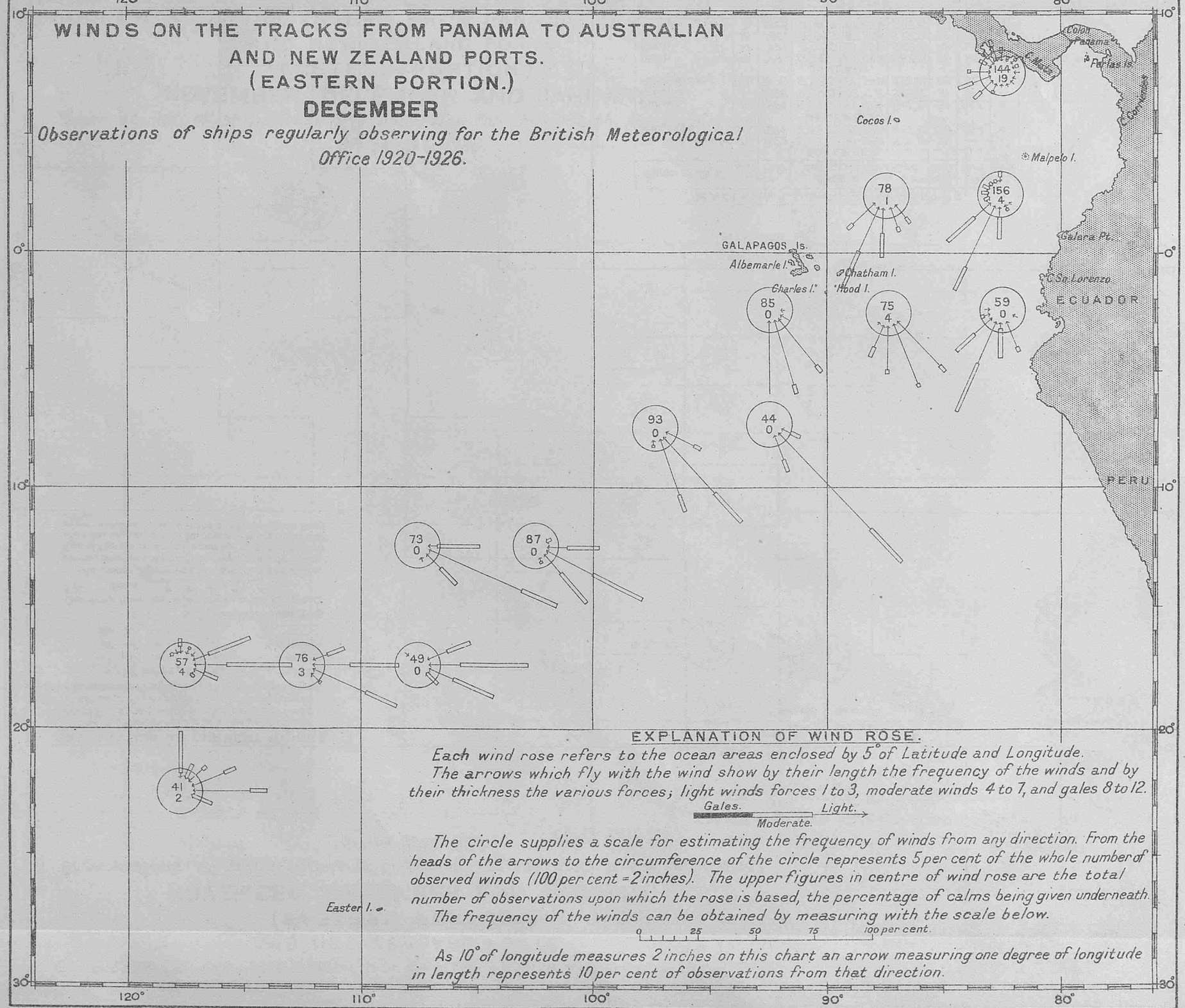
0700 G.M.T., MORNING OF OCTOBER 29 TH. 1927.



Weather Chart XXIV.

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

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



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.

Gales. Moderate. Light.

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.

0 25 50 75 100 per cent.

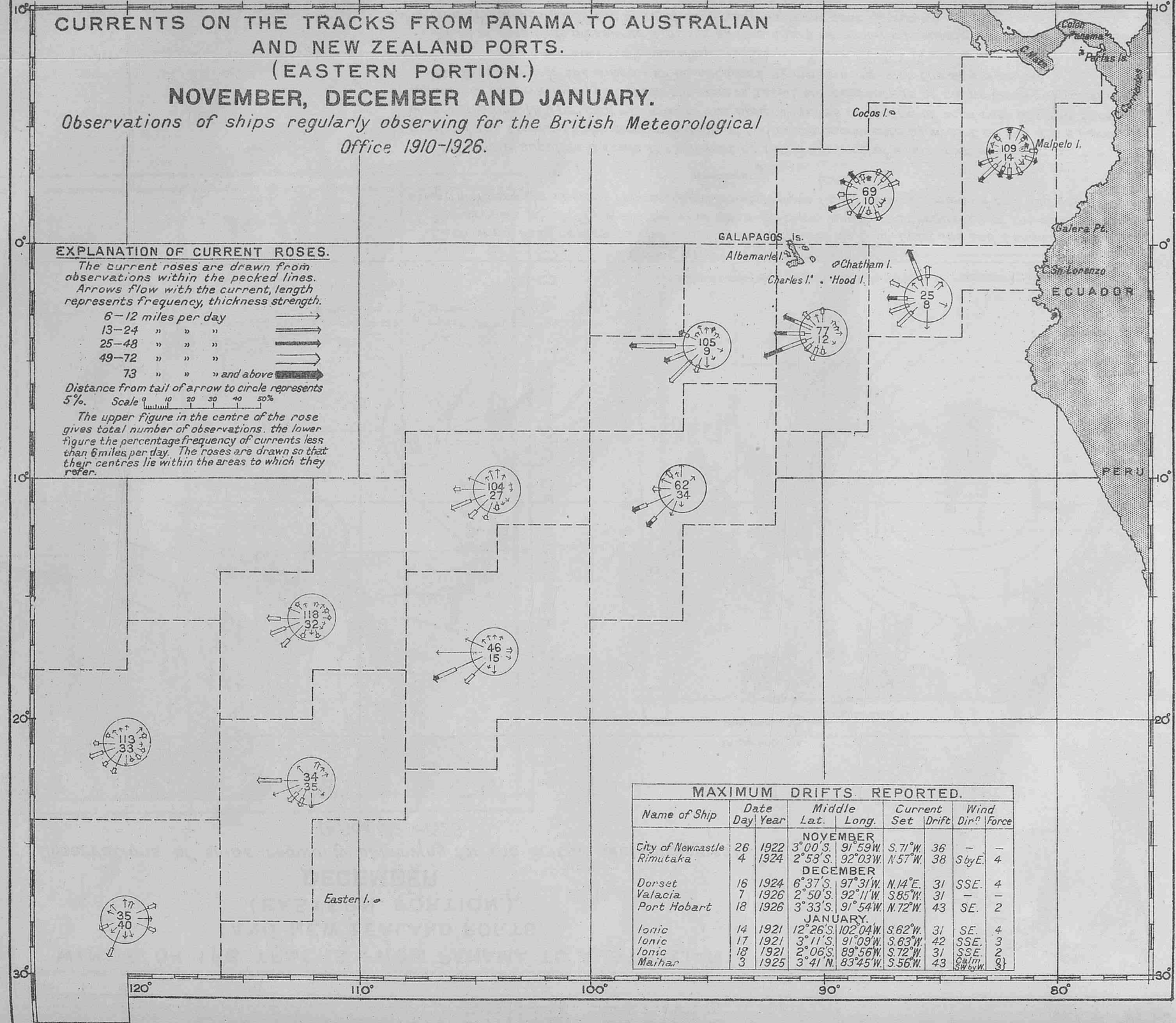
As 10° of longitude measures 2 inches on this chart an arrow measuring one degree of longitude in length represents 10 per cent of observations from that direction.

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

(EASTERN PORTION.)

NOVEMBER, DECEMBER AND JANUARY.

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



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%

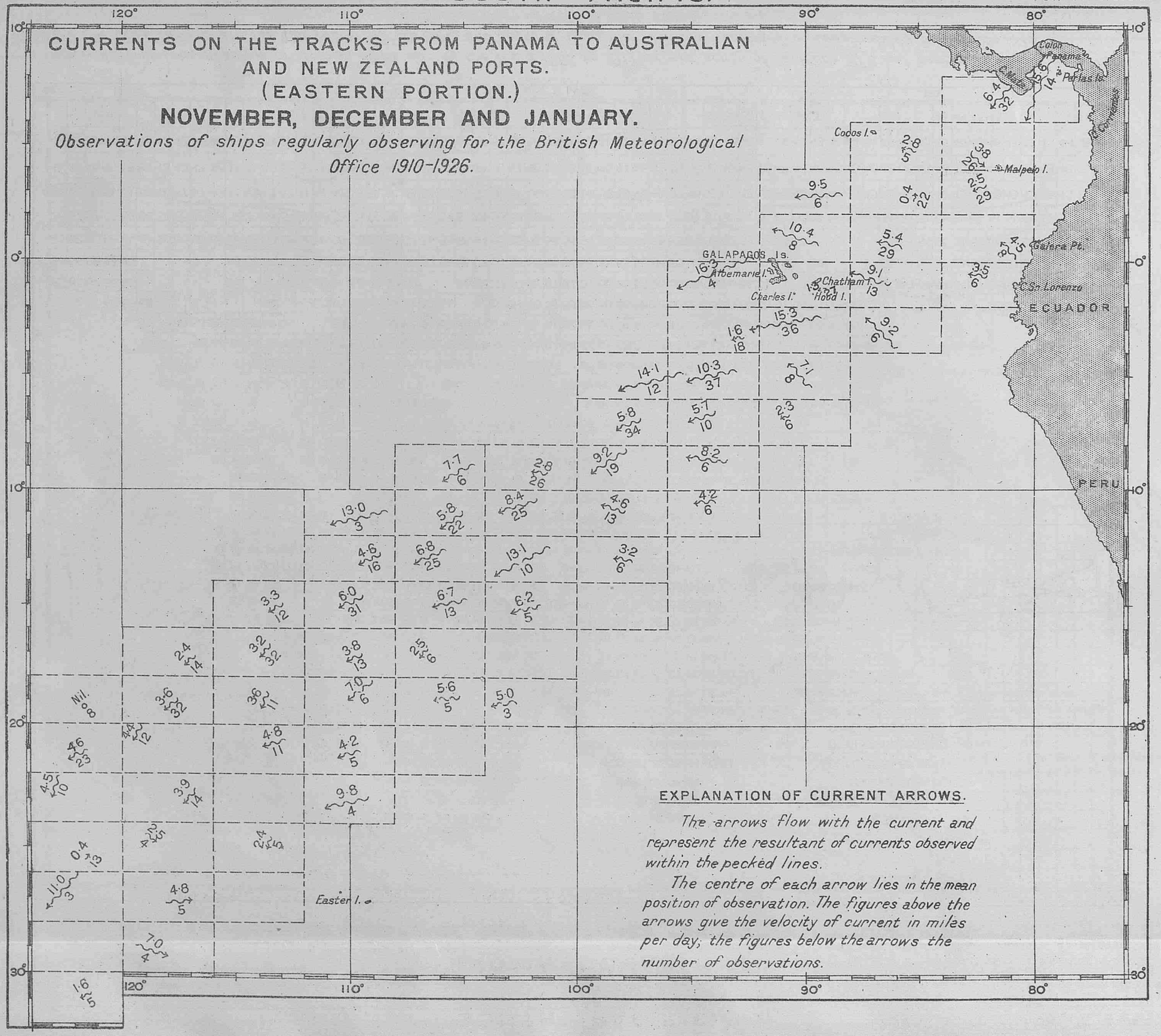
The upper figure in the centre of the rose gives total number of observations. the lower figure the percentage frequency of currents less than 6 miles per day. The roses are drawn so that their centres lie within the areas to which they refer.

MAXIMUM DRIFTS REPORTED.

Name of Ship	Date Day	Date Year	Middle Lat.	Middle Long.	Current Set	Current Drift	Wind Dir^n	Wind Force
			NOVEMBER					
City of Newcastle	26	1922	3°00'S.	91°59'W.	S.71°W.	36	—	—
Rimutaka	4	1924	2°58'S.	92°03'W.	N.57°W.	38	S by E.	4
			DECEMBER					
Dorset	16	1924	6°37'S.	97°31'W.	N.14°E.	31	SSE.	4
Valacia	7	1926	2°50'S.	92°11'W.	S.85°W.	31	—	—
Port Hobart	18	1926	3°33'S.	91°54'W.	N.72°W.	43	SE.	2
			JANUARY.					
Ionic	14	1921	12°26'S.	102°04'W.	S.62°W.	31	SE.	4
Ionic	17	1921	3°11'S.	91°09'W.	S.63°W.	42	SSE.	3
Ionic	18	1921	2°06'S.	89°56'W.	S.72°W.	31	SSE.	2
Maihar	3	1925	3°41'N.	83°45'W.	S.56°W.	43	Calm SW by W.	0 3

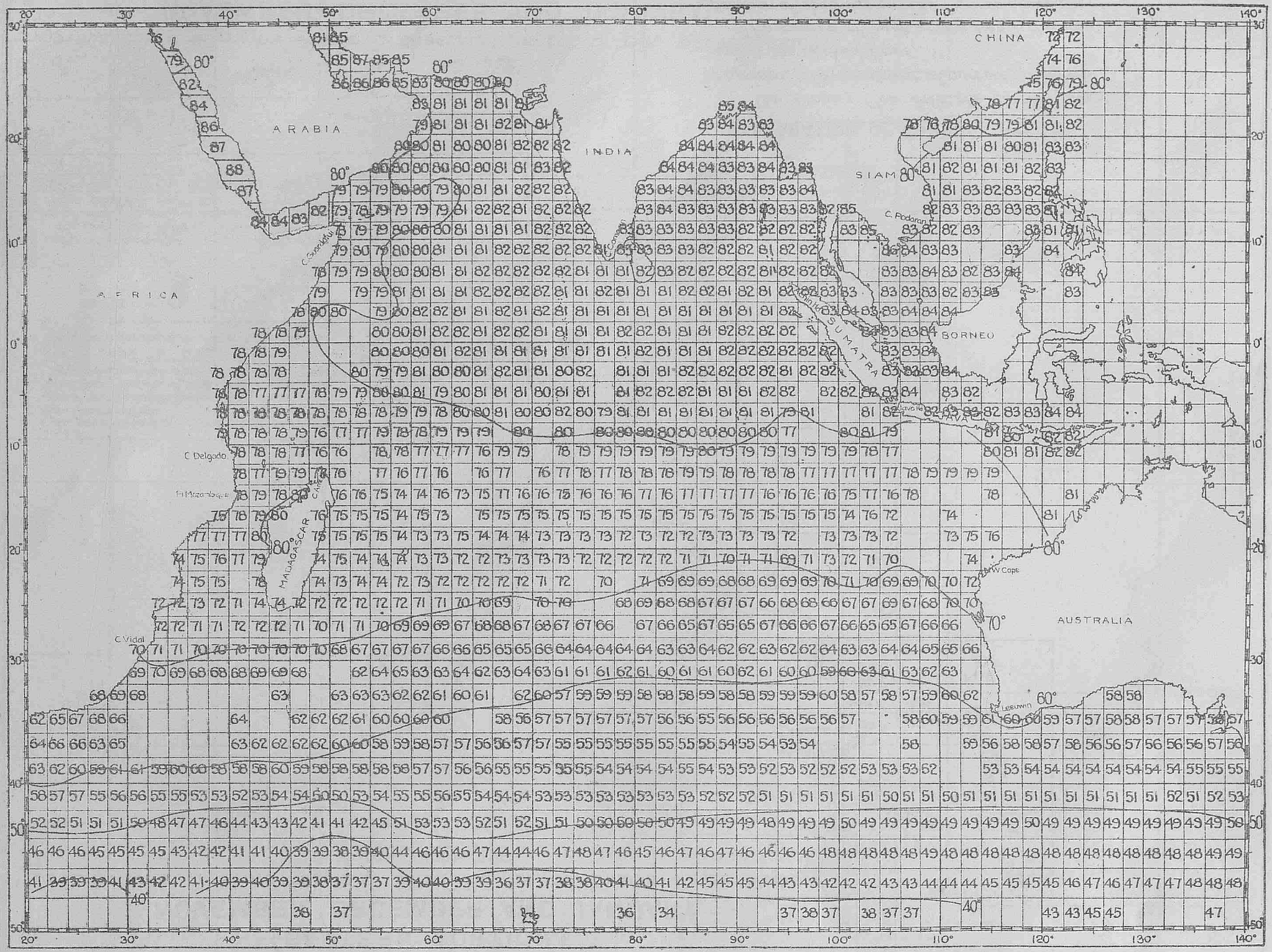
CURRENTS ON THE TRACKS FROM PANAMA TO AUSTRALIAN AND NEW ZEALAND PORTS.
(EASTERN PORTION.)
NOVEMBER, DECEMBER AND JANUARY.

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



INDIAN OCEAN.

MEAN SEA SURFACE TEMPERATURES FOR MONTH OF OCTOBER.

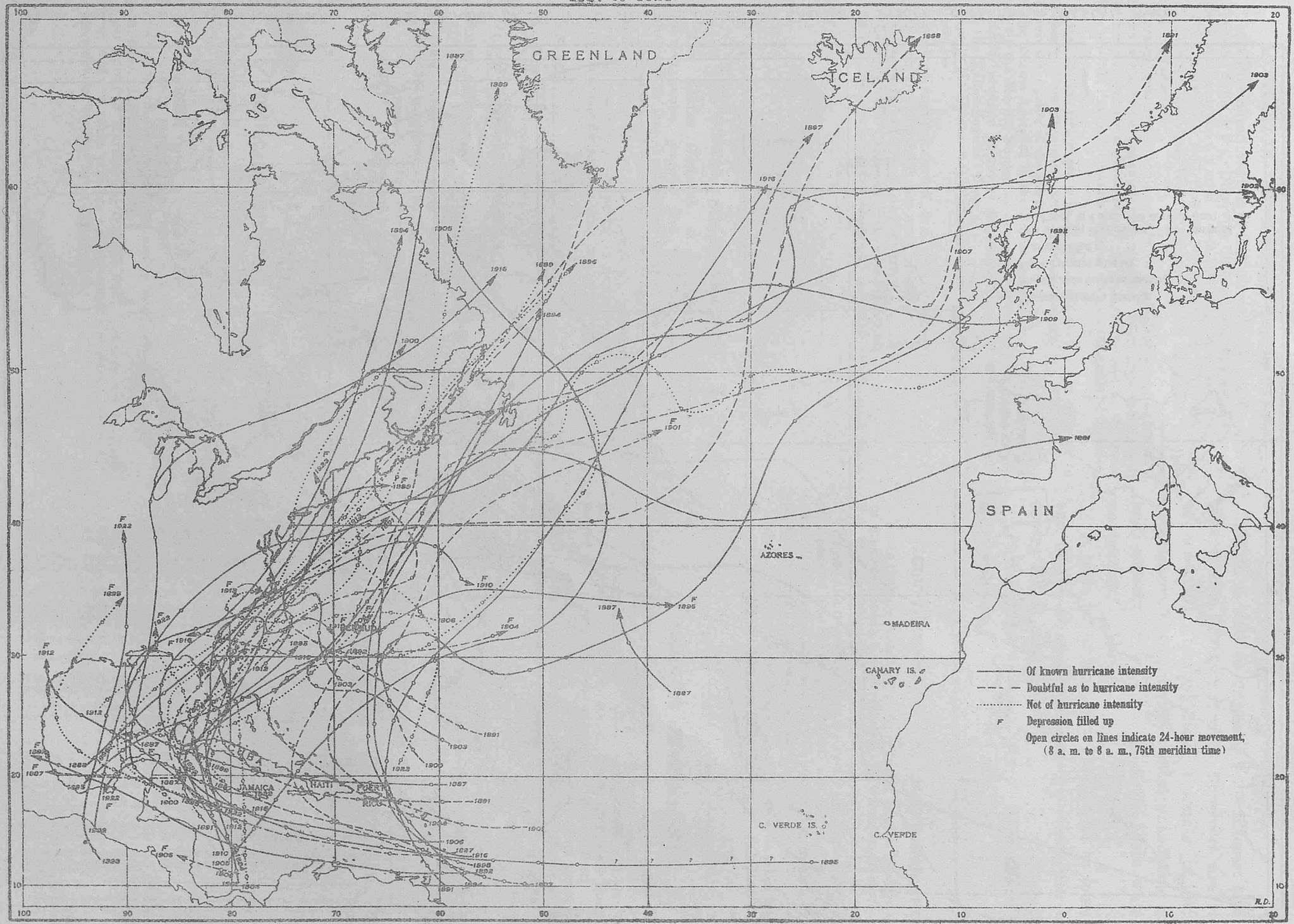


Computed from observations of British Ships during the years 1855 to 1917 except south of Latitude 30°S. and eastward of Longitude 40°E. where the observations are for the years 1855 to 1895; and south of Latitude 30°S. and westward of Longitude 40°E., 1855 to 1878.

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

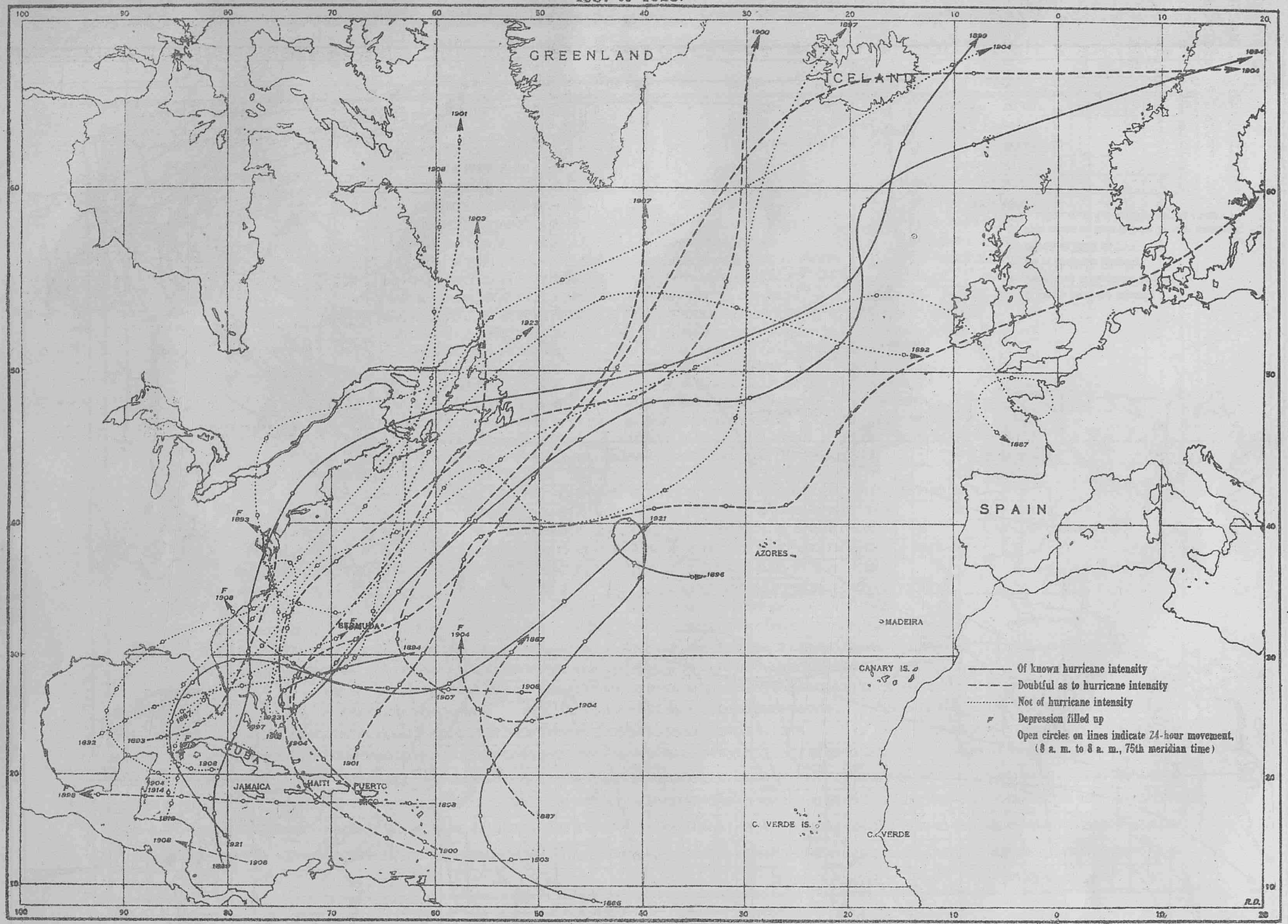
Ps. 981/1744. Wt. 52 A. D.9. 1300. 8/28.

Tracks of Tropical Cyclones of North Atlantic, October 1-15
1887 to 1923.



From "West Indian Hurricanes & other Tropical Cyclones of the North Atlantic Ocean", by Charles L. Mitchell, published in "Monthly Weather Review," Supplement No. 24, of the U.S. Weather Bureau.

Tracks of Tropical Cyclones of North Atlantic, October 16-31
1887 to 1923.



From "West Indian Hurricanes & other Tropical Cyclones of the North Atlantic Ocean", by Charles L. Mitchell, published in "Monthly Weather Review," Supplement No. 24, of the U.S. Weather Bureau.

NOTICES.

INVITATION TO MARINE OBSERVERS.

The Marine Superintendent will be pleased to see the Captains of Observing Ships or their Observing Officers when they are in London, between 10 a.m. and 4 p.m. at Room 319, Adastral House, Kingsway, W.C.2. Telephone No., Holborn 3434, Extension 421. Telegrams, Marine Superintendent, Weather, London. (Nearest Station, Temple, District Railway.)

Personal touch is not only conducive to efficient work, but by this means we may be better able to advance upon lines which will further the practice of Meteorology in Navigation and at the same time provide the most suitable data for the general needs of Meteorological Science.

Those Marine Observers who do not come to London wishing to discuss matters connected with Marine Meteorology, are asked to consult the Agents at the Ports.

The Marine Agencies in the British Isles are visited at least once a year by the Marine Superintendent, and it is hoped by these means to further promote voluntary co-operation between ships at sea, and with the Meteorological Office.

Usually the Marine Superintendent visits the Marine Agencies as follows :—

Southampton and Cardiff, first week of March.
Belfast and Liverpool, last week of May.
Glasgow and Liverpool, early October.
Leith, North Shields and Hull, mid November.

Marine Agencies are given about two weeks notice of exact dates.

POSTAL ARRANGEMENTS.

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

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

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

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

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

TROPICAL REVOLVING STORMS.

OBSERVATIONS.

Marine Observers are requested to bring to the notice of Commanders and Officers of ships who are not on the Meteorological Office list Form 905 which was reproduced in the July Number of this year, and to request those who encounter Tropical Revolving Storms to send in observations set out in this form, which may be obtained from the Marine Agents.

Observations of Hurricanes, Cyclones and Typhoons are required from as many ships as possible in the vicinity of these storms for the development of the "Laws of Storms."

IMPORTANT.

With a view to promoting the interest and usefulness of this Journal, Marine Observers are requested to send in when possible accounts of interesting experiences, remarks upon special phenomena observed, and matters of interest, especially those which affect navigation.

A page for additional remarks will be found at the end of the Meteorological Log, or these can be made separately in manuscript.

Photographs, sketches and weather charts will be most welcome.

ILLUSTRATIONS FOR THE MARINE OBSERVER.

When making sketches, charts or plans, Marine Observers will give us great assistance if they will give consideration to reproduction in THE MARINE OBSERVER.

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

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

CARE OF INSTRUMENTS.

Marine Observers are earnestly requested to exercise every precaution in the care of instruments lent by the Meteorological Office.

It is requested that the Captains and Officers will give the Port Meteorological Officers assistance when they visit the ship, by having all instruments accessible for their inspection.

In the event of breakages or losses, the broken parts should be handed to the Port Meteorological Officer or Agent at the ports, with a brief and clear account of how the breakage or loss occurred.

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

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

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

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

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

ROUTE NOTICES.

For latest information *re* Tracks *see* pages 73–4, Vol. V. No. 52 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.

Steamers Keep {10'N of this track Westbound / 10'S of this track Eastbound}

Limit of ice reported to Meteorological Office October 1901–1927.

PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position. Lat.	Position. Long.	Remarks.
Oct. 15, 1883	S.S. Elenora ...	37°00′N.	18°00′W.	Piece ice.
„ 8, 1912	S.S. Putney Bridge...	38°15′N.	44°50′W.	Small berg 35 ft. long, 6 ft. high.
„ 27, 1916	S.S. Montreal ...	51°17′N.	41°17′W.	Small berg.
„ 2, 1918	U.S. Hyd., Bulletin	50°10′N.	40°50′W.	Large berg.
„ 19, 1920	Do.	45°22′N.	40°09′W.	Berg.
		45°24′N.	40°07′W.	Berg.
„ 17, 1921	S.S. Mt. Vernon ...	48°23′N.	42°19′W.	Berg about 70 ft. high, 400 ft. long.
„ 6, 1922	S.S. Christian Krogh	50°43′N.	40°42′W.	Berg 60 ft. high.
„ 7, 1923	S.S. Eastern Dawn...	40°46′N.	65°54′W.	Large growler about 100 ft. square.
„ 23, 1927	Trawler, Grecian Empire.	30 mls. E.S.E. of Outer Skerries, Shetland Is.		Piece of ice 100 ft. long, 6 ft. above water.

Reports of Ice sighted between gust 1st and August 31st, 1928, which have been received by the teorological Office, are shown by the Symbols plotted in the ition reported, the figures indicating the day of the month.

Ps.981/1744 Wt.52A. D.3. 1100 8/28.

OCTOBER M.O., 1928. 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 Chapter I. of "Wireless and Weather an Aid to Navigation," page 6, and page 18 of Vol V., No. 49, of this Journal.

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.	Longitude.	Description.
	NORTH SEA.		
12.8.28	52°09′N.	3°00′E.	Abandoned fishing boat: dangerous to navigation.
	IRISH SEA.		
3.8.28	18 miles N.W. of Liverpool Bar Light Vessel.		Obstruction partly submerged, believed to be of heavy timber.
	NORTH ATLANTIC.		
1.8.28	40°39′N.	68°22′W.	Black buoy with a white superstructure about 10 ft high.
3.8.28	30°45′N.	79°20′W.	Partly submerged wreckage consisting of a deck and hatch, about 30 ft. long, drifting north-easterly.
6.8.28	48°53′N.	8°29′W.	Red buoy adrift: staff and globe, square flag below globe.
8.8.28	28°36′N.	79°38′W.	Derelict 50 ft. yawl, painted white, with masts carried away.
10.8.28	40°32′N.	69°30′W.	Red buoy marked *54* with round red and white ball.
11.8.28	24°52′N.	80°14′W.	Tree trunk about 35 ft. long and 3 ft. in diameter.
12.8.28	39°18′N.	74°00′W.	Undamaged empty lifeboat marked *Betmada* drifting westward.
12.8.28	39°18′N.	74°05′W.	Schooner *John L. Martino*, derelict, quantities of lumber nearby.
13.8.28	39°07′N.	74°33′W.	Three large pieces of wreckage, one over 100 ft.; awash.
13.8.28	33°19′N.	76°43′W.	Small derelict schooner.
14.8.28	33°30′N.	76°24′W.	Large mass of floating wreckage.
20.8.28	48°03′N.	26°09′W.	Large log covered with marine growth, approximately 30 ft. long and 3 ft. in diameter.
	CARIBBEAN SEA.		
3.8.28	12°06′N.	83°22′W.	Log about 20 ft. long.
	GULF OF MEXICO.		
2.8.28	20°11′N.	85°22′W.	Large tree trunk with very long large roots.
	NORTH PACIFIC.		
6.8.28	40°20′N.	126°57′W.	Log 40 ft. long and 2 ft. diameter.
14.8.28	33°12′N.	120°20′W.	Obstruction, showing about 20 ft. out of water.

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

LONDON ... ... Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent.
Commander J. Hennessy, R.D., R.N.R., Senior Nautical Assistant.
Room 319, Adastral House, Kingsway, W.C.2.
(*Telephone No.: Holborn 3434 Extension 421*).
Nearest station Temple, District Railway.
Mr. W. T. GRIEVES, Visiting Officer for the Port of London.

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

Agents.

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

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

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

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

Agents (*contd.*).

HONG KONG, China. ... Lieut. Commander J. H. DRUMMOND, D.S.C., 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.
Captain C. LINDBERGH.
Customs House.
(*Telephone No.: B6421*).

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

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

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.

Selected Ships.

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

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Aba	Williams, T. E. ...	S. J. Bristow, O. E. Jones, A. H. Perkins.	M.L.	Elder Dempster ...	Met. Log. 14.10.27 to 10.2.28... ...	16.3.28
Abinsi	Millson, H. E. ...	... ...	No. A.	,, ,, ...	Form 911 16.5.28 to 23.6.28	27.6.28
Achilles	Dodds, R	J. Powell, L. Hutchinson, G. M. Kirk, F. W. Hilton.	M.L.	A. Holt	Met. Log. 31.1.28 to 7.5.28	11.5.28
Actor	Haylett, E. ...	E. Pearce, F. M. Eales, G. Morrice.	,,	Harrison	,, 1.6.28 to 28.7.28	2.8.28
Adda, M.V.... ...	Toft, J. T.	A. A. Arrowsmith, A. E. Lovgreen, W. F Logget, A. Boniwell.	M.L.	Elder Dempster ...	Form 911 21.12.27 to 19.5.28... ...	18.7.28
50 *Adriatic* ...	Binks, J. W., R.D., Lt.-Commr. R.N.R.	O. V. Lucas, R. H. Shaw, F. W. Laws.	W.T.	White Star ...	W T. Reg. 25.6.28 to 14.7.28	17.7.28
					,, 22.7.28 to 11.8.28	14.8.28
Aeneas	Wallace, W. K. ...	E. R. Owen	No. A.	A. Holt	Form 911 24.6.28 to 3.7.28	14.7.28
Agapenor	Ramsay, J. ...	B. Bell	,, A.	,, ...	,, 22.7.28 to 31.7.28	8.8.28
Aidan	Evans, L.	R. A. Broad	,, A.	Booth	,, 24.4.28 to 9.6.28	30.6.28
Alban	Barlow, F. P.... ...	E. M. Lyons	,, A.	,, ...	,, 16.5.28 to 31.5.28	14.6.28
Alipore	Smith, H. E., R.D., Lt.-Commr., R.N.R.	C. H. Stokes	,, M.	P. and O.	,, 18.4.28 to 17.6.28	11.7.28
Almanzora ...	Clarke, E. C.	J. W. Smith	,, A.	R.M.S.P.	,, 21.4.28 to 4.6.28	8.6.28
63 *Albertic*	Summers, F. F., R.D., Commr., R.N.R.	A. E. Dyer, J. W. Paine, W. Hill.	W T.	White Star	W.T. Reg. 2.7.28 to 17.7.28	20.7.28
Alondra	Scott, L. S.	H. Peters	No. A.	Yeoward	Form 911 14.7.28 to 4.8.28	7.8.28
Alynbank	Clayton, W. E. ...	R. Ardley	,, A.	A. Weir & Co. ...	,, 15.5.28 to 4.6.28	9.7.28
Ambuscade... ...	Abbay, A. T. N., D.S.O.,Commr.R.N.	F. G. Bullock	M.L.	His Majesty's Ship...	... ...	...
Ampetco ...	Vandenkerckhove, A.	... ...	No. A.	American Petroleum	Form 911 14.6.28 to 22.7.28	8.8.28
Andalucia ...	Thomas, R. J. ...	R. A. Brock, A. Vaughan ...	,, M.	Blue Star	,, 29.4.28 to 10.6.28	19.6.28
Anchises	Woodgett, R. J. ...	R. Fountain, G. Brown ...	,, A.	A. Holt...	,, 25.3.28 to 13.4.28	8.5.28
Andes	Smith, W. E., D.S.O., R.D., Capt. R.N.R.	H. Whittle, S. G. Page, A. E. Nicholls, J. E. E. Hadlow.	M.L.	R.M.S.P. Co.	Met. Log. 17.3.28 to 26.6.28	30.6.28
Antillian	Hannaford, W. T. ...	... ...	No. A.	Leyland	Form 911 11.5.28 to 24.7.28	26.7.28
Antilochus ...	Salter, G. H.	O. P. H. Wynne	,, A.	A. Holt...	,, 1.6.28 to 18.7.28	13.8.28
Aorangi	Crawford, R. ...	E. Anderson, E. V. Bilger, R. Kendall, W. J. Weber.	M.L.	Canadian-Australasian	Met. Log. 2.5.28 to 21.6.28	14.7.28
30 *Aquitania* ...	Diggle, E. G., R.D., Capt. R.N.R.	R. W. Bee, J. Locke, G. Duguid.	W.T.	Cunard ...	W.T. Reg. 1.7.28 to 14.7.28	17.7.28
				,,	,, 22.7.28 to 7.8.28	9.8.28
2 *Arabic*	Bulman, J. B. ...	W. Jackman, T. W. Wills, W. N. Jenkins.	,,	White Star	,, 17.6.28 to 6.7.28	9.7.28
Arafura	Diamond, S. L. ...	F. O. Colvin, F. R. Miller, C. Stratford.	M.L.	Eastern and Australian	Met. Log. 28.10.27 to 3.3.28	8.6.28
Arawa	Summers, W. G. ...	A. Chrystal, A. C. Jones, G. Campbell.	,,	Shaw, Savill and Albion	,, 13.12.27 to 17.4.28... ...	30.4.28
Archimedes ...	Downs, E. B. ...	... ...	No. A.	Lamport & Holt ...	Form 911 10.10.27 to 5.1.28	18.1.28
Argyllshire ...	Wallace, J. ...	J. C. Robinson	,, M.	Federal	,, 11.4.28 to 20.5.28	6.6.28
Ariguani	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	G. McKee, J. W. Dodd, W. Ireland.	M.L.	Elders & Fyffes ...	Met. Log. 7.5.28 to 21.7.28	1.8.28
Ariosto	Biggins, R. L.	R. Heneage, D. A. Stokes ...	No A.	Ellerman Wilson ...	Form 911 10.6.28 to 26.6.28	30.7.28
Armadale Castle ...	Imlah, C. B. ...	E. Roach, G. D. Pennick, E. Fullick.	M.L.	Union Castle	Met. Log. 12.11.27 to 4.3.28	8.3.28
Arracan	Duncan, S. S.	J. Summers, J. Henderson, C. C. Weir.	,,	P. Henderson ...	,, 2.11.27 to 27.3.28	23.4.28
Arundel	Short, H.	Mr. Hill...	C.C.	Southern Rly. ...	Telegraphic Report 28.6.28	28.6.28
Arundel Castle ...	Knight, A.	A. G. Bidwell	No. A.	Union Castle ...	Form 911 2.6.28 to 22.7.28	24.7.28
Astronomer ...	Richards, J. ...	A. Browne, C. C. Heaton, H. W. FitzSimons.	M.L.	Harrison	Met. Log. 28.10.27 to 7.1.28	13.1.28
Ascanius	Wilson, C. A.	T. Robb, J. B. Marshall, W. Cook.	,,	A. Holt...	,, 31.10.27 to 5.3.28	14.3.28
Atreus	Rundle, G. G. ...	H. Nicholas	No. A.	A. Holt...	Form 911 31.5.28 to 11.7.28	7.8.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Atsuta Maru ...	Narui, N.	Y. Osada	No. A.	Nippon Yusen Kaisha	Form 911 16.3.28 to 16.4.28	24.4.28
Auditor	Owen, W. T. ...	L. A. Bennett, W. Moore ...	„ M.	Harrison	„ 19.1.28 to 18.4.28	5.5.28
Autolycus	Dunlop, J. K. ...	T. Bell	„ A.	A. Holt...	„ 7.7.28 to 25.7.28	13.8.28
Ausonia	Stafford, W., D.S.C., R.D., Lt.-Commr., R.N.R.	J. J. Wiseman	„ A.	Cunard	„ 21.8.27 to 8.10.27	11.10.27
Avon	Spriddell, F. G., R.D., Commr., R.N.R.	R. H. East	„ M.	R.M.S.P.	„ 17.2.28 to 28.3.28	29.3.28
Balmoral Castle ...	Chave, Sir B., K.B.E.	... ...	„ A.	Union Castle	„ 6.4.28 to 23.4.28	24.4.28
Balranald	Townshend, W. P., Capt., R.N.R.	H. Stinn, G. Owen, F. Ward,	M.L.	P. & O. Branch ...	Met. Log. 31.3.28 to 5.8.28	16.8.28
51 *Baltic*	White, E. R., R.D., Commr., R.N.R.	T. F. Pratt, A. C. J. Anson, E. P. Hughes.	W.T.	White Star ...	W.T. Reg. 9.7.28 to 28.7.28	1.8.28
					Form 911 8.7.28 to 28.7.28	31.7.28
Bampton Castle ...	Hutchings, A. H. ...	... ...	No. A.	Union Castle	„ 17.9.27 to 14.10.27... ...	24.10.27
Banffshire	Wynne, R. H.... ...	W. D. E. Campbell	„ A.	Turnbull Martin ...	„ 12.6.28 to 1.7.28	23.7.28
Baradine	Rollo, W.	C. B. Roche, B. H. Pollitt, D. F. Lambard, G. C. Case.	M.L.	P. & O. Branch ...	Met. Log. 26.1.28 to 1.6.28	4.6.28
Barpeta	Chandler, H.	B. R. Faithfull	No. M.	British India	Form 911 17.6.28 to 28.6.28	23.7.28
Barrabool	Rhodes, H. R. ...	T. G. Davies	„ M	P. & O. Branch ...	„ 16.6.28 to 4.7.28	23.7.28
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, C. H. Otterson, W. Hesketh.	W.T.	Red Star ...	W.T. Reg. 24.6.28 to 11.7.28	16.7.28
					„ 22.7.28 to 9.8.28	13.8.28
					Form 911 24.6.28 to 9.8.28	13.8.28
Beltana	Allin, C. H. C. ...	D. M. Stafford	No. M.	P. & O. Branch ...	„ 22.5.28 to 8.7.28	18.7.28
Benalder	Fairweather, J. J. ...	L. A. Sayers	„ A.	Ben Line	„ 30.6.28 to 18.7.28	13.8.28
Benalla	Sheepwash, J. ...	S. W. Du Fosse...	„ M.	P. & O. Branch ...	„ 10.2.28 to 3.7.28	11.7.28
Bendigo	Nicholl, R. N. C. ...	R. M. Richardson	„ M.	„ „ ...	„ 1.6.28 to 18.6.28	7.8.28
Benefactor	Jones, C. W.	... ...	„ M.	Harrison	„ 25.4.28 to 26.5.28	14.6.28
Bengloe	McCorquodale, A. ...	G. Davidson	„ A.	Ben Line	„ 11.4.28 to 21.5.28	8.6.28
31 *Berengaria* ...	Rostron, Sir A. H., K.B.E., R.D., Capt. R.N.R.	J. A. Myles, W. C. A. Robson, S. A. T Bullock.	W.T.	Cunard ...	W.T. Reg. 8.7.28 to 21.7.28	23.7.28
					„ 29.7.28 to 14.8.28	16.8.28
Berrima	Short, C. E.	A. Hughes	No. M.	P. & O. Branch ...	Form 911 9.12.27 to 13.4.28	16.4.28
Bogota	Pape, E. R.	G. A. Thexton	„ M.	R.M.S.P. Co.	„ 27.5.28 to 15.6.28	11.7.28
Brenda	Lamont, A.	N. Ross	„ A.	Scottish Fishery Brd.	„ 5.7.28 to 28.7.28	7.8.28
Brighton	Hill, A.	Mr. Munton	C.C.	Southern Railway ...	Telegraphic Report 19.7.28	19.7.28
British Colonel ...	Taylor, R. J.	F. W. Sherlock	No. M.	British Tankers ...	Form 911 18.4.28 to 16.6.28	21.6.28
British Consul ...	Putt, R. O.	C. H. Humphries	„ M.	„ „ ...	„ 29.6.28 to 16.7.28	20.7.28
Bronte	Crapper, J. S.... ...	J. B. Scott	„ A.	Lamport & Holt ...	„ 25.3.28 to 26.4.28	8.6.28
Bruyere	Birch, A.	R. B. Langley	„ A.	„ „ ...	„ 23.5.28 to 19.6.28	26.7.28
Bulysses M.V. ...	Head, B. P.	A. J. Clatworthy	„ M.	Anglo-Saxon Petroleum Co	„ 12.6.28 to 26.7.28	16.8.28
Cambria	Copland, C. P. ...	O. W. Ll. Jones	C.C.	L.M. & S. Rly	Telegraphic Report 17.8.28	17.8.28
Cameronia	Gemmell, W.	... ...	M.L.	Anchor	Form 911 25.3.28 to 16.4.28	18.4.28
Camito	Forrester, W. T., O.B.E.	H. H. Dunning, W. E. Grant, C. M. Schofield. G. M. Roberts.	„	Elders & Fyffes ...	Met. Log. 30.1.28 to 27.5.28	7.6.28
Canadian Importer	Forson, A.	... ...	No. A.	Canadian Gov. Mercantile Marine.	Form 911 13.6.28 to 10.7.28	26.7.28
Canadian Inventor	Boulten, F. W. ...	O. D. Alcorn	„ A.	„ „ „	„ 17.9.27 to 30.10.27... ...	19.11.27
Canadian Winner	Hocking, N. P. ...	R. J. Watson	„ M.	„ „ „	„ 17.5.28 to 24.7.28	13.8.28
Canonesa	Brodie, W. H. ...	T. Wetherall	„ M.	Furness Houlder ...	„ 13.2.28 to 3.4.28	11.4.28
Cape of Good Hope	Lamont, J.	J. J. Lewis	No. A.	Lyle S.S. Co.	„ 31.3.28 to 15.5.28	8.6.28
35 *Carmania* ...	Brown, F. G., R.D., Capt., R.N.R.	W. M. Stewart, E. Taylor, E. Gleave.	W.T.	Cunard ...	W.T. Reg. 9.7.28 to 27.7.28	30.7.28
					Form 911 7.8.27 to 26.8.27	30.8.27
Carnarvon Castle M.V.	Stanley, W. F., R.D., Commr., R.N.R.	W. G. Smith, T. C. Goldstone, J. B. McReynolds.	M.L.	Union Castle ...	Met. Log. 9.3.28 to 1.7.28	17.7.28
34 *Caronia*	Hossack, W. H., R.D., Capt., R.N.R.	H. G. Hayward, D. McMillan, T. Parry, R. B. Cambell.	W.T.	Cunard ...	W.T. Reg. 25.6.28 to 13.7.28	18.7.28
					„ 23.7.28 to 10.8.28	14.8.28
					Form 911 25.6.28 to 10.8.28	14.8.28
Casanare	Browne, S.	H. A. Tilley	No. A.	Elders & Fyffes ...	„ 3.6.28 to 7.7.28	9.7.28
Cavina	Riseley, A. D.... ...	R. L. Stevenson...	„ A.	„ ...	„ 4.6.28 to 8.7.28	14.7.28
52 *Cedric*	Lloyd, W.	J. H. Walker, D. W. Chamberlain, S. Fieldwood.	W.T.	White Star ...	W.T. Reg. 16.7.28 to 5.8.28	8.8.28
					Form 911 16.7.28 to 5.8.28	9.8.28
53 *Celtic*	Musgrave, T.	J. Law, D. K. Crawford, A. R. Stevens.	„	„ „ „ ...	W.T. Reg. 2.7.28 to 22.7.28	26.7.28
					Form 911 2.7.28 to 22.7.28	26.7.28
Centaur	Rose, A. F.	E. D. Potts, N. L. Thompson, J. Cockburn.	M.L.	A. Holt & Co. ...	Met. Log. 21.8.27 to 6.2.28	26.4.28
Ceramic	Musgrave, T.	... ...	No. A.	White Star	Form 911 22.1.28 to 10.5.28	15.5.28
Changte	Gambrill, F. C. ...	— Thomas, — Tyer, — Allan.	M.L.	Yuill & Co.	Met. Log. 16.12.27 to 6.4.28	16.5.28
Changuinola ...	Thorburn, R. A., R.D., Commr., R.N.R.	W. G. Chanter	No. A.	Elders & Fyffes ...	Form 911 30.5.28 to 1.7.28	9.7.28
Chindwin	Paterson, G.	... ...	„ A.	Henderson	„ 14.4.28 to 29.6.28	23.7.28
Chinkiang	Stringer, C.	... ...	M.L.	China Navigation Co	... ...	...
Chirripo	McColm, F.	H. Rawston, R. Laycock ...	No. A.	Elders & Fyffes ...	„ 26.5.28 to 1.7.28	9.7.28
City of Baroda ...	McMillan, J.	A. Beaton, T. C. Hodgkinson.	M.L.	Ellerman	Met. Log. 5.3.28 to 20.5.28	6.6.28
City of Benares ...	Anderson, W. W. ...	F. Forsyth	No. A.	„	Form 911 15.3.28 to 16.4.28	19.4.28
City of Brisbane ...	Seaborne, F. O., D.S.C	R. Jones	„ A.	„	„ 3.2.28 to 1.4.28	10.4.28
City of Canterbury	Bremner, D. M. ...	R. H. Hodgson	„ A.	„	„ 2.4.28 to 4.6.28	8.6.28
City of Carlisle ...	Mordue, J. A. ...	... ...	„ A.	„	„ 24.6.28 to 30.7.28	7.8.28
City of Chester ...	Letton, F. W. ...	C. C. Duncan, A. J. Barnett, R. Mowbray.	M.L.	„	Met. Log. 22.10.27 to 26.2.28	21.3.28
City of Edinburgh	Wyper, J.	G. Hummell	No. M.	„	Form 911 22.2.28 to 1.4.28	21.5.28
City of Hong Kong	Walton, H. L., O.B.E., R.D., Commr., R.N.R.	H. Saunders	„ A.	„	„ 27.6.28 to 19.7.28	13.8.28
City of London ...	Parker, F. W., R.D., Commr., R.N.R.	H. H. Asher	No. A.	„	Form 911 4.2.28 to 22.4.28	27.4.28
City of Osaka ...	Smith, W. H.	R. K. Walker	No. M.	„	„ 12.5.28 to 18.6.28	14.7.28
City of Rangoon ...	Jones, P.	E. R Wildermuth, R. H. Stewart, F. E. Broadbent.	M.L.	„	Met. Log. 28.3.28 to 9.7.28	1.8.28
City of Venice ...	Lee, A.	... ...	No. A.	„	Form 911 18.2.28 to 1.3.28	12.3.28
City of Yokohama	Singleton, J. G. ...	R. Willott Leese	„ A.	Ellerman	„ 25.3.28 to 4.5.28	25.6.28
Clan Alpine ...	Lyall, A. B.	K. M. Banks	„ A.	Clan	„ 12.4.28 to 23.6.28	25.6.28
Clan Kenneth ...	Young, A. H., Commr. R.D., R.N.R.	... ...	„ A.	„	... ...	...
Clan Lamont ...	Urquhart, P., D.S.C.	P. de Gruchy	„ A.	„	„ 25.1.28 to 27.4.28	8.5.28
ClanLindsay ...	Giles, H. J., R.D., Commr., R.N.R.	... ...	„ A.	„	„ 18.5.28 to 7.6.28	25.6.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Clan MacBean ...	Worthington, J. H. ...	J. E. Clayton	No. A.	Clan	Form 911 25.3.28 to 26.5.28	1.8.28
Clan Macbeth ...	Horn, R.	T A. Watkinson	„ A.	„	„ 1.4.28 to 27.4.28	21.5.28
Clan Macfadyen ...	Stenson, F. J. R.D., Capt. R.N.R.	A. Dowds	„ A.	„	„ 30.4.28 to 18.5.28	8.6.28
Clan Macfarlane ...	Redford, L. F. ...	... ...	„ A.	.. ..	„ 18.4.28 to 9.5.28	4.6.28
Clan Macgillivray	Mackinlay, A. ...	J. Garis	„ A.	„	„ 13.5.28 to 1.6.28	8.8.28
Clan Macindoe ...	Holman, W. G. ...	A. Hunter	„ A.	„	„ 11.6.28 to 4.7.28	7.8.28
Clan Mackellar ...	Smith, W. P.	A. Woodrow	„ A.	„	„ 9.6.28 to 21.6.28	30.6.28
Clan Macphee ...	Gourlay, J. B. ...	G. Short, B. Edgar, E. Mowatt.	M.L.	„	Met. Log. 21.11.27 to 18.4.28... ...	17.5.28
Clan Macnaughton	Simpson, A. W. ...	J. W. Fox	No. A.	„	Form 911 26.3.28 to 20.4.28	14.5.28
Clan Mactaggart ...	Makepeace. F. ...	E. A. Hewson	„ A.	„	„ 19.6.28 to 12.7.28	7.8.28
Clan Macwhirter ...	Waterhouse, J. ...	W. A. Robbie, E. A. Brown, S. W. Brown.	M.L.	„	Met. Log. 1.10.27 to 26.4.28	30.4.28
Clan Malcolm ...	George, L. S.	R. L. Ranford, J. F. Hubbard, P. Evans.	„	„	„ 23.2.28 to 9.6.28	29.6.28
Clan Morrison ...	Porterfield, W. M. ...	H. R. Crosscombe	No. A.	„	Form 911 5.3.28 to 11.4.28	30.4.28
Clan Murdoch ...	Neill, G. A.	... ...	„ A.	„	„ 13.7.28 to 5.8.28	16.8.28
Clan Ranald ...	Fraser, R. K.	R. Cameron	„ A.	„	„ 20.6.28 to 4.7.28	30.7.28
Clan Ross	Openshaw, L. G. ...	R. K. Phillips	„ A.	„	„ 11.4.28 to 12.5.28	8.6.28
Clan Sinclair ...	Taylor, P. V.	J. H. Dennis	„ A.	„	„ 29.5.28 to 10.6.28	14.6.28
Clan Urquhart ...	Baker, E. W.	R. Silk	„ A.	„	„ 30.4.28 to 19.5.28	25.6.28
Comorin	Borland, J. Mc.I., C.B., D.S.O., R.D., Capt., R.N.R.	E. C. White	„ M.	P. & O.	„ 20.3.28 to 6.5.28	23.5.28
Corinthic	Lloyd, W.	E. M. Burt, M. Bennett, I. A. Macnaughton.	M.L.	White Star	Met. Log. 4.2.28 to 18.5.28	22 5.28
Cornwall	Wilde, H. J.	H. M. Knight	No. A.	Federal	Form 911 27.3.28 to 9.5.28	15.5.28
Crawford Castle ...	Morgan, A. O., R.D., Commr., R.N.R.	J. A. Wilson	„ A.	Union Castle	„ 30.10.27 to 1.12.27... ...	15.12.27
Culebra	Rathkins C.E., R.D., Commr., R.N.R	P Cooper, R. N. Fletcher, W. S. Thomas.	M.L.	R.M.S.P. Co.	Met. Log. 28.4.28 to 28.6.28	6.7.28
Cumberland ...	Macmillan, D. ...	J. Marks	„	Federal...	Form 911 25.2.28 to 3.4.28	24.4.28
Cyclops	Cosker, W.	... ...	No. A.	A. Holt	„ 25.5.28 to 9.6.28	16.7.28
Daga	Wiles, N.	A. Olding...	No. M.	P. Henderson... ...	„ 19.5.28 to 6.7.28	13.8.28
Dakotian	Robb, J.	W. R. Atkinson...	„ A.	Leyland	„ 30.3.28 to 24.6.28	2.7.28
Dardanus	Clarke, J. W.	R. Millar	„ A.	A. Holt	„ 12.5.28 to 6.6.28	19.7.28
Darian	Masters, W.	... ...	„ A.	Leyland	„ 12.11.27 to 24.11.27 ...	5.12.27
Darro	Matthews, G. P. ...	... ...	„ M.	R.M.S.P. Co.	„ 17.5.28 to 2.7.28	18.7.28
Demerara	Willan, F. G. L., R.D., Capt., R.N.R.	F Jeyes	„ M.	„	„ 30.4.28 to 21.6.28	25.6.28
Demosthenes ...	Ogilvy, A.	... ...	„ M.	Aberdeen	„ 14 3.28 to 23.4.28	28.4.28
Denis	Harris, F. C. P. ...	A. Blewett	„ A.	Booth	„ 12.6.28 to 25.6.28	18.7.28
Deseado	Hannam, F. S. ...	A. F. Walker, R. Barff ...	„ M.	R.M.S.P. Co.	„ 27.5.28 to 20.7.28	23.7.28
Desna	Green, J.	R. Wilson	„ M.	„	„ 12.6.28 to 30.7.28	14.8.28
Deucalion	Melling, C. F.... ...	... ...	„ A.	A. Holt	„ 23.6.28 to 31.7.28	2.8.28
Devon	Kinnell, G.	... ...	„ M.	Federal	... ...	...
Dieppe	Marmery, S.	Mr. Parsons	C.C.	Southern Railway ...	Telegraphic Report 18.8.28	18.8.28
Dimboola	Roy, C. M.	H. L. Price	No. A.	Melbourne S.S. Co. ...	Form 911 13.4.28 to 9.5.28	8.6.28
Domala, M.V. ...	Kitson, A. G.	H. Robertson	„ M.	British India	„ 19.4.28 to 26.5.28	26.6.28
Dominia, C.S. ...	Campos, V., O.B.E., Lt.-Commr., R.N.R.	H. Hutchins, T. J. C. Dexter, J. Dyer.	M.L.	Telegraph Construction & Maintenance.	Met. Log. 4.1.28 to 24 1.28	1.3.28
Dominic	Saxton, C.	J. A. Moon	No. A.	Booth	Form 911 14.3.28 to 1.5.28	8.5.28
Doric	Bolton, S., D.S.C., R.D. Commr., R.N.R.	G. T. Kavanagh	„ M.	White Star	„ 1.7.28 to 22.7.28	24.7.28
Dorington Court ...	Clarke, E. J.	P. Jones	„ A.	Haldin & Co.	„ 28.6.28 to 6.7.28	16.8.28
Dromore Castle ...	MacMahon, J., R.D., Commr., R.N.R.	D. P. Klasen	„ A.	Union Castle	„ 11.3.28 to 11.4.28	30.4.28
Dryden	Major, T. W.	E. W. Hardie	„ M	Lamport & Holt ...	„ 6.4.28 to 1.5.28	5.5.28
Dunaff Head ...	Milner, T. F. R.D., Lt.-Commr., R.N.R.	S. Duff	„ A.	Ulster S.S. Co, ...	„ 7.3.28 to 13.6.28	18.6.28
Dundrum Castle ...	Goodacre, R.W., R.D., Commr., R.N.R.	A. R. J. Tilston	., A.	Union Castle	„ 13.4.28 to 11.5.28	21.5.28
Dunluce Castle ...	Morgan, A. O. ...	F. O. Wilbraham	„ A.	„ „	„ 29.6.28 to 13.7.28	14.8.28
Dunrobin	Ramsay, J. D. ...	C. H. Kendall	„ A.	Glen & Co.	„ 5.6.28 to 6.7.28	23.7.28
Duquesa	Owen, R.	C. G. Adlard	„ M.	Furness Withy ...	„ 22.1.28 to 15.3.28	19.3.28
Durenda, M.V. ...	Beeching, P. H. ...	F. E. Liles	„ M.	British India	„ 21.6.28 to 22.7.28	7.8.28
Edinburgh Castle	Owen, S. H.	G. H. Mayhew	„ A.	Union Castle	„ 13.4.28 to 3.6.28	8.6.28
Egori	Sola, P., D.S.O. ...	R. W. Pattinson	„ A.	Elder Dempster ...	„ 5.5.28 to 5.7.28	9.7.28
Ellora	Baird, S. K.	... ...	„ M.	British India... ...	... ...	...
El Paraguayo ...	Fletcher, G.	F. F. Feint, D. Murray ...	„ M.	Houlder Bros. ...	Form 911 23.10.27 to 15.12.27 ...	20.12.27
Elpenor	Gordon, A. L.... ...	C. Kavanagh, J. E. Cliff ...	M.L.	A. Holt...	Met. Log. 5.2.28 to 29.5.28	18.6.28
Elysia	Duncan, A. R. ...	A Laidlaw, G. S. Sinclair, H. M. Sanders.	„	Anchor	„ 12.5.28 to 15.7.28	24.7.28
Empress of Asia ...	Hailey, A. J., Lt.-Commr., R.N.R.	L. C. Hogg	„	Canadian Pacific ...	„ 25.2.28 to 15.6.28	14.7.28
Empress of Canada	Robinson, S., C.B.E., R.D., Commr., R.N.R.	A. G. Simmons	„	„ „ ...	„ 17.3.28 to 28.6.28	15.8.28
Empress of France	Griffiths, E.	E. Roberts, L. Outram, W. Griffith.	„	„ „ ...	„ 7.1.28 to 25.4.28	10.5.28
Empress of Russia	Hosken, A. J.... ...	L. C. Barry, R. A. Leicester, J. S. Clarke, J. H. Reid.	„	„ „ ...	„ 10.11..27 to 25.3.28 ...	22.6.28
Endeavour	Law, E. F. B., Commr., R.N.	C. S. E. Lansdown, P. Barlow, W. H. Dickinson.	„	His Majesty's Ship ...	„ 14.3.28 to 11.7.28	16.7.28
Essequibo	Kirkwood, J. H. ...	J. H. E. Evans	No. M.	R.M.S.P. Co.	Form 911 17.5.28 to 2.7.28	28.7.28
Eumaeus	Read, J. W.	... ...	„ A.	A. Holt	„ 27.5.28 to 5.7.28	7.8.28
Euryades	Findlay, J.	... ...	No. A.	A. Holt	„ 15.6.28 to 4.7.28	14.7.28
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. Stout ...	„ A.	Scottish Fishery Board.	„ 2.7.28 to 24.7.28	1.8.28
Ferndale	Daniel, F.	... ...	No. M.	Aberdeen Commonwealth.	„ 25.4.28 to 27 5.28	11.7.28
Flandria	Maars, L.	... ...	„ M.	Holland Lloyd ...	„ 27.4.28 to 14.6.28	18.6.28
Fordsdale	Richardson, A. V. ...	F. J. Llewellyn	„ M.	Aberdeen Commonwealth.	... ...	...

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Francisco	Scales, H.	F. Elgin	No. A.	Ellerman Wilson ...	Form 911 30.6.28 to 8.8.28	13.8.28
Freya	Angus, W.	W. Pirrie	„ A.	Scottish Fishery Board.	„ 18.7.28 to 31.7.28	7.8.28
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
Garth Castle ...	Linklater, H.	D. F. H. Klasen	„ A.	Union Castle	„ 14.5.28 to 15.6.28	19.6.28
Gascoyne	Johnson, L.	... ...	M.L.	A. Holt & Co.... ...	... ...	...
Gelria	Veldkamp, C. J. ...	A. J. H. Schöler... ...	„ M.	Holland Lloyd ...	Form 911 25.5.28 to 13.6.28	14.7.28
Glamorganshire ...	Clayton, R. G., D.S.C., R.D., Lt.-Commr., R.N.R.	K. H. Whitaker	„ M.	R.M.S.P. Co.	„ 24.2.28 to 12.5.28	18.5.28
Glenamoy, M.V. ...	Homan, C. E.... ...	R. H. Bishop, R. W. Emerson, F. S. Howell.	M.L.	Glen Line	Met. Log. 5.12.27 to 16.4.28	29.5.28
Glengarry	Angier, J.	F. C. White	No. M.	„	Form 911 20.5.28 to 5.6.28	18.6.28
Glenluce	Kennett, W. H. ...	H. B. Porter	„ A.	„	„ 30.6.28 to 13.7.28	23.7.28
Glenshane	Neil, P. G.	... ...	„ A.	„	„ 19.2.28 to 25.5.28	8.6.28
Glentworth ...	Kilgour, H. A. ...	... ...	No.	R. S. Dalgleish ...	... ...	...
Gloucestershire ...	Robin, E.	W. Moore	„ A.	Bibby	Form 911 5.5.28 to 15.7.28	23.7.28
Gloxinia	Pool, F. G.	J. Steward, D. Coughlan ...	„ A.	Stag Line	„ 14.6.28 to 13.7.28	17.8.28
Halesius	Samuels, C.	R. W. Cook	„ A.	R. P. Houston ...	„ 29.5.28 to 27.6.28	30.6.28
Haliartius	Felton, W. J.	C. C. Reeder	„ A.	„ „ ...	„ 23.6.28 to 13.7.28	7.8.28
Harmonides ...	Hughes, W. F. ...	K. T. Roper	„ A.	„ „ ...	„ 6.7.28 to 18.7.28	1.8.28
Hatimura ...	Lane, S. R., R.D., Capt., R.N.R.	... ...	„ M.	British India	„ 27.11.27 to 6.1.28	6.2.28
	Hannaford, J. ...					
Hauraki, M.V. ...	Norton, A. T.	T. Marshall, R. B. Denniston, F. C. Cochran.	M.L.	Union S.S. Co., N.Z. ...	Met. Log. 29.11.27 to 5.3.28	1.6.28
Henry Holmes, C.S.	Bicker Caarten, A. ...	A. R. Moss	No. M	W. I. & Panama Telegraph Co.	Form 911 18.5.28 to 2.7.28	28.7.28
Herald	Haselfoot, F.E.B., Capt., R.N.	D. G. V. Williams	M.L.	His Majesty's Ship ...	Met. Log. 18.10.27 to 19.11.27 ...	31.1.28
Herefordshire ...	Mann, R. P.	M. D. Louttill	No. A.	Bibby	Form 911 21.4.28 to 30.6.28	9.7.28
Herminius	Roberts, T. V. ...	D. W. MacGregor	„ A.	Shaw, Savill & Albion	„ 17.4.28 to 27.5.28	4.6.28
Herschel	Watson, W. W. ...	J. F. Maurey	„ A.	Lamport & Holt ...	„ 13.2.28 to 6.5.28	25.5.28
Hertford	Kettlewell, C. R. ...	J. R. Ricketts	M.L.	Federal	... ...	...
Hibernia	Roberts. W. Ivor, M.B.E.	R. Woodall, A. Marsh ...	C.C.	L.M. & S. Railway ...	Telegraphic Report 11.8.28	11.8.28
Highland Laddie ...	Jones, T. J.	E. F. Smart	No. A.	Nelson	Form 911 22.4.28 to 12.6.28	9.7.28
„ *Piper* ...	Collings, D.	R. G. Owen, A. Southgate ...	M.L.	„	Met. Log. 1.12.27 to 22.6.28	7.8.28
„ *Pride* ...	Robinson, R. H. ...	F. Qwelch	No. A.	„	Form 911 16.6.28 to 10.8.28	14.8.28
„ *Prince* ...	Davis, J.	J. Harrison	„ A.	Prince	„ 13.5.28 to 25.5.28	8.6.28
„ *Rover* ...	Ashby Graves, F. ...	... ...	„ A.	Nelson	„ 9.4.28 to 25.5.28	8.6.28
Hildebrand ...	Peregrine, D.... ...	... ...	„ A.	Booth	„ 15.5.28 to 28.6.28	2.7.28
Hobson's Bay ...	Kydd, O. J.	R. Pearce, H. Benson, A. McLeod, K. McKenzie.	M.L.	Aberdeen Commonwealth.	Met. Log. 7.2.28 to 18.5.28	7.6.28
Holbein	Gough, W. A.... ...	S. Ranson	No. A.	Lamport & Holt ...	Form 911 3.3.28 to 23.5.28	29.5.28
54 *Homeric*	Parker, W. H., C.B.E., R.D., Capt. R.N.R.	H. G. Morgan. S. B. Morfee, W. T. Poustie.	W.T.	White Star ...	W.T. Reg. 28.6.28 to 12.7.28	16.7.28
					„ 20.7.28 to 3.8.28	8.8.28
Hororata	Holland, E.	A. E. Bamforth	No. A.	New Zealand S.S. Co.	Form 911 26.3.28 to 10.7.28	14.7.28
Hubert	Briscoe, W.	E. C. McGuinness	„ A.	Booth	„ 31.5.28 to 14.6.28	25.6.28
Huntingdon ...	Ashworth, W. ...	H. G. Letts	„ A.	Federal...	„ 22.6.28 to 28.6.28	16.7.28
Huntsman	Russell, H.	J. Richardson	„ M.	Harrison	„ 6.12.27 to 14.2.28	23.2.28
Hydaspes	Williams, P. E. ...	P. McMillan	No. M.	R. P. Houston ...	Form 911 13.6.28 to 9.7.28	7.8.28
Ingoma	Barrow, R. K. ...	W. P. Baker	„ M.	Harrison	Form 911 9.6.28 to 20.7.28	24.7.28
Inkum	Meetham, J. T. ...	H. A. Belsham	„ A.	J. H. Welsford ...	„ 9.5.28 to 10.6.28	23.7.28
Iris, C.S.	Hughes, H. R. ...	L. V. Vicker, D. MacDonald	M.L.	Pacific Cable Board...	Met. Log. 25.8.27 to 3.10.27	21.3.28
Iroquois	Jackson, A. L. Commr., R.N.	H. L. Jenkins	„	His Majesty's Ship ...	„ 2.8.27 to 21.11.27	31.1.28
Ixion	Reed, G. C.	C. W. A. Murphy	No. A.	A. Holt	Form 911 7.6.28 to 23.6.28	3.7.28
Javanese Prince ...	Marshall, F.	W. Venn	„ A.	Prince	„ 9.6.28 to 24.6.28	3.7.28
Jervis Bay	Chaplin, W. R. ...	R. W. Laycock	„ M.	Aberdeen Commonwealth.	„ 20.12.27 to 23.4.28... ...	14.5.28
Justin	Bush, H.	G. E. Thomas	„ A.	Booth	„ 28.6.28 to 13.7.28	13.8.28
Kaisar-i-Hind ...	Manley, G.	R. H. Hand	„ M.	P. & O.	„ 14.4.28 to 5.6.28	12.6.28
Kalyan	Cornewall Jones, B.	S. Gerrans	„ M.	P. & O.	„ 18.2.28 to 13.5.28	15.5.28
Kamo Maru ...	Enya, S.	... ...	„ A.	Nippon Yusen Kaisha	„ 20.5.28 to 22.6.28	25.6.28
Kangaroo	Buckeridge, G. ... Kavanagh, J. ... Norris, H. C. ...	E. Hutchinson, J. Kavanagh, H Brackenridge.	M.L.	State Service Australia.	Met. Log. 7.9.27 to 6.3.28	22.5.28
Karapara	Miller, A. C.	J. Small	No. M.	British India... ...	Form 911 6.6.28 to 20.7.28	13.8.28
Kashmir	Mallalue, R., R.D., Lt.-Commr., R.N.R.	W. C. Riley	„ M.	P. & O.	„ 2.6.28 to 21.6.28	17.7.28
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
Kent	Matthews, C.... ...	W. C. Wilkinson	No. A.	Federal...	Form 911 21.12.27 to 24.1.28... ...	31.1.28
Khiva	Stringer, R. H., O.B.E., R.D., Commr., R.N.R.	G. W. Wood, D. Meakle, V. A. Nicolls, A. Robson.	M.L.	P. & O.	Met. Log. 13.10.27 to 14.4.28... ...	23.4.28
Khyber	Hester, C. W., R.D., Commr., R.N.R.	C. S. Pirie	„	P. & O.	„ 16.12.27 to 24.3.28... ...	2.4.28
Knight Companion	Cox, B.T., D.S.O., R.D., Lt. Commr., R.N.R.	J. H. Isherwood, S. R. Evans, G. R. Cheetham.	No. M.	A. Holt	Form 911 19.5.28 to 26.7.28	17.8.28
Koolinda, M.V. ...	Buckeridge, J. ...	... ...	„ M.	State Service, Australia.	„ 27.3.28 to 22.4.28	29.5.28
Kovno	Dossor, W. A. ...	F. Barnard, S. Butcher ...	M.L.	Ellerman Wilson ...	Met. Log. 24.12.27 to 2.7.28	6.7.28
37 *Laconia*	Britten, E. T., R.D., Commr.. R.N.R.	E. W. Connell, A. B. Fasting, J. O. Chambers.	W.T.	Cunard ...	W.T. Reg. 25.6.28 to 15.7.28	19.7.28
					Form 911 24.6.28 to 15.7.28	19.7.28
Laguna	Mander, T.	... ...	No. A.	Pacific S.N. Co. ...	Form 911 21.2.28 to 14.3.28	20.6.28
Lahore	Gordon, L. M., R.D., Commr. R.N.R.	E. B. Elcoate	„ M.	P. & O.	„ 15.5.28 to 29.6.28	12.7.28
Lalande	Hamill, H.	A. E. Warburton	No. A.	Lamport & Holt ...	Form 911 16.2.28 to 13.5.28	29.5.28
Lancashire ...	Crumplin, W. E. ...	R. Allen	„ A.	Bibby	„ 3.6.28 to 11.8.28	14.8.28
36 *Lancastria* ...	Oram, B.B., R.D., Commr., R.N.R.	L. R. Sharp, G. Overton, P. L. Williams.	W.T.	Cunard ...	W.T. Reg. 21.6.28 to 4.7.28	18.7.28
					Form 911 20.6.28 to 7.7.28	18.7.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteoro-logical Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Laomedon	Beswick, W., D.S.C., Lt.-Commr., R.N.R.	H. A. Standfield	No. A.	A. Holt...	Form 911 9.5.28 to 1.7.28	9.7.28
La Paz, M.V. ...	Morgan, D. R. ...	J. W. Richards	„ M.	Pacific S.N. Co. ...	„ 22.6.28 to 9.7.28	28.7.28
55 *Lapland*	Harvey, H.	L. A. Williams, J. Flett, — Bullied	W.T.	Red Star ...	W.T. Reg. 8.7.28 to 27.7.28	30.7.28
					Form 911 8.7.28 to 28.7.28	30.7.28
64 *Laurentic* ...	Trant, E. L., R.D., Commr., R.N.R.	J. W. Peters, E. A. A. Crowley, H. R. Wilkinson.	„	White Star ...	W.T. Reg. 24.6.28 to 13.7.28	18.7.28
					„ 22.7.26 to 10.8.28	14.8.28
					Form 911 23.6.28 to 10.8.28	14.8.28
Lautaro, M.V. ...	Dunn, R. E., O.B.E....	... ...	No. M.	Pacific S.N. Co. ...	„ 24.11.27 to 11.3.28... ...	29.3.28
Leicestershire ...	de Legh, P.	R. S. Evans. H. G. Walton, J. K. Gemmell, D. Burt.	M.L.	Bibby	Met. Log. 24.3.28 to 30.5.28	4.6.28
Leighton, M.V. ...	Lindesay, J. M. ...	... .	No. A.	Lamport & Holt ...	Form 911 1.5.28 to 20.5.28	19.6.28
Leitrim	Robertson, A.... ...	... ...	„ A.	Dowie, J., & Co. ...	„ 15.4.28 to 26.5.28	2.7.28
Limerick	Molyneux, P. L. ...	... ...	„ M.	Federal...	... ...	...
Linaria	Robinson, J. J. ...	... ...	„ A.	J. Robinson	„ 10.3.28 to 11.4.28	31.5.28
Llandaff Castle ...	Gilbert, E. F.... ...	R. Bayer	„ A.	Union Castle	Form 911 19.4.28 to 8.5.28	9.6.28
Llandovery Castle	Kerbey, J. H. ...	C. H. Williams, G. Moon, P. Clissold.	M.L.	„ „	Met. Log. 5.4.28 to 13.6.28	28.6.28
Loch Katrine ...	Buret, T. J. C. ...	R. A. Stenhouse, E. E. Collins.	No. A.	R.M.S.P. Co.	Form 911 1.3.28 to 25.5.28	4.6.28
Logician	Gibbings, W.	... ...	No.	Harrison	... ...	...
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. ...	F. F Feint, J. H. Metcalfe, J. G. Freeman.	M.L.	„ „ ...	Met. Log. 8.1.28 to 31.3.28	14.4.28
Lord Antrim ...	Jarvis, F. E.	... ...	No. A.	Ulster S.S. Co. ...	Form 911 25.6.28 to 8.8.28	13.8.28
Loriga, M.V. ...	Clapham, E. C. ...	D. P. Morgan	„ A.	Pacific S.N. Co. ...	„ 19.4.28 to 2.8.28	7.8.28
Losada, M.V. ...	Ross, J....	D. Beamer	„ M.	„ „ ...	„ 18.6.28 to 7.7.28	14.7.28
Macedonia	Potter, H. W., R.D., Commr., R.N.R.	C. J. L. Hayward	„ M.	P. & O.	„ 2.6.28 to 20.6.28	28.6.28
Macharda	Hanna, R. G.	T. Johnston	„ M.	Brocklebank	„ 14.5.28 to 7.6.28	12.7.28
Mahia	McIntosh, A.... ...	R. James, P. Campbell, J. Jackson.	M.L.	Shaw, Savill & Albion	Met. Log. 25.2.28 to 28.6.28	6.7.28
Mahronda	Addy, M. J.	J. Kettlewell	No. M.	Brocklebank	Form 911 7.5.28 to 13.7.28	17.7.28
Maihar	Charlton, W. L. ...	J. W. B. Robertson, C. Cadwallader, S. S. Slade.	M.L.	„	Met. Log. 27.1.28 to 21.4.28	7.6.28
Maimoa	Johnson, J. W. ...	... ...	„	Shaw, Savill & Albion	„	...
Maimyo	Smith, G. C.	H. M. Drummond	No. A.	Brocklebank	Form 911 5.11.27 to 15.6.28	7.8.28
Maiwara	Blain, A. W.	J. J. Skinner, A. M. Stanton	No. A.	Burns Philp	„ 14.2.28 to 3.3.28	26.4.28
58 *Majestic*	Metcalfe, G. R., Lt.-Commr, R.N.R.	W. W. Pearson, L. Thompson, W. T. Fitz Gerald, A. H. Young.	W.T.	White Star ...	W.T. Reg. 5.7.28 to 17.7.28	19.7.28
					„ 26.7.28 to 9.8.28	13.8.28
Makalla	Maugham, J. W. ...	J. B. Newman	No. M.	Brocklebank	Form 911 12.6.28 to 30.6.28	19.7.28
Makambo ...	Blain, A. W.	R. Perry, R. W. Holmes, T. MacRae.	M.L.	Burns Philp	Met. Log. 20.8.27 to 22.1.28	20.3.28
Makura	Brown, T. M.... ... Spring Brown, J. F....	W. A. Todd, D. Burgess, A. Gell.	„	Canadian-Australasian	„ 26.1.28 to 11.5.28	11.7.28
Malabar, M.V. ...	Donaldson, A. ...	K. Morris	„	Burns, Philp & Co. ...	Met. Log. 28.12.27 to 13.4.28... ...	4.7.28
Malakuta	Adamson, F. L. ...	N. Grayson	No. M.	Brocklebank	Form 911 23.5.28 to 20.6.28	17.7.28
Malancha	Whitham, F.	R. Humble, F. Moore ...	„ M.	„ ...	„ 3.4.28 to 19.6.28	30.6.28
Malda	Gray, T. N.	S. G. James	„ M.	British India ...	„ 30.5.28 to 5.7.28	1.8.28
Maloja	Ohlson, B. J., D.S.O., R.D., Commr. R.N.R.	A. D. Dennis	„ M.	P. & O.	„ 1.6.28 to 21.6.28	17.7.28
Malwa	Norman, W. A. ...	... ...	„ M.	„	„ 18.5.28 to 27.6.28	30.6.28
Mamari	Falconer, H.	B. Rudkin	„ A.	Shaw, Savill & Albion	„ 16.5.28 to 27.6.28	9.7.28
Manchester Brigade	Stott, C. H.	W. S. Eustance	M.L.	Manchester Liners ...	„ 10.1.28 to 18.2.28	23.2.28
Manchester Corporation.	Makin, T.	... ...	No. A.	„ „ ...	„ 10.5.28 to 24.6.28	14.7.28
Manchester Hero ...	Riley, J. E.	H. Anderton, J. H. Emmett, A. W. Hanchett.	M.L.	„ „ ...	Met. Log. 6.9.27 to 18.2.28	23.2.28
Manchester Producer	Struss, F. D.	J. W. Moss	No. A.	„ „ ...	Form 911 16.6.28 to 14.7.28	23.7.28
Manchester Regiment	Foale, J. R.	P. D. Barr	„ A.	„ „ ...	Form 911 4.2.28 to 9.3.28	14.3.28
Manipur	Cochran, G. N. ...	R. Penston, G. B. Falconer ...	No. M.	Brocklebank	„ 6.5.28 to 31.5.28	26.6.28
Manistee	Edwards, A. E. ...	J. D. Patterson, A. Sandham, W. E. A. Duff.	M.L.	Elders & Fyffes ...	Met. Log. 17.6.28 to 20.7.28	9.8.28
Manora	Hudson, H. T., R.D., Commr., R.N.R.	W. H. Cruse	No. M.	British India... ...	Form 911 9.1.28 to 14.3.28	3.4.28
Mantua	Davis, H. C., D.S.C., Commr., R.N.R.	... ...	„ M.	P. & O.	Form 911 13.5.28 to 5.7.28	12.7.28
Marella	Mortimer, S.	A. G. Hill, R. Duddell, A. G. Thomas.	M.L.	Burns Philp	Met. Log. 1.10.27 to 30.1.28	1.6.28
Marengo	Curle, J.	H. Bryan, J. Ford, F. Barnard. S. Butcher.	„	Ellerman Wilson ...	„ 27.3.28 to 30.6.28	6.7.28
Maresfield	Berry, V.	T. Connolly	No. A.	Woods, Tyler & Brown	Form 911 3.5.28 to 19.5.28	9.6.28
Margha	Hughes, C. G... ...	P. Wright, P. B. Moore, W. E. Jones, W. G. Jones.	M.L.	British India... ...	Met. Log. 11.3.28 to 3.6.28	11.6.28
Marquesa	Smiles, R. S.	L. Owen	No. M.	Furness Houlder ...	Form 911 29.4.28 to 4.7.28	12.7.28
Matakana	Thurston, H. P. ...	J. J. Finn, J. Dickson, C. E. Mayer.	M.L.	Shaw, Savill & Albion	Met. Log. 31.3.28 to 7.8.28	10.8.28
Matheran	Ison, W. A.	... ...	No. M.	Brocklebank	Form 911 10.4.28 to 29.4.28	6.6.28
Matiana	Green, F. V.	J. R. Precious	No. M	British India... ...	Form 911 20.12.27 to 12.2.28... ...	20.2.28
Matra	Cornish, N. P. ...	W. Gibson, R. E. Johnson ...	„ M.	Brocklebank	„ 6.4.28 to 20.5.28	25.5.28
Maunganui...	Toten, A. T.	C. R. Carlyon, A. J. Herbert	„ M.	Union S.S. Co. of N.Z	„ 28.4.28 to 7.7.28	23.7.28
	Aldwell, B. M. ...					
32 *Mauretania* ...	McNeil, S.G.S., R.D., Capt. R.N.R.	R. H. Crawford, C. B. Osborne B. J. P. Tuck.	W.T.	Cunard	W.T. Reg. 15.7.28 to 30.7.28	2.8.28
Megantic	Kearney, J.	F. E. Patchett	No. A.	White Star	Form 911 16.7.28 to 2.8.28	13.8.28
22 *Melita*	Stewart, A.	J. Shearer, T. Gillette ...	W.T.	Canadian Pacific	W.T. Reg. 15.7.28 to 1.8.28	7.8.28
					„ 17.6.28 to 7.7.28	13.7.28
Memnon	Dougall, W. T. ...	J. A. C. McGregor	No. A.	A. Holt...	Form 911 29.5.28 to 2.8.28	15.8.28
21 *Metagama* ...	Freer, A., Capt., R.N.R.	A. M. Watt, W. P. Haines, S. Keay.	W.T.	Canadian Pacific ...	W.T. Reg. 25.4.28 to 12.5.28	18.5.28
Middlesex	MacRae, A., D.S.C., Lt.-Commr., R.N.R.	C. Roberts	No. M.	Federal...	Form 911 23.3.28 to 7.5.28	12.5.28
Minna	Mackenzie, G. G. ...	A. M. Campbell	„ A.	Scottish Fishery Brd.	Form 911 23.5.28 to 6.7.28	10.7.28
Minnesota	Finch, E., R. D., Commr. R.N.R.	T. W. Pullen	„ M.	Atlantic Transport...	„ 9.7.28 to 28.7.28	1.8.28
Minnetonka ...	Gates, T. F., C.B.E. ...	H. E. McCartney	„ M.	„ „ ...	„ 15.7.28 to 4.8.28	7.8.28
Minnewaska ...	Claret, F. H., C.B.E., Commr.. R.N.R.	... ...	„ M.	„ „ ...	„ 2.7.28 to 21.7.28	24.7.28
Mirror, C.S. ...	Jones, T., M.B.E. ...	J. G. West	„ M.	Eastern Tel. Co. ...	„ 13.2.28 to 18.3.28	10.4.28
Mississippi	Wylie, J. T. J.... ...	W. M. Shoesmith	No. A.	Atlantic Transport...	Form 911 7.7.28 to 10.8.28	15.8.28
Modasa	Gilchrist, J. W. ...	R. E. T. Parsons	„ M.	British India	„ 18.2.28 to 10.8.28	25.5.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8 28.	Date Received.
Moldavia	Stringer, R.H., O.B.E., R.D.,Commr.R.N.R.	C. B. Holmes	No. M.	P. & O.	Form 911 30.6.28 to 20.7.28	14.8.28
Mongolia	Furlong, G. H. S., R D., Capt., R.N.R..	A. H. Cole	„ M.	„	„ 16.6.28 to 5.7.28	9.8.28
24 *Montcalm* ...	Landy, E.	F. H. Steel, M. Williams, L. Thornton.	W.T.	Canadian Pacific	W.T. Reg. 24.6.28 to 12.7.28	17.7.28
					„ 22.7.28 to 9.8.28	13.8.28
25 *Montclare* ...	Griffiths. J. N. ...	A. Mansey, F. E. Bevis, C. Draper.	„	„ „ ...	„ 8.7.28 to 26.7.28	30.7.28
27 *Montnairn* ...	Dott, J. F.	E. A. Shergold, E. Stephens, W. J. Roberts.	W.T.	Canadian Pacific	W.T. Reg. 22.6.28 to 10.7.28	14.7.28
					„ 26.7.28 to 11.8.28	13.8.28
					Form 911 22.6.28 to 10.8.28	13.8.28
Montoro	Williams, D. J. ...	J. Campbell	M.L.	Burns, Philp & Co. ...	Form 911 31.1.28 to 6.3.28	10.4.28
26 *Montrose* ...	Notley, A. H., R.D., Commr. R.N.R.	J. A. Coldwell	W.T.	Canadian Pacific ...	W.T. Reg. 16.6.28 to 4.7.28	7.7.28
20 *Montroyal* ...	Freer, A.. R.D., Capt., R.N.R.	A. Mackie	„	„ „ ...	„ 12.7.28 to 26.7.28	30.7.28
Moresby ...	Edgell, J. A., O.B.E., Capt., R.N. Henderson, D. A., Commr., R.N.	W. H. Martin	M.L.	His Majesty's Australian Ship.	Met. Log. 29.8.27 to 15.12.27... ...	23.1.28
Morvada	Mills, T. L., O.B.E., R.D., Commr.R.N.R.	H. J. O'Donohoe	No. M.	British India	Form 911 23.5.28 to 18.6.28	21.6.28
Mulbera	Caffyn, F.	J. Rose	„ M.	„	„ 12.6.28 to 16.7.28	28.7.28
Nagara	Foster, E.	C. K. Brown	„ M.	R.M.S.P. Co.	„ 26.8.27 to 21.1.28	26.1.28
Nagoya	Bedwell, L. A. ...	T. A. Sergeant	„ M.	P. & O.	„ 26.3.28 to 3.5.28	19.5.28
Naldera ...	Dayas, C. T. E. ...	C. H. Hand, W. T. Banks, H. M. Askin.	M.L.	„	Met. Log. 10.3.28 to 14.6.28	20.6.28
	Hartley, J. W. ...					
Nardana	Moth, F. L.	S. C. T. Smith	No. M.	British India	Form 911 17.3.28 to 20.4 28	30.4.28
Narkunda	Collyer, R. M. M., R.D., Commr. R.N.R.	J. Biggs	„ M.	P & O.	... ...	...
Nellore	Hignett, A. H., R.D., Lt.-Commr., R.N.R.	A. J. Brown	„ M.	P. & O.	„ 25.5.28 to 14.6.28	12.7.28
Nerbudda	Williams, B. N. ...	J. A. Farley	„ M.	British India	„ 27.5.28 to 14.6.28	23.7.28
Nestor	Houghton, G. K. ...	A. Caird, N. Anderson, R. T. Dryden.	M.L.	A. Holt	Met. Log. 8.1.28 to 13.5.28	24.5.28
Newby Hall	Storey, J. K.	... ...	„	Ellerman	„ 13.10.27 to 21.3.28... ...	20.6.28
	Zeal, R. C.					
Newfoundland	Westgarth, W. A., D.S.C.	R. F. Handley, E. Sainty, E.B.Burke, D.Hetherington.	„	Furness Withy ...	„ 28.2.28 to 23.7.28	28.7.28
	Foxworthy, A. W.					
Niagara ...	Hill, T. V.	R. N. Turner, V. Knight, G. Webb.	„	Canadian-Australasian	„ 4.4.28 to 19.7.28	15.8.28
	Brown, J. S.					
Ningchow	Beale, H. E.	M H. Vincent	No. A.	A. Holt...	Form 911 9.6.28 to 9.7.28	7.8.28
Norfolk	Robinson, F. W. ...	E. M. Foster	„ A.	Federal	„ 14.1.28 to 28.2.28	9.2.28
Norna	Wright, J. W.... ...	T. R. Ness	„ A.	Scottish Fishery Board	„ 21.6.28 to 27.7.28	7.8.28
Norseman, C.S. ...	Douglas, W.	R. W. Greenfield	„ M.	Western Tel. Co. ...	„ 5.5.28 to 12.5.28	12.6.28
Northumberland ...	Upton, H. L., D.S.C., R.D., Lt.-Commr. R.N.R.	A. J. Robertson, A. Weatherall, J. F. Clements.	M.L.	Federal	Met. Log. 30.10.27 to 25.3.28... ...	17.4.28
Nova Scotia ...	Furneaux, S.... ...	A. Hender	No. A	Furness Withy ...	Form 911 12.7.28 to 10.8.28	13.8.28
Nowshera	Rowe, S. N.	W. D. L. Reeves	„ M.	British India	„ 16.4.28 to 24.5.28	29.5.28
Nubian	Watmough, T. M. ...	... ...	„ A.	Leyland	„ 19.8.27 to 30.10.27... ...	11.11.27
Nuddea	Morrison, W. C. ...	... ...	„ M.	British India... ...	„ 4.7.28 to 20.7.28	1.8.28
Oaklands Grange	St. Clair, C., D.S.C. ...	C. F. Foxwell	„ A.	Houlder Bros. ...	Form 911 25.5.28 to 21.6.28	23.7.28
57 *Olympic*	Marshall, W., C.B., D.S.O., R.D., Commodore, R.N.R.	H. J. C. Day, A. E. Weller, W. Crangle.	W.T.	White Star ...	W.T. Reg. 13.7.28 to 26.7.28	30.7.28
					Form 911 13.7.28 to 26.7.28	28.7.28
Orama	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	W. Elliot, C. K. Blake, J. M. M. Swanson.	M.L.	Orient	„ 4.3.28 to 7.6.28	14.6.28
Oranian	Hoskins, W.	.. ..	No. A.	Leyland	„ 11.6.28 to 13.8.28	15.8.28
Orbita	Dominy, R. H., C.B.E Commr., R.N.R.	J. Lloyd Jones	„ M.	R.M.S.P. Co.	„ 8.5.28 to 12.7.28	20.7.28
Orcoma	Pearse, A. W.	W. M. Horsfall, J. N. Laylor, D. L. Jones.	M.L.	Pacific S.N. Co. ...	Met. Log. 21.9.27 to 16.2.28	27.2.28
Orduna	Daniel, T.	R. D. Eckford	No. M.	R.M.S.P. Co.	Form 911 7.4.28 to 18.6.28	21.6.28
Orestes	Flynn, G. A.	R. Martin...	„ A.	A. Holt...	„ 26.3.28 to 29.6.28	10.7.28
Orita	Duncan, E. E. ...	D. W. Hutchinson, H. D. Griffiths.	M.L.	Pacific S.N. Co. ...	Met. Log. 21.12.27 to 24.5.28... ...	4.6.28
Ormonde	Rice, W. V., D.S.O., D.S.C., Commr. R.N.	H. P. Price	.,	His Majesty's Ship ...	„ 30.10.27 to 26.2.28... ...	2.5.28
Ormonde	Sarson, M. J.	... ...	No. A.	Orient	Form 911 8.10.27 to 30.10.27... ...	5.12.27
Oronsay	Shelford, W. S., Lt.-Commr., R.N.R.	... ...	M.L.	„	Met. Log. 5.2.28 to 8.5.28	12.5.28
Oroya	Ridyard, A.	P. H. Ray	No. M.	Pacific S.N. Co. ...	Form 911 22.5.28 to 30.7.28	9.8.28
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. 1.4.28 to 4.7.28	10.7.28
Orvieto	O'Sullevan, F. R. ...	J. G. Goldsworthy, G. L. Carter, T.Fox Russell, C.D.Lane	„	„	., 29.4.28 to 1.8.28	7.8.28
Osterley	Sarson, M. J.	A. F. C. Gray	No. A.	„	Form 911 19.2.28 to 23.5.28	2.6.28
Otaki	McNish, R.	J. McCulloch	„ A.	New Zealand S.S. Co.	„ 30.3.28 to 7.5.28	12.5.28
Otira	Wood, C., D.S.C. ...	S. Winton	„ M.	Shaw, Savill & Albion	„ 22.3.28 to 28.4.28	8.5.28
Otranto	Staunton, H. G., C.B. E., R. D., Commr., R.N.R.	O. C. Davies	„ M.	Orient	„ 29.1.28 to 30.3.28	14.4.28
Oxfordshire ...	Foster, W. L.	... ...	„ A.	Bibby Bros.	„ 19.5.28 to 1.8.28	8.8.28
Pacific Shipper, M.V.	Fairclough, H. ...	... ...	„ A.	Furness Withy ...	„ 27.12.27 to 22.3.28... ...	16.4 28
Pacuare	Sapsworth, S. A. ...	V. R. Watkins	„ A.	Elders & Fyffes ...	„ 17.12.27 to 20.1.28... ...	24.1 28
Pakeha	W. P. Clifton Mogg, Lt.-Commr., R.N.R.	H. C. Smith, G. Almond, G. Lindsay	M.L.	Shaw, Savill & Albion	Met. Log. 20.1.28 to 25.5.28	1.6.28
Pancras	Reynolds, H. B. W....	W. Griffiths, C. C. Veal, J. Nichales.	M.L.	Booth	., 13.12.27 to 14.6.28... ...	25.7.28
Pareora	Evans, J. O.	J. Greenaway	No. A.	Hain S.S. Co.	Form 911 13.1.28 to 11.2.28	10.4.28
Paris	Cook, C. L.	Mr. Biles	C.C.	Southern Rly. ...	Telegraphic Report. 31.7.27 ...	31.7.27
Patia	Makepeace, S. ...	J. D. S. Sloper	No. A.	Elders & Fyffes ...	Form 911 7.7.28 to 12.8.28	14.8.28
Peisander	Slater, H.	H. E. Readslaw	„ A.	A. Holt...	„ 2.6.28 to 12.6.28	21.6.28
Pennland	Doughty, G.	C J. Murray, A. Lewis, J. Mackie.	No.	Red Star	W.T. Reg. 6.5.28 to 22.6.28	26.6.28
Peshawur	Wilding, H. G. ...	J. C. Mellonie. S. H. Baldwin, A. M. Tolfree.	M.L.	P. & O.	Met. Log. 19.11.27 to 25.3.28... ...	11.4 28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Polycarp	Jackson, T. H. ...	G. H. Clark	No. A.	Booth	Form 911 31.3.28 to 21.5.28	9.6.28
Port Adelaide ...	Swan, L. H.	E. N. Rogerson, F. J. Lavers, L. H. Potter.	M.L.	Commonwealth & Dominion.	Met. Log. 3.2.28 to 18.6.28	6.7.28
„ *Albany* ...	Needham, R.	... ...	„	„ „ „	„ 22.1.28 to 4.7.28	11.7.28
„ *Auckland* ...	Durham, R. S., D.S.C	C. F. Post, E. R. Rowlands, H. E. Braine.	„	„ „ „	„ 16.3.28 to 27.7.28	7.8.28
„ *Bowen* ...	Hearn, G. W.	W. R. Johnston	No. A.	„ „ „	Form 911 28.10.27 to 15.12.27 ...	6.1.28
„ *Campbell* ...	Reynolds, P. J. ...	J. G. Thom	„	„ „ „	„ 6.1.28 to 13.5.28 ...	18.5.28
„ *Caroline* ...	Hoad, A. C.	L. M. Bayly, R. Forrest, J. Stannard.	M.L.	„ „ „	Met. Log. 4.12.27 to 31.3.28	30.4.28
„ *Darwin* ...	Sawbridge, I. R. ...	H. Pinkney, E. M. Fenton, S. Moate, J. Dedman.	„	„ „ „	„ 2.3.28 to 30.6.28	20.7.28
„ *Denison* ...	Ferris, J.	E. T. N. Lawrey, G. W. B. Lovegrove, P. J. Howe, L. W. Cady.	„	„ „ „	„ 23.7.27 to 25.2.28	28.2.28
„ *Dunedin*, M.V.	Farmar, F.	E. G. Jones, H. M. Post, N. M. Muzzell.	„	„ „ „	Met. Log. 5.4.28 to 13.7.28	21.7.28
„ *Fremantle*, M.V.	Kearney, F. J. ...	A. G. Rhind	No. A.	„ „ „	Form 911 5.5.28 to 8.6.28	15.6.28
„ *Gisborne*, M.V.	Craven, R.	R. D. Elson	„ A.	„ „ „	„ 28.1.28 to 23.5.28	4.6.28
„ *Hobart* ...	Hayter, S. W.... ...	R. Carter, L. Copeland, G. G. Langford, C. L. Webb.	M.L.	„ „ „	Met. Log. 1.1.28 to 28.4.28	15.5.28
„ *Hunter* ...	Cottell, S. C.	J. C. Goddard, A. McClounan, J. T. Weldin.	„	„ „ „	„ 7.1.28 to 11.5.28	16.5.28
„ *Huon*	Compton, J.	... ...	No. A.	„ „ „	Form 911 20.3.28 to 17.4.28	24.4.28
„ *Melbourne* ...	Hudson, J. J.	A. R. Martin, L. H. B. Bloye, W. E. Simpson.	M.L.	„ „ „	Met. Log. 12.11.27 to 1.4.28	10.4.28
„ *Nicholson* ...	Jack, J.	J. G. Lewis, G. L. H. Dean, A. G. Newbury, W. B. Hopkins.	M.L.	„ „ „	Met. Log. 17.9.27 to 17.1.28	6.2.28
„ *Pirie*	Kippins, T.	W. G. Jones, J. F. Martin, E. O. Round.	„	„ „ „	„ 12.10.27 to 27.3.28... ...	12.4.28
„ *Sydney* ...	Higgs, W. G.	T. L. Kidwell, E. E. Roswell, K. D. Morgan.	„	„ „ „	„ 21.9.27 to 3.3.28	8.3.28
„ *Victor* ...	Williams, R.	R. Stannard, W. B. Craig, C. E. Midwinter.	„	„ „ „	„ 3.2.28 to 9.6.28	27.6.28
„ *Wellington* ...	Jones, C.	D. F. Morgan	No. A.	„ „ „	Form 911 18.4.28 to 23.5.28	23.7.28
President Jackson	Kohlmeister, W.O. ...	J. A. Cartwright	„ A.	Pacific Mail S.S. Co...	„ 5.6.28 to 20.6.28	30.7.28
President Jefferson	Nichols, F. R	C. H. Moen, S. Hansson ...	„ A.	Admiral Oriental Line	„ 5.1.28 to 29.1.28	20.2.28
Protea, H.M.S.A.S.	Dalgliesh, J., Lt.-Commr., S.A.N.S.	A. C. Matson	M.L.	South African Naval Service.	„ 1.2.28 to 10.5.28	12.6.28
Protesilaus	Williams, T. G. ...	... ...	„	A. Holt	Met. Log. 28.9.27 to 16.5.28	21.6.28
Pyrrhus	Elford, W. J.	R. E. Wilks	No. A.	„	Form 911 18.6.28 to 10.8.28	13.8.28
Quiloa	Cave, S.	... ...	No. M.	British India... ...	... ...	...
Ranpura	King, A. M., D.S.C. ...	E. J. Spurling	No. M.	P. & O.	„ 13.6.28 to 26.7.28	2.8.28
Rawalpindi ...	Thornton, E. J. ...	A. G. Stansfield...	„ M.	„	... ...	...
60 *Regina*	Davies, E.	R. S. Walker, J. C. Boyce, R. Conway.	W.T.	White Star - Dominion	„ 15.7.28 to 3.8.28	8.8.28
					W.T. Reg. 15.7.28 to 3.8.28 ...	8.8.28
Reindeer	Pitman, R. R.... ...	... ...	C.C.	G.W. Railway ...	Telegraphic Report 23.2.28	23.2.28
Remuera	Cameron, J. J. ...	H. Horwood	No. A.	New Zealand S.S. Co.	Form 911 17.2.28 to 2.6.28	9.6.28
Rhexenor	Stout, G. I.	A. Yarwood	„ A.	A. Holt...	„ 9.5.28 to 29.5.28	3.7.28
Rhodesian Transport.	Bullock, F. W. H. ...	F. D. Betts	„ A.	Houlder Bros. ...	„ 3.12.27 to 17.3.28	10.4.28
Rimutaka	Hemming, F. A. ...	F. Pretty. H. S. Cashmore, F. Cooke, E. Foster.	M.L.	New Zealand S.S. Co.	Met. Log. 13.4.28 to 10.8.28	16.8.28
Ripley Castle ...	Morgan, A. O., R.D., Commr., R.N.R.	T. E. Wilford	No. A.	Union Castle	Form 911 2.3.28 to 4.5.28	8.5.28
Risaldar	Matthews, E. G. ...	R. H. Friedlander	No. M.	Asiatic S.N. Co. ...	„ 4.11.27 to 19.11.27... ...	12.12.27
Rona...	Wallis, J. A.	W. G. Balharrie	No. M.	Colonial Sugar Refining Co.	„ 8.2.28 to 21.3.28	2.7.28
Rother	Woodhead, T. H. ...	S. Duckels	No. A.	Goole Steam Shipping	„ 15.6.28 to 21.7.28	8.8.28
Rotorua	Hunter, J. L. B. ...	E. Lawrence, L. Griffiths, T. M. Devitt.	M.L.	New Zealand S.S. Co.	Met. Log. 21.1.28 to 8.5.28	23.5.28
Royal Transport ...	Oliver, R. C.	R. Hughes	No. A.	Houlder Bros. ...	Form 911 14.3.28 to 30.5.28	15.6.28
Ruapehu	McKellar, A. W., R.D., Capt., R.N.R.	A. Landles, D. M. Lambert, W.J. Newton.	M.L.	New Zealand S.S. Co.	Met. Log. 19.1.28 to 14.5.28	23.5.28
St. Albans	Smith, G. L., Commr., R.A.N.R.	W. McIntyre, J. Kavanagh, R. L. Harry, B. W. Dun.	„	Eastern and Australian.	„ 30.9.27 to 16.2.28	7.5.28
St. Helier	... ...	C. Bell	C.C.	G.W. Railway ...	Telegraphic Report 17.8.28	17.8.28
St. Julien	Richardson, L. ...	C. W. Sanderson	„	„ „ ...	„ „ 14.8.28	14.8.28
St. Andrew ...	Bearpark, E. W. ...	E. E. Moodie	No. A.	Rankin Gilmour ...	Form 911 21.3.28 to 20.5.28	9.6.28
38 *Samaria*	Malin, R. G., Lieut.-Commr., R.N.R.	C. S. Williams, W. B. Tanner, D. E. Sibson.	W.T.	Cunard	„ 2.7.28 to 21.7.28	26.7.28
					W.T. Reg. 2.7.28 to 21.7.28 ...	26.7.28
Sardinian Prince ...	Brown, J. F.	W. O. Young	No. A.	Prince	Form 911 13.5.28 to 13.6.28	30.6.28
Saxon	Gardner, G. F., O.B.E.	R. May	„ A.	Union-Castle	„ 29.6.28 to 16.7.28	17.7.28
Scholar	Whyte, D. L.	... ...	„ M.	Harrison	„ 11.4.28 to 27.5.28	30.5.28
Scotia	Prichard, S. D., M.B.E.	W. T. Griffith	C.C	L.M. & S. Railway ...	Telegraphic Report 9.8.28	9.8.28
33 *Scythia*	Prothero, W.	R. Sell, G. H. Morris, J. G. Bradley.	W.T.	Cunard	W.T. Reg. 9.7.28 to 28.7.28 ...	3.8.28
					Form 911 7.7.28 to 30.7.28 ...	12.7.28
Sheaf Mount ...	Whitfield, G. A., O.B.E.	A. Macarthur	No. A.	W. A. Souter	„ 25.6.28 to 31.7.28	17.8.28
Sheaf Spear ...	„ „ „	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. Cuming, W. H. Brittain, L. McDermott.	„	Bibby	„ 6.4.28 to 16.6.28	21.6.28
Socrates	Taylor, F. C.	W. E. Jordan	No. A.	Lamport & Holt ...	Form 911 1.10.27 to 21.12.27... ...	27.1.28
Somerset	Howell Price, J. ...	W. Redwood	„ A.	Federal...	„ 17.5.28 to 26.6.28	30.6.28
Spero	Montgomery, H. ...	H. W. Vickers	M.L.	Ellerman Wilson ...	Met. Log. 6.1.28 to 1.7.28	6.7.28
Statesman	Mowat, J.	R. Letten	No. M.	Harrison	Form 911 3.3.28 to 22.6.28	13.7.28
Stephen	Evans, L. G.	N. Caris	No. A.	Booth	„ 18.6.28 to 7.8.28	16.8.28
Stockwell	Smith, W.	R. A. Kneen	„ A.	Brocklebank	„ 8.7.28 to 18.7.28	27.7.28
Surrey	Lamb, C. B.	S. C. Bradley	„ A.	Federal...	„ 26.1.28 to 3.3.28	12.3.28
Suwa Maru ...	Gotoh, M.	... ...	„ A.	Nippon Yusen Kaisha	„ 29.4.28 to 27.5.28	4.6.28
Sylvafield, M.V ...	Biddick, E.	A. M. Tully	„ A.	Hunting & Son ...	„ 18.6.28 to 25.7.28	27.7.28
Tainui	Elford, H. C.	L. J. Hopkins	„ A.	Shaw, Savill & Albion	„ 5.7.28 to 9.8.28	16.8.28
Tahiti	Aldwell, B. M. ...	C. R. Carlyon	„ A.	Union S.S. Co. of N.Z.	„ 16.5.28 to 3.6.28	7.8.28
Taiping	Frame, A. M.	F. Stratford, A. C. Kennedy, R. Bargent.	M.L.	Yuill & Co.	Met. Log. 15.11.27 to 9.4.28	23.6.28
Talthybius	Wilson, R. J.	... ...	No. A.	A. Holt	Form 911 23.5.28 to 4.6.28	21.6.28
Tamaroa	Hartman, W. H. ...	F. W. Lutyens	„ M.	Shaw, Savill & Albion	9.6.28 to 15.7.28	19.7.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 17.8.28.	Date Received.
Tanda	Pilcher, E. T., Lieut.-Commr., R.N.R.	G. C. Smith, H. Munday, J. W. Kavanagh, R. Millington.	M.L.	E. & A. S.S. Co. ...	Met. Log 2.9.27 to 31.1.28	3.4.28
Taranaki	Kershaw, W. A. R. ...	... ...	„	Shaw, Savill & Albion	... ...	...
Tarantia	Munro, D., R.D., Commr. R.N.R.	A. Morrice	No. A.	Anchor	Form 911 2.5.28 to 5.7.28	14.7.28
Teiresias	Wilkinson, W. H. ...	R. Singleton	„ A.	A. Holt & Co.	„ 3.5.28 to 7.7.28	18.7.28
Tekoa	Barnett. H.	A. W. Marshall	„ M.	New Zealand S.S. Co.	„ 28.5.28 to 25.6.28	2.8.28
Telamon	Willcox, J. H.... ...	F. A. Brown	„ A.	A. Holt	„ 4.6.28 to 9.7.28	14.7.28
Tetela	Brice, E. H.	E. Swale	„ A.	Elders & Fyffes ...	„ 16.6.28 to 22.7.28	27.7.28
Teucer	Dodds, R.	J. M. Kirk	„ A.	A. Holt	„ 24.4.28 to 26.6.28	14.7.28
Themistocles ...	Young, A. D.	H. C. Howe	„ M.	Aberdeen	„ 4.2.28 to 22.2.28	16.4.28
Theseus	Jones, E.	W. A. Fyffe	„ A.	A. Holt	„ 25.6.28 to 10.7.28	13.8.28
Titan	Power, J. J.	G. W. Best, P. Cross, R. A. Shennan.	M.L.	„	Met. Log. 4.3.28 to 15.7.28	18.7.28
Tongariro	Burton Davies, J. ...	E. A. Burton, A. E. Williams, E. A. Quick, D. Baldwin.	„	New Zealand S.S. Co.	Form 911 4.3.28 to 27.6.28	2.7.28
Transylvania ...	Bone, D. W.	P. Middleton	No. A	Anchor	„ 8.7.28 to 26.7.28	27.7.28
Traveller	Worthington, B. ...	W. G. Ellis	„ M.	T. & J. Harrison ...	„ 28.4.28 to 28.7.28	2.8.28
Trefusis	Cordy, C.	... ...	„ A.	Hain S.S. Co.	„ 14.6.28 to 7.8.28	8.8.28
Trematon	Evans, B.	J. Jenkyn, C. Warren, R. Kitson.	M.L.	Hain S.S. Co.	Met. Log. 25.1.28 to 5.5.28	11.5.28
Turakina	Hamilton, F. S. ...	J. D. B. Fisher	No. M.	New Zealand S.S. Co.	Form 911 5.6.28 to 24.6.28	14.7.28
11 *Tuscania*	Rome, W.	... ...	W.T.	Anchor	W.T. Reg. 4.6.28 to 23.6.28	28.6.28
					Form 911 3.6.28 to 24.6.28	28.6.28
Tyndareus	Christie, W.	A. F. Barclay, T. R. Phillips. F. H. Gray.	M.L.	A. Holt	Met. Log. 29.11.27 to 23.4.28... ...	1.6.28
Ulimaroa	Wylie, W. J.	A. N. Robertson	No. M.	Huddart Parker, Ltd.	Form 911 3.2.28 to 27.2.28	11.4.28
Ulysses	Owen, R. D., O.B.E....	W. E. Ford	„ A.	A. Holt	„ 20.5.28 to 8.6.28	19.6.28
Umvolosi	Barnes, E. W.... ...	R. Dyns	„ A.	Bullard King	„ 23.6.28 to 12.7.8	7.8.28
Valacia	Inch, F....	... ...	„ M.	Cunard	„ 26.3.28 to 13.5.28	17.5.28
Vardulia	Fear, E. T. C.... ...	W. H. Barker	„ A.	„	„ 17.6.28 to 30.6.28	20.7.28
Vigilant	Simpson, E. S. S. ...	J. Hunter	„ A.	Scottish Fishery Board.	„ 1.7.28 to 31.7.28	3.8.28
Waiotapu	Todd, D.	A. J. McKenzie	„ M.	Canadian - Australasian.	„ 7.5.28 to 3.6.28	23.7.28
Wairuna	Creese, A. W.... ...	J. E. Broughton, R. Tulloch, J. Ritchie.	M.L.	Union S.S. Co. of N.Z.	Met. Log. 4.2.28 to 22.5.28	8.8.28
Walmer Castle ...	Jackson, C. R. ...	... ...	No. A.	Union Castle	Form 911 8.6.28 to 29.7.28	31.7.28
Wangaratta ...	Scutt, W.	T. W. Wordingham, S. R. Millard, A. G. Brooks, M. Harvey.	M.L.	British India	Met. Log. 2.10.27 to 29.2.28	2.3.28
Warfield	Steel, R.	... ...	No. A.	„ „	Form 911 11.5.28 to 27.6.28	17.7.28
War Nizam ...	Moncrieff, T.	F. J. Marshall	„ M.	British Tankers ...	„ 5.5.28 to 11.6.28	26.6.28
Westmoreland ...	Gardner, H. W. ...	G. A. Shepherd, K. S. Phillips, R. L. Warren.	M.L.	Federal...	Met. Log. 22.1.28 to 2.6.28	7.6.28
William Scoresby, R.S.S.	De la Motte, J. B. B., Lieut., R.N.	... ...	„	Falkland Islands Government.	... ...	...
Windsor Castle ...	Chave, Sir B., K.B.E.	A. J. Tweddell, J. Montgomery, P. G. McIver, A. G. Bedwell.	„	Union Castle	„ 15.10.27 to 5.2.28	15.2.28
Winifredian ...	Harrocks W.	A. Crone	No. M.	Leyland	Form 911 30.10.27 to 22.12.27 ...	6.1.28
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Zent	Roberts, H.	J. B. Wookey	No. A.	Elders & Fyffes ...	Form 911 10.6.28 to 14.7.28	18.7.28
Conway, H.M.S ...	Richardson, F. A., D.S.C., Commr., R.N.	The Senior Cadets	Cadets' M.L.	... ...	Cadets' Met. Log. 6.5.28 to 27.7.28...	2.8.28
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Cay Lobos	... ...	„	„	... ...	Lighthouse Register 1.1.27 to 11.7.27	29.9.27
Double Headed Shot	... ...	„	„	... ...	Lighthouse Register 4.9.27 to 29.2.28	24.4.28
Inagua	... ...	„	„	... ...	Lighthouse Register 4.7.27 to 13.1.28	24.4.28
Sombrero	... ...	„	„	... ...	Lighthouse Register 1.1.28 to 30.6.28	17.8.28
Watling Island ...	... ...	„	„	... ...	Lighthouse Register 21.7.27 to 31.12.27	24.4.28
Cape Pembroke ... (Falkland Is.).	... ...	„	„	... ...	Lighthouse Register 1.7.27 to 31.12.27	21.2.28

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Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., received up to 31.7.28.	Date Received.
Antillian	Hannaford, W.	J. L. Crighton	Leyland	Water Samples	30.7.28
Dakotian	Robb, J.	W. F. Sloan	„	„ „	30.6.28
Darro	Matthews, G. P.	J. Clark	R.M.S.P. Co.	„ „	12.7.28
Deseado	Hannan, F. S....	J. G. Scott	„	„ „	26.7.28
Hildebrand...	Peregrine, D....	E. Jones	Booth	„ „	5.7.28
Oranian	Hoskins, W.	J. L, McLaren	Leyland	„ „	4.6.28

October, M.O., 1928.

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MARINE METEOROLOGY, ATLASES, BOOKS 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) :—

Meteorological Charts of the North Atlantic for each month of the year, giving normals of Pressure, Air and Sea Surface Temperature and Ocean Currents, with Frequencies of Winds, also Ice Limits. (No. 149A, 1923) 1*s.* each (35 × 22½ in.). Sold by J. D. Potter, 145, Minories, E.1.

Synchronous Weather Charts of the North Atlantic and the adjacent Continents, 1st August, 1882, to 3rd September, 1883. Parts I to IV (33 sheets each). (No. 71, 1886) 17*s. each* Part. (26 × 22 in.)

Charts of Meteorological Data for Square 3, Lat. 0°-10° N., Long. 20°-30° W. (20 × 13½ in.) and Remarks to accompany the Monthly Charts, which show the Best Routes across the Equator for each Month, &c. (17 × 16½ in.) (No. 20, 1874). 20*s.*

Discussion of the Meteorology of that Part of the Atlantic lying North of 30° N., for the eleven days ending 8th February, 1870. With Charts (No. 13, 1872). 5*s.* (4to.)

ATLANTIC (SOUTH) :—

Wind Charts for the Coastal Regions of South America, from information collated and prepared in the Meteorological Office. (No. 159, 1902.) (27 × 20½ in.) (Published by the Admiralty.)

The relation between Pressure, Temperature, and Air Circulation over the South Atlantic Ocean. By M. W. Campbell Hepworth, C.B., Commander R.N.R., Marine Superintendent. (No. 177, Second Edition, 1917.) 1*s.* (8vo.)

BAFFIN BAY AND DAVIS STRAIT :—

Monthly Meteorological Charts of Baffin Bay and Davis Strait. (No. 221, 1917.) 8*s.* (30 × 25½ in.)

INDIAN OCEAN :—

Meteorological Charts of the East Indian Seas for each month of the year, giving Normals of Pressure, Air and Sea Temperatures and Ocean Currents, with Frequencies of Winds. (No. 181A, 1923.) 1*s* each. (35 × 22½ in.) Sold by J. D. Potter, 145, Minories, E.1.

CHARTS :—*continued.*

INDIAN OCEAN :—*continued.*

Monthly Current Charts for the Indian Ocean, from information collated and prepared in the Meteorological Office. (No. 124, 1896.) (20 × 24½ in.) (Published by the Admiralty.)

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Atlas of Normal Monthly Values of the Meteorological Elements for the Mediterranean Sea and adjacent Lands. (No. 224, 1917.) 6*s.* (22½ × 17 in.)

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