

VOL. VI. No. 62.

THE MARINE OBSERVER.

FEBRUARY, 1929.

TABLE OF PRINCIPAL CONTENTS.

	PAGE		PAGE
Currents, Floating Ice and Weather Conditions along the Tracks from the Latitude of the Plate to Cape Horn ...	27	Weather Signals, Great Britain and Ireland:—	
British Weather Signals	28	"Weather Shipping" Bulletin	45
The Marine Observer's Log (with illustrations)	28	Wireless Gale Warnings	47
Old Time Marine Observer's Log (with illustrations)	35	Visual Gale Warnings	48
Commodore Sir JAMES CHARLES	38	Lithographic Illustrations after page 50:—	
Sudden Gale, Eastern North Atlantic, February, 1928	40	Weather Charts VI to X, Eastern North Atlantic, February 23rd to 25th, 1928.	
Local Winds, Mediterranean and Black Sea	41	Currents on the Tracks from the Latitude of the Plate to Magellan Straits and Cape Horn, February, March and April.	
Southern Ice Reports during the years 1917 to 1928—			
February	43		

CURRENTS, FLOATING ICE AND WEATHER CONDITIONS ALONG THE TRACKS FROM THE LATITUDE OF THE PLATE TO CAPE HORN.

In this number the Charts for February to April of Currents along these tracks appear, also a table giving all Ice reported in February for Southern Waters since 1917. In the January number the Ice Chart of the Southern Ocean for the same quarter was published, and we asked the Captains of ships who have used these routes to send in remarks based upon their experience after they have seen this Chart. They are now reminded of this request, for if full use is to be made of their knowledge and experience in the general interest of navigation and meteorology it is essential that we should have the benefit of their remarks as soon as possible so that the results obtained from the data extracted from Meteorological Logs and Reports may be reconciled with practical experience.

In the August number last year the report of a ship which hit an iceberg in this region was given, and in the September number we made suggestions with a view to improvement in the dissemination of information of Ice on the trade routes of the Southern Ocean by Selected Ships.

This year by charting the currents along these tracks, ice in Southern Latitudes, investigating the conditions, and publishing the results in THE MARINE OBSERVER we may be able to help in taking the matter of an Ice Warning Service in the South a step further.

Those ships whose officers have been members of the Corps of Marine Observers for some time who are fortunate enough to have on board Atlases of Wind Charts of the South Atlantic or The Wind

Charts of the Coastal regions of South America, both compiled under the supervision of Captain CAMPBELL HEPWORTH, now out of print, which before the days of THE MARINE OBSERVER were used as presentations, will do well to consider the influence of the winds which the Bailey Wind Roses so clearly indicate and the conditions of fog with certain winds shown by remarks.

In studying the Currents charted due regard must be given to the number of observations upon which the arrows and roses are based, for instance the arrow showing 29.7 miles per day off the mouth of the Plate in the area Latitude 38° to 36° S., Longitude 50° to 54° W., is calculated from 3 observations only. Examination of the table of maximum drifts indicates that one of these observations was a set and drift at the rate of S.27° W., 79 miles per day, so that it may be readily seen that even these three observations were of great variety. The resultant arrow is the best we can give, but it and all arrows calculated from so few observations must be considered with due caution.

Only when we have received the considered views of Commanders based on their experience, have completed the Charts for all four quarters and examined previously published information shall we be in a position to draw conclusions and possibly publish information which may be of assistance in the safe navigation of this region where floating ice and fog are bugbears probably closely related to the Current.

BRITISH WEATHER SIGNALS.

Since the forecasts of the British "Weather Shipping" Bulletin were broadcast by word of mouth through the British Broadcasting Corporation's Radio Telephony Station they have reached millions of listeners-in ashore as well as afloat; and as might be expected when a message specially framed for seamen is received by landmen there have been questions as to meaning of terms. Perhaps the most frequent question is, what is meant by Forties? Even some deep sea seamen who have not navigated the North Sea have asked this. Forties is short for Long Forties, which as every North Sea navigator knows is the northern part of the North Sea bank of soundings within the fifty fathom line. The name Forties is therefore given to this district for weather forecasting.

It took a long time to decide upon the present plan of this bulletin, as will be remembered. For some years a message for the Western Seaboard only was broadcast, and many requests were made that similar information should be issued for the North Sea.

Ultimately the weight of these requests prevailed. At first a plan which differs little from that in use now was drawn up, the districts being named by letter. This did not seem very clear, and we harked back to the early days of the Great War, when much time and trouble was spent in making instructions and orders for the skippers of the Auxiliary Patrol as clear and simple as possible.

The plan of the "Weather Shipping" Bulletin had to be as simple and clear as possible to serve the purposes of the navigator of every type of vessel.

In those bad old days of War it was our duty to run a large flotilla of Drifters in the North Channel and to put a stop on enemy submarines from passing into the Irish Sea. To do this a programme had to be worked to keep sufficient drifters on patrol, and sufficient with anti-submarine nets in place and to ensure that their

distribution over the area was constantly changed. To ensure such arrangements the patrol area and net area were divided into small districts, each district being named after an island within it or a Cape or a County bounding it, so that the skippers could not mistake the time and place in which they were ordered to perform their operations.

There are a number of Agents and Marine Observers who as Lieutenants R.N.R. in charge of sections of Drifters conducted these operations, and there must be many skippers on the fishing grounds who executed their orders.

This plan, which had worked so well in orders for the disposal of Indicator net drifters at certain times, suggested the plan which is now used in the British "Weather Shipping" Bulletin, and the districts are named after Islands, rivers or banks within them so that they may be readily memorised. On pages 45-7 a full description of the Bulletin will be found with a Chart showing not only the districts, but the three Forecast areas of which the districts are subdivisions, and what is of importance to all educated seamen, the stations for which observations are given.

All are asked to help in making known the plan on which this Bulletin is made, the uses to which the information in it may be put, and to emphasize the importance of the Gale Warning Signals. Agents and Marine Observers can help in promoting safety of life at sea in enlightening their brethren in small craft in the Laws of Storms and the principles upon which British Weather Signals are made, and they are earnestly invited to help us encourage the more general use of Wireless Weather Signals throughout the British Merchant Navy and Fishing Fleets.

London,
November 10th, 1928.

MARINE SUPERINTENDENT.

THE MARINE OBSERVER'S LOG.

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

ICE ISLAND.

Southern Ocean.

THE following is an extract from an ice report of R.R.S. *Discovery*, Commander J. R. STENHOUSE, D.S.O., D.S.C., O.B.E., R.D., R.N.R., on research work in Southern Waters, Observers Lieutenant Commander J. M. CHAPLIN, R.N., Messrs. T. W. GOODCHILD and C. SANDERSON.

"February 22nd, 1927, 0400 to 2000 between Latitude 60° 53' S., Longitude 50° 05' W. and Latitude 60° 51' S., Longitude 51° 02' W. Observed Ice Island, Bergs, Growlers and small ice. Ten large tabular bergs were sighted during early part of morning watch. At 0445 an enormous tabular berg or Ice Island was sighted ahead; course was altered to pass north of the berg, as it extended beyond our southern horizon. 0655 passed the north-east corner of berg. Soundings were taken close to the northern side of the berg, in 1373 fathoms and 1011 fathoms, 12 and 13 miles, respectively, from the north-east corner. Between these soundings a net being towed with 984 fathoms of wire out took the bottom in a depth estimated at 600 fathoms. Ship steamed on straight course throughout day until 2000, when north-west corner of berg was passed.

"Length of Berg (by log), 35 miles.

"Height, average (by sextant), 150 feet.

"Northern side trended W.N.W. to E.S.E. No limits to this berg could be seen to the southward. A berg 150 feet high would ground in about 150 fathoms. During the day 4 large tabular bergs were sighted to the northward. Many growlers and much small ice had drifted off the ice island. After clearing the ice island, many large bergs and strong ice blink were seen to the westward. Course was altered to clear ice, and ship proceeded under easy steam until daylight. Weather calm, clear and fine."

DRIFT OF A BUOY.

Indian Ocean.

THE following is an extract from a letter received from Captain R. SARGENT, Port Captain at Mombasa.

"The Nahotha (Skipper) of a native Dhow reported recently that on the 6th February (last month) he picked up a life buoy in 'Owyombo Creek.' He brought the buoy to the Mombasa Port Office, when reporting his arrival, and upon examination it was found to bear the words 'Orama Barrow.' It is white painted, with part of its covering worn away, but the name of the ship and port, although faded, are quite discernible.

"'Owyombo Creek' is shown on Admiralty Chart No. 1389 (Formosa Bay to Chale Point) as 'Owyombo River,' and is situated between the small ports of Malindi and Kilifi. Several similar Creeks are shown as rivers, but are in reality salt water creeks. As far as I can ascertain, the buoy was picked up amongst the mangroves in Latitude 3° 23' S., Longitude 39° 58' E."

NOTE.—This buoy was lost overboard from R.M.S. *Orama* on December 11th, 1926, in Latitude 20° 03' S., Longitude 104° 00' E. The course and distance between these positions is N.75° W., 3,917 miles, so that the buoy could not have drifted less than 9.28 miles a day.

CURRENT OFF CAPE OTWAY.

Victoria, Australia.

THE following is an extract from the Meteorological Log of S.S. *Pakeha*, Captain W. P. CLIFTON-MOGG, London to Australia via Cape of Good Hope, Observer Mr. H. C. SMITH, 2nd Officer.

“ February 27th, 1928. When approaching Cape Otway a strong current was experienced, which could in thick weather, if not allowed for, become a source of danger. Stellar observations at 5.01 a.m. placed the ship in Latitude 41° 04' S., Longitude 138° 42'.5 E. At 10.19 a.m. another position was obtained by simultaneous altitudes of Sun and Venus, placing ship in Latitude 46° 26'.5 S., Longitude 140° 09' E. Current from 'a.m. Stars,' Nil. At 7.02 p.m. Stellar observations placed the ship in Latitude 39° 24' S., Longitude 142° 05'.5 E., a current setting 289°, 12.6 miles having been experienced since 10.19 a.m. The clock had been advanced twenty minutes in the interval, therefore the mean velocity of the current was 1.5 knots. A vessel steering for Cape Otway from Southward experiencing this current would, unless it were allowed for, tend to make the land in the vicinity of Moonlight Head. From 'p.m. Stars' to a position abeam of Cape Otway, distant 4 miles, the current was found to have set 283°, 3 miles.

NOTE.—This experience is another of many which have been brought to notice, which illustrate the value to safe navigation of reports of set and drift of current observed by selected ships, being included in their Wireless Weather reports to “All Ships.” See Chapter VIII WIRELESS AND WEATHER AN AID TO NAVIGATION.

CURRENT RIPS.

Approaching Cape Town.

THE following is an extract from the Meteorological Log of S.S. *Pakeha*, Captain W. P. CLIFTON-MOGG, London to Melbourne via Cape of Good Hope, Observer Mr. H. C. SMITH, 2nd Officer.

“ February 9th, 1928, 1.25 p.m. Zone Time in Latitude 32° 15' S., Longitude 16° 25' E., heavy overfalls were observed extending across ship's course. As the ship passed through them, it was apparent that the overfalls were caused by two bodies of water meeting. The sea took on a faint yellowish tinge, while the surface temperature dropped from 67°.5 to 63°, the specific gravity remaining the same. The wind at the time was S.S.E., force 3. The line of demarkation as shown by the overfalls was very distinct, crossing the ship's course in a S.W. direction, then turning sharply to S.S.E., maintaining that direction for about 3 miles, finally turning again to S.S.W.

“ The noon position was obtained by simultaneous altitudes of Sun and Venus: the current experienced from Noon to a stellar position at 7.0 p.m. was 014°, 0.57 knots. From 'Stars' to a position off Cape Town at 0.54 a.m., February 10th, 344°, 1.06 knots, thence to position abeam Cape Point, distant 5 miles, no current. The surface temperature rose to 67° immediately after rounding the Cape. Wind S.S.E'ly, force 3-4.”

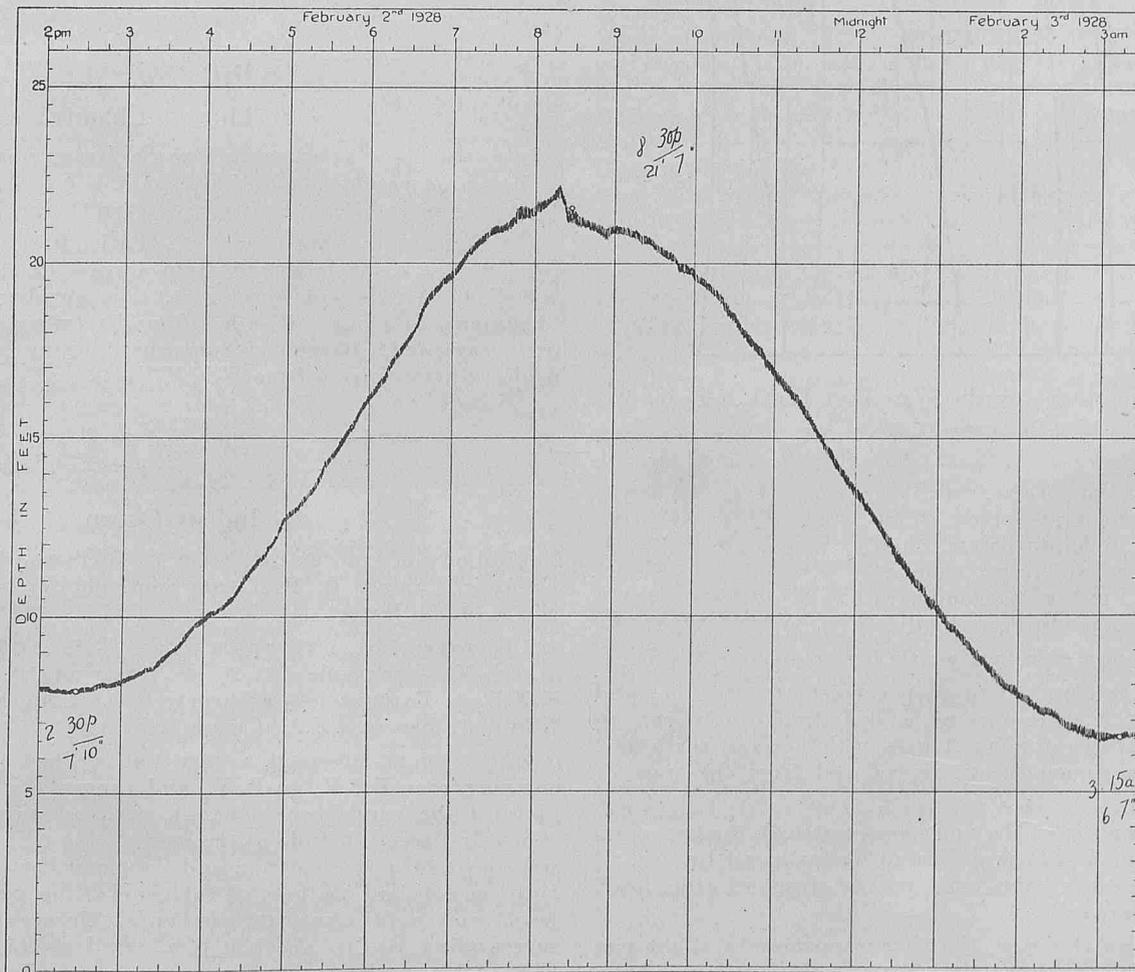
SUDDEN DROP IN THE TIDAL LEVEL.

Newhaven, Sussex.

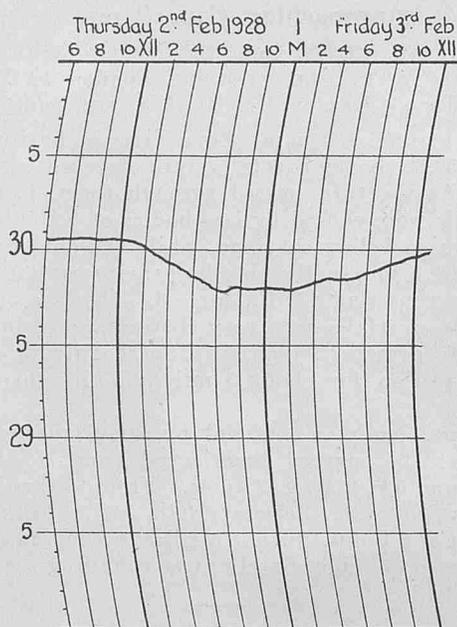
THE following information provided by Mr. R. W. DEWDNEY, Manager of the Southern Railway Steamship Department, Newhaven, will be of interest in light of information given in recent numbers of this journal concerning abnormal tidal heights during gales on the British Coasts.

“ Near the top of high water at about 8.20 p.m. on February 2nd, 1928, the Automatic Tide Gauge by BAILEY at West Pier, Newhaven, showed a sudden drop in the tidal level. The barograph in the Manager's Office showed a sudden rise of the barometer at about the same time, and the Anemometer above the Office also showed a sudden decrease of wind.

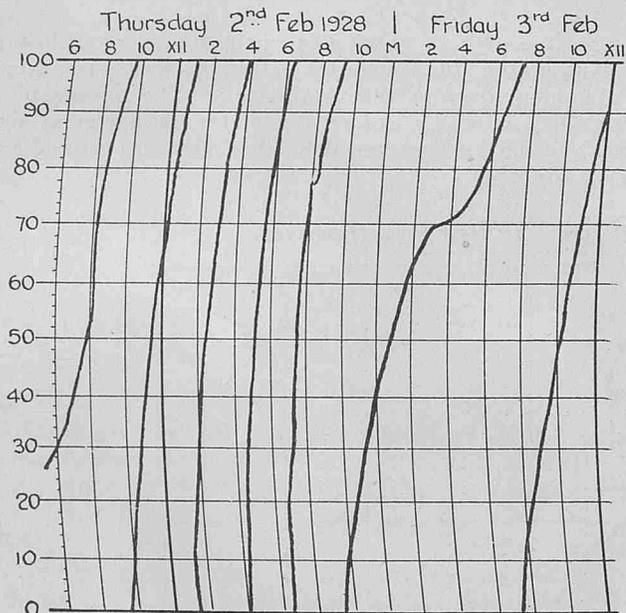
Copy of Portion of Sir W. H. Bailey's Water Level Recorder at West Pier, Newhaven.



Copy of Portion of Barogram at the Manager's Office, Newhaven.



Copy of Portion of Trace from Anemometer above the Manager's Office, Newhaven.



"According to the log kept by the West Pier Light Keeper, Mr. HOBGEN, the wind was as follows:—

February 2nd, 1928.

4 a.m.	N.W.	Light breeze, fine.
8 a.m.	W.S.W.	Moderate breeze, fine.
Noon	S.W.	Moderate breeze, cloudy.
4 p.m.	S.W.	Fresh breeze, cloudy.
8 p.m.	S.W.	Fresh gale, cloudy, rain.
Midt.	West.	Light breeze, cloudy.

The wind dropped from a gale to a gentle breeze about 8.20 p.m.

"The tide gauge was observed to show correct at 8.20 p.m., and when the wind dropped there was a decided drop of the pen on chart indicating a decrease of about 1 foot in the level of the water.

"The accompanying diagrams are reproduced from the trace of the three instruments."

NOTE.—From examination of the anemometer record, the barogram and the daily weather map, it is indicated that a small line squall passed over the Station at the time of the drop in tide level, recorded on the tide gauge.

At about 8.20 p.m. on this day, the barogram shows a slight rise and the anemogram at the same time shows a lull followed by a

violent gust, conditions which are associated with the passage of line squalls.

This sudden drop in tidal level cannot be accounted for by the sudden small increase of atmospheric pressure, and apart from other unknown factors it would appear to be the result of wind changes.

PHOSPHORESCENCE.

Mediterranean.

THE following is an extract from the Meteorological Log of C.S. *Colonia*, Commander G. F. CARLTON, O.B.E., R.N.R., Malta to London, Observer Lieutenant W. E. ALLEN, R.N.R.

"16th February, 1928, Latitude 36° 25' N., Longitude 3° 15' W., Midnight to 4 a.m. Light W.S.W. airs, smooth sea, no swell. Sea Water Temperature 58°.

"During the Midnight to 4 a.m. watch, the *Colonia* passed through numerous areas of water which, when disturbed by the ship's bow wave, exhibited phosphorescence. The peculiarity about this phenomenon was the fact that only where the water was actually broken by the bow wave was phosphorescence visible, and it then appeared as a thin bluish white line where the bow wave curved over, broke and met the water. There was no sign of phosphorescence in the disturbed water alongside the hull or around the propellers.

"Whatever the cause of this phenomenon it certainly appeared that it was only through the mechanical shock of breaking water that the phosphorescence was produced.

"The areas over which this spectacle was seen varied from a few feet to a quarter of a mile as measured along the ship's course, and were very irregular in distribution.

"There were no indications on the surface of the sea when the ship was approaching any of these areas, the only sign being the gradual appearance of the phosphorescence on the falling crest of the bow wave which would gain a brightness until it presented a striking appearance and then gradually disappear."

WIND SQUALL.

In Florida Channel.

THE following is an extract from the Meteorological Report of S.S. *Orbita*, Commander R. H. DOMINY, C.B.E., R.N.R., Vigo to West Indies, Observer M. J. LLOYD JONES, 3rd Officer.

"10 a.m., 18th February, 1928, Latitude 26° 00' N., Longitude 79° 10' W. Wind increased from force 5 to 12 and veered from S.S.W. to W.N.W. Barometer 29.94 in. steady. Spume from wave tops blown to a high altitude. Squall terminated at 10.12 a.m. and little rain fell. Barometer commenced rising steadily after, wind moderating to force 5 from W.N.W."

SQUALL.

Indian Ocean.

THE following is an extract from the Meteorological Report of S.S. *Kashmir*, Captain R. MALLALUE, Southampton to Colombo, Observer Mr. A. J. MCHATTIE, 4th Officer.

"February 2nd, 1928, at 7.0 p.m. A.T.S. (1415 GMT) in Latitude 8° 00' N., Longitude 74° 20' E., steering 100°, 14 knots: Wind N.N.E. 2: Barometer 29.86" (corrected): Temperature 83° F. Swell N.byW.3: Sea N.N.E.2. Clouds A-St and St-Cu. amount 8.

"At 7.0 p.m. observed a very well defined line squall covering horizon from E.S.E. to S.W. and approaching from the S.E. (against the wind then blowing), with occasional vivid lightning. When first seen, altitude of the base of this very heavy nimbus cloud was about 10° above horizon, and the cloud itself about 10° in depth, both the top and the base of the cloud being perfectly straight and level, and very clear-cut; the ends, however, merging into the surrounding St-Cu. At 7.20 p.m. wind shifted very suddenly to S.E., force 3, the barometer remaining steady. At 7.27 p.m. the

cloud passed over the ship, the temperature falling 1°; (barometer steady) and light rain falling after the cloud had passed. At 7.35 p.m. the wind backed to E.byS., force 2, with light rain: clouds, stratus, 8-9, and the last of the nimbus cloud visible to the N.W. By 7.50, the rain had ceased, the clouds were A-St: St-Cu: and St. 9; and the wind E.byS., force 1.

"Throughout the passage of the cloud from S.E. to N.W. the barometer remained unaffected."

SQUALL AND DUSTFALL.

In the N.E. Atlantic Trade.

THE following is an extract from the Meteorological Report of S.S. *Clan Macbeth*, Captain Q. C. PAGAN, Cape Town to Liverpool via Las Palmas, Observer Mr. T. A. WATKINSON, 2nd Officer.

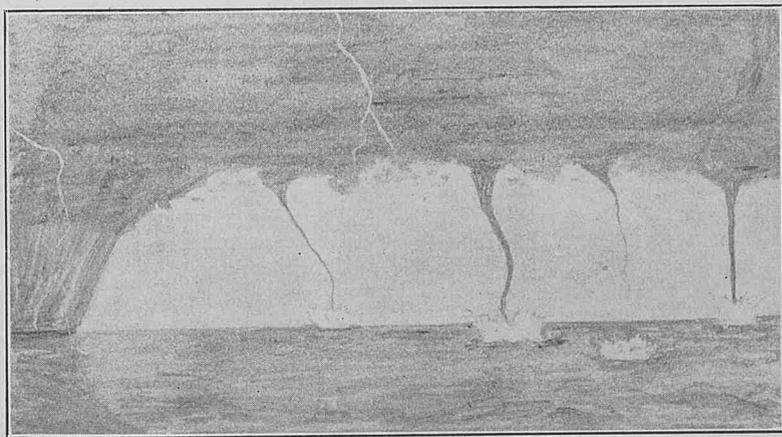
"At 11.50 p.m. A.T.S., February 20th, 1928. Position Latitude 29° 28' N., Longitude 15° 00' W. Weather, wind N.E., force 4. Overcast and gloomy. Barometer uncorrected 29.86 in. steady, temperature of air 65°, wind suddenly veered to E.S.E. and blew a fierce squall, force 10, till 00.42 a.m. February 21st (52 mins). During the squall the air was charged with fine particles of red sand sore to the eyes and causing a considerable haze. The temperature of the air during the squall rose from 65° F. to 72° F. (7°) and fell when the squall passed over to 64° F., the wind then having backed and settled down to E.N.E., force 7."

NOTE.—This dustfall occurred at the extreme North of the area over which dustfall has been observed, as shown in the chart in THE MARINE OBSERVER, Vol. V, No. 53, page 98.

SQUALL AND WATERSPOUTS.

East Indies.

THE following is an extract from the Meteorological Log of S.S. *Gascoyne*, Captain L. JOHNSON, Sourabaya to Kupang (Timor), Observer Mr. S. L. R. SIMPSON, 2nd Officer.



"February 1st, 1928, 4.30 p.m. in Latitude 7° 29' S., Longitude 113° 20' E. (Madura Strait), observed Line Squall right ahead and stretching from horizon to horizon, possessing the usual characteristic features—wind-torn under-edge, and comparatively clear sky (except for fracto-nimbus) beneath the band of nimbus. As the ship approached the squall, we experienced heavy falls of rain, although most of this passed away to the lee (port) side. The wind was vacillating from N.E. to E.S.E. and back again. Barometer 1008.1 mb., Dry bulb 81°.3, Wet bulb 77°.0, Sea smooth.

"From the under edge of the heavy bank of nimbus several tentacles of cloud were observed to form rapidly, acquiring the usual thin funnel shape, and reaching down to the usual sympathetic sea disturbance characteristic of waterspouts.

"Three particularly well-formed spouts and several incipient and uncompleted efforts were observed, the largest at considerably under a mile from the ship (see rough sketch).

"The motion was distinctly clockwise, and the agitation of the sea surface very great. The entire nimbus bank passed gradually astern, discharging heavy rain and very violent lightning and thunder, the waterspouts disintegrating gradually."

WATERSPOUT.

Mediterranean.

THE following is an extract from the Meteorological Log of S.S. *Llandoverly Castle*, Captain J. H. KERBEY, Port Said to Genoa, Observer Lieutenant C. H. WILLIAMS, R.N.R., 2nd Officer.

"12th February, 1928, in Latitude 41° 20' N., Longitude 11° 46' E., 1.30 p.m., Wind shifted from W.byN., force 8, to N.W., force 9, in rain squall. 1.45 p.m. Hail for about 3 minutes. Large hail stones. Observed a waterspout forming about half a mile from the ship. In the rear of the big squall cloud, a small white cloud, in considerable commotion, formed into a spout, the lower end of which lengthened and receded continually. In the sea beneath it was a patch of agitated water and spray, apparently revolving anti-clockwise. As it passed the ship the wind veered to N.E., decreasing in force to almost calm, then backing to N.W. again and steadying at about force 8.

"2 p.m. Sky clearing. Clouds Ci-Cu, St-Cu, Cu. 4/10. Finer appearance of sky to Northward. Barometer 996.5 mb. Temperature Dry 58°, Wet 52°."

MOUNTAIN CLOUD.

Gulf of Suez.

THE following is an extract from the Meteorological Report of S.S. *Mongolia*, Captain G. H. S. FURLONG, Port Said to Aden, Observer Mr. E. ALLEN, Apprentice.

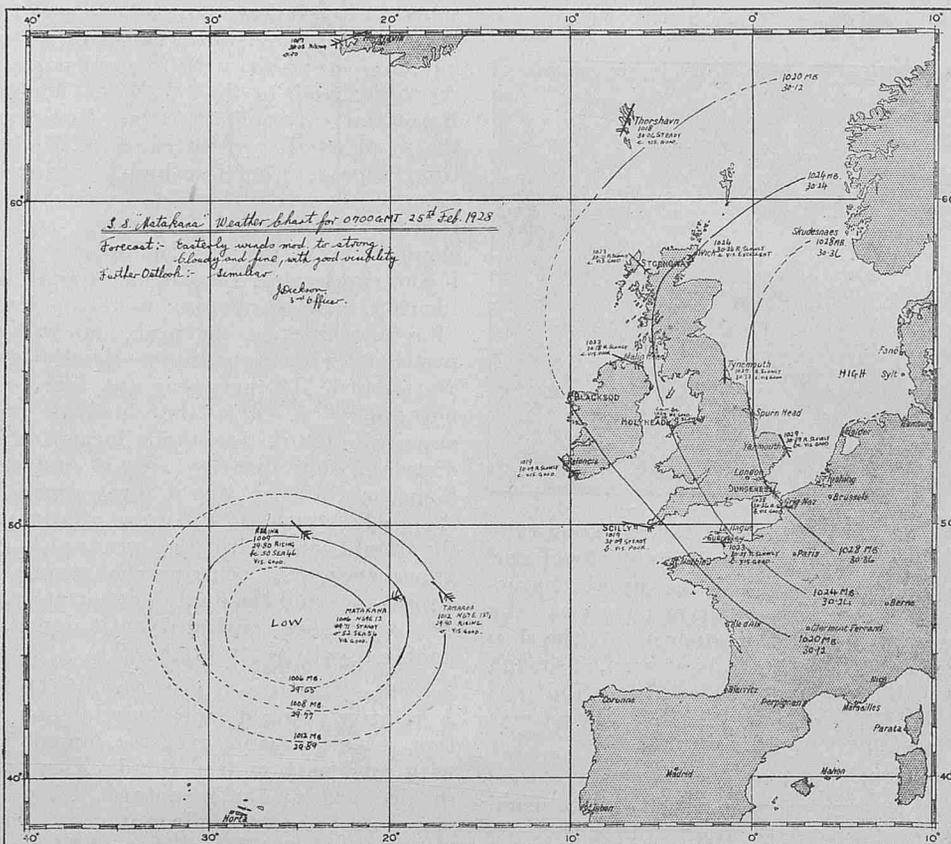
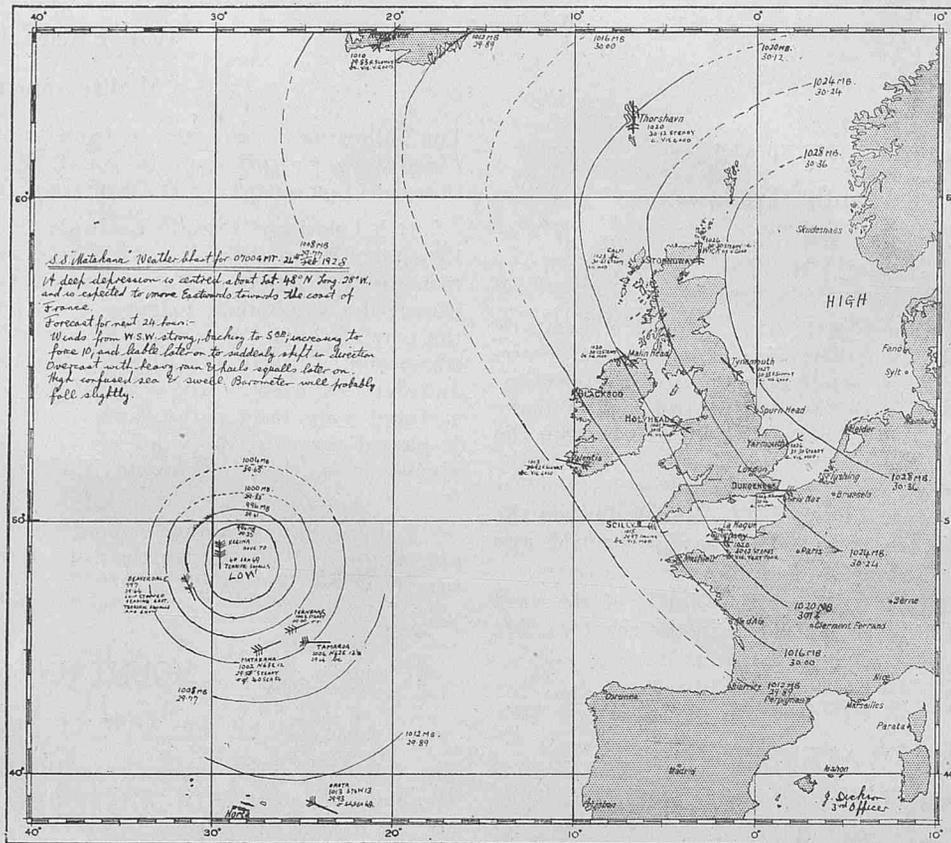
"At about 1600 G.M.T. (1800 Ship's time), February 9th, 1928, shortly after sunset; ship in Latitude 28° 34' N., Longitude 33° 05' E. (Gulf of Suez), visibility good to seaward: weather fine and clear, but hazy overland, with a small part of distant Cirro-Stratus over the high land to the W.N.W. horizon; wind North, force 5: Barometer corrected 30.23 ins. (1023.7 mb.) 65° F.: Temperature in the wind 63° F.: Steering S.23° E. 16 knots: Observed over Jebel Gharib peak, 5,740 feet high, bearing S.19° W., 28.5 miles distant from ship, small cloudlets resembling Strato-Cumulus in type rapidly forming, disappearing and reforming. At times no cloudlets were visible; but soon a small speck would gradually become noticeable, increasing in size until there was no doubt of its identity. The formation occurred almost anywhere within a range of a few miles of the peak, but it was more persistent in two positions, viz., apparently directly above it and a little to the Northward. If there was any force of wind over the peak it did not appear to carry the cloudlets very far before they had disappeared again, for their formation appeared to occur, at that distance, only directly over it and within the radius mentioned. Sometimes a wisp would form apparently directly in contact with the peak, which slowly grew upwards, streaming away a little to the Southward with the wind and giving the peak the curious appearance of a smoking mountain. The time between the first appearance and the final disintegration never exceeded 1 min. 20 secs. The occurrence continued until dark, after which the observer was unable to witness it further."

NOTE.—This is a typical case of the formation of mountain cloud. A relatively warm moist wind blows against the mountain top so that the air passing over the summit is cooled below the dewpoint, with condensation into cloud. These clouds will therefore form on the leeward of the mountain. They do not persist far from the mountain because the air soon gets warmed up again with consequent evaporation of the waterdrops. If the mountain causes air blowing against it to ascend, cloud may be formed over the mountain-top by the cooling of this air which results.

THE MARINE OBSERVER
 WEATHER CHARTS MADE AT SEA.

Eastern North Atlantic.

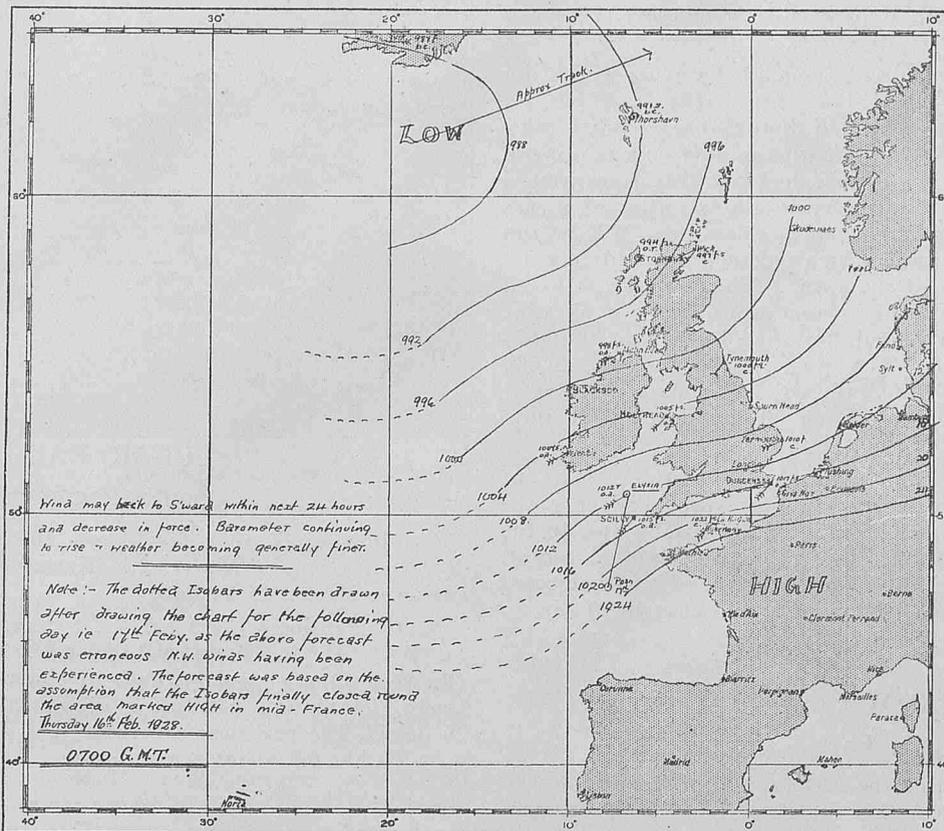
Weather Charts (two of a series) made at sea on board S.S. *Matakana*, Captain H. P. THURSTON, Colon to London, by Mr. J. DICKSON, 3rd Officer.



Reference is made to these Weather Charts by Commander J. HENNESSY, R.D., R.N.R., in "Sudden Gale, Eastern North Atlantic, February, 1928," appearing on page 40 of this number.

Eastern North Atlantic (continued).

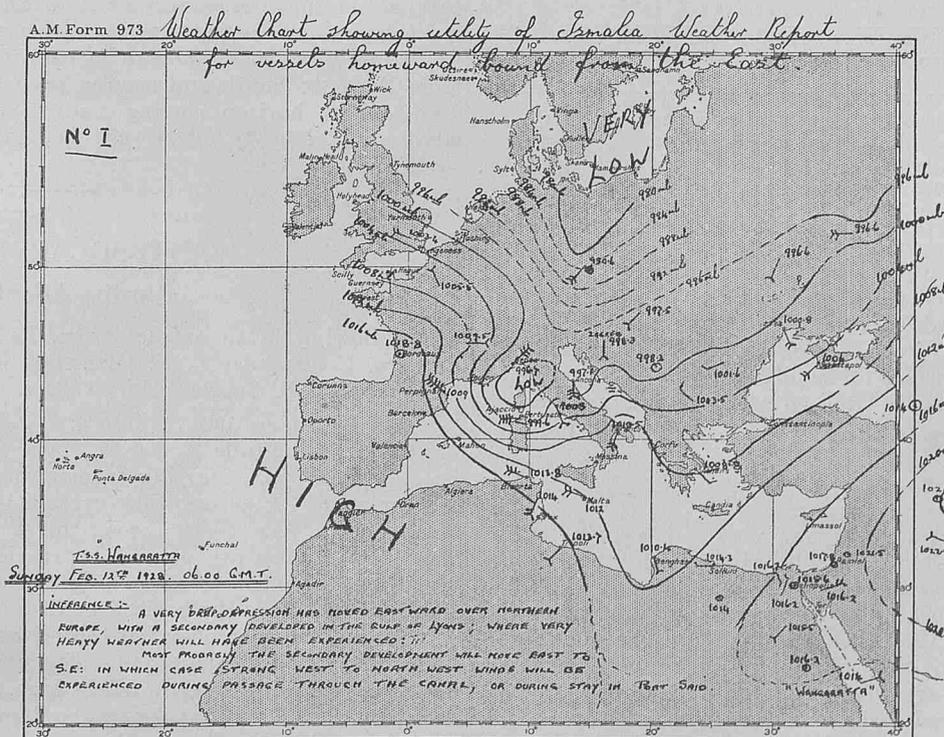
Weather Chart (one of a series) made at sea on board S.S. Elysia, Captain A. R. DUNCAN, Liverpool to Bombay, by the late Mr. A. LAIDLAW, 2nd Officer.



Reference to this Weather Chart is made by Commander J. HENNESSY, R.D., R.N.R., in "Sudden Gale, Eastern North Atlantic, February, 1928," appearing on page 40 of this number.

Mediterranean Sea.

Weather Chart (one of a series) made at sea on board S.S. Wangaratta, Captain W. SCUTT, Melbourne to Suez, by Mr. S. R. MILLARD, 2nd Officer.



According to Wangaratta's Meteorological Log the wind was Westerly, force 5 to 6, during her passage through the Suez Canal.

ROTARY CLOUD MOTION.

Off Coast of Victoria, Australia.

THE following is an extract from the Meteorological Log of S.S. *Marella*, Captain S. MORTIMER, Melbourne to Singapore, Observer Mr. A. G. HILL, 2nd Officer.

"4th February, 1928, observed peculiar cloud disturbance, lasting from 1.45 p.m. to 2.15 p.m. Position of ship Latitude 37° 49' S., Longitude 149° 14' E. (half way through disturbance), Course 064°, speed 13 kts. Clouds (Cu-Nb. lower, cumulus middle, cirrus upper). Lower clouds began to rotate in an anti-clockwise direction around an area devoid of lower or middle clouds, top stratum of cirrus being visible throughout. Wind at commencement was N.E.'ly and veered rapidly at 2 p.m. to South. Small detached "whirlpools" formed on sea surface, with uplifting spray. Ship's smoke followed general direction of wind, suddenly rising upwards in a circular motion. 2.5 p.m. phenomenon ceased, followed by violent thunderstorm of one hour's duration. 1.45 p.m. Barometer 1005.2 mb. Temperature Dry Bulb 70°, Wet Bulb 66°. 1.50 p.m. Barometer 1006.9 mb. 2.5 p.m. Barometer 1006.2 mb. Temperature Dry Bulb 69°, Wet Bulb 66°."

NOTE.—During this observation there was evidently a state of rapid convection of relatively warm air upwards, producing the rotary movements of the lower cloud and finally giving rise to the thunderstorm. In order to produce this rapid convective ascent, the air above, say at middle cloud height, must have been subjected to rapid cooling, probably by the inflow of a cold current of air.

MIRAGE.

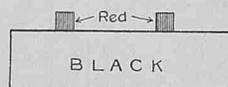
Table Bay.

THE following is an extract from the Meteorological Report of S.S. *Saxon*, Captain G. F. GARDNER, O.B.E., Cape Town to Southampton, Observer Mr. R. MAY, 4th Officer.

"On February 20th, 1928, at 7 a.m. South African Standard Time, the sun having risen at 6.35 a.m., approaching Table Bay from the Southward the R.M.S. *Walmer Castle* (grey hull, white superstructure, 2 red funnels with black tops) was observed approaching Table Bay from the N.W. Distant 10 miles, considerably distorted by mirage. The Barometer was steady at 1015.2 mb. after having fallen rapidly during the night, the data for the previous 13 hours and following hour being:—

Date.	Time.	Barometer.	Air.	Sea.	Wind.	Force.
February 19th	8.0 p.m.	1026.1 mb.	72° F.	69° F.	S.E.	5
	Midnight	1024.0 mb.	69° F.	66° F.	S.E.	4
February 20th	4.0 a.m.	1018.6 mb.	66° F.	66° F.	S.E.	6
	7.0 a.m.	1015.2 mb.	66° F.	50° F.	Calm	0
	8.0 a.m.	1015.2 mb.	70° F.	50° F.	S.E.	5

The *Saxon* being under the lee of the Cape Peninsular range of mountains, Dist. 1½ miles from the shore, was in a smooth sea and no wind, but it was afterwards ascertained that the *Walmer Castle* was exposed to a S.E. wind, force 5, blowing off Table Mountain. When first sighted the appearance of the *Walmer Castle* was like a large black oblong, with a small band of red showing above. At



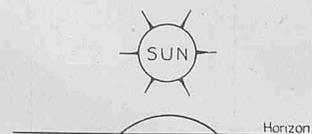
frequent intervals the vessel herself was observed clearly, then becoming a black oblong as before. Robben Island Lighthouse was also observed well above the *Walmer Castle*, but under normal conditions would have been hidden behind her. There was a slight mist over the land near Green Point Lighthouse, but the atmosphere over the adjacent sea was clear. Two small uncovered rocks lying 5 cables to the westward of Bantry Bay were considerably magnified, and at a distance of 7 miles appeared to be two lighters at anchor. The phenomenon disappeared at 7.45 a.m. on entering Table Bay, when the wind became S.E., force 5, and the air and sea temperatures 70° F. and 50° F. respectively."

UNUSUAL SUNSET.

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *City of Chester*, Captain F. W. LETTON, Port Said to Boston, Observer Mr. A. J. BARNETT.

"February 26th, 1928, 5.27 p.m. A.T.S., Latitude 42° 24' N., Longitude 69° 15' W.



"As sun set there appeared a segment as if another sun was just appearing above horizon. As sun set the two joined, and as sun sank had the appearance of a red-hot rivet."

LUNAR RAINBOW.

South Pacific Ocean.

THE following is an extract from the Meteorological Log of S.S. *Mataroa*, Captain W. A. R. KERSHAW, Balboa to Wellington, Observer Mr. J. J. NICHOLL.

"10th February, 1928, at 11.15 p.m. A.T.S. (G.M.T. February 11. D. 9. H. 35. M.), Latitude 33° 58' S., Longitude 150° 38' W. Observed Lunar rainbow, ends of bow bearing 229° and 307° respectively. Maximum Altitude of bow 20°. Moon bearing 087°. Age 19 days. The bow became visible just after a rain squall, and was only visible for about ten minutes.

SUNRISE COLOURS.

North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Andalucia*, Captain R. J. THOMAS, London to River Plate, Observer Mr. R. A. BROCK, 3rd Officer.

"February 18th a.m. (Shortly before sunrise sky seven-tenths covered, cirrus and lower altitude cirro-stratus, all clouds blood red colour except highest cirrus, which were white and laying pointing from West to East, moving toward N.E. lower cirrus laying from North to South and moving towards West, colour of sea water deep red at horizon coming natural colour nearing ship. Wind slight N.E., long W.byN. swell, moderate heavy and moderate short swell from N.N.E."

ANTI-SOLAR RAYS.

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Calebra*, Commander C. E. RATHKINS, R.N.R., London to Bermuda, Observer Mr. P. COOPER, Chief Officer.

"20th February, 1928, at 6.50 a.m. A.T.S. (G.M.T. 1055), Latitude 33° 20' N., Longitude 57° 44' W., bright rays of light were observed bearing N.50° W. Starting from a small base line on the horizon measuring 6°-12° across, they extended in three rays until the top measurement was 35° 15' across, the height of the rays being 5° 46'. The Westernmost ray extended practically perpendicular and the Northernmost one was at an angle of almost 35° with the horizon. The sun was above the horizon at the time, having risen at 6.30 a.m. ship's time, but was obscured behind St-Cu., the bearing of the sun being S.73° E. by calculation. The sky was overcast, being practically covered with St-Cu., fairly high, with small Cu. below. The rays were quite brilliant, being about as bright as the usual morning sun's rays to the Eastward at sunrise. They lasted about ten minutes until 7.00 a.m., when the sun shone through the clouds and the rays disappeared. During this time the rays changed in



brilliancy and size very rapidly, and the above account refers to the period when they were brightest and longest, about 6.58 a.m. ship's time."

BRIGHT METEORS.

South Atlantic Ocean.

THE following is an extract from the Meteorological Report of S.S. *Deseado*, Captain F. E. HANNAM, Rio de Janeiro to Liverpool, Observer Mr. A. BARFF, 5th Officer.

"In a position 4 miles East of C. Frio, at 0201 G.M.T. of February 15th, 1928, observed a meteor of exceptional brilliance. It first was seen in the vicinity of Canopus, and travelled past Rigel, and finally disappeared in the vicinity of Aldebaran. To give some idea of the brilliance of the aforementioned meteor, it may be mentioned that it lit the whole sky and land sufficiently well for

bearings to be taken of the various islands, one in particular, Comprida Island, a distance of some eight miles off. The trail of the meteor remained in the sky from Rigel to Bellatrix, and was visible to the naked eye for three minutes and twenty seconds after its disappearance.

"Weather conditions at the time:—Fine, clear and cloudless—Great Humidity. Air Temperature 75° F. Sea Temperature 77° F. Barometer 30.04 in. Wind E.byN., force 2-3."

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Culebra*, Commander C. E. RATHKINS, R.N.R., London to Bermuda, Observer Mr. W. S. THOMAS, 3rd Officer.

"10th February, 1928, 2045 A.T.S. (2234 G.M.T.), Latitude 37° 47' N., Longitude 25° 01' W., off Arnel Point, San Miguel. Brilliant meteor. First seen at an altitude of about 45°, bearing West; it fell vertically to an altitude of 15° before vanishing. The brilliancy of this meteor was such as to need special mention; it can only be described as blinding. The time occupied in falling was about two seconds; during this time the whole heavens were illuminated with the light, which was of a greenish tint."

ZODIACAL LIGHT.

North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Culebra*, Commander C. E. RATHKINS, R.N.R., London to Bermuda, Observer Mr. R. N. FLETCHER, 2nd Officer.

"February 14th, 1928, 1900 A.T.S. (G.M.T. 2140), Latitude 35° 54' N., Longitude 39° 30' W. The Zodiacal Light was observed in the Constellation of Pegasus, a little Southward, extending to an angular height of approximately 40°, its path being towards the Pleiades. Breadth 25° at an altitude of 6°, where it appeared to be brightest. The base of the Light was hidden by Cumulus clouds just over the horizon, the rest of the sky being clear at this time. Colour white and about as bright as the Milky Way."

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.

DISASTER AND DELIVERANCE.

THE following extracts are taken from Journal No. 3582 of the Ship *Swan*, Captain ROBERT DRING, kept when on a voyage to Davis Straits in search of whales. The *Swan* sailed from Hull for the Arctic seas on the 11th April, 1836, and the journal shows how perilous and full of hardship was such a voyage in those early days, and how stout hearted were the crews which manned the whaling Fleet.

"THURSDAY, AUGUST 25TH.—Fore part light airs. At 6 a.m. called all hands, sent 6 boats away in search of whale fish. At 7 saw a wreck which afterwards proved to be *Margaret* of London. At 11 a.m. received one boat's crew on board, six hands. Middle and latter part light breezes and Variable. Spoke the *Duncombe* of Hull with one fish and a sucker alongside. P.M. The boats returned without success. Seven sail in company to the end.

"SUNDAY, OCTOBER 9TH.—The fore part of these 24 hours light winds and variable, the ship frozen entirely up. Middle and latter part calm, end with a fine starlight night.

"MONDAY, OCTOBER 10TH.—The fore part light airs. The watch employed in breaking the bay-ice around the ship. Middle part winds and clear weather, no alteration in the ice, ends with dark cloudy weather. Lat. Obs. 73° 46' N. Thermometer, zero.

"WEDNESDAY, OCTOBER 12TH.—This day commences with light variable winds. Very poor prospect of getting out of the ice this

winter, everything therefore that humanity can suggest being done for the comfort and convenience of the men. The decks began to cover fore and aft with sails so as to enable sufficient exercise to be taken without danger of being frost-bitten. The sun began to decline very fast, rising this day at 8 a.m., setting at four in the afternoon. Thermometer 11°.

"FRIDAY, OCTOBER 14TH.—Light Northerly winds the whole of this day. Our coal being expended obliged to cut up a spare topsail yard for fuel, the greatest economy being observed in the fires. Thermometer average 10°.

"WEDNESDAY, OCTOBER 26TH.—Strong breezes still continue, but they have not made any impression on the ice; the ship is drove amongst a great number of bergs which appear to be aground, no less than fifty being visible from the masthead, one of them with a large flat top cannot draw less than 200 fathoms. Our fears for the preservation of the ship are very great, and everything is in readiness in case she should have the misfortune to come in contact with either of them. The day ends with strong breezes and dark weather. Thermometer 4°.

"THURSDAY, OCTOBER 27TH.—W.S.W. This morning at daylight we felt greatly enlivened by seeing the land high and dry bearing S.W. by W. of us distant about 45 miles. At middle of day carpenter cut up topmast for fuel. Ends fresh breezes and a fine clear moonlight night. Thermometer 15°. Sun obscure.

" WEDNESDAY, NOVEMBER 9TH.—Strong breezes the whole of this day, the ship drifting off to the westward very fast, which we are enabled to ascertain from the position of the Bergs. No alteration has taken place in the Ice, but it is increasing in strength very much.

" SATURDAY, NOVEMBER 12TH.—Light breezes from the Eastward the whole of this day. A 240 gallon cask cut up for fuel. At 7 p.m. saw two foxes under the ship's stern. Thermometer 5° below zero.

" TUESDAY, NOVEMBER 15TH.—Strong breezes still continue. At 3 a.m. the watch on deck saw a bear under the ship's bows, but it went off before a gun could be loaded. 5 a.m. J. PATTISSON shot a fox; from tracing the blood on the ice it is evident it has fallen a prey to the bear. Thermometer this day 16° below zero; the ink freezes in the table drawer, and on the cabin dead lights the ice forms an inch in thickness in one night.

" WEDNESDAY, NOVEMBER 16TH.—A light air of wind the whole of this day. The land visible, Sanderson's Hope bearing S.S.W. of us, distance 25 miles.

" SUNDAY, NOVEMBER 20TH.—Light breezes northward with hazy weather. At 12 shot a white fox from off the fore-castle deck. This day began to burn our spare main top gallant mast. Divine service morning and night this day as usual. Thermometer 10° minus.

" SATURDAY, NOVEMBER 26TH.—Wind light from the Northward. The fore part of this day at noon the land was visible bearing S.S.W., distant 60 miles. The men employed this day in banking the ship's side up with snow for the purpose of warmth. At 11 a.m. a Bear came near to ship so as to enable the men to get at it, but being slightly wounded he got away, after chasing it for 5 miles, on a floe. This day the thermometer rose to 8° above zero, but towards night it fell as much below. Wind from the Southward.

" FRIDAY, DECEMBER 2ND.—Strong gales of wind the whole of this day. J. PATTISSON shot a fox this day from the fore-castle, a very large one compared with the others, and from which they make a good soup. Ship drifting South fast.

" MONDAY, DECEMBER 5TH.—Light breezes and clear weather. At noon our fears were raised by discovering our ship's stern not far from a berg, 17 of them lying south of us right in our drift, and how we can escape them GOD only knows, but we are prepared for the worst. The day ends with dark dismal weather. Thermometer 8° minus.

" WEDNESDAY, DECEMBER 7TH.—This day we have had a wonderful escape from being shipwrecked. At 7 a.m. our floe while driving south came in contact with two bergs aground. The concussion was tremendous, and the ship trembled like a leaf. The whole floe gave way about 40 yards from the ship, and we experienced not the least damage. Had the ship drifted in any other direction we should inevitably have lost our lives, the bergs lying on the reef very close to each other. Very cold.

" SATURDAY, DECEMBER 10TH.—Dark weather most of these 24 hours, the stars shining at noon as at night. Another week is drawing to a close, our situation in this dreary region is very dismal. Still thanks to the ALMIGHTY that all of us are blessed with a good state of health. A 260 gallon shake cut up for fuel. Thermometer 14° below zero.

" WEDNESDAY, DECEMBER 14TH.—Fine clear weather, but exceedingly cold, the thermometer at 23° below zero. Measured the young ice 20 yards from the ship, and found it to be 23 inches thick. Diminished our weekly allowance of bread from 4lbs. to 3½lbs. Latitude 72° 01' N.

" FRIDAY, DECEMBER 16TH.—E.N.E. light winds and hazy. Three hours twilight we enjoy out of the 24, and we all anxiously look forward to that period when we shall see once more the sun—if we are preserved. Replenished the Oil cask with 22 gallons of neat oil. The tiller cut up for fuel.

" SATURDAY, DECEMBER 24TH.—Strong gales. At 1 a.m. the watch on deck saw a berg to leeward, the ship drifting down on it very fast. Called all hands immediately and got a couple of bread casks on deck, when each man awaited his fate. When about 200 yards from us the gale shifted to the N.W. and consequently we were to leeward; what is most remarkable, it proved the same berg that caused us so much fear on the 7th of this month. Latter part more moderate, the ship driving south in the pack. A 300 gallon cask cut up for fuel this day.

" SUNDAY, DECEMBER 25TH.—Light variable winds the whole of this day. All hands assembled in the 'tween decks for the purpose of Divine service and to give thanks to the ALMIGHTY for our late preservation. A 300 gallon shake cut up for fuel.

" MONDAY, JANUARY 9TH, 1837.—Light breezes the fore part of this day, the land showing itself very much and distinctly about 20 miles distant. At 2 p.m. a berg rent our floe into several pieces, one of the cracks only 8 ft. from us. Called all hands and got the bread casks on deck, the bergs tearing up the floe with great violence, the noise resembling a continuous thunder clap. At a.m. the press abated, and ice began to slack, the wind having gone round to N.E. We are obliged to cut a fore topsail up to make bags for the bread, there being no chance of saving the ship. Thermometer 28° below zero.

" WEDNESDAY, JANUARY 11TH.—Strong breeze from the westward with hazy weather, the ship drifting in shore in the direction of a reef of bergs. Called all hands and got the bread started into the bags and the remainder of our provisions and clothing on deck. At 2 p.m. the floe caught one of the bergs, and our dock gave way, the pressure of the ice throwing our ship on her broadside. Passed everything on to the floe, the ice turning up the ship. Some of the men in jumping from the ship on to the ice bruised themselves very much. At 4 p.m. the floe gave way astern, when the ship rightened, and once more we behold the goodness of the ALMIGHTY. Benumbed with cold we ventured on board, having been 3 hours on the ice expecting every moment to see our home laid in ruins and ourselves exposed to the fury of the storm. At 10 p.m. the wind abated, with very dark thick snowy weather. A 330 gallon cask cut for fuel. The damage ship has sustained is not known at present.

" MONDAY, JANUARY 23RD.—Light S.W. winds, clear weather the whole of this day. At noon the sun showed himself just above the horizon, being an interval of 74 days since we last saw him in the same situation. The mercury is frozen in the thermometers, and we are unable to tell the exact degree of cold, but it is tremendous. After walking under the awnings a few minutes we were covered with frost.

" MONDAY, FEBRUARY 13TH.—Another dreary week passed. No alteration has taken place that will tend to liberate us from our icy prison. The ship during the last month has not drifted more than a few miles South, while the severity of the weather is daily and hourly increasing the strength and surface of the ice. Although the meridian altitude of the sun is upwards of 5°, yet he has no sensible effect on the thermometer when exposed to his rays. The combined causes of such intense cold and the want of nutriment has a great effect on our men. In one half of our men symptoms of scurvy have already shown itself, while others through neglect have suffered themselves to be severely frost-bitten.

" SUNDAY, FEBRUARY 26TH.—Strong winds with same intense cold the fore part of this day. At noon the mercury in the thermometer rose to 25° below zero, a change that is felt by each of us. The ship has drifted 11 miles during the last breeze, but is now brought up by the bergs off Hare Island. As soon as the weather clears we expect to see the reef not far off. Divine service in the 'tween decks morning and evening as usual. Thermometer 35° below zero. Latitude by Obs. 70° 30' N.

" THURSDAY, MARCH 9TH.—Strong winds the fore part of this day with fine clear weather. The island of Disco lying abeam of us about 30 miles distant. Our prospect of relief from this desolate place better than we expected a month ago. The week's allowance of bread this day was increased to 4 lb., being an additional ½ lb. since the 14th December last. A 260 gallon cask cut up for fuel. Latitude 69° 59' N.

" MONDAY, MARCH 27TH.—Fine clear weather with light Northerly winds, Hare Island bearing S.byE. distant 15 miles. There is very little hope of our now being enabled to stop on board until the ice breaks up, our bread being nearly expended and several of them down with the scurvy. Although the land is no great distance from us, still the chance of getting the ship out is very small, being frozen up in the very centre of a large floe. Should an opportunity offer or a good lead present itself, it would be impossible to attempt to saw through the ice, the health of our men being so much injured by being exposed to the cold and the want of sufficient quantity of nutriment.

"FRIDAY, MARCH 31ST.—S.E. light winds with fine clear weather, the ship having drifted a few miles north since yesterday. One whole cask of bread is all we have left, 27 of the hands having received their allowance for the week out of the other. In four weeks' time it will be impossible to stay by the ship, our provisions not allowing us to stay. Abandon her we must, for a reduction would be attended with very serious result. Four of our men lying in the last stage of scurvy, while the majority of the remainder are suffering from the same disease. At noon 14 men volunteered to leave the ship, including the *Margaret's* boat's crew, and launch for Hare Island as lively as opportunity offers, which is abreast of us about 15 or 20 miles. At 3 p.m. ship began to drive North, when orders were sent that the men are not to leave the ship. At 4 p.m. they all mustered and begged leave of the Captain to permit them to go, even being willing to take less provisions with them. Latter part fine clear weather, the average of the Thermometer being 26°, Latitude by Obs. 70° 30' N.

"SATURDAY, APRIL 1ST.—S.E. light wind and fine clear weather. At 5 a.m. the above mentioned men left the ship with 7 lbs. of bread each, 2 pieces of beef, 1 piece of pork, 1 cheese and other necessaries. Two watches assisted them in launching the boat as far as possible; being prevented by lanes of water and bay-ice, the two watches left them and returned on board. Latter part light winds and fine weather. The wind having gone round to the N.W. has caused the thermometer to fall. P.M. They were just perceptible from the masthead, and appeared to be making great progress.

"WEDNESDAY, APRIL 5TH.—N.E. light winds and clear weather. A 260 gallon shake cut up for fuel. Latitude by Obs. 70° 30' N. 1 lb. of flour was weighed out yesterday to each man, an increase on 11 ozs., the usual weekly allowance, some of them being in a deplorable state of scurvy. Our little stock of anti-scorbutics are expended, and what the result will be God only knows. Our time is getting very short, and a few more weeks must decide all. To HIM therefore who has preserved us thus far we still trust and pray for a continuance of his DIVINE protection. Thermometer highest 28° above.

"THURSDAY, APRIL 6TH.—Light winds with clear weather. At 1 p.m. the ship began to drive South. At 4.30 p.m. while on the quarter deck observed two men about 4 miles to the East of the ship standing on hummock of ice and waving a flag, another being seen from the masthead a few miles astern of him. Called all hands and launched a boat for the purpose of getting over a lane of water, when what was our astonishment and surprise when we were told that we beheld the only survivors of our unfortunate boat's crew. A party proceeded further and fell in with ROBERT DARBY prostrate and on the floe; before he could be conveyed to the boat the vital spark had fled, and they were obliged to leave his body and return to the Ship. Such was the severity of the weather that out of 16 hands that launched the boat to their assistance only two escaped being frost-bitten, the thermometer at the time, with a breeze of wind and thick weather, 28° below zero. Latitude by Obs. 70° 28' N.

"THURSDAY, APRIL 27TH.—Nearly calm the whole of this day with hazy weather. At noon JOHN STOCKS, seaman, died of scurvy. (This makes the fifth death from this disease, thereby reducing our number to 38.) Unless a speedy deliverance comes a number more must surely die, so deeply are they infected with that horrible disease. Eight months we have been frozen up in this solid sheet, and our prospects of getting out of this floe is very small, it appears as far distant as ever. Numerous opportunities have offered when we could have sailed in any direction had the ship been out of this piece. Had the whole of our ship's company been alive there is no doubt but they could have sawn a passage through the floe, but the enfeebled state of those that can walk renders the attempt impossible.

"SUNDAY, APRIL 30TH.—Light winds and fine clear weather, the thermometer averaging 18°. At 2 p.m. DANIEL KNIGHT and HENRY JUDGE died, the former in a state of debility occasioned by the loss of both feet, and the latter in the last stage of scurvy after being bedridden three months. Our number is now reduced to 36, and out of that number there is no more than eight or nine hands on board but who are affected more or less with the same disease. Latitude by Obs. 69° 30' N.

"MONDAY, MAY 8TH.—Light winds and fine clear weather. We again tried our uttermost to saw the ship out, but the united efforts of the past two days' exertion could have been accomplished by our usual ship's company in one hour.

TUESDAY, MAY 9TH.—Light winds with thick weather. Being unable to proceed any further with saw gave up all hope of the Ship. At noon PETER HUNTER died of scurvy. Our number is now reduced to 34 hands on board, 20 of our men having died, and only three are now able to keep the deck, the remainder being bedridden, some of them nearly dead and others not able to move a leg. Our only bread cask is getting low, and by the 25th of this month, should not a ship heave in sight and give us relief, the few that are able must try and reach the land. Latitude by Obs. 69° 22' N.

"SUNDAY, MAY 14TH.—Light breezes from the Northward with fine clear weather. A great number of whales to be seen in every direction. At noon saw a ship bearing W.S.W. distant 15 miles. 8 p.m. Another sail to the Southward of her. The ice being open we are all anxiously looking out for a boat, the ships having answered our signals. The ice closing fast. The above ships in sight with their ensigns flying at their mastheads. Divine service among our few men. Latitude by Obs. 69° 18' N.

"MONDAY, MAY 15TH.—S.E. strong breezes. At 3 a.m. saw a boat making great progress through the Ice towards us. At 5 a.m. they reached the ship, when we found we were indebted to the humane master of the *Princess Charlot* of Dundee for our happy deliverance. The *William and Ann* and the *Princess Charlot* still in sight at the edge of the Ice.

"WEDNESDAY, MAY 17TH.—Light winds the fore part of this day. 11 a.m. The boat and crew left our ship, and falling in with some good leads soon out of sight. 12. JAMES MOORE died of scurvy, having lived long enough to see relief come to us. Latitude in 69° 31' N.

"FRIDAY, MAY 19TH.—Light winds and clear weather the fore part of this day. At noon launched the body of JAMES MOORE through the ice. Middle and latter part thick weather. At 6 a.m. heard the report of a gun, which we immediately answered, and continued firing until 7 p.m., when five boats with men and provisions arrived to the edge of our floe, and got the provisions on board from the following: *Princess Charlot*, *William and Ann*, *Hoine*, *Herine*, *Dorothy*.

"SUNDAY, MAY 21ST.—Light winds and hazy weather. This day we commence the last of 18 oars, 4 rough handspikes, 4 topmast studding sail booms, 6 stunsail yards, 6 deck stanchions. All the above mustered, at work sawing through the bay-ice. P.M. Got the last piece out and in three hours' time we were amongst the ships, the *Princess Charlot* men still on board, our crew being disabled. Latter part light winds. The *Princess Charlot* conducted us into Whalefish Island harbour, not one of our own men, with the exception of the cabin people, being on deck. Latitude by Obs. 69° 10' N.

"SATURDAY, MAY 27TH.—Strong gales from the S.W. at 4 a.m. Expected to drive on shore; not a soul on deck but the Mate and Master, Surgeon JAMES and SAMUEL DRING. At 5 a.m. it moderated and cleared up, when *Traveller* of Peterhead and *Duncombe* of Hull hove in sight. At noon three boats came alongside with provisions and clothes, which were much needed by our poor crew, some of whom are in a deplorable state, while those in which the disease had not made so great progress are now greatly recovering. During the time we have laid in the harbour we have experienced the utmost attention and kindness from the Esquimaux and Danes, the Cooners washing our clothes and linen and furnished us with scurvy grass, which seems to be very abundant on these Islands. Latter part fine clear weather. The master of the *Camden* came on board. Master of the *Traveller* came on board with a boat's crew from the *Lord Gambier* of Newcastle.

"MONDAY, MAY 29TH.—N.N.W. light winds and fine weather. 9 a.m. Five boats from the *Duncombe* got our ship under way, only four of our men being able to assist. At a.m. pumped ship and found that she made water, the oakum hanging out of her seams very much. The casks heads of our second tier are burst. The damage we sustained on the 17th January with the heavy

pressure of the ice gives us great fear for the safety of our ship. Having laid a week in this harbour in such a distressing condition, the *Duncombe* of Hull has abandoned his fishing and is accompanying us home, having put 20 of his hands on board us to work the Ship, our own poor men being totally unfit, having suffered so dreadfully from the scurvy. This evening THOMAS THOMPSON died, victim to this horrid pestilence. Light winds and fine clear

weather, the ship running down the Straits, the *Duncombe* in company.

"SUNDAY, JUNE 4TH.—Strong breeze and thick weather. At 7 a.m. tacked ship and stood to the East. Latitude 63° 14' N., Longitude 56° W., from which I take my departure. This day ends at noon in order to commence the sea log according to Nautical time."

COMMODORE SIR JAMES CHARLES.

By one of his Officers.

JAMES THOMAS WALTER CHARLES, second son of the late JAMES CHARLES, was born at Hursley, Hants, on August 2nd, 1865.

He was educated privately, and at an early age evinced a desire for the sea.

He commenced his sea career at the age of 15, when he was apprenticed to the firm of Messrs. HILL & Co., and served his time in the barque *Eta* of Swansea, a vessel of 494 tons engaged in that hard school for seamen, the West Coast Trade.

After completing his apprenticeship, and having passed for Second Mate, he served in that capacity in the ship *Margaret Galbraith*, owned by Messrs. SHAW SAVILL & ALBION, and made two voyages to New Zealand in that vessel.

In 1887 he forsook sail and joined the British India Steam Navigation Company, and remained in that Company's Indian Coastal Service for nearly six years, during which time he served in the various ranks from 4th to chief officer. In 1891 he was appointed Sub-Lieutenant in the Royal Naval Reserve, and in 1894, after Gunnery and Torpedo courses, was appointed Acting Lieutenant of H.M.S. *Vulcan* on the Mediterranean station. On completion of his service in that ship he was confirmed in the rank of Lieutenant.

In June, 1895, he joined the Cunard Steamship Company as 4th Officer, and served in most of the famous Cunarders of that time, passing from grade to grade until March, 1900, when he was promoted to Chief Officer. The greater part of his service in this rank was spent in the *Umbria* under the command of the late Captain DUTTON. His promotion was rapid, and four years later he was appointed to command of the *Aleppo*, one of the Liverpool-Mediterranean cargo ships. After less than a year in that ship he was given command of the *Slavonia* and afterwards the *Carpathia*; both these ships were employed in the New York-Hungarian Service. Eventually, after commanding in turn the *Saxonia*, *Umbria*, *Sylvania*, *Carmania* and *Campania*, he was, in February, 1910, appointed to command the *Lusitania*, where he remained for four years, after which he was transferred to the *Mauretania*.

During the war he commanded a number of the Company's ships which were engaged as transports, and for a year he was attached to the British Naval Mission in the United States. In 1918 he was appointed to the *Aquitania*, then a fully commissioned ship of war engaged in the transport of American troops to France. The total number of troops carried by this ship exceeded 60,000. The same year he was appointed Commodore of the Cunard Fleet, and he remained in the *Aquitania* until his tragic death on July 15th, on the last day of his active service and within three weeks of his retirement.

Sir JAMES had just completed his 728th crossing of the Atlantic, and had anchored his ship in Cherbourg harbour, when he was stricken down, never to regain consciousness, and died in a nursing home in Southampton a few minutes after his admission that same day. Always a keen "Reserve" officer, he was promoted Commander in 1907, Captain in 1914, and retired in 1921 with the rank of Commodore. He was decorated by HIS MAJESTY THE KING on four occasions, C.B. in 1911, O.B.E. in 1915, C.B.E. in 1919, the signal honour of K.B.E. being conferred upon him by HIS MAJESTY in 1920.

Sir JAMES served on several committees, being a member of the Departmental Committee on Boats and Davits 1912-1913, and Nautical Adviser to the British Delegation International Conference on the Safety of Life at Sea 1913-1914. He served for three years on the Royal Naval Reserve Advisory Committee, and was a Mariner Warden of the Honourable Company of Master Mariners at its inception.

Sir JAMES was a member of the Corps of Voluntary Marine Observers from 1904 until his death, and the ships under his command contributed a great volume of Meteorological data by written record and Wireless communication. Always interested in the practical application of Meteorology to Navigation, Sir JAMES was instrumental with his brother Commodore of the White Star Line in persuading the Meteorological Office that visibility reports in the British Weather Shipping Bulletin, more especially for the Scillies and the Channel Islands, would be of special value to Atlantic Liners.

Sir JAMES CHARLES was a man to hold the eye of any stranger who met him in the street or saw him in a gathering of men. He gave at first glance an impression of great reserve of power and the custom of command. There was about him a natural distinction which made it impossible that anyone should fail to see in him, though unknown, the unusual. "Who is that man?" would be the inevitable question that instinctively singled him out in a crowd.

According to one or another of the many different series of circumstances that might have wrought upon his boyhood and youth, he would have become a great soldier; a great discoverer, a great judge, great in anything involving leadership and service. Physically he was a giant, being so well above the average height and powerfully built. The great shoulders, and a body to match them, were part of an equipment that enabled him to brave the hardships and fatigues of a strenuous sea life extending over a period of 48 years, the past 24 of which had been spent in command of large and fast ships in the hardest of all trades—the North Atlantic. No severe illness had ever weakened him; his body was equal to the demands of even such a brain and phenomenal activity. It never failed or seemed to decline. His mind was absolutely tireless and its edge always undulled. Although he drew relentlessly upon his physical resources and did not appear to know the meaning of the word "Fatigue" both of mind or body, he did not use them uselessly. He was vigorous and alert to the very end, and was on the bridge of his ship and anchored her in Cherbourg harbour less than an hour before he was stricken down by an attack of hemorrhage, and twelve hours before he passed away.

See him on the bridge of his ship! His attitude, his air, was majestic! He stood there quite unconscious of the lordship the whole man proclaimed, the embodiment of all one visualizes or expects to find in the master of a ship. At close range you felt his piercing eye, his look had that quality found in all great leaders of men, it saw down, through, and beyond! The square jaw, the straight firm lips, spoke of power and determination! Here also was the imprint of the open heart, understanding, and kindly sympathy. Here too the stamp of that strong sense of humour! The mouth, like the nature of the man, was kindly. His mode of speaking was all his own; his speech, like his writing, went straight to the point. Informally he could express himself with a vigour and directness that did not require explanation or invite repetition.

His normal attitude towards men, towards life, towards duty, was expectant and appreciative, but in duty he would brook no trifling. The mediocre must stand aside! He was kindness and gentleness itself to those who did their best, or in whose best he saw a promise of the superlative he sought.

If one thought differently from him on some serious question, and told him so, quietly and clearly, how and why, he gave you his appreciative attention. No one could serve under him without gaining in knowledge.

He loved the society of old friends. No man could be more gracious in the reception of a visitor. It pleased him to recall, in



The Master of the *Aquitania*,
1918-1928.

COMMODORE SIR JAMES T. W. CHARLES, K.B.E., C.B., R.D., R.N.R.

company with others, things that were a part of his past and theirs. He was eager to discuss current events, new ideas of science or industry, tendencies in the thought and action of the time. His penetrating analysis sought out, and his intelligence grasped, the meaning of these things, just as it attacked the ordinary work of his life.

Personal publicity he sincerely disliked, he detested the limelight, but during his last voyage he was very pleased and touched by the

sheafs of wireless messages and expressions of kindly thought on his retirement which he received from the numerous ships, both large and small, and of all nationalities, and also from his host of friends in the two continents.

His great renown and popularity was very evident when it is recalled that so many of our leading newspapers, together with those of the United States, made the tragic passing of this Great Seaman the subject matter of their leading article.

A. C. G.

SUDDEN GALE, EASTERN NORTH ATLANTIC, FEBRUARY, 1928.

Prepared in the Marine Division by J. Hennessy, Senior Nautical Assistant.

The General Inference and Forecasts issued in the "Weather Shipping" Bulletin apply only to those waters East of the 100 fathom line, but a ship leaving British ports outward bound wishing to know what weather she is likely to experience for the first twenty-four hours after leaving soundings may, by intercepting Weather messages broadcast by "Selected Ships" and combining this information with that contained in the "Weather Shipping" Bulletin, make simple weather charts. Such charts give a graphical illustration of the existing pressure distribution and the general weather conditions prevailing, from which navigators may make their own deductions as to the weather they are likely to experience.

Full particulars of the "Weather Shipping" Bulletin will be found under Weather Signals in this number, and instructions on the making of Weather Charts at sea is fully dealt with in Chapter II of WIRELESS AND WEATHER AN AID TO NAVIGATION.

WEATHER CHARTS VI to X show how a gale of exceptional severity in the Eastern North Atlantic which did not reach the British Coast was caused by the rapid development of a secondary depression and illustrate the advantages to be gained from the Practice of Wireless and Weather as an Aid to Navigation.

WEATHER CHART VI FOR THE MORNING OF FEBRUARY 23RD.

Berengaria, Captain Sir A. H. ROSTON, K.B.E., R.D., R.N.R., steaming S.84° W. 23 knots, was at this time about sixty miles west of Scillies. She had obtained from the "Weather Shipping" Bulletin the forecast for the area through which she was then steaming up to the 100 fathom line, and if she desires to know what lies ahead of her she could make CHART VI. From this she could see that a large depression centre N.W. of Iceland extends and influences the weather over the Central North Atlantic as far south as the 45th parallel.

The ships' observations show that a secondary system is developing in about Latitude 50° N., Longitude 35° W., and the barometric tendencies of both ships and shore stations indicate that the secondary will deepen and move in an Easterly direction.

Berengaria's weather during the next 24 hours will be influenced by the development of the secondary.

WEATHER CHART VII FOR THE EVENING OF FEBRUARY 23RD.

On receipt of the evening issue of the "Weather Shipping" Bulletin *Berengaria* could make CHART VII, from which she could see that the secondary indicated on the morning chart has deepened and moved in a South-Easterly direction.

Regina, Captain E. DAVIES, and *Caronia*, Captain W. H. HOSSACK, R.D., R.N.R., steaming E.N.E. at speed, are experiencing winds of moderate gale force and falling barometer. *Matakana*, Captain H. P. THURSTON, and *Tamaroa*, Captain W. HARTMAN, are experiencing similar weather conditions to *Regina* and *Caronia*. Allowing for course and speed of these ships, their barometric tendencies, together with those of the shore stations, indicate that the depression will continue to move East and deepen.

Berengaria will therefore expect her wind to veer and gradually increase to gale force as she makes Westing.

WEATHER CHART VIII FOR THE MORNING OF FEBRUARY 24TH.

On making WEATHER CHART VIII, *Berengaria* would observe that the depression has deepened considerably and has remained practically stationary during the last twelve hours.

Regina, nearest to the centre of the disturbance, hove to, records wind of hurricane force, while *Caronia*, ninety miles West of *Regina*, is experiencing a wind of storm force. The barometric tendencies of these ships and those of the shore stations indicate a further deepening of the depression. *Berengaria*, steering S.84° W., 23 knots, will therefore expect her wind to gradually back and continue to increase in strength as she steams West.

WEATHER CHART IX FOR THE EVENING OF FEBRUARY 24TH.

Berengaria is now situated closer to the centre of the storm than either *Regina* or *Caronia*, and records wind force 8, while the other two ships in the same quadrant of the storm but further from centre report forces 10 and 11 respectively.

The barometric tendencies at the shore stations and those of *Regina* and *Caronia* indicate that the depression is filling in. *Berengaria* as she proceeds on her course will experience a rising glass and improving weather conditions.

WEATHER CHART X FOR THE MORNING OF FEBRUARY 25TH shows that the depression has filled in considerably during the past twelve hours, and will continue to do so with a return to normal weather conditions, as indicated by the barometric tendencies of both ships and shore stations.

In "The Marine Observer's Log" of this number will be found Weather Charts made by Mr. J. DICKSON, 3rd Officer, S.S. *Matakana*, for the mornings of the 24th and 25th of February. These charts were made at sea with data contained in the "Weather Shipping" Bulletin and reports broadcast by "Selected Ships." Comparing these charts with CHARTS VIII and X it will be seen that *Matakana* received observations from ships not appearing on the latter charts. These ships, though not on the list of Voluntary Observing Ships, nevertheless practice Wireless and Weather as an Aid to Navigation. On the other hand, CHARTS VIII and X record observations of Ships of the Voluntary Observing Fleet which do not appear on *Matakana's* charts owing to their not broadcasting their Weather Reports to "All Ships" or to not being received.

When every "Selected Ship" of the Voluntary Observing Fleet broadcasts her reports twice daily at the times of observation of those of the nearest coast stations the distribution of the Fleet is such that on most trade routes of the World sufficient data will be available for the making of Weather Charts such as are given here, and when the proposed International organization is complete there will always be sufficient reports.

The necessity of intercepting the broadcast reports of "Selected Ships" may be seen from the Weather Chart also in "The Marine Observer's Log" of this number, made by the late Mr. A. LAIDLAW, second officer, S.S. *Elysia*, Captain A. R. DUNCAN. Had reports from "Selected Ships" been available in this instance the Isobars could have been extended to the westward of the British Isles, and a more reliable forecast made as explained in Mr. LAIDLAW's note on his chart.

LOCAL WINDS, MEDITERRANEAN AND BLACK SEA.

Prepared in the Marine Division by H. Keeton, Principal Clerical Assistant.

Weather conditions in the Mediterranean and Black Seas provide a notable example of the effect of a large area of water being enclosed within great continental land masses. The sea undergoes far less variation of temperature between day and night and between summer and winter than the surrounding land areas, so that the relative conditions of sea and land are subject to frequent changes, with consequent changeable, and sometimes stormy, weather.

These conditions, together with other geographical features, such as the irregular shape of the coast line, the proximity of high land or desert areas, give rise under suitable meteorological conditions, in many localities, to winds having special characteristics, to which distinguishing local names have been applied.

Generally in the Mediterranean and Black Sea the weather is divided into two distinct types, a summer type and a winter type; the former extending from May to September, and the latter from November to March, April and October being transition months.

During the summer months, the season of fine settled weather, the permanent high pressure area of the eastern North Atlantic and the low pressure over Arabia and Iraq are the controlling factors in the air circulation of the Mediterranean, and in general, away from the land, the prevailing winds are light from North West, except in the western part of the sea, where the prevailing wind is Easterly or North-easterly.

During the winter months the Mediterranean is situated between two areas of high pressure, one centred over the Balkans and the other over North West Africa. This distribution is favourable for the approach of disturbances from the Atlantic; these often follow one another in quick succession and, accentuated by the differences in temperature of sea and land, cause unsettled conditions and frequent storms during this period.

I.—Western Mediterranean.

In the extreme western part of the Mediterranean the winds roughly follow the trend of the coast, being either from between North East and East, or between South West and West, becoming East or West in Gibraltar Strait.

The North Easterly winds predominate during the summer and the South Westerly during the winter. When Easterly winds are established they usually last for a week, increasing in strength as Gibraltar is approached, and blowing strongest during the day. It often happens in summer that while Easterly winds are blowing on the African coast, Westerly winds may be blowing on the Spanish coast, with calms and variable winds to seaward. In this region also, close inshore, winds frequently blow simultaneously from opposing quarters at short distances apart. These winds, known as "Contrastes," are most common near the period of the equinoxes, and are often accompanied by thunderstorms, rain, and violent squalls, and usually produce a heavy sea.

In October, winds from the South West, called "Vendavales," set in regularly, and alternate with those from the North East. These South Westerly winds are very prevalent from November to January, and invariably bring bad weather and heavy rains, and are frequently accompanied by violent squalls. When the wind veers to West, it diminishes in violence, and the sky becomes less overcast; while if it veers to North West, it gradually moderates and the atmosphere clears. With the approach of another depression, however, the wind backs again to South West with renewed strength and a return of bad weather. In February and March the "Vendavales" lose somewhat of their strength, and alternate with winds from the eastward.

EAST COAST OF SPAIN.—On the East coast of Spain, from Cape de Gata to Cape Creus, during the summer North Easterly winds prevail, backing to North and North West towards the Gulf of Lions. In the Bay of Valencia the North Easterly wind reaches the head of the Bay by day, and is succeeded by a land wind at night. At times the wind is light South-Westerly in the Bay, while it is Easterly outside.

In winter the North West wind, called "El Maestral," is very prevalent and, though not strong near the land, is much felt in the offing.

GULF OF LIONS.—In the Gulf of Lions the winds are divided into two predominating groups, the North to North West winds (Mistral or Tramontane) and the South East or East winds (Marins). Throughout the year the North to North West winds are the most frequent, but especially in winter, when they often blow with great violence.

Their direction and strength bear a definite relation to the general pressure distribution, but they are also very considerably influenced by the high mountains situated close to the French coast. When pressure is low to the East or South East of the Gulf, the North West wind due to the barometric gradient is greatly strengthened by the downward flow of the cold dry air from the summits of the mountains; and the Mistral reaches the sea as a gale, and very rapidly produces a high and steep sea. It is usually a cold dry wind, and blows hardest when accompanied by a clear sky or with little cloud; but it sometimes blows during rainy and occasionally snowy weather, accompanied by severe squalls.

The Easterly winds of summer are usually light, with fine weather. A South East wind in the middle of the Gulf, both in summer and winter, veers to South West on its western shore, and backs to North East on its eastern shore, following the trend of the land. They are generally warm moist winds, accompanied by cloudy, rainy weather, and sometimes fog.

South West winds occur occasionally; in summer they are generally light, backing to South East and East, with fine weather at the eastern side of the Gulf. In winter they are seldom strong or of long duration, but when they are (usually in March) they cause a heavy sea on the north-eastern shore of the Gulf, and obscure the land.

BALEARIC ISLANDS.—Amongst these Islands North-westerly to North-easterly winds are generally frequent throughout the year, and are the predominating winds during the winter months, reaching a considerable force when a Mistral is blowing in the Gulf of Lions. In summer, May to September, winds from South West to South East prevail, with generally fine weather.

In Minorca, Northerly winds prevail for two-thirds of the year, and sometimes blow with great force, carrying spray right across the island. In winter they sometimes last for as much as 15 days, and have been known to persist from the North West for two months, with but short interruptions. In summer they may blow strongly for a day, but seldom last for more than three days, and during this season are accompanied by clear weather.

GULF OF GENOA.—On the south coast of France, east of the Rhone, the predominating winds closely follow the trend of the land, being North West and S.S.E. at Marseille, West and East at Ile du Levant, and South West and North East at Camarat. The number of westerly winds decreases eastwards, and east of Cape Roux, Easterly winds predominate throughout the year.

North West winds, the Mistral, occur often in winter, and are sometimes strong between October and April, and have the same characteristics as those of the Gulf of Lions. East of Cape Roux, the Mistral is usually from the West, and rarely lasts for more than two or three days.

During summer land and sea breezes are frequent. The land wind commences during the night, light from North East or E.N.E., veering to the southward, and increasing in strength. At noon the wind is from South to S.S.W., veering to the westward during the afternoon, and falling at sunset.

"Contrastes" are often experienced on these coasts; for example, near Cape Sicie a strong North West wind may be blowing on the west side of the Cape, while at the same time it is blowing from the eastward in Toulon Bay and among the Iles Hyeres.

The prevailing winds in the Gulf of Genoa east of Nice are from North to North East during October to February, and from South or South East during May to September, and bad weather is rarely

experienced, even in winter. On the coast of Genoa, where the land is high, the winds off the land are sometimes very strong, with heavy gusts from the ravines, and occasionally in winter they are very violent with overcast and rainy weather and very severe squalls. Violent North West winds sometimes blow during the day on the western shore of the Gulf, but rarely continue after sunset.

CORSICA AND SARDINIA.—On the North and West coasts of Corsica, West to South West winds, known as the "Libeccio," are the predominating winds throughout the year, having their maximum frequency in summer. These winds, which are always preceded by a low barometer, sometimes reach gale force and raise a heavy sea on the coast, and while they are blowing cloud caps are present over the mountains.

The East coast of Corsica is much protected from these winds, but at the openings of some of the valleys their force is much increased, and they blow down in violent squalls from the mountains, even when their force on the West coast is only moderate.

On the North and West coasts the "Libeccio" is often followed, as soon as the barometer rises, by a North East wind, known as a "Tramontana."

In winter South East winds are nearly as frequent as the South-westerly winds, and these cause a heavy sea on the east coast, and produce very similar squalls on the west coast as the "Libeccio" does on the east coast, but as a rule they are not so violent.

The South coast is most subject to westerly winds, North West to South West, but in winter North-easterly winds are very frequent, veering to East and South East in the Strait of Bonifacio.

On the coasts of Sardinia the most prevalent winds are those from North West and South East. Land and sea breezes are experienced, the sea breeze, called locally the "Imbattu," setting in about noon, and falling calm at sunset, being followed during the evening by a land breeze known as the "Rampinu."

North East winds are also experienced, usually bringing heavy rains; while Easterly winds are usually accompanied by vivid lightning, their approach being indicated by the formation of clouds on the summits of the mountains.

WEST COAST OF ITALY.—In the Tyrrhenian Sea between Corsica and Sardinia and the West Coast of Italy the weather is much quieter than to the westward of those islands. Although depressions frequently travel in a South-easterly direction across Italy, the islands afford very effective protection against Westerly gales, so that these rarely reach the west coast of Italy, especially the southern portion.

The prevailing winds are from North or North East during the autumn and winter. In spring and summer West and South West winds become more frequent north of Naples, while further south, towards the Strait of Messina, East and South East winds prevail. Westerly winds are rare south of Naples, except when a North West to South West gale is blowing to the westward of Corsica and Sardinia, when these winds may be felt as squalls on the Italian coast.

In the winter and spring South-easterly gales are experienced on the Coast, especially between Civita Vecchia and Leghorn; they commence with gloomy damp weather, which as the wind freshens becomes thick, with heavy rain. The weather clears as the wind veers to the South and West, and it often veers suddenly to the westward in a violent squall. After blowing hard from this quarter for several hours, it gradually veers to the North West and moderates.

Land and sea breezes are frequent on the coast, especially during the summer. Land squalls, known as "Raggiature," often descend with great force where there is high land near the coast, but they only extend a short distance off shore.

COASTS OF MOROCCO, ALGERIA AND TUNISIA.—The winds on these coasts are generally from the eastward or westward, following the trend of the coast. The easterly winds predominate in summer, varying in direction from E.S.E. to E.N.E., and sometimes North East. Near the coast sea breezes prevail during the day, while the wind in the offing is blowing from an Easterly or Westerly direction. These sea breezes usually set in shortly before noon, and continue until sunset, when they fall light or become calm. Two or three hours afterwards a land breeze sets in from S.E. or South (or, if the wind is from the westward in the offing, from S.W.), attaining its greatest strength about sunrise, and then gradually giving way to the sea breeze.

The westerly winds which prevail during the winter months are generally fresh in November, blowing in gusts, and accompanied by rain and a heavy sea. In December these winds become stronger, and the weather boisterous, especially if the wind veers to North West. Gales are experienced during this month, and in January and February, but vary in strength in different localities.

Westerly winds are generally associated with remarkable clearness of the atmosphere and dryness of the air. If the peaks of the mountains have light clouds hanging over their eastern slopes, it is an indication of a westerly wind; while if the clouds hang over the western slopes, it is a sign of an easterly wind.

This coast is subject to the hot winds from the Sahara desert, known as the Scirocco or Simoon. They blow from S.S.E. to S.S.W. on the Moroccan coast, and from South to South West on the coast of Algeria. They are usually moderate in strength, but blow in scorching puffs, sucking up moisture from the sea, raising the temperature considerably, and are very oppressive. The Scirocco may blow at any time of the year, but is twice as frequent in summer as in winter. At Algiers it is experienced, on an average, for about 30 days in the year.

SICILY AND MALTA.—On the coasts of Sicily during the summer, May to August, winds are chiefly from the North East; while during the winter months, October to March, South-westerly winds predominate. During April and September North-easterly winds alternate with those from South West.

The Scirocco, somewhat moderated by its passage over the sea, is experienced, and on the east coast, where it first arrives, its effects are not considerable; but in summer, as it blows across the land to the North West, it seems to acquire additional heat, and its effects are particularly felt at Palermo.

In the Malta Channel and at Malta the prevailing winds are from North West throughout the year, but winds from North East and South East are also frequent, the former especially during the summer, and the latter during the autumn.

In winter North West and North East winds are stronger than those further to the westward, and sometimes freshen to gale force. A strong wind from North East is called a "Gregale," and may be a source of inconvenience or danger to shipping.

In summer the weather is settled and dry, with light winds mostly from North West or North East, with a large percentage of calms.

Southerly or South-easterly winds in autumn have the characteristics of the Scirocco, being disagreeably hot and humid, but they seldom last more than three or four days at a time.

(To be continued.)

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

SOUTHERN ICE REPORTS
During the Years 1917 to 1928.

February.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1917	8	42° 30' S.	53° 20' E.	Large berg .. .. .	.. .. .	—
1922	23	68° 19' S.	0° 54' E.	Stream ice and some heavy ice fragments	.. .. .	R.Y.S. <i>Quest.</i>
	22	67° 28' S.	6° 14' E.	1 berg, 1 growler and loose pack and brash	.. .. .	do.
	21	67° 39' S.	8° 12' E.	2 bergs, loose and heavy pack	.. .. .	do.
	20	67° 22' S.	9° 12' E.	1 berg, loose pack, pancake and brash	.. .. .	do.
	1	62° 36' S.	9° 53' E.	1 berg	.. .. .	do.
	19	66° 44' S.	10° 06' E.	1 berg and floes of old ice mixed with brash.	.. .. .	do.
	18	65° 40' S.	11° 21' E.	Brash and pack tails .. .. .	.. .. .	do.
	17	65° 40' S.	12° 47' E.	1 berg and light pack .. .. .	.. .. .	do.
	16	66° 43' S.	14° 22' E.	8 bergs, heavy lumps of old pack and area of tabular ice 3 to 4 feet high.	.. .. .	do.
	15	67° 46' S.	14° 36' E.	Pancake ice 3 to 5 inches in thickness	.. .. .	do.
	4	65° 07' S.	15° 16' E.	Loose stream ice .. .. .	.. .. .	do.
	14	68° 21' S.	15° 53' E.	3 bergs	Pack thinning, young ice melting	do.
	10	68° 03' S.	16° 08' E.	Heavy pack .. .. .	.. .. .	do.
	13	68° 58' S.	16° 08' E.	5 bergs	Moving slowly northward	do.
	9	67° 29' S.	16° 14' E.	Pieces of heavy two-year ice mixed in pack.	.. .. .	do.
	5	66° 12' S.	16° 16' E.	1 berg	Heavy pack, eastward	do.
	8	67° 22' S.	16° 40' E.	Loose pack .. .. .	.. .. .	do.
	6	67° 06' S.	16° 45' E.	2 bergs and loose pack	Stretches of open water	do.
	11	68° 52' S.	16° 48' E.	2 bergs and large floes of new ice with two-year ice interspersed.	.. .. .	do.
	7	67° 40' S.	17° 00' E.	3 bergs	Loose, then heavy pack	do.
	12	69° 18' S.	17° 04' E.	10 bergs	At standstill in heavy pack	do.
	6 to 27	From 53° 23' S. to 47° 18' S.	49° 16' W. to 43° 53' W.	.. .. .	Picked up Finnish barque <i>Professor Koch</i> , after being in collision with bergs, becoming demasted and rudderless, was 21 days continually among the ice, could not get out, she hit the berg during a fog. Took barque in tow to Monte Video.	S.S. <i>Junin</i> .
	28	65° 47' S.	8° 19' W.	1 berg, loose heavy lumps	Pancake mixed with old floe	R.Y.S. <i>Quest.</i>
	27	66° 32' S.	4° 35' W.	Few pieces and patches of ice .. .. .	.. .. .	do.
	26	66° 44' S.	3° 03' W.	1 berg, brash and occasional close pack .. .. .	.. .. .	do.
	25	67° 40' S.	0° 53' W.	1 berg, brash and heavy pieces of old floe	.. .. .	do.
	24	68° 32' S.	0° 05' W.	Pancake ice and heavy ice fragments	.. .. .	do.
1923	3	55° 37' S.	129° 56' W.	Berg .. .. .	.. .. .	S.S. <i>Middlesex</i> .
	3	55° 45' S.	128° 24' W.	Berg .. .. .	.. .. .	do.
1924	9	56° 25' S.	134° 24' W.	Small berg .. .. .	.. .. .	S.S. <i>Port Victor</i> .
1926	20	Larsen Pt., 225° 56 miles	.. .. .	Close pack	Remarkable discolouration on one part like bluff or rock	R.R.S. <i>Discovery</i> .
	19	53° 21' S.	34° 53' W.	2 bergs	Tabular, 350 feet high, estimated	do.
	19	53° 21' S.	34° 53' W.	Berg	Pinnacle, 200 feet high, estimated	do.
	19	53° 21' S.	34° 53' W.	Bergy bits	Various sizes	do.
	19	52° 37' S.	33° 38' W.	2 bergs	Tabular, 250 feet and 50 feet high, estimated	do.
	18	51° 59' S.	32° 30' W.	Growler and bergy bits	Growler 20 to 30 feet high, very low	do.
	18	51° 40' S.	32° 02' W.	Berg	Tabular, 250 feet high, 1/4-mile in length, measured by sextant.	do.
	16	50° 23' S.	30° 23' W.	Berg	Tabular, 300 feet high, 1/4-mile long, measured by sextant	do.
1927	27	50° 55' S.	67° 08' W.	10 pieces of ice	About 40 feet in extent	S.S. <i>Hardanger</i> .
	6	43° 43' S.	58° 29' W.	Berg	180 feet high	S.S. <i>Gallie</i> .
	25	From *82° 31' S. to Cape Melville, King George Is., brg, 291° 14 miles.	58° 30' W.	21 bergs, bergy bits and growlers	1 large tabular, the others mainly pinnacled	R.R.S. <i>Discovery</i> .
	25	*Cape Melville, King George Is., brg, 287° 17 miles	.. .. .	2 bergs	1 medium sized tabular, 1 medium sized pinnacle, covered with moranic deposit.	do.
	1	46° 53' S.	56° 43' W.	Berg .. .. .	.. .. .	S.S. <i>Oraduna</i> .
	9	44° 57' S.	56° 34' W.	Berg	370 feet high, 1,200 feet long. 4 growlers in vicinity	S.S. <i>La Paz</i> .
	9	45° 02' S.	55° 56' W.	Berg	200 feet high (approx.), 1,500 feet long (approx.), too far away to obtain sextant angle.	do.
	24	*From Cape Melville, King George Is., brg, 322° 10 miles.	.. .. .	6 bergs	Various shapes; medium size	R.R.S. <i>Discovery</i> .
	7	to 61° 40' S.	55° 35' W.	Berg .. .. .	.. .. .	S.S. <i>Saller</i> .
	24	From *S. and S.E. of Gibbs and O'Brien Is.,	55° 40' W.	6 bergs and bergy bits	Medium sized tabular bergs	R.R.S. <i>Discovery</i> .
	9	to 61° 40' S.	55° 35' W.	Berg	200 feet high (approx.)	S.S. <i>La Paz</i> .
	10	43° 15' S.	54° 12' W.	Berg	200 to 300 feet high	do.
	23 to 24	*Between Clarence Is. and Gibbs Is.	.. .. .	Bergs .. .. .	.. .. .	R.R.S. <i>Discovery</i> (Signy I., S. Orkneys to Deception I., S. Shetlands).
	5	35° 51' S.	53° 55' W.	Berg	About 40 feet high, 300 to 400 feet long	S.S. <i>Grangepark</i> .
	6	35° 41' S.	53° 55' W.	Large berg .. .. .	.. .. .	S.S. <i>George M. Embiricos</i> .
	6	35° 41' S.	53° 54' W.	Berg	80 feet above water, 150 feet long	S.S. <i>Mongolian Prince</i> .
	23	From *S.W. of Clarence Is.,	53° 51' W.	7 large tabular bergs, ice island and small ice.	Many large tabular bergs to S'rd. and an ice island extending as far as eye could see.	R.R.S. <i>Discovery</i> .
	6	to 61° 29' S.	53° 51' W.	Small berg	20 feet high, 200 feet long	S.S. <i>Curaca</i> .
	10	35° 47' S.	53° 46' W.	Berg .. .. .	.. .. .	S.S. <i>La Paz</i> .
	10	43° 07' S.	53° 07' W.	Berg	180 feet high, 400 feet long, drifting in N.E'ly direction at approx. 1 knot. Several growlers in vicinity.	do.
	10	42° 57' S.	53° 25' W.	Berg	Bergs, mainly tabular	R.R.S. <i>Discovery</i> .
	23	From *61° 06' S. to 60° 45' S.	52° 37' W. to 51° 58' W.	44 bergs, bergy bits, growlers and small ice.	.. .. .	do.
	22 to 23	Between Ice Is., reported on 22nd February, and Clarence Is.	.. .. .	Sea studded with bergs .. .. .	.. .. .	do.

* Position of Ship (R.R.S. *Discovery*).

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1927	22	From 60° 51' S. to 60° 53' S.	51° 02' W. 50° 05' W.	Ice island, many large tabular bergs, many growlers and small ice.	An enormous tabular berg or ice island was sighted. Length (by log) 35 miles. Height, average (by sextant), 150 feet. Soundings taken close to northern side of berg in 1,373 fathoms and 1,011 fathoms, 12 and 13 miles, respectively, from N.E. corner. Between these soundings a net being towed with 984 fathoms of wire out, took the bottom in a depth estimated at 600 fathoms.	R.R.S. <i>Discovery</i> .
	1	51° 35' S.	50° 10' W.	2 bergs .. .. .	.. .. .	S.S. <i>Padua</i> .
	21	From 60° 58' S. to 61° 02' S.	49° 51' W. 49° 15' W.	14 bergs, growlers and small ice	Bergs of various shapes and sizes, mainly medium sized tabular.	R.R.S. <i>Discovery</i> .
	1	51° 10' S.	49° 25' W.	Berg .. .. .	.. .. .	S.S. <i>Padua</i> .
	11	39° 42' S.	49° 05' W.	Berg	150 feet high, drifting in N.E.'ly direction. 4 growlers in vicinity.	S.S. <i>La Paz</i> .
	21	From 61° 02' S. to 60° 56' S.	49° 15' W. 48° 40' W.	11 bergs, bergy bits and growlers	Bergs of various shapes and sizes, mainly medium sized tabular.	R.R.S. <i>Discovery</i> .
	21	From 60° 56' S. to 60° 58' S.	48° 40' W. 48° 05' W.	7 bergs, bergy bits and growlers	Bergs of various shapes and sizes, mainly medium sized tabular.	do.
	21	From 60° 58' S. to 60° 55' S.	48° 05' W. 47° 41' W.	14 bergs, bergy bits and small ice	Bergs of various shapes and sizes, mainly medium sized tabular, much weather worn.	do.
	21	From 60° 55' S. to 60° 55' S.	47° 41' W. 47° 30' W.	11 tabular bergs and bergy bits	Medium to large	do.
	16	From 60° 26' S. to 60° 05' S.	47° 39' W. 47° 29' W.	5 large tabular bergs and many growlers .. .. .	.. .. .	do.
	16	From 60° 26' S. to 60° 38' S.	47° 39' W. 47° 14' W.	Several large tabular bergs .. .. .	.. .. .	do.
	21	60° 55' S.	47° 30' W.	10 large tabular bergs, bergy bits and growlers.	.. .. .	do.
	12	38° 37' S.	47° 29' W.	Berg	212 feet high, drifting in N.E.'ly direction	S.S. <i>La Paz</i> .
	16	From 60° 05' S. to 59° 43' S.	47° 29' W. 47° 20' W.	9 bergs, bergy bits, growlers and small ice	Bergs mainly large tabular	R.R.S. <i>Discovery</i> .
	20	60° 57' S.	47° 22' W.	1 very large tabular berg and small ice .. .. .	.. .. .	do.
	15	From 59° 37' S. to 59° 12' S.	47° 23' W. 47° 14' W.	2 large tabular bergs and 3 medium sized pinnacle bergs.	.. .. .	do.
	20	From 60° 57' S. to 60° 53' S.	47° 22' W. 46° 50' W.	Bergs and bergy bits .. .. .	.. .. .	do.
	16	From 59° 43' S. to 59° 25' S.	47° 20' W. 47° 10' W.	7 tabular bergs and many growlers	Tabular bergs of various sizes from 1 cable to 2 miles in length.	do.
	16	60° 40' S.	47° 14' W.	Bergs and growlers .. .. .	.. .. .	do.
	15	From 59° 12' S. to 58° 50' S.	47° 14' W. 47° 00' W.	11 bergs and 26 growlers	Bergs mainly medium sized, pinnaced	do.
	14	58° 55' S.	47° 00' W.	5 bergs .. .. .	.. .. .	do.
	20	*S.E. Rock off Signy Is. (S. Orkneys), brg., 47° 6' 6 miles.		Bergs, bergy bits and small ice	192 bergs, mainly tabular, seen from masthead during afternoon watch. Pack ice in heavy belts studded with bergs, from S., towards the land in the N.E.	do.
	20	*Off Borge Hbr., Signy Is. (S. Orkneys).		Bergs, bergy bits and small ice	Many bergs and much heavy pack ice to S.E.'rd. of Signy I.	do.
	17	From *Signy Is. (S. Orkneys) to 60° 54' S.	46° 33' W.	Bergs and pack ice	Ship working through broad belts of pack ice. This pack, which was heavily pressured and broken into small floes, appeared from its condition to be first year ice and most likely out of the Weddell Sea.	do.
	14	From 58° 47' S. to 58° 21' S.	46° 57' W. 46° 47' W.	19 bergs, 7 bergy bits and many growlers	Bergs of various shapes and sizes, mainly large tabular, one of which (seen through mist) appeared to be several miles long.	do.
	17	60° 45' S.	46° 52' W.	7 large tabular bergs, bergy bits and growlers.	.. .. .	do.
	17	From 60° 45' S. to 60° 54' S.	46° 52' W. 46° 33' W.	Bergs, bergy bits, growlers and pack ice	Innumerable bergs of all shapes and sizes. Pack ice towards S. side of Coronation Island.	do.
	14	From 58° 21' S. to 57° 55' S.	46° 47' W. 46° 38' W.	Bergs and bergy bits	Bergs of various shapes and sizes, mainly large tabular	do.
	14	From 57° 46' S. to 57° 30' S.	46° 39' W. 46° 27' W.	24 large tabular bergs, many bergy bits and a few growlers.	Bergs mainly about 1-2 miles long. One berg was covered with moranic deposit.	do.
	14	57° 24' S.	46° 18' W.	Many large tabular bergs, bergy bits and several growlers.	Some bergs 2-3 miles long	do.
	13	57° 10' S.	46° 00' W.	5 large tabular bergs .. .. .	.. .. .	do.
	13	From 57° 03' S. to 56° 45' S.	46° 00' W. 45° 47' W.	2 tabular bergs, many bergy bits and growlers.	.. .. .	do.
	13	From 56° 45' S. to 56° 28' S.	45° 47' W. 45° 33' W.	Many large bergy bits and growlers .. .. .	.. .. .	do.
	11	From 56° 13' S. to 56° 09' S.	44° 58' W. 44° 46' W.	1 large tabular berg	Length 1.8 miles (by log), approximate height 100 feet	do.
	11	From 56° 09' S. to 56° 06' S.	44° 46' W. 44° 35' W.	3 large tabular bergs .. .. .	.. .. .	do.
	12	55° 59' S.	44° 35' W.	1 large tabular berg .. .. .	.. .. .	do.
	12	56° 19' S.	44° 27' W.	6 large tabular bergs .. .. .	.. .. .	do.
	10	From 55° 45' S. to 55° 34' S.	44° 31' W. 44° 20' W.	1 large tabular berg .. .. .	.. .. .	do.
	10	From 55° 34' S. to 55° 24' S.	44° 20' W. 44° 07' W.	7 bergs	Various shapes and sizes, mainly large tabular	do.
	19	53° 10' S.	44° 10' W.	1 large tabular berg .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	10	55° 20' S.	44° 05' W.	1 pinnaced berg .. .. .	.. .. .	R.R.S. <i>Discovery</i> .
	9	From 56° 00' S. to 55° 38' S.	44° 24' W. 44° 04' W.	1 large tabular berg .. .. .	.. .. .	do.
	19	53° 20' S.	43° 45' W.	2 bergs, several growlers .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	18	53° 25' S.	43° 20' W.	1 medium tabular berg .. .. .	.. .. .	do.
		53° 30' S.	42° 50' W.	1 large tabular berg .. .. .	.. .. .	do.
	8	From 54° 23' S. to 54° 04' S.	42° 44' W. 42° 29' W.	1 large tabular berg .. .. .	.. .. .	R.R.S. <i>Discovery</i> .
	18	53° 30' S.	42° 30' W.	3 large tabular and 1 irregular berg .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	8	From 54° 04' S. to 53° 49' S.	42° 29' W. 42° 18' W.	2 tabular bergs	Medium size	R.R.S. <i>Discovery</i> .
	8	*10 miles W.S.W. of Shag Rocks		Bergs and much small ice .. .. .	.. .. .	do.
	18	53° 25' S.	42° 15' W.	2 bergs .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
		53° 38' S.	42° 14' W.	4 bergs .. .. .	.. .. .	do.
		53° 20' S.	42° 06' W.	2 weathered tabular bergs .. .. .	.. .. .	do.
	7	*S.E. rock of Shag Rocks brg. 290° 12 miles.		22 large tabular bergs	These bergs were sighted stretching in a line E. & W. at a distance of about 10 miles S. of Shag Rocks. They appeared to be aground on the S. edge of Shag Shoal. No other bergs seen in immediate vicinity of the rocks to the N.	R.R.S. <i>Discovery</i> .
	7	53° 19' S.	40° 43' W.	1 large tabular berg .. .. .	.. .. .	do.
	17	53° 40' S.	40° 20' W.	1 small berg and 1 growler .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	6	53° 11' S.	40° 14' W.	Bergs .. .. .	.. .. .	R.R.S. <i>Discovery</i> .
	17	53° 45' S.	40° 09' W.	1 berg	Irregular shape, medium size	R.S.S. <i>William Scoresby</i> .
	Early in Feb.	58° 30' S.	40° 08' W.	An enormous berg	Described as being "As large as S. Georgia." Position given is approximate central position of berg.	S.S. <i>Lancing</i> .

* Position of Ship (R.R.S. *Discovery*).

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1927	6	From 52° 58' S.	40° 00' W.	6 tabular bergs	Medium size, weather and water worn	R.R.S. <i>Discovery</i> .
		to 52° 51' S.	39° 35' W.			
	6	From 52° 50' S.	39° 16' W.	4 tabular bergs and 3 bergy bits	Bergs, medium size	do.
		to 52° 50' S.	39° 04' W.			
	16	From 53° 55' S.	37° 32' W.	1 berg .. .. .	.. .. .	R.S.S. <i>William Scoresby</i> .
	4	From 53° 41' S.	37° 13' W.	4 tabular bergs	These bergs were probably from the Southern Barrier (Weddell Sea) and with others have been set northward by wind and current until they strand off the coast of S. Georgia.	R.R.S. <i>Discovery</i> .
	to Cape Constance (S. Georgia) brg., 190° 11 miles.					
	23	From 51° 45' S.	37° 00' W.	Large field of pack ice	Composed chiefly of great bergs and ice forms of every kind. Bergs were of tabular type with precipitous sides 200 to 400 feet high.	S.S. <i>Strathfillan</i> .
		to 52° 10' S.	36° 10' W.			
	22	From 49° 35' S.	36° 40' W.	9 large tabular bergs	About 400 to 600 feet high	do.
		to 50° 45' S.	36° 30' W.			
	20	44° 06' S.	35° 52' W.	Large peaked berg .. .. .	.. .. .	do.
1928	26	44° 52' S.	42° 16' W.	2 small bergs .. .. .	.. .. .	Bqe. <i>C. B. Pedersen</i> .

* Position of Ship (R.R.S. *Discovery*).

Reports of ice previous to February, 1917, will be found on the back of the Monthly Meteorological Chart of the East Indian Seas, January 1917, No. 129.

WEATHER SIGNALS.

II. WIRELESS WEATHER SIGNALS.

Bulletins.

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

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

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

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

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

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

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

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

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

WIRELESS WEATHER BULLETINS,
GREAT BRITAIN AND IRELAND.

C.W. ISSUES "WEATHER SHIPPING" BULLETIN.

W/T Station, **Air Ministry**. Latitude 51° 27' 50" N.
Longitude 0° 01' 35" E.
Call sign **G.F.A.**
Wave length 4,100 metres, C.W.
Times of transmission 0900 G.M.T.* and 2000 G.M.T.

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

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

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

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

Explanation of Chartlet.

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

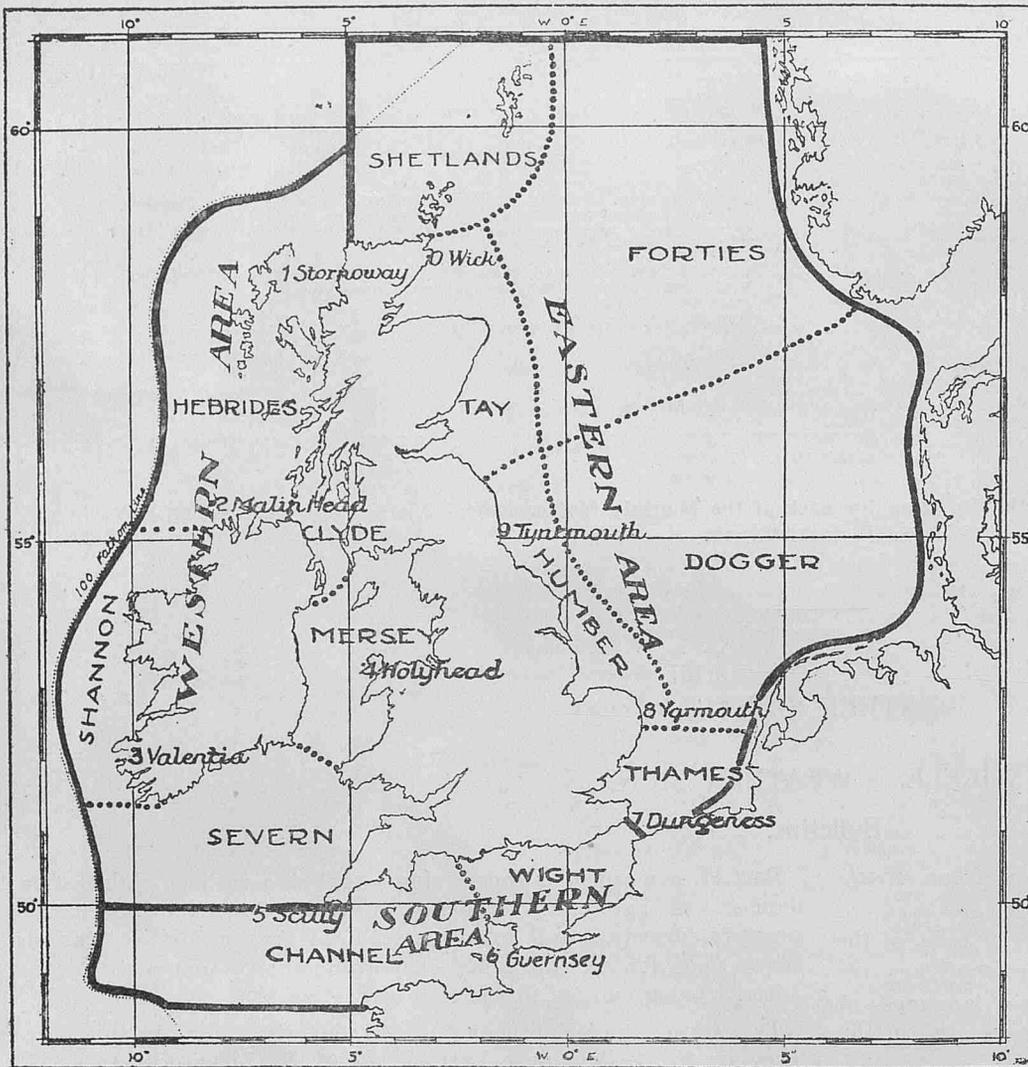
The boundaries of the areas are defined by the plain black lines and the coast line.

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

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

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

CHARTLET SHOWING STATIONS, FORECAST AREAS AND DISTRICTS.



DESCRIPTION OF CODE

AND

INSTRUCTIONS FOR DECODING PART II.

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

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

The 2nd Figure gives the Barometric tendency, Table XII., p. 24, Vol. VI, No. 61.

The 3rd and 4th Figures give the weather, Table V., p. 22, Vol. VI, No. 61.

The 5th Figure gives the visibility, Table VI., p. 23, Vol. VI, No. 61. Caution is necessary in the use of these visibility reports owing to the conditions of view to seaward at some stations. The two foreign stations' visibility reports are landward.

Even Groups. The 1st and 2nd Figures indicate the last two whole figures of the corrected barometer reading in millibars.* To convert to inches, see Special Table XXIII, p. 25, Vol. VI, No. 61.

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

WESTERN AREA.

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

DISTRICTS.

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

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

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

MERSEY.—The Irish Sea and approaches.

CLYDE.—The North Channel and approaches to Clyde.

SOUTHERN AREA.

The English Channel from Dover to the 100 fathom line.

DISTRICTS.

CHANNEL.—West of Portland.

WIGHT.—East of Portland.

EASTERN AREA.

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

DISTRICTS.

THAMES.—Thames Estuary and its approaches.

HUMBER.—East coasts from Yarmouth to Tweed.

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

SHETLANDS.—Orkneys and Shetlands.

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

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

The 3rd and 4th Figures give the True Direction of the Wind, Table III., p. 22, Vol. VI, No. 61.

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

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

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

$I_n K' ww V_s$

BBDDF.

Thus I_n = Station.

BB = Barometric Pressure.

K' = Barometric tendency.

DD = Wind Direction.

ww = Weather.

F = Wind Force.

V_s = Visibility.

It will be noticed that the above symbols and their meanings are taken from the Abridged Key to the International Code which was published together with the necessary decode tables in Vol. VI, No. 61, pp. 21 to 25.

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

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

A Sample Message.

Call Sign:—CQ CQ CQ V GFA GFA GFA (repeated twice).
Weather Shipping.

Inference.—A deep depression over the North Channel which is moving East North East will cause strong winds or gales in all districts with much rain at first. Improving weather will spread across the country in its rear.

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

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

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

SPARK ISSUES.

“WEATHER SHIPPING” BULLETIN.

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

For the Western Area.

Valentia, Lat. 51° 56' N., Long. 10° 21' W. (approx.), call sign **GCK** wavelength 600 metres spark. At 0948 G.M.T. and at 2048 G.M.T.

Seaforth, Lat. 53° 28' N., Long. 3° 01' W. (approx.), call sign **GLV** wavelength 600 metres spark. At 0930 G.M.T. and at 2030 G.M.T.

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

For the Southern Area.

Niton, Lat. 50° 35' N., Long. 1° 17' W. (approx.), call sign **GNI**, wavelength 600 metres spark. At 0930 G.M.T. and at 2030 G.M.T.

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

For the Eastern Area.

Cullercoats, Lat. 55° 02' N., Long. 1° 26' W. (approx.), call sign **GCC**, wavelength 600 metres spark. At 0948 G.M.T. and at 2048 G.M.T.

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

WIRELESS TELEPHONY (R/T) ISSUES.

“WEATHER SHIPPING” BULLETIN.

Certain portions of the “Weather Shipping” Bulletin are broadcast from the BRITISH BROADCASTING CORPORATION’S station at **Daventry** by Wireless Telephony as follows:—

Daventry. Latitude 52° 15' N., Longitude 1° 08' W. (approx.), call sign 5XX, wavelength 1562.5 metres (R/T). At 1030 and about 2130 G.M.T. on weekdays and 1030 and about 2100 G.M.T. on Sundays

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

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

As changes in the Time of issue of Parts I, III, IV and V through the BRITISH BROADCASTING CORPORATION’S station at **Daventry** are occasionally necessary at short notice, mariners are referred to the “Radio Times,” the official organ of the BRITISH BROADCASTING CORPORATION, which is published weekly for notice of the exact times of issue of this message; these are also given in the daily press.

It should be noted that the times given in the “Radio Times” are G.M.T. only when summer time is not in operation, while all times for Wireless Weather Telegraphy in THE MARINE OBSERVER are G.M.T.

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

WIRELESS GALE WARNINGS.

Spark Issues.

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

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

Stations broadcasting these warnings.

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

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

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

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

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

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

Wireless Telephony (R/T) Issues.

Gale warnings will be broadcast as necessary by Radio Telephony, by the BRITISH BROADCASTING CORPORATION'S station at Daventry, call sign 5XX, on the wavelength of 1562.5 metres as follows:—

Weekdays.

Immediately after the time signals at 1300 and 1645 G.M.T. and immediately before the general weather report (not the Weather Shipping Bulletin) broadcast at 1815 G.M.T. Gale warnings issued at 1300 G.M.T. will be repeated both at 1645 and 1815 G.M.T. and a warning issued at 1645 G.M.T. will be repeated at 1815 G.M.T.

Sundays.

Immediately after the time signal at 1530 G.M.T. only.

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

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

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

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

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

III. WIRELESS TIME SIGNALS.

C.W. Issues.

Rugby W/T Station, Lat. 52° 21' 59" N., Long. 1° 11' 12" W., call sign GBR, broadcasts Time Signals on a wavelength of 18,740 metres (C.W.) at 1000 and 1800 G.M.T.:—

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

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

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

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

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

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

Wireless Telephony (R/T) Issues.

The Time Signals broadcast by the British Broadcasting Corporation through their Station at Daventry, latitude 52° 15' N., longitude 1° 08' W., call sign 5XX, wavelength 1562.5 metres, may be of utility for rating chronometers at sea in ships which are fitted for R/T reception but have not Wireless Telegraphy on board.

These Time Signals are made at the following times:—

Weekdays.		Sundays.	
1030 G.M.T.		1030 G.M.T.	
1300	"	1530	"
1645	"	2100	"
1815	"	2200	"
2200	"		

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

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

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

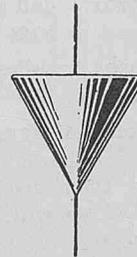
As changes in the times of the British Broadcasting Corporation issues may be made at shorter notice than can be given by THE MARINE OBSERVER, Mariners are therefore referred to the RADIO TIMES, the official organ of the British Broadcasting Corporation, published weekly, for exact times of issue.

IV. VISUAL GALE WARNINGS.

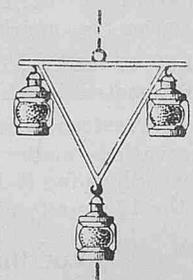
Great Britain and Ireland.

SOUTH CONE.

By Day.



By Night.

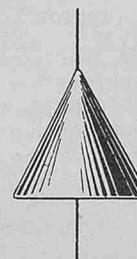


Hoisted for Gales.

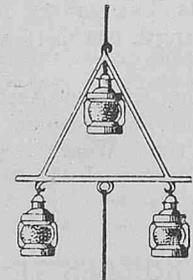
From S.E., veering to S.W., W., or N.W.
 " S.W., veering to W. or N.W.
 " W., veering to N.W.
 And also from E., veering to S. or S.W.

NORTH CONE.

By Day.



By Night.



Hoisted for Gales.

From S.E., E., or N.E., backing to N.
 " N.W., veering to N., N.E., or E.
 " N., veering to N.E. or E.
 " N.E., veering to E.

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

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

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

The stations are as follows:—

England, East Coast.

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

England, South Coast.

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

England, West Coast, and Wales.

Sennen	Lynmouth—Foreland
Godrevy	Bude
St. Ives	Hartland Point
Newquay	Bull point
Trevoise head	Ilfracombe
Padstow	Weston-super-Mare
Port Isaac	Avonmouth

ENGLAND, WEST COAST, AND WALES.—*Continued.*

Newport (Mon.)	Penmon
Cardiff	Hilbre island
Penarth	Hoylake
Nells point	New Brighton
Barry dock	Formby light-vessel
Nash	Crosby light-vessel
Briton ferry	Runcorn
Mumbles	Liverpool
Rhos-sili	Preston
Burry port	Blackpool
Tenby	Fleetwood
Caldy island	Heysham
St. Ann's head	Morecambe
Fishguard	Barrow
Newquay (Cardigan)	Walney island
Aberystwith	Maryport
Carnarvon	Whitehaven
South Stack	Douglas (Isle of Man)
Holyhead	Ayre point (Isle of Man)
Point Lynus	Ramsey (Isle of Man)

Scotland, West Coast.

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

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

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

Ireland, North and East Coasts.

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

Ireland, South Coast.

Queenstown	Galley head
Cork	

Ireland, West Coast.

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

Special Notices Regarding Personnel.

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

Captain H. G. Wilding.

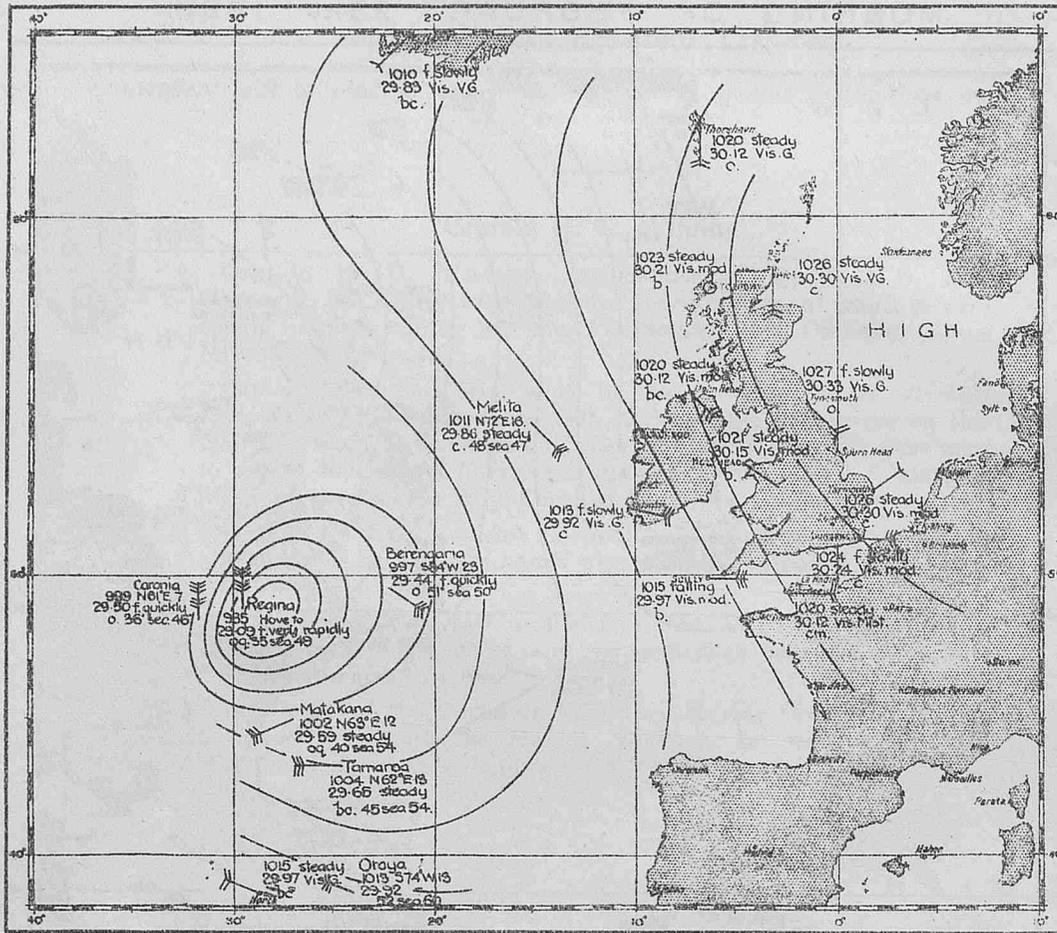
Captain H. G. WILDING, Commander of the P. & O. S.S. *Peshawur*, has retired after 36 years' service afloat, of which 28 were spent in the employ of the PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY.

Captain WILDING first went to sea in the Barque *Michael Hutchinson*, of Liverpool, in 1891, and had the misfortune on this his first voyage to be burnt out when off Cape Horn. He next went to sea in the Ship *Ulidia*, and again met with disaster, his ship being wrecked on the West Coast of Australia.

Joining the Ship *Ainsdale* misfortune was once more experienced when off the Horn; four hands were washed overboard and several others severely injured.

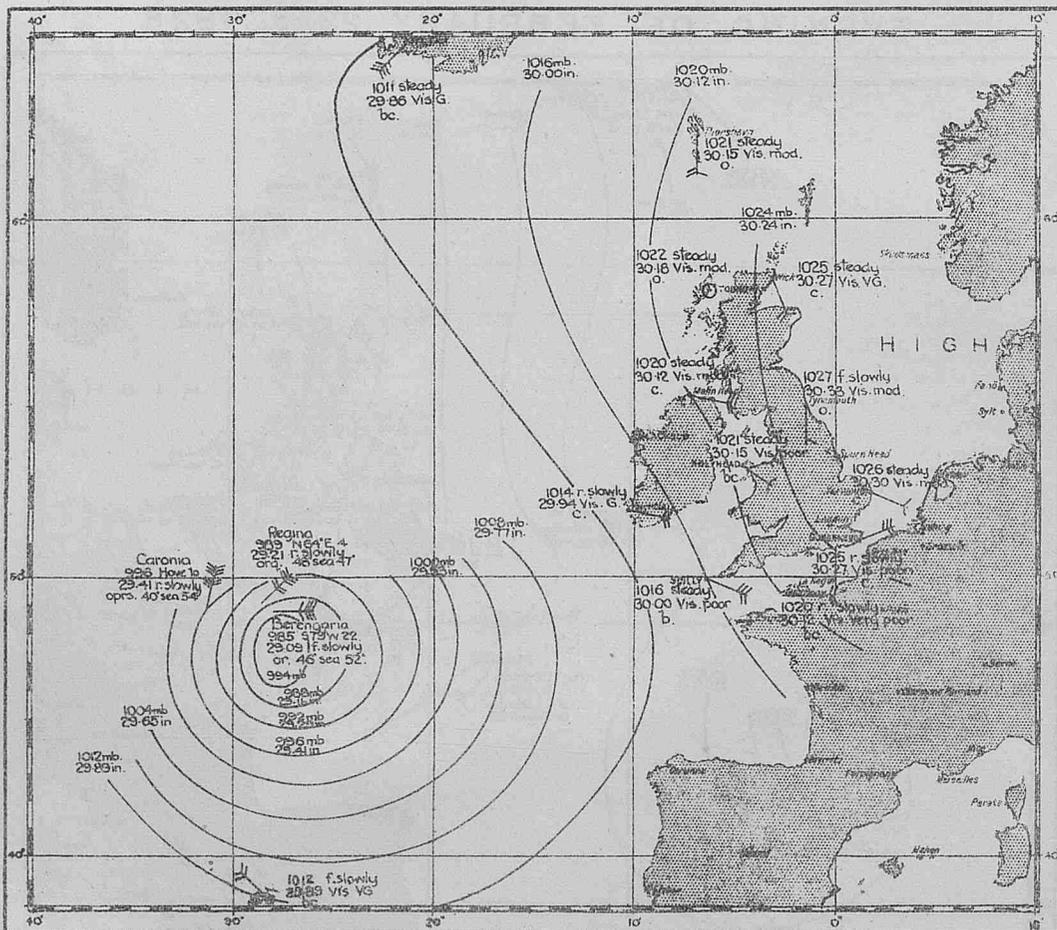
Transferring from sail to steam in 1899, he joined the P. & O. COMPANY as a junior officer, and rising through the successive grades obtained command in 1926.

A member of the Corps of Voluntary Marine Observers, Marine Observers join with the Marine Division in wishing Captain WILDING long life and happiness in his retirement.



Weather Chart VIII.

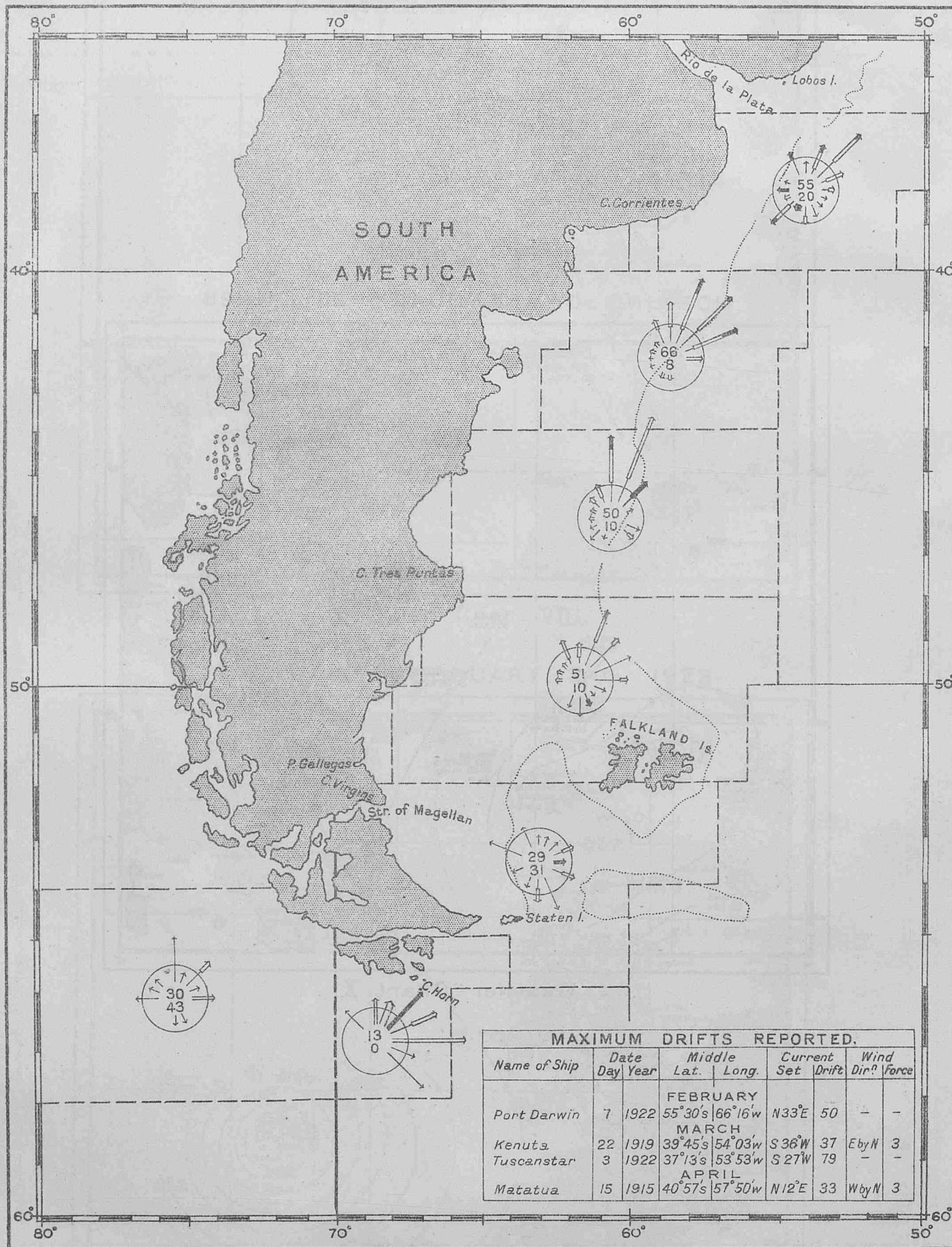
EVENING OF FEBRUARY 24TH. 1928.



Weather Chart IX.

CURRENTS ON THE TRACKS FROM THE LATITUDE OF THE PLATE TO MAGELLAN STRAITS AND CAPE HORN, FEBRUARY, MARCH AND APRIL.

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



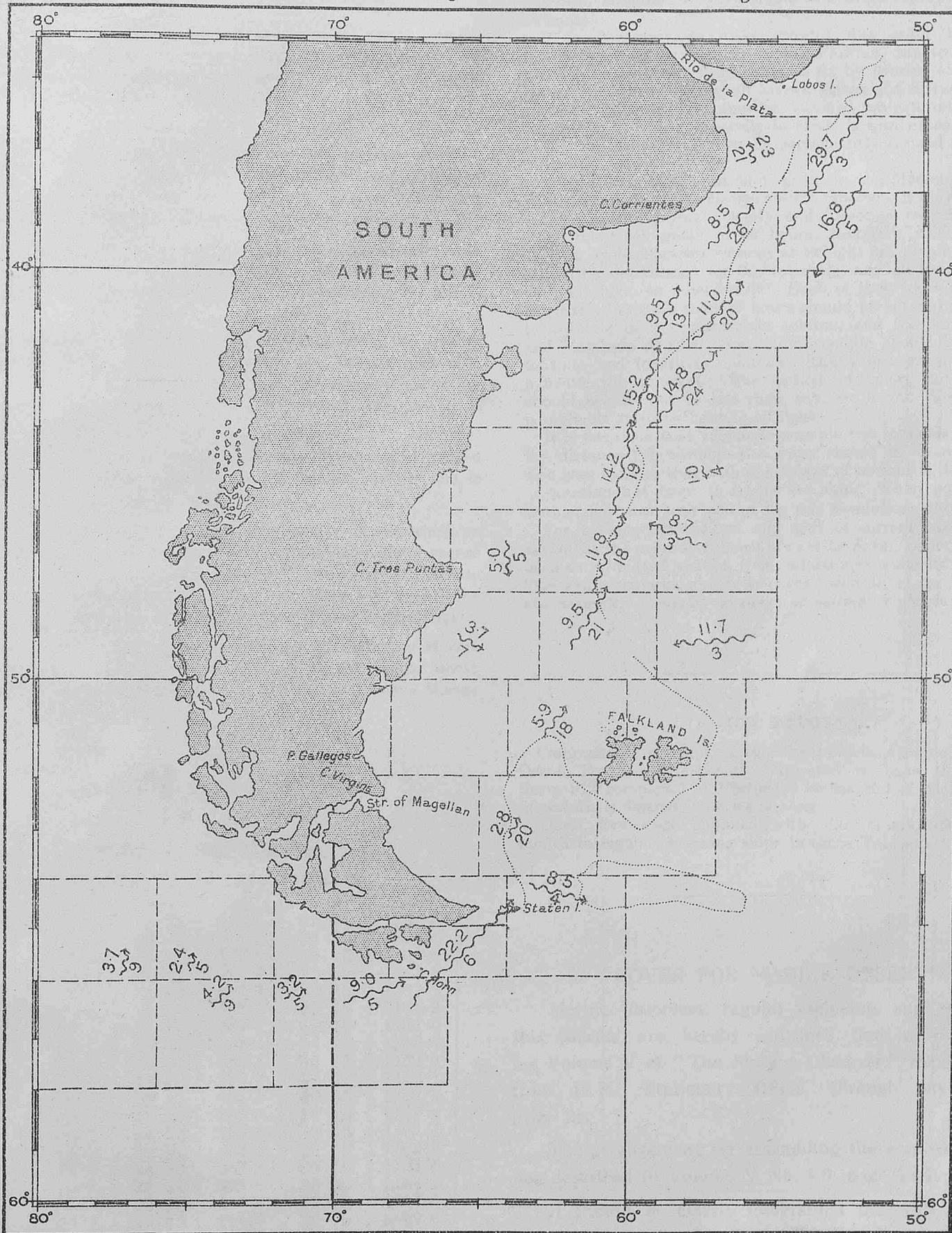
EXPLANATION OF CURRENT ROSES.

The current roses are drawn from observations within the packed lines.
 Arrows flow with the current, length represents frequency, thickness strength.
 Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%
 The upper figure in centre of rose gives total number of observations, the lower figure the percentage frequency of currents less than 6 miles per day.

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

CURRENTS ON THE TRACKS FROM THE LATITUDE OF THE PLATE
TO MAGELLAN STRAITS AND CAPE HORN,
FEBRUARY, MARCH AND APRIL.

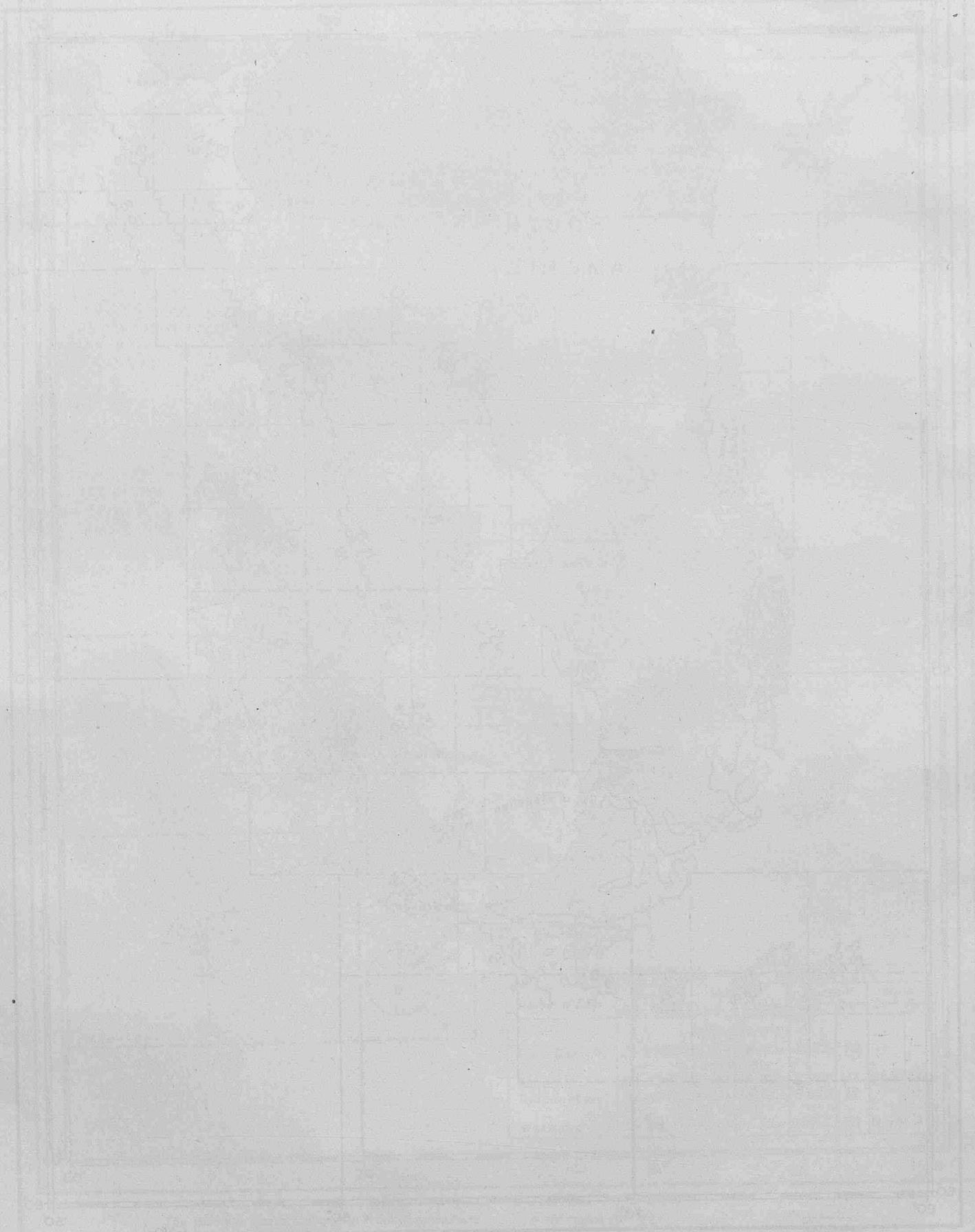
Observations of ships regularly observing for the British Meteorological Office 1910-1927.



EXPLANATION OF CURRENT ARROWS.

The arrows flow with the current and represent the resultant of currents observed within the pecked lines.
The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity of current in miles per day; the figures below the arrows the number of observations.

STATIONER'S COPY OF THE ORIGINAL SURVEY OF THE STATE OF TEXAS
CURRENTS ON THE TRACKS FROM THE LATITUDE OF THE PLATE
FEBRUARY-MARCH AND APRIL



EXPLANATION OF CURRENT ARROWS
The arrows on this chart are intended to show the direction and force of the currents in the Gulf of Mexico and the Gulf Stream. The force of the currents is indicated by the length of the arrows, and the direction by the arrowheads. The arrows are drawn from the observations of the United States Fish Commission, and are intended to show the general character of the currents in the Gulf of Mexico and the Gulf Stream. The arrows are drawn from the observations of the United States Fish Commission, and are intended to show the general character of the currents in the Gulf of Mexico and the Gulf Stream.

SHIPS WEATHER SIGNALS.

Selected ships are requested to continue making routine reports daily of observations taken at the same time as those of the nearest coast to All Ships at times convenient as soon as possible after observation time.

The scheme for regulating communication of these reports outlined on pages 198 and 199 of the October, 1928, MARINE OBSERVER, if adopted, cannot be put into use in its entirety until after the forthcoming Conference of Safety of Life at Sea.

Selected ships are therefore asked not to lessen their efforts to also get their reports to all ships through to such stations as Malta and Ismalia during the times given in the notices which appeared in the May, 1928, and June, 1928, numbers, and of which the commanders concerned were supplied with typewritten copies.

Selected ships in middle and high Southern Latitudes are reminded of the request in the September, 1928, number, pages 175-176, to add to their routine reports information of ice received during the last 24 hours.

By steadily carrying out this service notwithstanding the present difficulties of communication, the Commanders, Officers and W/T. Operators of Selected Ships will best assist in bringing about the establishment of a well organized and efficient voluntary service in the common interest of all at sea.

These reports should conform to the Plain Language Standard form given in "Weather Signals" in the January number and in WIRELESS AND WEATHER AN AID TO NAVIGATION.

The uniformity of code for Weather Telegraphy at sea which so many British Seamen have advocated may be brought about sooner if the British Corps of Voluntary Marine Observers adhere strictly in all parts of the world to these measures, which are largely the outcome of their own work in the interests of Marine Meteorology.

All inquiries with regard to this service and all Voluntary Marine Meteorological work should be made verbally to the Agents whose names and addresses are given overleaf, or sent direct to the Marine Superintendent in London.

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

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

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

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

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

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

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

ICE REPORTS.

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

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

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		

COVER FOR MARINE OBSERVER.

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

The arrangement for assembling the numbers for binding was described in Volume V No. 60, page 244.

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

ICE CHART. WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

- (B) From 1st February to 31st August, inclusive.
- (D) From 15th February to 10th April, inclusive.
- (E) From 1st December to 14th February.

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

ROUTE NOTICES.
For latest information re Tracks see pages 3-4, 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.

PHENOMENAL POSITIONS OF ICE.

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

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

LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 12th December, 1928, was received from the Superintendent, Canadian Signal Service, Quebec:—
"Montreal to Murray Bay light open ice everywhere Eastward to Cape Race and Belle Isle no ice in sight."

Co-operation of Shipowners, Masters and Mates.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

LATE PRESS.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
BALTIC.			
1.12.28	15 m. N. of Dager Ort Lighthouse.		Dismasted and waterlogged wreck of Finnish schooner <i>Neptun</i> of Mariehamn.
NORTH SEA.			
7.12.28	Yarmouth Roads.		Derelict and abandoned vessel adrift, very dangerous.
ENGLISH CHANNEL.			
6.12.28	50°25'N.	2°22'W.	Lighted buoy with bright flashing white light at regular intervals.
NORTH ATLANTIC.			
2.12.28	26°22'N.	74°44'W.	Large partially submerged log.
2.12.28	About 4 m. 71° (true) from Montauk Point Lighthouse.		Red and black spar buoy.
3.12.28	40°19'N.	72°51'W.	Abandoned life raft.
5.12.28	38°55'N.	61°54'W.	Nun buoy.
7.12.28	43°27'N.	23°11'W.	Whistle buoy painted black with frame superstructure, red light, adrift.
13.12.28	40°27'N.	71°50'W.	American schooner <i>Edward B. Winslow</i> .
NORTH PACIFIC.			
1.12.28	10°18'N.	86°15'W.	Tree trunk about 150 feet long with roots showing about 4 feet out of water.

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Shields.

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LIST OF VOLUNTARY OBSERVING SHIPS

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

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

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

Only in special cases will individual letters be sent.

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

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

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

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

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

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 Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
<i>Abinsi</i> ...	Millson, H. E. ...	G. M. de la Cour ...	No. A.	Elder Dempster ...	Form 911 31.10.28 to 8.12.28...	12.12.28
<i>Acera</i> ...	Wright, J. B. ...	" " " " " " " "	M.L.	" " " " " " " "	" " " " " " " "	" " " " " " " "
<i>Achilles</i> ...	Williams, D. T. ...	A. G. Phillips, N. Anderson, F. W. Hilton.	"	A. Holt " " " " " "	Met. Log. 17.6.28 to 29.10.28...	29.11.28
<i>Actor</i> ...	Haylett, E. ...	E. Pearce, F. M. Eales, G. Morrice.	"	Harrison " " " " " "	" 27.8.28 to 9.11.28 ...	22.11.28
<i>Adda, M.V.</i> ...	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 <i>Adriatic</i> ...	Hickson, V. W., R.D., Lt.-Commr., R.N.R.	O. V. Lucas, H. R. Wilkinson, D. W. Chamberlain.	W.T.	White Star ...	W.T. Reg. 12.11.28 to 1.12.28... Form 911 11.11.28 to 1.12.28...	5.12.28 4.12.28
<i>Aeneas</i> ...	Wallace, W. K. ...	E. R. Owen ...	No. A.	A. Holt ...	" 24.6.28 to 3.7.28 ...	14.7.28
<i>Agapenor</i> ...	Ramsay, J. ...	B. Bell ...	" A.	" " " " " " " "	" 17.10.28 to 3.12.28...	8.12.28
<i>Aidan</i> ...	Evans, L. ...	R. A. Broad ...	" A.	Booth ...	" 24.6.28 to 5.9.28 ...	3.10.28
<i>Alban</i> ...	Buck, R. H. ...	G. M. Duff ...	" A.	" " " " " " " "	" 20.8.28 to 2.10.28 ...	12.10.28
<i>Alipore</i> ...	Smith, H. E., R.D., Lt.-Commr., R.N.R.	C. H. Stokes ...	" M.	P. and O. ...	" 30.9.28 to 28.10.28...	19.11.28
<i>Almanzora</i> ...	Clarke, E. C. ...	G. K. Elliott ...	" A.	R.M.S.P. ...	" 6.10.28 to 19.11.28...	22.11.28
63 <i>Alberic</i> ...	Summers, F. F., R.D., Commr., R.N.R.	J. W. Paine, W. Hill, J. Allingham.	W.T.	White Star ...	W.T. Reg. 21.10.28 to 9.11.28...	16.11.28
<i>Alexa, Barquentine</i> ...	H. Heyen ...	" " " " " " " "	No. A.	On Chong & Co. ...	Form 911... ..	" " " " " " " "
<i>Alondra</i> ...	Scott, L. S. ...	H. Peters ...	No. A.	Yeoward ...	Form 911 7.10.28 to 29.10.28...	5.11.28
<i>Alunbank</i> ...	Clayton, W. E. ...	R. H. B. Ardley ...	" A.	A. Weir & Co. ...	" 23.9.28 to 7.11.28 ...	28.11.28
<i>Ambuscade</i> ...	Abbey, A. T. N., D.S.O., Commr. R.N.	F. G. Bullock ...	M.L.	His Majesty's Ship...	" " " " " " " "	" " " " " " " "
<i>Ampetco</i> ...	Vandenkerckhove, A.	" " " " " " " "	No. A.	American Petroleum	Form 911 14.6.28 to 22.7.28 ...	8.8.28
<i>Andalucia</i> ...	Thomas, R. J. ...	" " " " " " " "	" M.	Blue Star ...	" 12.9.28 to 29.10.28...	5.11.28
<i>Anchises</i> ...	Woodgett, R. J. ...	R. Fountain, T. Coyne ...	" A.	A. Holt ...	" 30.9.28 to 19.10.28...	12.11.28
<i>Andes</i> ...	Smith, W. E., D.S.O., R.D., Capt. R.N.R.	H. Whittle, H. Sang, A. Nicholls, J. E. P. Matthews.	M.L.	R.M.S.P. Co. ...	Met. Log. 7.7.28 to 16.10.28 ...	29.10.28
<i>Antillian</i> ...	Hannaford, W. T. ...	" " " " " " " "	No. A.	Leyland ...	Form 911 11.5.28 to 24.7.28 ...	26.7.28
<i>Antiochus</i> ...	Salter, G. H. ...	A. C. Abbott ...	" A.	A. Holt ...	" 13.11.28 to 22.11.28 ...	29.11.28
<i>Aorangi</i> ...	Crawford, R. ...	E. V. Bilger, R. Kendall	M.L.	Canadian- Australasian	Met. Log. 27.6.28 to 10.10.28...	19.11.28
30 <i>Aquitania</i> ...	Hill, T. V. ...	W. J. Weber.	"	Cunard ...	W.T. Reg. 4.11.28 to 20.11.28...	27.11.28
62 <i>Arabic</i> ...	Diggle, E. G., R.D., Capt. R.N.R.	R. W. Bee, J. Locke, G. Duguid.	W.T.	White Star ...	" 2.10.28 to 27.10.28...	29.10.28
<i>Arafura</i> ...	Bulman, J. B. ...	W. F. Jackman, T. W. Wills, W. N. Jenkins.	"	Eastern and Australian	Met. Log. 4.5.28 to 1.8.28 ...	6.9.28
<i>Archimedes</i> ...	Gordon, A. S. ...	F. O. Colvin, F. R. Miller, B. W. Dun.	M.L.	Lampport & Holt ...	Form 911 10.10.27 to 5.1.28 ...	18.1.28
<i>Argyllshire</i> ...	Downs, E. B. ...	" " " " " " " "	No. A.	Federal ...	" 11.4.28 to 20.5.28 ...	6.6.28
<i>Ariguani</i> ...	Wallace, J. ...	J. C. Robinson ...	" M.	Elders & Fyffes ...	Met. Log. 7.5.28 to 21.7.28 ...	1.8.28
<i>Ariosto</i> ...	Sudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	G. McKee, J. W. Dodd, W. Ireland.	M.L.	" " " " " " " "	" " " " " " " "	" " " " " " " "
<i>Armada Castle</i> ...	Biggins, R. L. ...	R. Heneage, D. A. Stokes ...	No. A.	Ellerman Wilson ...	Form 911 19.7.28 to 27.7.28 ...	21.8.28
<i>Arracan</i> ...	Imlah, C. B., Stuart, C. E., R.D., Capt. R.N.R.	" " " " " " " "	M.L.	Union Castle ...	Met. Log. 16.3.28 to 8.7.28 ...	11.9.28
<i>Arundel</i> ...	Duncan, S. S. ...	J. Summers, J. Henderson, C. C. Weir, E. W. Stubbs, J. Morrison.	"	P. Henderson ...	" 28.3.28 to 6.10.28 ...	29.10.28
<i>Arundel Castle</i> ...	Macfarlane, W. M. F.	" " " " " " " "	"	" " " " " " " "	" " " " " " " "	" " " " " " " "
<i>Astronomer</i> ...	Short, H. ...	Mr. Hill... ..	C.C.	Southern Rly. ...	Telegraphic Report 12.12.28	12.12.28
<i>Ascanius</i> ...	Owen, S. H. ...	S. E. Aldam ...	No. A.	Union Castle ...	Form 911 5.10.28 to 26.11.28...	4.12.28
	Richards, J. ...	A. Browne, C. C. Heaton, H. W. FitzSimons.	M.L.	Harrison ...	Met. Log. 2.3.28 to 30.7.28 ...	30.8.28
	Wilson, C. A. ...	T. Robb, W. F. Cook, E. M. Robb.	"	A. Holt ...	" 13.5.28 to 16.9.28 ...	27.9.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
<i>Atrous</i> ...	Rundle, G. G. ...	H. Nicholas ...	No. A.	A. Holt ...	Form 911 19.7.28 to 28.9.28 ...	2.10.28
<i>Atsuta Maru</i> ...	Narui, N. ...	Y. Osada ...	" A.	Nippon Yusen Kaisha ...	" 18.5.28 to 18.9.28 ...	24.9.28
<i>Auditor</i> ...	Owen, W. T. ...	D. O. Percy ...	" M.	Harrison ...	" 4.10.28 to 1.11.28 ...	27.11.28
<i>Autolyceus</i> ...	Dunlop, J. K. ...	" ...	" A.	A. Holt ...	" 25.10.28 to 11.11.28 ...	28.11.28
<i>Avon</i> ...	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
<i>Balmoral Castle</i> ...	Chave, Sir B., K.B.E. Townshend, W. P., Capt., R.N.R.	H. Stinn, G. Owen, F. Ward, " ...	" A. M.L.	Union Castle ... P. & O. Branch ...	Met. Log. 6.4.28 to 23.4.28 ... 31.3.28 to 5.8.28 ...	24.4.28 16.8.28
51 <i>Baltic</i> ...	Warner, G. E., R.D., Capt.	H. C. Gray, A. C. T'Anson ...	W.T.	White Star ...	W.T. Reg. 29.10.28 to 18.11.28 ... Form 911 29.10.28 to 18.11.28 ...	22.11.28 22.11.28
<i>Bampton Castle</i> ...	Hutchings, A. H. ...	E. Hamlyn ...	No. A.	Union Castle ...	" 28.4.28 to 4.8.28 ...	23.8.28
<i>Banffshire</i> ...	Wynne, R. H. ...	W. D. E. Campbell, F. Cossar, E. S. Sprout.	" A.	Turnbull Martin ...	" 24.10.28 to 10.11.28 ...	26.11.28
<i>Baradine</i> ...	Rollo, W. ...	C. B. Roche, B. H. Pollitt, P. Haworth, J. H. Anderson.	M.L.	P. & O. Branch ...	Met. Log. 19.7.28 to 20.11.28 ...	22.11.28
<i>Barpeta</i> ...	Chandler, H. V. ...	B. R. Faithfull ...	No. M.	British India ...	Form 911 26.9.28 to 12.10.28 ...	5.11.28
<i>Barrabool</i> ...	Rhodes, H. R. ...	T. G. Davies ...	" M	P. & O. Branch ...	" 26.9.28 to 20.10.28 ...	25.10.28
<i>Baychimo</i> ...	Cornwall, S. A. ...	" ...	" A.	Hudson's Bay Co. ...	" 5.10.28 to 19.11.28 ...	3.12.28
59 <i>Belgenland</i> ...	Morehouse, W. A. ...	F. Good, W. Hesketh, C. H. Otterson.	W.T.	Red Star ...	W.T. Reg. 14.10.28 to 3.11.28 ... Form 911 24.6.28 to 9.8.28 ...	5.11.28 13.8.28
<i>Beltana</i> ...	Allin, C. H. G. ...	" ...	No. M.	P. & O. Branch ...	" 26.8.28 to 30.9.28 ...	12.11.28
<i>Benalder</i> ...	Fairweather, J. J. ...	L. A. Sayers ...	" A.	Ben Line ...	" 20.10.28 to 4.11.28 ...	30.11.28
<i>Benalla</i> ...	Sheepwash, J. ...	J. E. Hills ...	" M.	P. & O. Branch ...	" 26.8.28 to 14.9.28 ...	22.10.28
<i>Bendigo</i> ...	Nicholl, R. N. C. ...	G. G. Mason ...	" M.	" ...	" 9.8.28 to 28.9.28 ...	3.10.28
<i>Benefactor</i> ...	Jones, C. W. ...	" ...	" M.	Harrison ...	" 25.4.28 to 26.5.28 ...	14.6.28
<i>Bengloe</i> ...	McCorquodale, A. ...	G. Davidson ...	" A.	Ben Line ...	" 11.4.28 to 21.5.28 ...	8.6.28
31 <i>Berengaria</i> ...	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. 12.11.28 to 27.11.28 ...	1.12.28
<i>Berrima</i> ...	Short, C. E. ...	G. H. Durrant ...	No. M.	P. & O. Branch ...	Form 911 25.5.28 to 3.6.28 ...	27.8.28
<i>Brenda</i> ...	Lamont, A. ...	N. Ross ...	" A.	Scottish Fishery Bnd. Southern Railway ...	" 3.11.28 to 29.11.28 ... Telegraphic Report 23.11.28 ...	4.12.28 23.11.28
<i>Brighton</i> ...	Hill, A. ...	Mr. Munton ...	C.C.	British Tankers ...	Form 911 29.6.28 to 27.9.28 ...	5.10.28
<i>British Colonel</i> ...	Taylor, R. J. ...	F. W. Sherlock ...	No. M.	Lampert & Holt ...	" 25.3.28 to 26.4.28 ...	8.6.28
<i>Bronte</i> ...	Crappier, J. S. ...	J. B. Scott ...	" A.	" ...	" 16.8.28 to 8.11.28 ...	26.11.28
<i>Bruyere</i> ...	Birch, A. ...	" ...	" A.	" ...	" 1.11.28 to 12.11.28 ...	17.11.28
<i>Bulysses M.V.</i> ...	Head, B. P. ...	A. J. Clatworthy ...	" M.	Anglo-Saxon Petroleum Co	" ...	" ...
65 <i>Calgaric</i> ...	Western, W. ...	" ...	W.T.	White Star ...	" ...	" ...
<i>Cambria</i> ...	Copland, C. P. ...	O. W. Ll. Jones ...	C.C.	L.M. & S. Rly ...	Telegraphic Report 8.12.28 ...	8.12.28
<i>Cameronia</i> ...	Gemmell, W. ...	D. Chamberlain ...	M.L.	Anchor ...	Met. Log. 28.4.28 to 15.9.28 ...	6.11.28
<i>Camito</i> ...	Forrester, W. T., O.B.E.	H. H. Dunning, W. E. Grant, G. M. Roberts.	"	Elders & Fyffes ...	" 5.6.28 to 3.10.28 ...	9.10.28
<i>Canadian Importer</i> ...	Forson, A. ...	E. Hamilton ...	No. A.	Canadian Gov. Mer- cantile Marine.	Form 911 6.10.28 to 31.10.28 ...	22.11.28
<i>Canadian Winner</i> ...	McConechy, W. G. ...	J. M. Lang ...	" M.	" ...	" 17.9.28 to 13.10.28 ...	27.11.28
<i>Canonesa</i> ...	Brodie, W. H. ...	T. Wetherall ...	" M.	Furness Houlder ...	" 13.2.28 to 3.4.28 ...	11.4.28
<i>Cape of Good Hope</i> ...	Lamont, J. ...	W. S. Bartlett ...	No. A.	Lyle S.S. Co. ...	" 12.10.28 to 17.11.28 ...	26.11.28
35 <i>Carmania</i> ...	Brown, F. G., R.D., Capt., R.N.R.	W. M. Stewart, E. R. Taylor, E. Gleave.	W.T.	Cunard ...	W.T. Reg. 29.10.28 to 17.11.28 ...	20.11.28
<i>Carnarvon Castle</i> ...	Stanley, W. F., R.D., Commr., R.N.R.	W. G. Smith, T. C. Goldstone, S. S. Smith.	M.L.	Union Castle ...	Met. Log. 14.7.28 to 4.11.28 ...	26.11.28
34 <i>Caronia</i> ...	Hossack, W. H., R.D., Capt., R.N.R.	H. G. Hayward, T. Parry, J. Chapman.	W.T.	Cunard ...	W.T. Reg. 15.10.28 to 2.11.28 ... Form 911 15.10.28 to 2.11.28 ...	7.11.28 7.11.28
<i>Casanare</i> ...	Brown, S. ...	H. N. Tilley ...	No. A.	Elders & Fyffes ...	" 26.8.28 to 11.11.28 ...	14.11.28
<i>Cavina</i> ...	Riseley, A. D. ...	R. L. Stevenson ...	" A.	" ...	" 7.10.28 to 11.11.28 ...	14.11.28
52 <i>Cedric</i> ...	Smith R. G. ...	W. Walker, S. Fieldwood, N. E. Banks.	W.T.	White Star ...	W.T. Reg. 4.11.28 to 25.11.28 ... Form 911 4.11.28 to 25.11.28 ...	1.12.28 29.11.28
53 <i>Celtic</i> ...	Berry, G. ...	J. Law, D. K. Crawford, A. R. Stevens.	"	" ...	W.T. Reg. 22.10.28 to 11.11.28 ... Form 911 21.10.28 to 11.11.28 ...	15.11.28 14.11.28
<i>Centaur</i> ...	Rose, A. F. ... Ward Hughes, J.	A. Bowl, N. L. Thompson, J. Cockburn.	M.L.	A. Holt & Co. ...	Met. Log. 14.2.28 to 15.7.28 ...	29.10.28
<i>Ceramic</i> ...	Musgrave, T. ...	H. A. R. Daman ...	No. A.	White Star ...	Form 911 20.8.28 to 20.9.28 ...	12.11.28
<i>Change</i> ...	Gambrill, F. C. ...	J. Thomas, T. Tyer, W. Allan, D. H. O'Hul'on.	M.L.	Yuill & Co. ...	Met. Log. 13.4.28 to 30.8.28 ...	21.11.28
<i>Changuinola</i> ...	Thorburn, R. A., R.D., Commr., R.N.R.	W. G. Chanter ...	No. A.	Elders & Fyffes ...	Form 911 5.10.28 to 6.11.28 ...	10.11.28
<i>Chindwin</i> ...	Paterson, G. ...	" ...	" A.	Henderson ...	" 18.7.28 to 17.10.28 ...	3.11.28
<i>Chinkiang</i> ...	Stringer, C. B. L. ...	R. J. Powerie ...	M.L.	China Navigation Co	Met. Log. 10.4.28 to 29.7.28 ...	6.9.28
<i>Chirripo</i> ...	McGilm, F. ...	" ...	No. A.	Elders & Fyffes ...	Form 911 30.9.28 to 1.11.28 ...	22.11.28
<i>City of Baroda</i> ...	McMillan, J. ...	A. Beaton, T. O. Hodgkinson.	M.L.	Ellerman ...	Met. Log. 5.3.28 to 20.5.28 ...	6.6.28
<i>City of Benares</i> ...	Anderson, W. W. ...	P. C. Wilson ...	No. A.	" ...	Form 911 28.8.28 to 27.9.28 ...	26.11.28
<i>City of Bombay</i> ...	Brown, O. C. ...	" ...	" M.	" ...	" 3.2.28 to 1.4.28 ...	10.4.28
<i>City of Brisbane</i> ...	Seaborn, F. O., D.S.C	R. Jones ...	" A.	" ...	" ...	" ...
<i>City of Bristol</i> ...	Jenkins, D. ...	" ...	" M.	" ...	" ...	" ...
<i>City of Canterbury</i> ...	Oleson, E. ...	R. H. Hodgson ...	" A.	Ellerman ...	Form 911 25.7.28 to 10.10.28 ...	13.10.28
<i>City of Carlisle</i> ...	Mordue, J. A. ...	" ...	" A.	" ...	" 4.10.28 to 22.10.28 ...	9.11.28
<i>City of Chester</i> ...	Letton, F. W. ...	C. C. Duncan, A. J. Barnett, R. Mowbray.	M.L.	" ...	Met. Log. 31.3.28 to 27.8.28 ...	30.8.28
<i>City of Edinburgh</i> ...	Wyper, J. ...	G. H. Hummell ...	No. M.	" ...	Form 911 21.10.28 to 20.11.28 ...	7.12.28
<i>City of Hong Kong</i> ...	Walton, H. L., O.B.E., R.D., Commr., R.N.R.	H. Saunders ...	" A.	" ...	" 28.10.28 to 9.11.28 ...	19.11.28
<i>City of Khios</i> ...	" ...	" ...	" ...	" ...	" ...	" ...
<i>City of London</i> ...	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
<i>City of Osaka</i> ...	Smith, W. H. ...	R. K. Walker ...	No. M.	" ...	" 10.8.28 to 2.9.28 ...	10.10.28
<i>City of Rangoon</i> ...	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
<i>City of Venice</i> ...	Lee, A. ...	" ...	No. A.	" ...	Form 911 18.2.28 to 1.3.28 ...	12.3.28
<i>City of Yokohama</i> ...	Singleton, J. G. ...	R. Willott Leese ...	" A.	Ellerman ...	" 23.8.28 to 3.10.28 ...	9.11.28
<i>Clan Alpine</i> ...	Lyall, A. B. ...	P. Sargent ...	" A.	Clan ...	" 23.9.28 to 14.10.28 ...	12.11.28
<i>Clan Kenneth</i> ...	Young, A. H., Commr. R.D., R.N.R.	F. H. Turton ...	" A.	" ...	" 1.8.28 to 4.10.28 ...	8.10.28
<i>Clan Lindsay</i> ...	Giles, H. J., R.D., Commr., R.N.R.	E. P. Smith ...	" A.	" ...	" 8.6.28 to 26.8.28 ...	3.9.28
<i>Clan MacBean</i> ...	Worthington, J. H. ...	W. A. Nicholas ...	" A.	" ...	" 6.10.28 to 31.10.28 ...	19.11.28
<i>Clan Macbeth</i> ...	Horn, R. ...	T. A. Watkinson ...	" A.	" ...	" 1.4.28 to 7.4.28 ...	21.5.28

LIST OF VOLUNTARY OBSERVING SHIPS

iii

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
<i>Clan Macfadayen</i> ...	Laird, C. ...	R. L. Smallbone ...	No. A.	Clan ...	Form 911 3.11.28 to 30.11.28 ...	23.12.28
<i>Clan Macfarlane</i> ...	Redford, L. F. ...	T. A. Pearson ...	" A.	" ...	" 4.8.28 to 3.10.28 ...	6.10.28
<i>Clan Macgillivray</i> ...	Mackinlay, A. ...	J. Garis ...	" A.	" ...	" 19.7.28 to 23.8.28 ...	20.9.28
<i>Clan Macindoe</i> ...	Holman, W. G. ...	" ...	" A.	" ...	" 17.8.28 to 19.9.28 ...	26.9.28
<i>Clan Mackellar</i> ...	Smith, W. P. ...	A. Woodrow ...	" A.	" ...	" 14.8.28 to 24.10.28 ...	3.11.28
<i>Clan Macphee</i> ...	Gourlay, J. B. ...	G. Short, B. Edgar, E. Mowatt.	M.L.	" ...	Met. Log. 21.11.27 to 18.4.28 ...	17.5.28
<i>Clan Macnaughton</i> ...	Simpson, A. W. ...	A. H. Hersee ...	No. A.	" ...	Form 911 9.11.28 to 7.12.28 ...	8.12.28
<i>Clan Macquarrie</i> ...	West, W. F. ...	T. P. Cranwill ...	" A.	" ...	" 16.9.28 to 11.10.28 ...	5.11.28
<i>Clan Macquarrie</i> ...	Makepeace, F. ...	E. A. Hewson ...	" A.	" ...	" 1.10.28 to 14.10.28 ...	19.11.28
<i>Clan Macwhirter</i> ...	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
<i>Clan Malcolm</i> ...	George, L. S. ...	J. Masters, R. L. Ranford, J. F. Hubbard, R. L. Martin.	"	" ...	" 7.7.28 to 21.10.28 ...	19.11.28
<i>Clan Morrison</i> ...	Porterfield, W. M. ...	H. R. Crosscombe ...	No. A.	" ...	Form 911 24.6.28 to 26.7.28 ...	25.8.28
<i>Clan Murdoch</i> ...	Neill, G. A. ...	W. J. Jones ...	" A.	" ...	" 7.8.28 to 24.8.28 ...	8.9.28
<i>Clan Ranald</i> ...	Fraser, R. K. ...	K. G. Tucker ...	" A.	" ...	" 29.9.28 to 12.10.28 ...	22.10.28
<i>Clan Ross</i> ...	Openshaw, L. G. ...	" ...	" A.	" ...	" 21.10.28 to 15.11.28 ...	26.11.28
<i>Clan Sinclair</i> ...	Taylor, P. V. ...	J. H. Dennis ...	" A.	" ...	" 12.11.28 to 21.11.28 ...	3.12.28
<i>Clan Urquhart</i> ...	Baker, E. W. ...	J. O. H. Kirkwood ...	" A.	" ...	" 26.10.28 to 7.11.28 ...	14.11.28
<i>Colonial</i> ...	Worthington, B. ...	" ...	" M.	T. & J. Harrison ...	" ...	"
<i>Comorin</i> ...	Borland, J. McI., C.B., D.S.O., R.D., Capt., R.N.R.	E. C. White ...	" M.	P. & O. ...	" 5.9.28 to 19.10.28 ...	29.10.28
<i>Corinthic</i> ...	Freeman, C. P. ...	E. M. Burt, M. Bennett, I. A. Macnaughton.	M.L.	White Star ...	Met. Log. 21.7.28 to 2.10.28 ...	12.11.28
<i>Cornwall</i> ...	Wilde, H. J. ...	H. M. Knight ...	No. A.	Federal ...	Form 911 27.3.28 to 9.5.28 ...	15.5.28
<i>Culebra</i> ...	Goble, C. J., R.D., Commr., R.N.R.	K. Paterson, R. N. Fletcher, W. S. Thomas.	M.L.	R.M.S.P. Co. ...	Met. Log. 20.7.28 to 19.9.28 ...	25.9.28
<i>Cumberland</i> ...	Macmillan, D. ...	G. C. Saul, P. Shakespear, J. Marks.	"	Federal ...	Form 911 29.4.28 to 30.8.28 ...	24.9.28
<i>Cyclops</i> ...	Cosker, W. ...	K. A. Owens ...	No. A.	A. Holt ...	" 4.10.28 to 23.11.28 ...	13.12.28
<i>Daga</i> ...	Wiles, N. ...	A. Olding ...	No. M.	P. Henderson ...	" 2.8.28 to 11.9.28 ...	9.11.28
<i>Dakotian</i> ...	Robb, J. ...	" ...	" A.	Leyland ...	" 3.8.28 to 30.9.28 ...	8.11.28
<i>Dardanus</i> ...	Clarke, J. W. ...	" ...	" A.	A. Holt ...	" 3.9.28 to 18.9.28 ...	22.11.28
<i>Darro</i> ...	Matthews, G. P. ...	" ...	" M.	R.M.S.P. Co. ...	" 19.10.28 to 6.11.28 ...	30.11.28
<i>Delphic</i> ...	Evans, W. ...	N. Williams ...	" M.	White Star ...	" 30.9.28 to 17.10.28 ...	19.11.28
<i>Demerara</i> ...	Willan, F. G. L., R.D., Capt., R.N.R.	F. Jeyes ...	" M.	R.M.S.P. Co. ...	" 9.7.28 to 13.9.28 ...	18.9.28
<i>Demosthenes</i> ...	Ogilvy, A. ...	H. Phillips ...	" M.	Aberdeen ...	" 25.9.28 to 11.11.28 ...	14.11.28
<i>Denis</i> ...	Harris, F. C. P. ...	J. H. Stokes ...	" A.	Booth ...	" 15.10.28 to 22.11.28 ...	7.12.28
<i>Desado</i> ...	Buret, T. ...	" ...	" M.	R.M.S.P. Co. ...	" 18.8.28 to 13.10.28 ...	15.10.28
<i>Desma</i> ...	Green, J. ...	L. T. Peterson ...	" M.	" ...	" 3.9.28 to 24.10.28 ...	12.11.28
<i>Deucalion</i> ...	Melling, C. F. ...	R. F. Dryden ...	" A.	A. Holt ...	" 6.10.28 to 13.11.28 ...	8.12.28
<i>Devon</i> ...	Kinnell, G. ...	D. Clegg ...	" M.	Federal ...	" 26.8.28 to 18.9.28 ...	29.10.28
<i>Dieppe</i> ...	Marmery, S. ...	Mr. Parsons ...	C.C.	Southern Railway ...	Telegraphic Report 23.12.28 ...	13.12.28
<i>Dimboola</i> ...	Brotherton, R. W. ...	H. L. Price ...	No. A.	Melbourne S.S. Co. ...	Form 911 22.7.28 to 15.8.28 ...	24.9.28
<i>Donala, M.V.</i> ...	Kitson, A. G. ...	H. Robertson ...	" M.	British India ...	" 19.4.28 to 26.5.28 ...	6.6.28
<i>Domitia, C.S.</i> ...	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
<i>Dominic</i> ...	Saxton, C. ...	G. H. Clark ...	No. A.	Booth ...	Form 911 9.7.28 to 9.11.28 ...	12.12.28
<i>61Doric</i> ...	Jones, W. H. ...	G. T. Kavanagh ...	W.T.	White Star ...	" 21.10.28 to 10.11.28 ...	14.11.28
	Commr., R.N.R.	" ...	"	" ...	W.T. Reg. 21.10.28 to 10.11.28 ...	1.11.28
<i>Dorington Court</i> ...	Clarke, E. J. ...	P. Jones ...	No. A.	Haldin & Co. ...	Form 911 28.6.28 to 6.7.28 ...	16.8.28
<i>Dromore Castle</i> ...	MacMahon, J., R.D., Commr., R.N.R.	J. A. Sowden ...	" A.	Union Castle ...	" 11.9.28 to 9.10.28 ...	9.11.28
<i>Dryden</i> ...	Major, T. W. ...	" ...	" M.	Lampot & Holt ...	" 3.6.28 to 7.9.28 ...	18.9.28
<i>Dunaff Head</i> ...	Butt, H. L. R.D., Lt.-Commr., R.N.R.	D. Martin ...	" A.	Ulster S.S. Co. ...	" 8.11.28 to 23.11.28 ...	10.12.28
<i>Dundrum Castle</i> ...	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
<i>Dunluce Castle</i> ...	Morgan, A. O. ...	F. O. Wilbraham ...	" A.	" ...	" 19.8.28 to 7.9.28 ...	11.9.28
<i>Dunrobin</i> ...	Ramsay, J. D. ...	C. H. Kendall ...	" A.	Glen & Co. ...	" 31.10.28 to 15.11.28 ...	12.12.28
<i>Duquesa</i> ...	Owen, R. ...	" ...	" M.	Furness Withy ...	" 18.7.28 to 11.9.28 ...	29.9.28
<i>Durenda, M.V.</i> ...	Beeching, P. H. ...	F. E. Liles ...	" M.	British India ...	" 21.6.28 to 22.7.28 ...	7.8.28
<i>Edinburgh Castle</i> ...	Gardner, G. F., O.B.E., Lt.-Commr., R.N.R.	" ...	" A.	Union Castle ...	" 21.9.28 to 11.11.28 ...	14.11.28
<i>Egori</i> ...	Sola, P., D.S.O. ...	R. W. Pattinson ...	" A.	Elder Dempster ...	" 29.10.28 to 17.11.28 ...	30.11.28
<i>Eldon Park</i> ...	Burns, R. ...	" ...	" M.	Denholm S.S. Co. ...	" ...	"
<i>Ellora</i> ...	Baird, S. K. ...	W. M. Bain ...	" M.	British India ...	" 17.10.28 to 5.11.28 ...	27.11.28
<i>Elpenor</i> ...	Gordon, A. L. ...	C. Kavanagh, J. E. Iliff ...	M.L.	A. Holt ...	Met. Log. 7.7.28 to 2.11.28 ...	7.11.28
<i>Elysia</i> ...	Duncan, A. R. ...	D. Blair, G. S. Sinclair, W. Black.	"	Anchor ...	" 11.8.28 to 11.10.28 ...	31.10.28
<i>Empress of Asia</i> ...	Hailey, A. J., Lt.-Commr., R.N.R.	L. C. Hogg ...	"	Canadian Pacific ...	" 25.2.28 to 15.6.28 ...	14.7.28
<i>Empress of Canada</i> ...	Robinson, S., C.B.E., R.D., Commr., R.N.R.	A. G. Simmons ...	"	" ...	" 12.7.28 to 20.10.28 ...	19.11.28
<i>Empress of France</i> ...	Griffiths, E. ...	O. F. Pennington, E. Roberts, L. Outram.	"	" ...	" 19.5.28 to 4.9.28 ...	1.10.28
<i>Empress of Russia</i> ...	Hosken, A. J. ...	R. A. Leicester, J. G. McQuarrie, A. C. Jones.	"	" ...	" 2.8.28 to 10.11.28 ...	10.12.28
<i>Endeavour</i> ...	L a w, 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
<i>Enterprise</i> ...	Pridham-Wippell, H.D., Capt., R.N.	" ...	"	" ...	" ...	"
<i>Essequibo</i> ...	Kirkwood, J. H. ...	J. H. E. Evans ...	No. M.	R.M.S.P. Co. ...	Form 911 12.7.28 to 26.9.28 ...	16.11.28
<i>Eumaeus</i> ...	Read, J. W. ...	" ...	" A.	A. Holt ...	" 17.11.28 to 26.11.28 ...	5.12.28
<i>Euryades</i> ...	Findlay, J. ...	W. K. Hole ...	No. A.	A. Holt ...	" 13.10.28 to 7.12.28 ...	13.12.28
<i>Explorer</i> ...	Ling, J. T. ...	H. W. Gostage ...	" M.	Harrison ...	" 27.4.28 to 25.8.28 ...	28.8.28
<i>Explorer</i> ...	Allan, J. ...	A. Stout, F. O. Sheehy ...	" A.	Scottish Fishery Board.	" 7.11.28 to 30.11.28 ...	6.12.28
<i>Ferndale</i> ...	Thompson, W. ...	R. S. Hartrick ...	No. M.	Aberdeen Common-wealth.	" 7.7.28 to 5.8.28 ...	23.8.28
<i>Flandria</i> ...	Maars, L. ...	S. R. Hemmes ...	" M.	Holland Lloyd ...	" 31.8.28 to 16.10.28 ...	22.10.28
<i>Fordsdale</i> ...	Richardson, A. V. ...	F. Vaughan ...	" M.	Aberdeen Common-wealth.	" 12.10.28 to 16.11.28 ...	20.11.28

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
<i>Francisco</i> ...	Scales, H. ...	F. Elgin ...	No. A.	Ellerman Wilson ...	Form 911 23.10.28 to 29.11.28 ...	4.12.28
<i>Freya</i> ...	Angus, W. ...	W. Pirrie ...	" A.	Scottish Fishery Board.	" 1.11.28 to 30.11.28... ..	12.12.28
<i>Garth Castle</i> ...	Linklater, H. ...	... ..	" A.	Union Castle ...	" 12.7.28 to 25.9.28	31.10.28
<i>Gaseoyne</i> ...	Johnson, L. ...	W. J. Macphedran, C. Melson, J. S. Macbride.	M.L.	A. Holt & Co....	Met. Log. 21.5.28 to 6.9.28	29.10.28
<i>Gelria</i> ...	Veldkamp, C. J. ...	A. J. H. Schöler... ..	" M.	Holland Lloyd ...	Form 911 15.9.28 to 7.10.28	3.11.28
<i>Glamorganshire</i> ...	Purvis, A. ...	E. A. E. Littlewood	" M.	R.M.S.P. Co. ...	" 17.9.28 to 19.10.28... ..	25.10.28
<i>Glenamoy, M.V.</i> ...	Homan, C. E....	R. W. Emerson, R. W. Brooks, J. R. Taylor.	M.L.	Glen Line ...	Met. Log. 25.6.28 to 7.11.28	6.12.28
<i>Glenapp</i> ...	Ingram, T. F....	... ..	No. A.	"	"	"
<i>Glenbeg</i> ...	... ..	... ..	No. A.	"	"	"
<i>Glenegarry</i> ...	Angier, J. ...	F. C. White	" M.	"	Form 911 23.9.28 to 20.10.28... ..	22.11.28
<i>Glenluce</i> ...	Kennett, W. H. ...	H. B. Porter	" A.	"	" 26.9.28 to 30.10.28... ..	12.11.28
<i>Glenishane</i> ...	Kersley, L. W. ...	A. C. Radley	" A.	"	" 21.8.28 to 23.9.28	29.10.28
<i>Glenworth</i> ...	Kilgour, H. A. ...	A. N. Storm	No. A.	R. S. Dalgleish ...	" 25.9.28 to 1.11.28	9.11.28
<i>Gloucestershire</i> ...	Robin, E. ...	... ..	" A.	Bibby ...	" 25.8.28 to 4.11.28	13.11.28
<i>Gloxinia</i> ...	Pool, F. G. ...	J. Steward, D. Coughlan ...	" A.	Stag Line ...	"	"
<i>Halesius</i> ...	Samuels, C. ...	N. MacLeod	" A.	R. P. Houston ...	" 1.11.28 to 6.12.28	8.12.28
<i>Haliartius</i> ...	Felton, W. J. ...	C. C. Reeder	" A.	"	" 5.9.28 to 6.10.28	8.10.28
<i>Harmonides</i> ...	Hughes, W. F. ...	K. T. Roper	" A.	"	" 19.8.28 to 6.11.28	17.11.28
<i>Hatimura</i> ...	Dawes, H. F. C. ...	L. E. Heath	" M.	British India ...	" 5.10.28 to 2.11.28	5.11.28
<i>Hauvaki, M.V.</i> ...	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
<i>Henry C.S.</i> ...	Bicker Caarten, A. ...	M. A. Green	No. M.	W. I. & Panama Telegraph Co.	Form 911 13.10.28 to 31.10.28	3.12.28
<i>Herald</i> ...	Haselfoot, F.E.B., Capt., D.S.O., R.N.	W. H. Martin	M.L.	His Majesty's Ship ...	Met. Log. 11.7.28 to 30.10.28... ..	4.12.28
<i>Herefordshire</i> ...	Lyon, H. ...	M. D. Louttill	No. A.	Bibby ...	Form 911 11.8.28 to 18.10.28... ..	22.10.28
<i>Hermiteus</i> ...	Roberts, T. V. ...	D. W. MacGregor	" A.	Shaw, Savill & Albion	" 13.7.28 to 22.8.28	10.10.28
<i>Herschel</i> ...	Watson, W. W. ...	... ..	" A.	Lampport & Holt ...	" 13.11.28 to 2.12.28... ..	8.12.28
<i>Hertford</i> ...	Kettlewell, C. R. ...	J. R. Ricketts	M.L.	Federal ...	"	"
<i>Hibernia</i> ...	Roberts, W. Ivor, M.B.E.	R. Woodall, A. Marsh ...	C.C.	L.M. & S. Railway ...	Telegraphic Report 12.12.28... ..	12.12.28
<i>Highland Laddie</i> ...	Jones, T. J. ...	E. F. Smart	No. A.	Nelson ...	Form 911 22.28 to 12.6.28	9.7.28
<i>" Paper</i> ...	Collings, D. ...	R. G. Owen, A. Southgate ...	M.L.	"	Met. Log. 1.12.27 to 22.6.28	7.8.28
<i>" Pride</i> ...	Robinson, R. H. ...	F. Quelch	No. A.	"	Form 911 8.9.28 to 3.11.28	7.11.28
<i>" Prince</i> ...	Taylor, F. ...	W. A. Hall	" A.	Prince ...	" 15.11.28 to 30.11.28	7.12.28
<i>" Rover</i> ...	McKinnon, H. ...	N. F. Seaton	" A.	Nelson ...	" 24.9.28 to 10.11.28... ..	3.12.28
<i>Hildebrand</i> ...	Peregrine, D. ...	... ..	" A.	Booth ...	" 21.9.28 to 28.10.28... ..	5.11.28
<i>Hobson's Bay</i> ...	Kydd, O. J. ...	R. Pearce, J. Worrall, D. Horn, J. D. Loughnan.	M.L.	Aberdeen Commonwealth.	Met. Log. 14.6.28 to 22.9.28	9.10.28
<i>Holbein</i> ...	Gough, W. A....	F. Delaney	No. A.	Lampport & Holt ...	Form 911 10.6.28 to 29.6.28	11.9.28
<i>54 Homerie</i> ...	White, E. R., R.D., Commr. R.N.R.	H. G. Morgan, S. B. Morfee, W. T. Poustie.	W.T.	White Star ...	W.T. Reg. 2.11.28 to 16.11.28... ..	19.11.28
<i>Hororata</i> ...	Holland, E. ...	A. E. Bamforth	No. A.	New Zealand S.S. Co.	Form 911 26.3.28 to 10.7.28	14.7.28
<i>Hubert</i> ...	Briscoe, W. ...	G. G. Westhorp	" A.	Booth ...	" 13.7.28 to 23.8.28	8.9.28
<i>Huntingdon</i> ...	Ashworth, W. ...	H. G. Letts	" A.	Federal... ..	" 30.6.28 to 23.7.28	30.8.28
<i>Huntsman</i> ...	Russell, H. ...	J. Richardson	" M.	Harrison ...	" 13.4.28 to 15.8.28	3.9.28
<i>Hydaspes</i> ...	Williams, P. E. ...	P. McMillan	No. M.	R. P. Houston ...	Form 911 9.11.28 to 28.11.28... ..	7.12.28
<i>Ingoma</i> ...	Gibbings, W. ...	W. P. Baker	" M.	Harrison ...	Form 911 5.8.28 to 17.9.28	27.9.28
<i>Inkum</i> ...	Meethan, J. T. ...	... ..	" A.	J. H. Welsford ...	" 10.10.28 to 24.10.28	3.11.28
<i>Iris, C.S.</i> ...	Hughes, H. R. ...	L. V. Vicker, D. MacDonald ...	M.L.	Pacific Cable Board...	Met. Log. 25.8.27 to 3.10.27	21.8.28
<i>Iroquois</i> ...	Nares, J. D., D.S.O., Capt. R.N.	A. B. Foulestone... ..	"	His Majesty's Ship ...	" 27.4.28 to 31.8.28	6.10.28
<i>Ixion</i> ...	Collins, H. M... ..	... ..	"	A. Holt ...	Form 911 25.6.28 to 6.8.28	17.9.28
<i>Javanese Prince</i> ...	Marshall, F. ...	J. B. Morrison	No. A.	Prince ...	" 7.8.28 to 31.10.28	8.11.28
<i>Jervis Bay</i> ...	Chaplin, W. R. ...	R. W. Laycock	" M.	Aberdeen Commonwealth.	" 20.12.27 to 23.4.28... ..	14.5.28
<i>Justin</i> ...	Bush, H. ...	L. G. McMillan	" A.	Booth ...	" 15.8.28 to 27.8.28	2.11.28
<i>Kaisar-i-Hind</i> ...	Manley, G. ...	R. H. Hand	" M.	P. & O. ...	" 1.9.28 to 24.10.28... ..	26.10.28
<i>Kalyan</i> ...	Cornwall Jones, B. ...	W. R. B. Noal	" M.	P. & O. ...	" 3.10.28 to 22.10.28... ..	10.11.28
<i>Kamo Maru</i> ...	Enya, S. ...	S. Maruyama	" A.	Nippon Yusen Kaisha	" 22.9.28 to 22.10.28... ..	24.11.28
<i>Kangaroo</i> ...	Norris, H. C. ...	E. Hutchinson, J. Edward, H. Reynolds.	M.L.	State Service Australia.	Met. Log. 2.4.28 to 1.8.28	29.10.28
<i>Karamea</i> ...	McIntosh, A. ...	... ..	"	Shaw, Savill & Albion	"	"
<i>Karapara</i> ...	Miller, A. C. ...	J. Spail	No. M.	British India... ..	Form 911 24.10.28 to 11.11.28	12.12.28
<i>Kashgar</i> ...	... ..	R. P. Eddy	" M.	P. & O. ...	"	"
<i>Kashmir</i> ...	Bent, E. ...	H. M. Askin	" M.	P. & O. ...	" 29.9.28 to 18.10.28... ..	27.11.28
<i>Kent</i> ...	Matthews, C....	W. C. Wilkinson	No. A.	Federal... ..	Form 911 21.12.27 to 24.1.28... ..	31.1.28
<i>Khiva</i> ...	Britten, P. O....	C. E. Arundel, J. A. Ridley, H. V. Williamson.	M.L.	P. & O....	Met. Log. 23.8.28 to 2.12.28	7.12.28
<i>Khyber</i> ...	Hester, C. W., R.D., Commr. R.N.R.	C. G. R. Fleming	"	P. & O....	" 3.5.28 to 14.8.28	11.9.28
<i>Knight Companion</i> ...	Davis, A. L. ...	J. H. Isherwood	No. M.	A. Holt... ..	Form 911 15.9.28 to 6.10.28	12.11.28
<i>Koolinda, M.V.</i> ...	Buckeridge, J. ...	... ..	" M.	State Service, Australia.	" 24.7.28 to 6.9.28	15.10.28
<i>Kovno</i> ...	Kavanagh, J. ...	... ..	"	Ellerman Wilson ...	Met. Log. 24.12.27 to 2.7.28	6.7.28
<i>37 Laconia</i> ...	Doyle, M. ...	E. W. Connell, A. B. Fasting, F. G. Russell	W.T.	Cunard ...	W.T. Reg. 12.11.28 to 2.12.28... ..	5.12.28
<i>Laguna</i> ...	Dunn, R. E., O.B.E....	... ..	No. A.	Pacific S.N. Co. ...	Form 911 12.11.28 to 2.12.28... ..	5.12.28
<i>Lahore</i> ...	Gordon, L. M., R.D., Commr. R.N.R.	E. B. Elcoate	" M.	P. & O. ...	Form 911 20.9.28 to 4.10.28	22.11.28
<i>Lalande</i> ...	Hamill, H. ...	A. E. Warburton	No. A.	Lampport & Holt ...	" 15.5.28 to 29.6.28	12.7.28
<i>Lancashire</i> ...	Crumplin, W. E. ...	R. Allen	" A.	Bibby ...	Form 911 7.6.28 to 11.9.28	27.9.28
<i>36 Lancastria</i> ...	Townley, J. C. R.D., Commr. R.N.R.	L. R. Sharp, G. Overton, P. L. Williams	W.T.	Cunard ...	Form 911 23.9.28 to 29.11.28... ..	5.12.28
<i>Laomedon</i> ...	Hatfield, F. ...	R. L. Haldstock	No. A.	A. Holt... ..	W.T. Reg. 8.11.28 to 24.1.28... ..	2.11.28
<i>La Paz, M.V.</i> ...	Morgan, D. R. ...	J. D. Richards	" M.	Pacific S.N. Co. ...	Form 911 4.11.28 to 24.11.28... ..	27.11.28
<i>55 Layland</i> ...	Harvey, H. ...	B. Harries, L. A. Williams, J. C. Flett.	W.T.	Red Star ...	Form 911 23.8.28 to 10.9.28	15.10.28
					W.T. Reg. 29.10.28 to 14.11.28	8.10.28
					Form 911 28.10.28 to 17.11.28	19.11.28

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
Largs Bay ...	Clifford, —	...	No. M.	Aberdeen Commonwealth.	...	...
64 <i>Laurentic</i> ...	Trant, E. L., R.D., Commr. R.N.R.	J. W. Peters, R. Hawkyns ...	"	White Star ...	W.T. Reg. 11.11.28 to 30.11.28 ... Form 911 11.11.28 to 1.12.28... 11.10.28 to 28.10.28 ...	5.12.28 4.12.28 27.11.28
<i>Lautaro</i> , M.V. ...	Leyne, R. W. ...	J. T. Denley ...	No. M.	Pacific S.N. Co. ...	Met. Log. 14.7.28 to 22.9.28 ...	26.9.28
<i>Leicestershire</i> ...	de Legh, P. ...	R. S. Evans H. G. Walton, C. F. Hicks, A. Thomson.	M.L.	Bibby ...	...	...
<i>Leighton</i> , M.V. ...	Lindesay, J. M. ...	...	No. A.	Lampert & Holt ...	Form 911 1.5.28 to 20.5.28 ...	19.6.28
<i>Leitrim</i> ...	Robertson, A. ...	S. J. Woodhouse ...	" A.	Dowie, J., & Co. ...	" 4.8.28 to 22.9.28 ...	25.9.28
<i>Limerick</i> ...	Molyneux, P. L. ...	F. J. Schibild ...	" M.	Federal ...	" 10.5.28 to 5.7.28 ...	11.9.28
<i>Llandaff Castle</i> ...	Gilbert, F. F. ...	R. Bayer ...	" A.	Union Castle ...	" 19.4.28 to 8.5.28 ...	9.6.28
<i>Llandoverly Castle</i> ...	Stuart, C. E., Capt. R.N.R.	C. H. Williams, G. Moon, P. Clissold.	M.L.	" ...	Met. Log. 26.7.28 to 4.10.28 ...	6.10.28
<i>Lobos</i> , M. V. ...	Pape, E. R. ...	S. E. Ayland ...	No. M.	Pacific S.N. Co. ...	Form 911 6.10.28 to 23.10.28... R.M.S.P. Co. ...	10.11.28 17.9.28
<i>Loch Katrine</i> ...	Schlanbusch, O. V. ...	D. A. Mallinson ...	No. A.	Harrison ...	" 18.6.28 to 15.9.28 ...	19.10.28
<i>Logician</i> ...	Gibbins, W. ...	A. G. S. Madrell ...	No. M.	Furness Withy ...	Met. Log. 22.6.28 to 15.10.28... Met. Log. 8.1.28 to 31.3.28 ...	14.4.28
<i>London Importer</i> ...	Fowler, W. H. ...	F. F. Feint, J. H. Metcalfe, J. G. Freeman.	M.L.	" ...	...	...
<i>Lord Antrim</i> ...	Jarvis, F. E. ...	...	No. A.	Ulster S.S. Co. ...	Form 911 24.10.28 to 23.11.28 ...	28.11.28
<i>Loriga</i> , M.V. ...	Clapham, E. C. ...	D. P. Morgan ...	" A.	Pacific S.N. Co. ...	" 6.9.28 to 24.9.28 ...	10.10.28
<i>Losada</i> , M.V. ...	Ross, J. ...	D. Beamer ...	" M.	" ...	" 1.11.28 to 20.11.28... Met. Log. 27.1.28 to 21.4.28 ...	27.11.28 7.6.28
<i>Macedonia</i> ...	Harrison, R. ...	C. J. L. Hayward ...	" M.	P. & O. ...	" 9.9.28 to 18.9.28 ...	27.9.28
<i>Macharda</i> ...	Hanna, R. G. ...	T. Johnston, H. M. Russell ...	" M.	Brocklebank ...	" 23.9.28 to 18.10.28... Met. Log. 18.8.28 to 13.9.28 ...	19.11.28 22.10.28
<i>Mahronia</i> ...	Addy, M. J. ...	J. Kettlewell ...	No. M.	" ...	...	...
<i>Maihar</i> ...	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
<i>Maimoa</i> ...	Johnson, J. W. ...	...	"	Shaw, Savill & Albion ...	...	...
<i>Maimyo</i> ...	Smith, G. C. ...	H. M. Drummond ...	No. A.	Brocklebank ...	Form 911 18.8.28 to 14.11.28... W.T. Reg. 8.11.28 to 22.11.28... Met. Log. 25.10.28 to 4.11.28... Met. Log. 1.2.28 to 22.6.28 ...	29.11.28 26.11.28 27.11.28 25.9.28
58 <i>Majestic</i> ...	Marshall, W. C.B., D. S. O., R. D., Commodore R.N.R.	W. W. Pearson, J. Clarke, W. T. Fitz Gerald, A. H. Young.	W.T.	White Star ...	...	...
<i>Makalla</i> ...	Maugham, J. W. ...	J. B. Newman ...	No. M.	Brocklebank ...	Form 911 25.10.28 to 4.11.28... Met. Log. 1.2.28 to 22.6.28 ...	27.11.28 25.9.28
<i>Makambo</i> ...	Middleton, J. ...	...	M.L.	Burns Philp ...	...	...
<i>Makura</i> ...	McLean, J. ...	...	"	Canadian-Australasian ...	" 26.1.28 to 11.5.28 ...	11.7.28
<i>Malabar</i> , M.V. ...	Spring Brown, J. F. ...	W. A. Todd, D. Burgess, A. Gell.	"	Burns, Philp & Co. ...	" 28.12.27 to 13.4.28... Form 911 18.9.28 to 28.11.28... " 4.8.28 to 14.10.28 ... " 2.9.28 to 21.11.28 ... " 15.10.28 to 26.10.28 ...	4.7.28 6.12.28 3.12.28 29.11.28 10.12.28
<i>Malakuta</i> ...	Donaldson, A. ...	K. Morris ...	"	" ...	" 21.7.28 to 13.9.28 ...	21.9.28
<i>Malakuta</i> ...	Adamson, F. L. ...	N. Grayson ...	No. M.	Brocklebank ...	Form 911 18.9.28 to 28.11.28... Met. Log. 3.3.28 to 14.8.28 ...	29.8.28
<i>Malancha</i> ...	Whitham, F. ...	...	" M.	" ...	...	...
<i>Malda</i> ...	Gray, T. N. ...	S. G. James ...	" M.	British India ...	...	...
<i>Maleja</i> ...	Browning, J. B., R.D., Commr. R.N.R.	A. D. Dennis ...	" M.	P. & O. ...	" 15.10.28 to 26.10.28 ...	10.12.28
<i>Malwa</i> ...	Norman, W. A. ...	G. C. Case ...	" M.	" ...	" 21.7.28 to 13.9.28 ...	21.9.28
<i>Manchester Brigade</i> ...	Stott, C. H. ...	W. S. Eustace, E. E. Bonnaud, W. R. Cullen.	M.L.	Manchester Liners ...	Met. Log. 3.3.28 to 14.8.28 ...	29.8.28
<i>Manchester Corporation</i> ...	Makin, T. ...	...	No. A.	" ...	Form 911 18.9.28 to 26.10.28... Met. Log. 24.3.28 to 12.10.28... Form 911 20.10.28 to 20.11.28 ... " 4.2.28 to 9.3.28 ...	8.11.28 19.10.28 3.12.28 14.3.28
<i>Manchester Hero</i> ...	Riley, J. E. ...	H. Anderton, J. H. Emmett, H. Dobson, A. Ricketts, A. Grant.	M.L.	" ...	Met. Log. 24.3.28 to 12.10.28... Form 911 20.10.28 to 20.11.28 ... " 4.2.28 to 9.3.28 ...	19.10.28 3.12.28 14.3.28
<i>Manchester Producer</i> ...	Struss, F. D. ...	J. W. Moss ...	No. A.	" ...	Form 911 20.10.28 to 20.11.28 ...	3.12.28
<i>Manchester Regiment</i> ...	Foale, J. R. ...	P. D. Barr ...	" A.	" ...	" 4.2.28 to 9.3.28 ...	14.3.28
<i>Manipur</i> ...	Cochran, G. N. ...	R. Penston, G. B. Falconer ...	No. M.	Brocklebank ...	" 9.9.28 to 5.10.28 ...	5.11.28
<i>Manistee</i> ...	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
<i>Manora</i> ...	Hudson, H. T., R.D., Commr. R.N.R.	W. H. Cruise ...	No. M.	British India ...	Form 911 29.4.28 to 13.7.28 ...	21.8.28
<i>Manhua</i> ...	Davis, H. C., D.S.C., Commr. R.N.R.	...	" M.	P. & O. ...	" 5.8.28 to 26.9.28 ...	6.10.28
<i>Marella</i> ...	Mortimer, S. ...	A. G. Hill, C. Edmonds, A. G. Thomas.	M.L.	Burns Philp ...	Met. Log. 3.2.28 to 2.6.28 ...	5.10.28
<i>Marengo</i> ...	Curle, J. ...	H. Bryan, J. Ford, F. Barnard, S. Butcher.	"	Ellerman Wilson ...	" 27.3.28 to 30.6.28 ...	6.7.28
<i>Maresfield</i> ...	Berry, V. ...	T. Connolly ...	No. A.	Woods, Tyler & Brown ...	Form 911 3.5.28 to 19.5.28 ...	9.6.28
<i>Margha</i> ...	Hughes, C. G. ...	P. Wright, B. Ludgate ...	M.L.	British India ...	Met. Log. 15.7.28 to 5.10.28 ...	12.10.28
<i>Marquesa</i> ...	Smiles, R. S. ...	L. Owen ...	No. M.	Furness Houlder ...	Form 911 29.7.28 to 28.9.28 ...	2.10.28
<i>Marstna</i> ...	Williams, G. E. ...	J. C. Reid ...	No. A.	Burns Philp & Co. ...	" 14.8.28 to 10.9.28 ...	15.10.28
<i>Matakana</i> ...	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
<i>Mataram</i> ...	Vay, W. ...	R. M. Blunt ...	No. A.	Burns Philp & Co. ...	Form 911 19.9.28 to 19.10.28... M.L. ...	3.12.28 ...
<i>Mataroa</i> ...	Kershaw, W. A. R. ...	...	M.L.	" ...	...	...
<i>Matheran</i> ...	Ison, W. A. ...	J. Richardson ...	No. M.	Brocklebank ...	Form 911 6.11.28 to 18.11.28... " 4.8.28 to 23.10.28 ... " 23.10.28 to 3.11.28 ... " 15.8.28 to 24.10.28... W.T. Reg. 28.10.28 to 12.11.28 ...	23.11.28 29.10.28 13.12.28 16.11.28 16.11.28
<i>Matiana</i> ...	Green, F. V. ...	W. McInnes ...	" M.	British India ...	...	...
<i>Matra</i> ...	Cornish, N. P. ...	W. Gibson, Hodgson, G. G. ...	" M.	Brocklebank ...	...	...
<i>Maunganiui</i> ...	Aldwell, B. M. ...	...	" M.	Union S.S. Co. of N.Z. ...	...	...
32 <i>Mauretania</i> ...	Prothero, W. ...	R. H. C. Crawford, C. B. Osborne B. J. P. Tuck.	W.T.	Cunard ...	W.T. Reg. 28.10.28 to 12.11.28 ...	16.11.28
<i>Megantia</i> ...	Kearney, J. ...	F. E. Patchett ...	No. A.	White Star ...	Form 911 16.7.28 to 2.8.28 ... W.T. Reg. 27.10.28 to 17.11.28 ... Form 911 9.11.28 to 24.11.28... W.T. Reg. 1.9.28 to 19.9.28 ... Form 911 5.7.28 to 24.7.28 ... " 3.11.28 to 6.12.28 ...	13.8.28 20.11.28 5.12.28 24.9.28 18.9.28 12.12.28
22 <i>Melita</i> ...	Stewart, A. ...	T. Gillette ...	W.T.	Canadian Pacific ...	...	...
<i>Memnon</i> ...	Watson, C. J. ...	J. A. C. McGregor ...	No. A.	A. Holt ...	Form 911 9.11.28 to 24.11.28... W.T. Reg. 1.9.28 to 19.9.28 ... Form 911 5.7.28 to 24.7.28 ... " 3.11.28 to 6.12.28 ...	5.12.28 24.9.28 18.9.28 12.12.28
21 <i>Metagama</i> ...	McQueen, D. S. ...	A. Watt, J. Harrison ...	W.T.	Canadian Pacific ...	...	...
<i>Middlesex</i> ...	Wilde, H. ...	D. J. Murray ...	No. M.	Federal ...	Form 911 5.7.28 to 24.7.28 ...	18.9.28
<i>Minna</i> ...	Mackenzie, G. G. ...	A. M. Campbell ...	" A.	Scottish Fishery Brd. ...	" 3.11.28 to 6.12.28 ...	12.12.28
23 <i>Minnedosa</i> ...	...	...	W.T.	Canadian Pacific ...	...	...
<i>Minnesota</i> ...	Finch, E., R. D., Commr. R.N.R.	...	No. M.	Atlantic Transport ...	Form 911 11.11.28 to 19.11.28 ...	26.11.28
<i>Minnetonka</i> ...	Gates, T. F., C.B.E. ...	H. E. D. McCartney ...	" M.	" ...	" 4.11.28 to 11.11.28 ...	27.11.28
<i>Minnewaska</i> ...	Claret, F. H., C.B.E., Commr. R.N.R.	F. J. Mummery ...	" M.	" ...	" 19.11.28 to 8.12.28... " 13.2.28 to 18.3.28 ... " 12.11.28 to 26.11.28 ... " 10.6.28 to 28.8.28 ... " 26.9.28 to 12.10.28 ...	12.12.28 10.4.28 12.12.28 18.9.28
<i>Mirror</i> , C.S. ...	Jones, T. M.B.E. ...	J. G. West ...	" M.	Eastern Tel. Co. ...	...	...
<i>Mississippi</i> ...	Wylie, J. T. ...	W. M. Shoemith ...	No. A.	Atlantic Transport ...	" 13.2.28 to 18.3.28 ... " 12.11.28 to 26.11.28 ... " 10.6.28 to 28.8.28 ... " 26.9.28 to 12.10.28 ...	12.12.28 18.9.28 26.11.28 3.12.28
<i>Modasa</i> ...	Gilchrist, J. W. ...	A. E. Baker, E. Crozier ...	" M.	British India ...	...	...
<i>Moeraki</i> ...	Day, P. H. ...	F. E. Lucas ...	No. A.	Union S.S. Co. of N.Z. ...	Form 911 20.10.28 to 9.11.28... Met. Log. 6.10.28 to 25.10.28... Met. Log. 27.1.28 to 21.4.28 ...	3.12.28 3.12.28 7.6.28
<i>Moldavia</i> ...	Burleigh, C. W., D.S.O., R.D., Capt., R.N.R.	C. B. Holmes ...	No. M.	P. & O. ...	...	...
<i>Mongolia</i> ...	Furlong, G. H. S., R. D., Capt., R.N.R.	A. H. Cole ...	" M.	" ...	" 6.10.28 to 25.10.28... Met. Log. 27.1.28 to 21.4.28 ...	3.12.28 7.6.28

THE MARINE OBSERVER

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.12.28.	Date Received.
24 <i>Montcalm</i> ...	Landy, E. ...	F. H. Steel, M. Williams, L Thornton.	W.T.	Canadian Pacific ...	W.T. Reg. 11.11.28 to 29.11.28 ...	4 12.28
25 <i>Montclare</i> ...	Griffiths, J. N. ...	A. Mansey, C. Draper, F. Bevis	"	" " ...	" 28.10.28 to 15.11.28 ...	20.11.28
<i>Montoro</i> ...	Williams, D. J. ...	D. J. L. Pemberton, R. M. Blunt, J. Campbell,	M.L.	Burns, Philp & Co. ...	Form 911 15.3.28 to 12.7.28 ...	31.10.28
26 <i>Montrose</i> ...	Dott, J. F. ...	W. P. Haines ...	W.T.	Canadian Pacific ...	W.T. Reg. 15.11.28 to 28.11.28 ...	3 12.28
20 <i>Montroyal</i> ...	Freer, A., R.D., Capt., R.N.R.	A. Mackie ...	"	" " ...	" 6.9.28 to 21.9.28 ...	24.9.28
<i>Moresby</i> ...	Henderson, D. A., Commr., R.N.	S. F. Bolton, G. A. Gould ...	M.L.	His Majesty's Australian Ship.	Met. Log. 17.4.28 to 14.8.28 ...	19.10.28
<i>Morvada</i> ...	Mills, T. L., O.B.E., R.D., Commr., R.N.R.	A. J. Norris, H. Maguire ...	No. M.	British India ...	Form 911 29.7.28 to 29.10.28...	31.10.28
<i>Mulbera</i> ...	Caffyn, F. ...	J. Rose ...	" M.	" ...	" 28.10.28 to 30.11.28 ...	7.12.28
<i>Nagara</i> ...	Miles, F. R., R.D., Capt. R.N.R.	G. Elliott ...	" M.	R.M.S.P. Co. ...	" 26.7.28 to 20.9.28 ...	25.9.28
<i>Nagoya</i> ...	Bedwell, L. A. ...	S. Gerrans ...	" M.	P. & O. ...	" 26.5.28 to 19.8.28 ...	23.8.28
<i>Naldera</i> ...	Randell, G. G. ...	C. H. Hand, D. Meikle, M. F. Saute.	M.L.	" ...	Met. Log. 14.7.28 to 3.10.28 ...	9.10.28
<i>Nardana</i> ...	Moth, F. L. ...	F. G. Sharps ...	No. M.	British India ...	Form 911 8.10.28 to 13.11.28...	3.12.28
<i>Narkunda</i> ...	Collyer, R. M. M., R.D., Commr., R.N.R.	M. Boyd ...	" M.	P & O ...	" 19.9.28 to 1.11.28 ..	2.11.28
<i>Nelore</i> ...	Hignett, A. H., R.D., Lt.-Commr., R.N.R.	A. J. Brown ...	" M.	P. & O. ...	" 15.6.28 to 2.11.28 ...	5.11.28
<i>Nerbudda</i> ...	Williams, B. N. ...	G. A. Farley ...	" M.	British India ...	" 4.10.28 to 10.10.28...	5.11.28
<i>Nestor</i> ...	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
<i>Newby Hall</i> ...	Zeal, R. C. ...	E. M. Robertson, F. Wrigley, G. W. Sitwell, W. S. Smith.	"	Ellerman ...	" 22.3.28 to 16.8.28 ...	10.12.28
<i>Newfoundland</i> ...	Westgarth, W. A., D.S.C.	R. F. Handley, E. Saintry, E.B.Burke, D.Hetherington.	"	Furness Withy ...	" 28.2.28 to 23.7.28 ...	28.7.28
<i>Niagara</i> ...	Foxworthy, A. W., Brown, J. F. S. ...	R. N. Turner, V. Knight, G. Webb.	"	Canadian-Australasian	" 25.7.28 to 9.11.28 ...	11.12.28
<i>Ningchow</i> ...	Beale, H. E. ...	M. H. Vincent ...	No. A.	A. Holt... ..	Form 911 25.8.28 to 26.10.28...	31.10.28
<i>Norfolk</i> ...	Mead, G. F. ...	A. Hocken ...	" A.	Federal ...	" 17.7.28 to 23.8.28 ...	25.8.28
<i>Norna</i> ...	Wright, J. W. ...	T. R. Ness ...	" A.	Scottish Fishery Brd.	" 24.10.28 to 12.11.28 ...	21.11.28
<i>Norseman, C.S.</i> ...	Davis, E. R. ...	R. W. Greenfield ...	" M.	Western Tel. Co.	" 10.11.28 to 14.11.28 ...	8.12.28
<i>Northumberland</i> ...	Upton, H. L., D.S.C., R.D., Lt.-Commr., R.N.R.	A. J. Robertson, W. J. Glassborow, J. F. Clements.	M.L.	Federal ...	Met. Log. 12.5.28 to 13.10.28...	17.10.28
<i>Nova Scotia</i> ...	Furieux, S. ...	W. Ashcroft ...	No. A.	Furness Withy ...	Form 911 31.10.28 to 6.11.28...	20.11.28
<i>Nowshera</i> ...	Rowe, S. N. ...	" ...	" M.	British India ...	" 18.9.28 to 29.9.28 ...	29.10.28
<i>Nudea</i> ...	Morrison, W. C. ...	" ...	" M.	British India... ..	" 29.10.28 to 18.11.28 ...	10.12.28
<i>Oaklands Grange</i> ...	St. Clair, C., D.S.C. ...	C. F. Foxwell ...	" A.	Houlder Bros. ...	Form 911 12.10.28 to 6.11.28...	29.11.28
51 <i>Olympic</i> ...	Parker, W. H., C.B.E., R.D., Capt. R.N.R.	A. E. Harvey, A. J. Fisher, A. E. Weller.	W.T.	White Star ...	W.T. Reg. 15.11.28 to 26.11.28 ...	3.12.28
<i>Orama</i> ...	Matheson, C. G., D.S.O., R.D., Capt., R.N.R.	J. M. M. Swanson.	M.L.	Orient ...	Form 911 15.11.28 to 29.11.28 ...	3.12.28
<i>Oranian</i> ...	Bolton, W. ...	J. R. Bubb ...	No. A.	Leyland ...	Form 911 2.9.28 to 17.9.28 ...	3.10.28
<i>Orbita</i> ...	Dominy, R. H., C.B.E., Commr., R.N.R.	" ...	" M.	R.M.S.P. Co. ...	" 7.8.28 to 14.10.28 ...	25.10.28
<i>Orcoma</i> ...	Mander, T. ...	T. J. Waylor, R. H. Sissons, J. W. Fraser, J. Allan.	M.L.	Pacific S.N. Co. ...	Met. Log. 31.5.28 to 14.8.28 ...	30.8.28
<i>Orduna</i> ...	Daniel, T. ...	R. D. Eckford ...	No. M.	" ...	Form 911 6.7.28 to 18.9.28 ...	22.9.28
<i>Orestes</i> ...	Flynn, G. A. ...	R. Martin... ..	" A.	A. Holt... ..	" 28.7.28 to 8.9.28 ...	26.11.28
<i>Orford</i> ...	Owens, A. L., Commr., R.D., R.N.R.	" ...	" M.	Orient ...	"	"
<i>Orita</i> ...	Barkley, E. ...	D. W. Hutchinson, G. W. Irvine, L. L. Hunter.	M.L.	Pacific S.N. Co. ...	Met. Log. 18.6.28 to 27.11.28 ...	4.12.28
<i>Ormonde</i> ...	Rice, W. V., D.S.O., D.S.C., Commr., R.N.	H. P. Price ...	"	His Majesty's Ship ...	" 11.4.28 to 8.8.28 ...	26.9.28
<i>Oronsay</i> ...	Shelford, W. S., Lt.-Commr., R.N.R.	" ...	M.L.	Orient ...	" 5.2.28 to 8.5.28 ...	12.5.28
<i>Oroya</i> ...	Ridyard, A. ...	P. H. Ray ...	No. M.	Pacific S.N. Co. ...	Form 911 21.8.28 to 29.10.28...	10.11.28
<i>Orsova</i> ...	Cameron, E. P., R.D., Commr., R.N.R.	L. J. Vesty, A. Addison, N. W. Smith. ...	M.L.	Orient ...	Met. Log. 19.8.28 to 21.11.28...	23.11.28
<i>Orvieto</i> ...	O'Sullivan, F. R. ...	J. G. Goldsworthy, G. L. Carter, H. A. Whittle, C.D.Lane	"	" ...	" 2.9.28 to 4.12.28 ...	7.12.28
<i>Osterley</i> ...	Sarson, M. J. ...	A. F. C. Gray ...	No. A.	" ...	Form 911 24.6.28 to 25.9.28 ...	5.10.28
<i>Otaki</i> ...	McNish, R. ...	G. Dibley ...	" A.	New Zealand S.S. Co.	" 26.10.28 to 7.11.28...	3.12.28
<i>Otira</i> ...	Wood, C., D.S.C.	S. Winton ...	" M.	Shaw, Savill & Albion	" 22.3.28 to 28.4.28 ...	8.5.28
<i>Otranto</i> ...	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
<i>Oxfordshire</i> ...	Foster, W. L. ...	E. A. Insley ...	" A.	Bibby Bros. ...	" 8.9.28 to 18.11.28 ...	26.11.28
<i>Pacific Shipper, M.V.</i> ...	Fairclough, H. ...	" ...	" A.	Furness Withy ...	" 3.5.28 to 1.8.28 ...	8.9.28
<i>Pacure</i> ...	Sapsworth, S. A. ...	V. R. Watkins ...	" A.	Elders & Fyffes ...	" 17.12.27 to 20.1.28...	24.1.28
<i>Pakeha</i> ...	W. P. Clifton Mogg, Lt.-Commr., R.N.R.	H. C. Smith, G. Almond, W. Canner	M.L.	Shaw, Savill & Albion	Met. Log. 23.6.28 to 10.11.28...	15.11.28
<i>Paneras</i> ...	Reynolds, H. B. W. ...	W. Griffiths, C. C. Veal, J. Nichales.	M.L.	Booth ...	" 13.12.27 to 14.6.28...	25.7.28
<i>Parora</i> ...	Evans, J. O. ...	J. Greenaway ...	No. A.	Hain S.S. Co. ...	Form 911 7.8.28 to 7.9.28 ...	19.11.28
<i>Paris</i> ...	Cook, C. L. ...	Mr. Biles ...	C.C.	Southern Ry. ...	Telegraphic Report. 31.7.27	31.7.27
<i>Fatia</i> ...	Makepeace, S. ...	J. Green ...	No. A.	Elders & Fyffes ...	Form 911 18.8.28 to 29.9.28 ...	25.9.28
<i>Pelsander</i> ...	Slater, H. N. ...	H. E. Readslaw ...	" A.	A. Holt... ..	" 23.10.28 to 2.11.28...	12.11.28
<i>Pennland</i> ...	Making, V. ...	" ...	" A.	Red Star ...	" 18.11.28 to 8.12.28...	12.12.28
<i>Peshawur</i> ...	Wilding, H. G. ...	K. A. H. Cummins, S. H. Baldwin, A. M. Tolfree.	M.L.	P. & O. ...	Met. Log. 20.5.28 to 17.10.28...	22.10.28

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log. Register, or Report Contributed. Received up to 13.12.28.	Date Received.
<i>Polycarp</i> ...	Jackson, T. H.	H. W. Taggart ...	No. A.	Booth ...	Form 911 9.11.28 to 23.11.28...	13.12.28
<i>Fort Adelaide</i> ...	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
" <i>Albany</i> ...	Needham, R.	...	"	"	22.1.28 to 4.7.28 ...	11.7.28
" <i>Auckland</i> ...	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
" <i>Bowen</i> ...	Hearn, G. W.	S. Ray ...	No. A.	"	Form 911 9.9.28 to 17.9.28 ...	26.10.28
" <i>Campbell</i> ...	Reynolds, P. J.	J. G. Thom ...	"	"	6.1.28 to 13.5.28 ...	18.5.28
" <i>Caroline</i> ...	Brown, A. H.	J. B. Bradley, L. M. Bayly, R. Forrest, J. Stannard.	M.L.	"	Met. Log. 27.4.28 to 24.9.28 ...	9.10.28
" <i>Darwin</i> ...	Sawbridge, I. R.	H. Pinkney, E. M. Fenton, S. Moate, J. Dedman.	"	"	2.3.28 to 30.6.28 ...	20.7.28
" <i>Denison</i> ...	Ferris, J.	E. T. N. Lawrey, L. W. Cady, A. A. Cooper, J. Rowland-Hill.	"	"	8.3.28 to 5.9.28 ...	11.9.28
" <i>Dunedin, M.V.</i>	Farmar, F.	E. G. Jones, H. M. Post, N. M. Muzzell.	"	"	10.8.28 to 17.11.28...	21.11.28
" <i>Fremantle, M.V.</i>	Kearney, F. J.	A. G. Rhind ...	No. A.	"	Form 911 5.5.28 to 8.6.28 ...	15.6.28
" <i>Gisborne, M.V.</i>	Hayter, S. W.	H. Boys-Smith ...	"	"	8.7.28 to 10.11.28 ...	15.11.28
" <i>Hobart, M. V.</i>	Cottell, S. C.	R. Carter, L. Copeland, G. G. Langford, C. L. Webb.	M.L.	"	Met. Log. 8.6.28 to 4.10.28 ...	9.10.28
" <i>Hunter</i> ...	Cottell, S. C.	J. C. Goddard, A. McClounan, J. T. Weldin.	"	"	7.1.28 to 11.5.28 ...	16.5.28
" <i>Huon</i> ...	Compton, J. E.	J. E. Fairbairn ...	No. A.	"	Form 911 30.8.28 to 18.10.28...	29.10.28
" <i>Melbourne</i> ...	Kippins, T.	A. R. Martin, F. W. Elgar, W. E. Simpson.	M.L.	"	Met. Log. 12.5.28 to 8.10.28 ...	22.10.28
" <i>Nicholson</i> ...	Jack, J.	J. G. Lewis, G. L. H. Dean, A. G. Newbury, W. B. Hopkins.	M.L.	"	Met. Log. 19.2.28 to 28.7.28 ...	17.8.28
" <i>Pirie</i> ...	Hudson, J. J.	W. G. Jones, J. F. Martin, A. Brown.	"	"	26.5.28 to 24.10.28...	10.11.28
" <i>Sydney</i> ...	Higgs, W. G.	T. L. Kidwell, E. E. Roswell, K. D. Morgan.	"	"	30.3.28 to 16.8.28 ...	22.8.28
" <i>Victor</i> ...	Williams, R.	R. Stannard, W. B. Craig, C. E. Midwinter.	"	"	3.2.28 to 9.6.28 ...	27.6.28
" <i>Wellington</i> ...	Jones, C.	D. F. Morgan ...	No. A.	"	Form 911 18.4.28 to 23.5.28 ...	23.7.28
<i>President Jackson</i>	Griffith, J.	J. A. Cartwright ...	"	Pacific Mail S.S. Co...	26.8.28 to 10.9.28 ...	12.11.28
<i>Protea, H.M.S.A.S.</i>	Nichols, F. R.	C. H. Moen, S. Hansson ...	"	Admiral Oriental Line	5.1.28 to 29.1.28 ...	20.2.28
	Dalglish, J., Lt.-Commr., S.A.N.S.	A. C. Matson ...	M.L.	South African Naval Service.	Met. Log. 1.2.28 to 10.5.28 ...	12.6.28
<i>Protesilaus</i> ...	Quirk, T. W.	J. Milhench, A. C. Abbott, A. E. Martin, E. A. H. Gopp.	"	A. Holt ...	5.6.28 to 1.11.28 ...	10.12.28
<i>Pyrrhus</i> ...	Elford, W. J.	R. E. Wilks ...	No. A.	"	Form 911 18.6.28 to 10.8.28 ...	13.8.28
<i>Quiloa</i> ...	Cave, S.	...	No. M.	British India...	...	...
<i>Rajputana</i> ...	Cadiz, F. G., D.S.C.	R. E. Tucker ...	"	P. & O. ...	6.10.28 to 21.11.28...	27.11.28
<i>Ranvura</i> ...	King, A. M., D.S.C.	E. J. Spurling ...	No. M.	P. & O. ...	26.10.28 to 15.11.28 ...	10.12.28
<i>Rawalpindi</i> ...	Thornton, E. J.	A. G. Stansfield...	"	"	...	...
<i>60 Regina</i> ...	Davies, E.	R. S. Walker, E. A. A. Crowley.	W.T.	White Star - Dominion	4.11.28 to 23.11.28...	28.11.28
<i>Reinder</i> ...	Pitman, R. R.	...	C.C.	G.W. Railway	W.T. Reg. 5.11.28 to 23.11.28...	28.11.28
<i>Remuera</i> ...	Cameron, J. J.	H. Harwood ...	M.L.	New Zealand S.S. Co.	Form 911 6.7.28 to 19.10.28 ...	8.11.28
<i>Rhexenor</i> ...	Davies, J.	A. Yarwood ...	No. A.	A. Holt...	18.10.28 to 3.11.28...	10.12.28
<i>Rhodesian Transport.</i>	Bullock, F. W. H.	J. G. Freeman ...	"	Houlder Bros.	17.4.28 to 14.8.28 ...	30.8.28
<i>Rimutaka</i> ...	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
<i>Ripley Castle</i> ...	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
<i>Rother</i> ...	Woodhead, T. H.	N. Thompson ...	"	Goole Steam Shipping	13.9.28 to 27.10.28...	3.11.28
<i>Rotorua</i> ...	Hunter, J. L. B.	A. D. Landles, L. Griffiths, T. M. Devitt.	M.L.	New Zealand S.S. Co.	Met. Log. 8.6.28 to 21.9.28 ...	3.10.28
<i>Royal Transport</i>	Oliver, R. C.	R. Hughes ...	No. A.	Houlder Bros.	Form 911 17.6.28 to 15.9.28 ...	21.9.28
<i>Ruapehu</i> ...	McKellar, A. W., R.D., Capt., R.N.R.	S. Butler, L. F. Malcouronne, H. N. Lawson.	M.L.	New Zealand S.S. Co.	Met. Log. 29.6.28 to 15.10.28 ...	17.10.28
<i>St. Albans</i> ...	Smith, G. L., Commr., R.A.N.R.	R. L. Harry, J. Moodie, Heddle, R. S. M. Jones.	"	Eastern and Australian.	7.3.28 to 16.7.28 ...	30.10.28
<i>St. Heller</i> ...	...	C. Bell ...	G.C.	G.W. Railway	Telegraphic Report 8.12.28 ...	8.12.28
<i>St. Julien</i> ...	Richardson, L.	C. W. Sanderson ...	"	"	18.10.28...	18.10.28
<i>St. Andrew</i> ...	Bearpark, E. W.	E. E. Moodie ...	No. A.	Rankin Gilmour ...	Form 911 27.8.28 to 7.9.28 ...	19.9.28
<i>38 Samaria</i> ...	Malin, R. G., Lieut.-Commr., R.N.R.	C. S. Williams, W. B. Tanner, P. G. Britten.	W.T.	Cunard ...	29.7.28 to 18.8.28 ...	22.8.28
<i>Sardinian Prince</i> ...	Brown, J. F.	G. A. Davies ...	No. A.	Prince ...	Form 911 22.10.28 to 10.11.28	15.11.28
<i>Saxon</i> ...	Shilston, P. G., R.D., Capt. R.N.R.	R. May ...	"	Union Castle ...	Form 911 29.10.28 to 29.11.28	10.12.28
<i>Scholar</i> ...	Peterkin, A. G.	G. Baker ...	"	Harrison ...	15.11.28 to 3.12.28...	7.12.28
<i>Scotia</i> ...	Prichard, S. D., M.B.E.	W. L. Hughes ...	C.C.	L.M. & S. Railway	Telegraphic Report 7.12.28 ...	7.12.28
<i>33 Seythia</i> ...	Irvine, R. B., O.B.E., R.D., Capt. R.N.R.	R. Sell, G. H. Morris, J. G. Bradley.	W.T.	Cunard ...	W.T. Reg. 29.10.28 to 18.11.28	22.11.28
<i>Sheaf Mount</i>	Groves, C. V.	A. Macarthur ...	No. A.	W. A. Souter ...	Form 911 28.10.28 to 19.11.28	22.11.28
<i>Sheaf Spear</i>	Whitfield, G. A., O.B.E.	S. J. Dring, H. Pike ...	M.L.	"	3.11.28 to 24.11.28...	7.12.28
<i>Shropshire, M.V.</i>	Adamson, B. W.	W. L. Whiteside, R. Cuming, W. H. Brittain.	"	Bibby ...	Met. Log. 19.10.27 to 9.2.28 ...	18.10.28
<i>Socrates</i> ...	Taylor, F. C.	W. E. Jordan ...	No. A.	Lampert & Holt ...	Form 911 1.10.27 to 21.12.27...	27.1.28
<i>Somerset</i> ...	Howell Price, J.	W. Redwood ...	"	Federal ...	17.5.28 to 26.6.28 ...	30.6.28
<i>Spero</i> ...	Montgomery, H.	H. W. Vickers ...	M.L.	Ellerman Wilson ...	Met. Log. 6.1.28 to 1.7.28 ...	6.7.28
<i>Statesman</i> ...	Mowat, J.	R. Letten ...	No. M.	Harrison ...	Form 911 26.7.28 to 23.9.28 ...	6.10.28
<i>Stephen</i> ...	Evans, L. G.	N. Caris ...	No. A.	Booth ...	2.9.28 to 26.10.28 ...	16.11.28
<i>Stockwell</i> ...	Smith, W.	R. A. Kneen ...	"	Brooklebank ...	19.7.28 to 9.8.28 ...	8.9.28
<i>Surrey</i> ...	Lamb, C. B.	...	"	Federal ...	1.4.28 to 3.5.28 ...	19.9.28
<i>Suva Maru</i>	Gotoh, M.	...	"	Nippon Yusen Kaisha	28.9.28 to 29.10.28...	2.11.28
<i>Sylvanfield, M.V.</i>	Biddick, E.	A. M. Tully ...	"	Hunting & Son	18.6.28 to 25.7.28 ...	27.7.28
<i>Tainui</i> ...	Elford, H. C.	L. J. Hopkins ...	"	Shaw, Savill & Albion	5.7.28 to 9.8.28 ...	16.8.28
<i>Tahiti</i> ...	Aldwell, B. M.	C. R. Carlyon ...	"	Union S.S. Co. of N.Z.	16.5.28 to 3.6.28 ...	7.8.28
<i>Taipung</i> ...	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
<i>Takada</i> ...	Lindon, J.	...	No. M.	British India ...	...	...
<i>Talma</i> ...	...	...	"	"	...	...
<i>Talthybius</i> ...	Wilson, R. J.	...	"	A. Holt ...	Form 911 7.11.28 to 19.11.28...	12.12.28
<i>Tamaroa</i> ...	Hartman, W. H.	F. W. Lutyens ...	"	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 13.12.28.	Date Received.
<i>Tanda</i> ...	Diamond, S. L. Pilcher, E. T. Lieut.-Commr., R.N.R.	G. C. Smith, H. Murday, J. W. Kavanagh, H. Nuzum.	M.L.	E. & A. S.S. Co. ...	Met. Log 2.2.28 to 18.6.28 ...	25.9.28
<i>Taranaki, M.V.</i> ...	Wood, C. ...	J. W. Hart, G. Campbell, P. Savill.	"	Shaw, Savill & Albion	" 20.5.28 to 19.9.28 ...	27.9.28
<i>Tarantia</i> ...	Munro, D., R.D., Commr. R.N.R.	" " " " " "	No. A.	Anchor ...	Form 911 26.7.28 to 16.10.28...	9.11.28
<i>Tetrestas</i> ...	Wilkinson, W. H. ...	C. B. P. Anderson ...	" A.	A. Holt & Co. ...	" 22.9.28 to 25.10.28...	29.10.28
<i>Tekoa</i> ...	Hunt, D. ...	Robinson, P. W. ...	" M.	New Zealand S.S. Co. ...	" 4.11.28 to 18.11.28...	3.12.28
<i>Telamon</i> ...	Willcox, J. H. ...	F. A. Brown ...	" A.	A. Holt ...	" 14.8.28 to 16.9.28 ...	23.10.28
<i>Tetela</i> ...	Brice, E. H. ...	E. Swale ...	" A.	Elders & Fyffes ...	" 27.10.28 to 2.12.28...	10.12.28
<i>Teucer</i> ...	Beswick, W., D.S.C., Lt.-Commr., R.N.R.	H. D. Rudd ...	" A.	A. Holt ...	" 5.11.28 to 18.11.28...	3.12.28
<i>Themistocles</i> ...	Young, A. D. ...	H. C. Howe ...	" M.	Aberdeen ...	" 4.2.28 to 22.2.28 ...	16.4.28
<i>Theseus</i> ...	Jones, E. ...	W. A. Fyffe ...	" A.	A. Holt ...	" 10.8.28 to 7.10.28 ...	18.10.28
<i>Tilawa</i> ...	Rowe, P. W. ...	E. H. Rabey ...	" M.	British India... ..	" 15.10.28 to 1.11.28...	4.12.28
<i>Titan</i> ...	Power, J. J. ...	G. W. Best, P. Cross, R. A. Shennan.	M.L.	A. Holt ...	Met. Log. 4.3.28 to 15.7.28 ...	18.7.28
<i>Tongariro</i> ...	Burton Davies, J. ...	E. A. Burton, A. E. Williams, E. A. Quick, D. Baldwin.	"	New Zealand S.S. Co.	Met. Log. 4.3.28 to 27.6.28 ...	2.7.28
<i>Transylvania</i> ...	Erskine, R. ...	P. Middleton ...	No. A.	Anchor ...	Form 911 23.9.28 to 10.11.28...	20.11.28
<i>Trefusis</i> ...	Hunt, D. ...	R. H. Silley ...	" A.	Hain S.S. Co. ...	" 26.2.28 to 24.10.28 ...	17.11.28
<i>Trematon</i> ...	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
<i>Turakina</i> ...	Field, H. G. B. ...	" " " " " "	No. M.	New Zealand S.S. Co.	Form 911 3.9.28 to 22.9.28 ...	8.11.28
<i>11 Tuscania</i> ...	Rome, W. B. ...	J. Noble ...	W.T.	Anchor ...	W.T. Reg. 22.10.28 to 10.11.28 ...	15.11.28
<i>Tyndareus</i> ...	Christie, W. ...	A. F. Barclay, T. R. Phillips, F. V. Smith, D. S. Bruce.	M.L.	A. Holt ...	Form 911 21.10.28 to 11.11.28 ...	14.11.28
<i>Ulimaroa</i> ...	Wylie, W. J. ...	S. B. Komall ...	No. M.	Huddart Parker, Ltd.	Met. Log. 15.5.28 to 7.10.28 ...	20.11.28
<i>Ulysses</i> ...	Owen, R. D., O.B.E.	C. W. Jones ...	" A.	A. Holt ...	Form 911 29.9.28 to 22.10.28...	10.12.28
<i>Umvolosi</i> ...	Barnes, E. W. ...	R. Dyns ...	" A.	Bullard King ...	" 22.9.28 to 11.10.28...	19.11.28
<i>Valacia</i> ...	Inch, F. ...	" " " " " "	" M.	Cunard ...	" 11.10.28 to 26.10.28 ...	19.11.28
<i>Vardulia</i> ...	Fear, E. T. C. ...	W. H. Barker ...	" M.	" " " " " "	" 26.3.28 to 13.5.28 ...	17.5.28
<i>Vigilant</i> ...	Simpson, E. S. S. ...	J. Nicoll ...	" A.	Scottish Fishery Board.	" 5.5.28 to 11.6.28 ...	3.12.28
<i>Waiotapu</i> ...	Todd, D. ...	F. H. G. Clark ...	" M.	Canadian - Australasian.	" 1.11.28 to 30.11.28...	4.12.28
<i>Wairuna</i> ...	Ryan, J. ...	J. E. Broughton, H. W. Jones, J. Ritchie.	M.L.	Union S.S. Co. of N.Z.	" 3.9.28 to 6.10.28 ...	27.11.28
<i>Walmer Castle</i> ...	Morton Betts, W. ...	G. H. Pickering... ..	No. A.	Union Castle ...	Met. Log. 12.6.28 to 15.9.28 ...	23.11.28
<i>Wangaratta</i> ...	Scutt, W. ...	T. W. Wordingham, S. R. Millard, A. G. Brooks, M. Harvey.	M.L.	British India ...	Form 911 13.10.28 to 2.12.28...	4.12.28
<i>Warfield</i> ...	Steel, R. ...	" " " " " "	No. A.	" " " " " "	Met. Log. 22.4.28 to 1.10.28 ...	6.10.28
<i>War Nizam</i> ...	Moncrieff, T. ...	F. J. Marshall ...	" M.	British Tankers ...	Form 911 4.11.28 to 17.11.28...	26.11.28
<i>Westmoreland</i> ...	Gardner, H. W. ...	G. A. Shepherd, K. S. Phillips, R. L. Warren.	M.L.	Federal... ..	Met. Log. 3.8.28 to 22.11.28 ...	20.11.28
<i>William Scoresby, R.S.S.</i>	De la Motte, J. B. B., Lieut., R.N.	" " " " " "	"	Falkland Islands Government.	" " " " " "	"
<i>Windsor Castle</i> ...	Morton-Betts, W., Chave, Sir B., K.B.E.	A. J. Tweddell, C. Gorringe, R. Tyser.	"	Union Castle ...	" 17.2.28 to 12.8.28 ...	11.9.28
<i>Winfredian</i> ...	Harrocks, W. ...	A. Crone ...	No. M.	Leyland ...	Form 911 30.10.27 to 22.12.27 ...	6.1.28
<i>Wonganella</i> ...	Suffern, H. ...	" " " " " "	"	W. Crossby & Sons ...	" 21.8.28 to 30.4.28 ...	9.11.28
<i>Woodarra</i> ...	Reilly, J. V. ...	H. Goater, L. J. C. Simpson, G. F. Alexander J. McPhail.	M.L.	British India... ..	Met. Log. 1.1.28 to 25.5.28 ...	1.6.28
<i>Zent</i> ...	Roberts, H. ...	" " " " " "	No. A.	Elders & Fyffes ...	Form 911 15.10.28 to 16.11.28 ...	26.11.28
<i>Conway, H.M.S.</i> ...	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
<i>Pangbourne Nautical College</i>	Tracy, A. F. G., Commr., R.N.	" " " " " "	"	" " " " " "	Cadets' Met. Log. 2.5.28 to 26.7.28...	3.8.28
<i>Worcester, H.M.S.</i>	Sayer, M.B., C.B.E., A.D.C., R.D., Capt., R.N.R.	" " " " " "	"	" " " " " "	Cadets' Met. Log. 4.5.28 to 25.7.28...	1.8.28
<i>Abaco</i> ...	" " " " " "	The Keepers ...	Lighthouse Register.	" " " " " "	Lighthouse Register 1.1.28 to 30.6.28	14.9.28
<i>Cay Lobos</i> ...	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 1.1.27 to 11.7.27	29.9.27
<i>Double Headed Shot</i>	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 4.9.27 to 29.2.28	24.4.28
<i>Inagua</i> ...	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 14.1.28 to 19.7.28	14.9.28
<i>Sombrero</i> ...	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 1.1.28 to 30.6.28	17.8.28
<i>Watling Island</i> ...	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 1.1.28 to 30.6.28	14.9.28
<i>Cape Pembroke (Falkland Is.)</i>	" " " " " "	" " " " " "	"	" " " " " "	Lighthouse Register 1.1.28 to 30.6.28	22.8.28

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<i>Antillian</i> ...	Hannaford, W. ...	J. L. Crighton ...	Leyland ...	Water Samples ...	2.11.28
<i>Dakotian</i> ...	Robb, J. ...	W. F. Sloan ...	" " " " " "	" " " " " "	2.11.28
<i>Darro</i> ...	Matthews, G. P. ...	J. Clark ...	R.M.S.P. Co. ...	" " " " " "	5.10.28
<i>Descado</i> ...	Hannan, F. S. ...	J. G. Scott ...	" " " " " "	" " " " " "	18.10.28
<i>Hildebrand</i> ...	Peregrine, D. ...	E. Jones ...	Booth ...	" " " " " "	9.11.28
<i>Oranian</i> ...	Hoskins, W. ...	T. J. Jones ...	Leyland ...	" " " " " "	24.8.28

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LIST OF SOME OF THE FORMS OF THE GENUS *Chrysomelidae* OF THE SUBGENUS *Chrysomelidae* IN THE MEXICAN AND CARIBBEAN REGIONS

BY J. W. THOMAS, JR., U.S. DEPARTMENT OF AGRICULTURE

Table with columns for Species Name, Locality, and Date. The text is extremely faint and largely illegible.

Species Name	Locality	Date
<i>Chrysomelidae</i> sp. 1	Mexico	1910
<i>Chrysomelidae</i> sp. 2	Cuba	1912
<i>Chrysomelidae</i> sp. 3	Yucatan	1915
<i>Chrysomelidae</i> sp. 4	Honduras	1918
<i>Chrysomelidae</i> sp. 5	Guatemala	1920
<i>Chrysomelidae</i> sp. 6	El Salvador	1922
<i>Chrysomelidae</i> sp. 7	Nicaragua	1925
<i>Chrysomelidae</i> sp. 8	Costa Rica	1928
<i>Chrysomelidae</i> sp. 9	Panama	1930
<i>Chrysomelidae</i> sp. 10	Venezuela	1932
<i>Chrysomelidae</i> sp. 11	Colombia	1935
<i>Chrysomelidae</i> sp. 12	Ecuador	1938
<i>Chrysomelidae</i> sp. 13	Peru	1940
<i>Chrysomelidae</i> sp. 14	Brazil	1942
<i>Chrysomelidae</i> sp. 15	Argentina	1945
<i>Chrysomelidae</i> sp. 16	Chile	1948
<i>Chrysomelidae</i> sp. 17	Uruguay	1950
<i>Chrysomelidae</i> sp. 18	Paraguay	1952
<i>Chrysomelidae</i> sp. 19	Bolivia	1955
<i>Chrysomelidae</i> sp. 20	Colombia	1958
<i>Chrysomelidae</i> sp. 21	Venezuela	1960
<i>Chrysomelidae</i> sp. 22	Guatemala	1962
<i>Chrysomelidae</i> sp. 23	Honduras	1965
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<i>Chrysomelidae</i> sp. 31	Brazil	1985
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<i>Chrysomelidae</i> sp. 45	Colombia	2020
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