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## SHIPS' METEOROLOGICAL REPORT.

## FORM 911.

WHEN Captain CAMPBELL HEPWORTH became Marine Superintendent he came to the office fresh from the sea impressed with the necessity of presenting to Marine Observers the results of their observations in a more general and convenient form than the Atlases published up to that time. The result was the issue of the North Atlantic Chart monthly, and later the monthly issue of the Indian Seas Chart giving notes of interesting phenomena reported, as well as averages and normals. He soon found that the 200 ships then keeping the Meteorological Log equipped with office instruments did not provide sufficient observations from the North Atlantic to complete the monthly chart for that Ocean, and so he introduced a form on which other ships could report Ice and to this was soon added general Meteorological observations. A similar form was introduced for ships in the Indian Ocean.

With post-war organisation these forms for the North Atlantic and Indian Ocean were replaced by a single form applicable to all oceans.

THE MARINE OBSERVER is very largely dependent upon contributors of these forms, and the manuscripts attached giving additional remarks have increased to such an extent as to make the inclusion of a space for Additional Remarks desirable.

At the commencement of this year the invitation to broadcast Wireless Weather reports to "All Ships" was extended to all those upon our list having a Mercurial Barometer, and a temporary form was sent to these ships to record the reports so made. The response to this invitation has proved the desirability of providing the necessary columns upon Form 911 for ships having Mercurial Barometers in their outfits and fitted with Wireless Telegraphy to record routine Wireless Weather Reports based on observations made at the same time as those of the nearest coast, to "All Ships." The latest reprint of Form 911, which should be in the hands of all Marine Observers concerned when they receive this number, has been enlarged and contains appropriate space for Additional Remarks and reports to "All Ships." We hope that they will be made full use of, for with the number of ships keeping the Meteorological Log—which provides the backbone of the work—reduced to the minimum we are more than ever dependent upon those ships on the list keeping Form 911. They have proved themselves of great value.

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.

## SAND STORM.

## Off the East Coast of Australia.

THE following is an extract from the Meteorological Log of S.S. *Peshawur*, Commander C. HESTER, R.D., R.N.R., Brisbane to Port Kembla :—

“Monday, October 12th, 1925, 4.0 a.m. Smoky Cape Light abeam N. 77° W. 10 miles. Barometer 1005.2. Dry Bulb 69°. Wet Bulb 66°. Wind N.N.W., force 3. Weather clear and heavy dew throughout the night. Barometer falling fast. 10.39 a.m. Sugarloaf Point Lighthouse, N. 70° W. 10 miles, hazy over the land. Sky becoming overcast with Cirrus haze. Noon Position: Latitude 32° 45' S., Longitude 152° 31' E., barometer 997.1, dry bulb 69°, wet bulb, 63°. Wind N.N.E., force 4. At 0.40 p.m. wind backed to N.N.W., increasing to force 6 to 7, the wind was hot and temperature was rising; at 2 p.m. it was 75°. At 4 p.m., barometer had fallen to 986.6. Dry bulb 77°, wet bulb 65°, with cloudy and unsettled appearance, a threatening sky, hazy over the land, and rather rough N.W'ly sea and moderate swell. Visibility poor, wind N.W., force 6 to 7, air full of fine sand and dust. At 5.15 p.m., a slight lull was followed by a stronger blow, wind backing to west, force 7. Barometer was then 985.8. Dry bulb 77°, wet bulb 65°, after which it commenced to rise steadily but slowly. The wind was hot and laden with dust and smoke from bush fires ashore; clouds were moving rapidly from westward, sky overcast with occasional breaks. The setting sun forcing its different rays through the clouds gave a peculiar hue to the atmosphere, which took on a deathlike tint. The phenomenon is supposed to have been caused by the low angle of the sun's rays. At 5.55 p.m. wind shifted in a fierce squall to S.W., force 7 to 8, afterwards veering again to west force 7 to 8. At 6 p.m. barometer was 986.9, temperature 80°, wind S.W., force 7 to 8. Vivid lightning and thunder. At 6.13 p.m., sighted the land about Long Point bearing S. 84° W. 2¼ miles. From 5.15 to 6.30 p.m., atmosphere was hot and oppressive and full of fine sand and grit, heavy thunder and lightning storm. At 6.43 p.m., South Head Light-House was abeam N. 85° W. 3 miles, and between 7 and 8 p.m. wind moderated to W.N.W., force 4. At 8 p.m. ship was 8 miles south of Sydney. Barometer 989.8, dry bulb 73°, wet bulb 65°, wind W.N.W., force 4. At 9.42 p.m., approaching Port Kembla, wind backed to southward and commenced to blow hard, force 7 to 8, visibility—improving after shift of wind; cruised for night between Woolongong and Balimba. At midnight wind was S.S.W., force 6 to 7. Barometer 996, dry bulb 66°, wet bulb 60°, and shortly afterwards the wind dropped. At 6.0 a.m. Tuesday, October 13th, anchored Port Kembla Harbour, the ship was found to be covered with fine reddish coloured sand supposed to have been blown from far in the interior. The District Engineer and Manager, Public Works, Woolongong and Port Kembla, informed me that some of the stuff was mica, and must have come 1,500 miles or so from the interior.”

The following is an extract from the Meteorological Log of S.S. *Tanda*, Captain E. T. PILCHER, Tasmania to Sydney, Observer, Mr. R. LLOYD HARRY, 3rd Officer :—

“October 12th, 1925, off Botany Bay, 11.45 a.m., wind N.N.E., force 4, barometer 989.5. The sea surface was much disturbed by very hot whirlwinds, each causing a great change in temperature as it passed over ship from westward. To westward the sky was obscured by a high cloud of thick red dust which made the day considerably darker and made everything take a bright orange hue. At 11.50 a.m. wind backed N.W., force 7, and remained in that quadrant until about 5.30 p.m. when severe rain squalls came from W., bringing down much dust and clearing the atmosphere. At 6 p.m. daylight was restored and darkness came naturally.”

NOTE.—According to the Weather Charts of the Australian Commonwealth Weather Bureau on the morning of the 12th, a depression was situated to the southward of Tasmania and from it

a  $\Lambda$  extended in a north-westerly direction into Central Australia and right out over the Australian desert. In accordance with Buys Ballot's law the wind was from north and north-north-west over the country to north-eastward of the trough of the  $\Lambda$  and a southerly and westerly wind was prevailing to south-westward of the trough.

During the day this  $\Lambda$  moved eastward, and on the morning of the 13th it had passed over the south-eastern coast of Australia. It was the passage of this  $\Lambda$  which caused the phenomena recorded by *Peshawur* and *Tanda*. The course of events was evidently somewhat similar to that followed by the “Southerly Bursters” of the east Australian coast which are described in THE MARINE OBSERVER, Vol. I., No. 7, p. 95, though the configuration of the isobars did not cause the strong southerly squalls generally associated with the “Burster.”

On the weather map of the 12th there is a distinct indication that the  $\Lambda$  extended as far inland as Latitude 22° S., Longitude 130° E., and possibly still further, so that there was a stream of northerly wind extending for some 1,500 miles inland, which must have brought the mica dust with it from the interior.

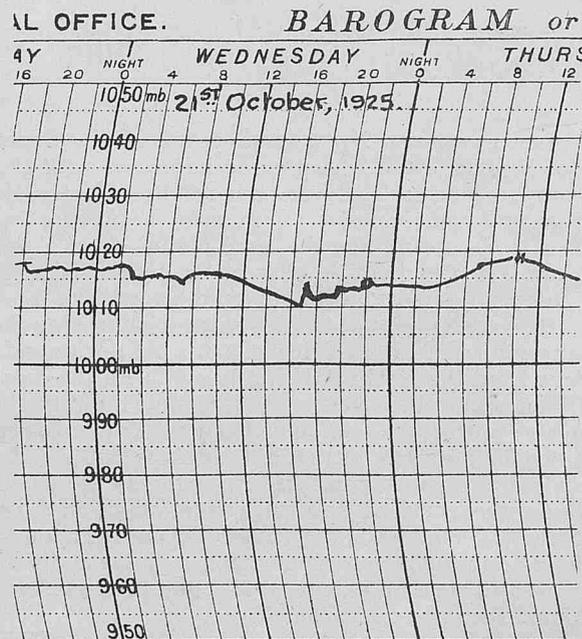
As the trough passed over *Peshawur* and *Tanda* the squalls recorded were experienced, and eventually with the arrival of air from a more southerly direction the atmosphere cleared.

## THUNDERSTORM.

## Off Queensland, Australia.

THE following is an extract from the Meteorological Log of H.M.A.S. *Moresby*, Captain J. A. EDGELL, O.B.E., R.N., Surveying off East Coast of Australia, Observer, Lieutenant W. H. MARTIN, R.A.N. :—

“At 1600, October 21st, 1925, at anchor off Sea Hill Point, Keppel Bay, Queensland (Latitude 23° 20' S., Longitude 151° 02' E.). Wind N. by W., force 4, barometer 1009.3 mbs. Temperatures—dry 77, wet 73, sea 74; clouds, high, Ci.; low, Nb, 4. Visibility 5. A severe thunderstorm was experienced about 1610. Heavy banks of cloud collected in the north, and, working up against the N.E. breeze on the north side of Curtis Island, passed over the northern end of the island. About 1600 the wind fell calm for about 3 minutes, then blew strong from the S.E. accompanied by heavy rain. Wind veered from S.E. to N.E. in about 40 minutes and the rain then ceased.



"The storm moved eastward followed by other less severe storms. The barograph record attached shows a remarkable jump at the commencement of the storm. Two barographs showed the same jump."

### HURRICANE AT HENJAM, PERSIAN GULF.

THE following account by Lieutenant-Commander G. E. BOULTBEE, R.N., H.M.S. *Triad*, has been received from Captain A. R. PALMER, R.N., formerly Senior Naval Officer, Persian Gulf, through the courtesy of the Secretary of the Admiralty.

"October 2nd, 1925. At this time of year the weather in the Persian Gulf is usually fine and settled, but an occasional sand storm is apt to occur.

"These sand storms usually only last about 20 minutes or half an hour, and the force of the wind is generally about 5 or 6.

"In 1924, in October, one of these was encountered at Henjam, and in 1925 two occurred in September and October. Except for the fact that the ship gets coated with sand and the general unpleasantness there appears to be no danger in these storms.

"On the evening of October 1st heavy clouds over the mountains of Persia, accompanied by lightning, were noticed, but as these are quite usual at this time of year no particular notice was taken, and, indeed, I fancy that these storms had nothing to do with the hurricane of the following morning.

"*Triad* and *Cyclamen* were anchored in the harbour, and having been coaling the previous day *Triad's* two whalers were anchored off the foreshore. *Triad* also had down her two motor boats made fast to boat ropes at each boom and a skiff at the stern boom.

"In addition to this there were 4 dhows loaded deep with coal lying off the pier, and one alongside *Cyclamen*, preparatory to that ship commencing coaling at daylight on the morrow.

"A few small shore boats were also anchored off the pier, and the B.I. Co.'s dhow was lying near the shore in readiness to meet the mail boat on the following day.

"Sunrise at this time of the year is at 0630, and owing to short twilight, there is no sign of dawn before 0600.

"On being called on the morning of October 2nd, at 0550, I noticed that there was a good deal of lightning and a certain amount of thunder. The storm appeared to be coming up from right astern and there was no wind. About 0605 by what little light there was I could make out a very heavy cloud covering the sky from about N.N.W. to S.S.W. and reaching to very nearly overhead, lower down I could just make out a certain lightness which I took to be a dense cloud of sand. I thereupon called the Captain and informed him that a very heavy sand storm appeared about to break from about W.S.W. As I came out of the Captain's cabin the storm broke. The wind rose immediately, and in the course of a few moments was blowing with full gale force accompanied by a dense cloud of driving sand which made it impossible to see anything.

"About two minutes after the storm broke the rain came down in a solid sheet, thereby effectually putting a stop to the sand storm.

"As the storm came up from right astern it took the ship some little time to swing to the wind, and I surmise that swinging round as she did very violently produced such a sudden strain on the cable that she started to drag as soon as the cable tautened out.

"Out of 32 awnings spread only two very old ones carried away, these being torn to ribbons in a very short time.

"About 0620 the two whalers were seen drifting away past the ship at a speed of about 3 knots, and shortly afterwards it was reported to me that the skiff had gone adrift from the stern boom. The two motor boats lying at boat ropes rode it out, albeit they shipped a quantity of water.

"As the storm broke I noticed the *Cyclamen's* whaler pulling inshore to clean out during coaling. Luckily this boat managed to get to our lower boom and made fast alongside the motor boat.

"Three hands managed to get out of her, the remaining two staying in the boat to bale out. Even so she shipped so much water that she sank at the lizard, the two hands taking refuge in the motor boat.

"At about 0620 it was noticed that the ship was dragging and that if not brought up would collide with *Cyclamen*. I managed to get a few hands together and struggled up on to the fo'c'sle and let go the second anchor. It was impossible to get along on the fo'c'sle

except by holding on the stanchions, etc., and clawing one's way from place to place.

"By this time it was more or less light, but the driving rain made it impossible to see more than about 200 yards. The ship brought up about one cable from *Cyclamen* but with two anchors down was yawing about wildly as much as four points either way from the wind's eye.

"Whilst on the fo'c'sle I noticed three or four of the dhows go drifting past with their crews frantically heaving bags of coal overboard to keep them afloat; they soon disappeared astern.

"One dhow, the last to part her cable (they use a 3" grass on their anchors), came drifting down, she just cleared our stem and fouled the starboard lower boom and the big motor boat lying there.

"We managed to clear her from the boom and the boat and tried to hold on to her astern, but she parted her rope and drifted away after the others.

\* \* \* \* \*

"During the time the whaler was being salvaged, the wind had come away again from the N.N.E. and was again blowing strongly, though nothing like as strong as before the calm.

"As soon as the whaler had been got rid of, the other motor boat was got underway and sent over to the *Cyclamen* whilst we proceeded to weigh and proceed to look for our missing boats.

"The rain had now eased up a good bit and the weather had cleared considerably and we could see the B.I. Mail Steamer from Bundar Abbas off the entrance engaged in picking up her dhow.

"This she accomplished and towed it in to the anchorage.

"Outside the entrance we came upon our smaller motor boat towing one whaler and the skiff, but of the other whaler we could find no trace. We then picked up one small shore boat and one of the dhows, and returned to harbour.

"By the time we returned to harbour at 1000, the wind had dropped to a fresh breeze, the sky had cleared and the storm could be seen passing away to the N.E.

"All the dhows had managed to remain afloat except one which had fouled an oil lighter and sunk, sinking with 36 tons of coal and a new 3-ton anchor recently supplied by the R.I.M. Dockyard to moor a new oil lighter which is to arrive shortly.

"The damage done ashore was fairly considerable. Most of the native village was flattened out, though as most of the houses are merely matting huts these can be easily erected again.

"The screens round the three tennis-courts were almost completely blown away, and a certain amount of damage was done to the courts themselves.

"Although I do not know how much rain fell I am told that enough came down to supply this part of the island with water for a year to come.

"There were no casualties either ashore or afloat. Of the crew of five in the dhow that sank, two managed to scramble on board the lighter when the dhow fouled it, the other three swam over to Kishm Island, a distance of about 1¼ miles, no inconsiderable feat under the circumstances.

"The barometer gave no warning of the approach of the storm but rose from 29.98 to 30.10 immediately it burst.

"At 0400 the temperature was 86° F., when read shortly after 0600 it had dropped to 74° F., and did not rise above 85° F. during the rest of the day.

"So far as can be gathered from the local inhabitants no storm like this has ever been known before, but one A.B. on board says that he encountered much the same thing in 1919.

"On the following day we heard from Bahrein that many pearling dhows had been lost on the banks and *Cyclamen* was sent to patrol the vicinity and render what assistance she could.

"The latest reports from her estimate that some 250 dhows are missing, and if this proves true it looks as if the loss of life must have been very heavy, as these dhows carry a crew of anything up to 50 or 60.

"The Captain of the *Cyclamen*, Commander A. B. BAKER, D.S.O., R.N., who was present at Bermuda during a cyclone in 1921 (or 1922) says the wind was not as strong as hurricane force and he estimated the speed of it at from 70 to 80 m.p.h."

## VISIBILITY.

## Gulf of Suez.

The following is an extract from the Meteorological Report of S.S. *Laomedon*, Captain A. S. BLUES, Suez to New York; Observer Mr. F. HOWE, 3rd Officer:—

“October 15th. In the Gulf of Suez and approaches, experienced remarkably clear atmosphere, the high mountains on both sides of the Gulf being visible at very long distances.

“Jebel Gharib was clearly seen when the vessel was one hundred miles distant.

“At night, owing no doubt to excessive refraction, Ras Zafarana Lt. was seen at a distance of 38 miles, this being almost three times the normal range.”

## WATER-SPOUT.

## In the North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Alondra*, Captain J. J. PRENDERGAST, Lisbon to Funchal, Madeira; Observer Mr. H. PETERS, Chief Officer.

“4th October, 1925, 1815 G.M.T., in Latitude 33° 36' N., Longitude 15° 30' W. Barometer 1018.3 steady, wind var. 1. Sea calm, visibility 9, weather bc. Clouds, Ci/Ci-S; Cu/Nb/St. Cloud amount 6. Air Temperature 76° F. Sea Temperature 71°.

“Observed two water-spouts, one bearing west (T) distance about 9 miles, the other bearing east (T) distance about  $\frac{1}{2}$  mile, easterly one travelling north (T) about 8 to 10 miles per hour.

“When easterly one was first sighted a spout dropped from the clouds, and the sea appeared to boil and eddy but did not join.

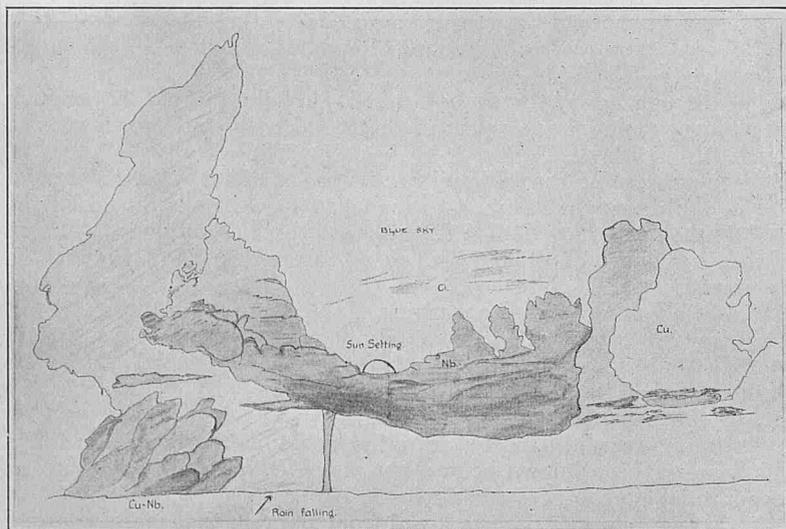
“This spout being quite close we were able to see a distinct expanding and contracting movement.

“The spout disappeared at 1843.

“The westerly spout was more defined, but owing to distance, was unable to obtain fuller particulars.

“It appeared to join the sea and was travelling northward.

“Sketch was drawn at 1838 and the spout disappeared at 1847.”

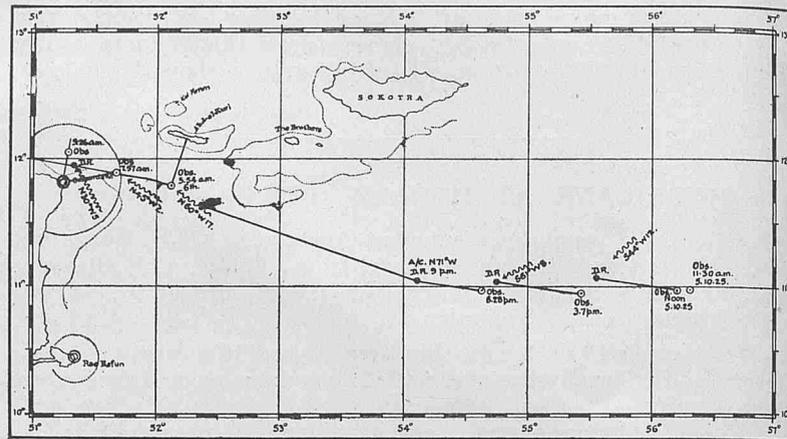


## CURRENT AND TEMPERATURE CHANGES.

## In the Vicinity of Cape Guardafui.

THE following is an extract from the Meteorological Report of S.S. *Nardana*, Captain F. L. MOTH, Colombo to Suez; Observers Mr. R. K. HARRISON, Chief Officer, and Mr. S. C. T. SMITH, Second Officer.

“The accompanying chartlet shows the current experienced to the S'rd. of Sokotra, from 11.30 a.m. October 5th to 9.26 a.m. October 6th, 1925. Wind during that time light and various, sea smooth.



When to the S'rd. of Sokotra quite a pronounced S'ly. swell was experienced but by midnight had entirely disappeared.

“At 5.46 a.m. the position was fixed by stellar observations and at 8.30 a.m. observations of Sun for Longitude gave 1 mile W. 11.30 a.m. position was fixed by Sun and Venus, giving still 1 mile W. from 5.46 a.m. At noon the meridian altitude was found to be in complete agreement. Course being steered N. 82° W. true. 3.7 p.m. position fixed by Sun, Venus and Jupiter gave set S. 44° W. true 12 miles, or 3.3 miles per hour. At 5.55 p.m. position fixed by Venus and Jupiter, checked at 6.28 p.m. by Vega, Deneb and Shaula. Drift from 3.7 p.m. to 6.28 p.m. S. 61° W. 8 miles or 2.3 miles per hour. At 9 p.m. the course was altered to N. 71° W. true and at 5.54 a.m. Abd-el-Kuri Hill (1670) bearing N. 20° E. true and Latitude by star Canopus. Drift from 6.28 p.m. to 5.54 a.m. N. 60° W. true 17 miles or 1.5 miles per hour. 6.40 a.m. course altered to N. 80° W. true and position fixed by cross bearings at 7.57 a.m. Drift from 5.54 a.m. to 7.57 a.m. N. 45° W. true 2 miles or .9 miles per hour.

“The same course still being steered brought Guardafui Lighthouse abeam 13 $\frac{1}{2}$  miles at 9.26 a.m. Drift N. 30° W. true 5 miles or 3.4 miles per hour from 7.57 a.m. to 9.26 a.m.

“The previous days currents experienced were:—

Noon October 4th to 3 p.m. October 4th.	Current S. 80° W. 2 miles.
3 p.m. „ to 6 p.m. „	„ S. 45° W. 1 mile.
6 p.m. „ to 5.45 a.m. „ 5th.	„ West 1 mile.”

The following account from the S.S. *Lorenzo*, Captain R. I. JAMES, has been received from the Marine Superintendent, Messrs. Ellerman & Bucknall Steamship Co., Ltd.:—

“Rounding Guardafui on the 4th October, 1925, I had what I think is a rather unusual experience. Steering about north-west and approaching Guardafui with a strong favourable current the temperature of sea water was 80° at 4 p.m. On rounding into the Gulf of Aden at 6.15 the temperature of the water fell rapidly and at 6.50 was 65°—the temperature of the air also dropping from 80° to 72°. I experienced no change in the drift of the current which continued favourable. From that time on the temperature of the water gradually rose until it was about normal next morning at 8 a.m.—82°. After entering the Red Sea the temperature of the water was unusually hot—89°.”

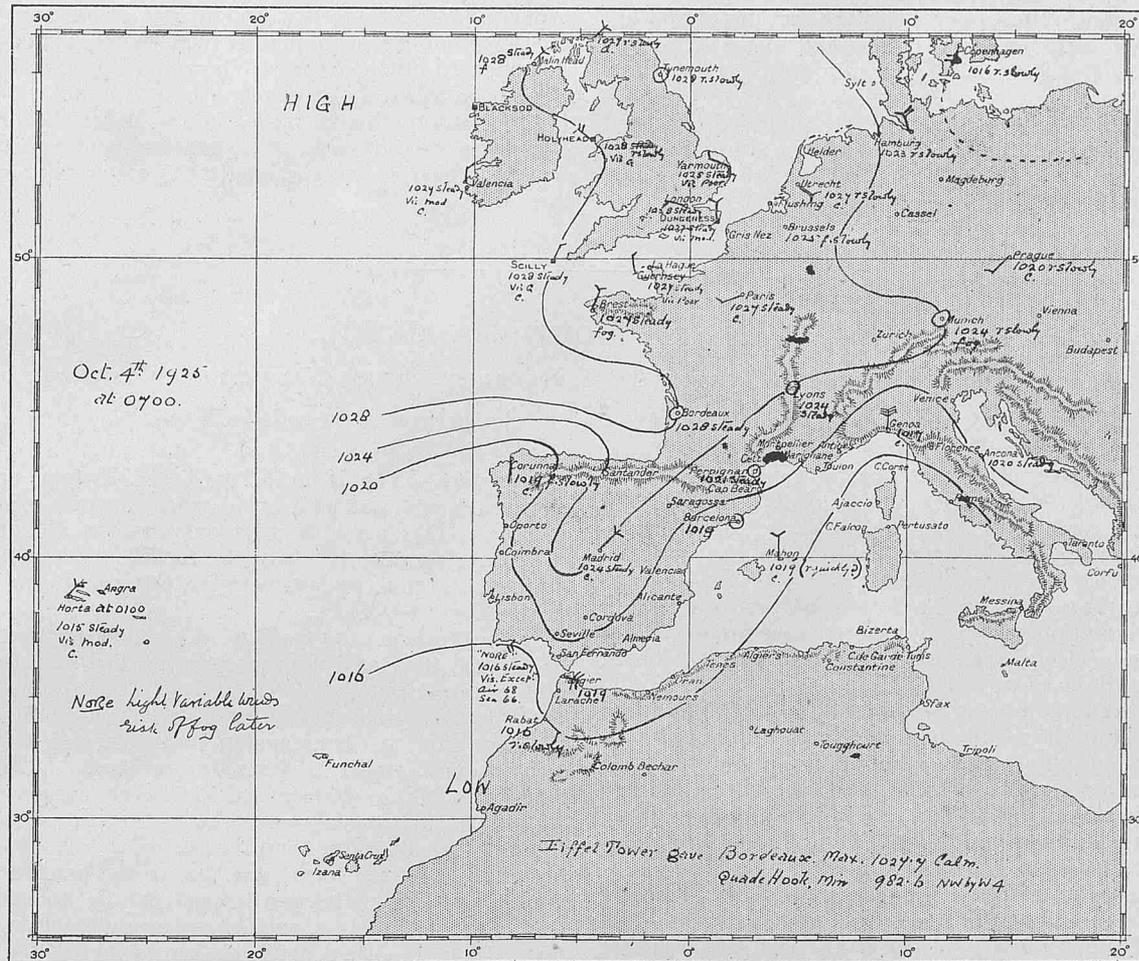
## PHOSPHORESCENCE.

## Off Ceylon.

THE following is an extract from the Meteorological Log of S.S. *Leicestershire*, Captain G. L. ENGLISH, Colombo to Rangoon; Observer Mr. D. Y. SHARROCK:—

“21st October, 1925. Left Colombo 0.57 a.m. Wind light N.W. Sea slight. Very dark, clear night. Extraordinary phosphorescence. Bow wave a line of beautiful green fire. Off Barberyn Lighthouse observed a distinct line of phosphorescence, stretching for quite a mile in an east and west direction.”

## WEATHER CHART MADE AT SEA.



Weather Chart (one of a series) by Mr. C. B. Roche, Chief Officer,  
S.S. "Nore," Captain J. W. Parker.

## PORTSMOUTH TO MALTA IN H.M.S. BARHAM. A SUDDEN STORM.

By COMMANDER L. G. GARBETT, R.N. (RETIRED) SUPERINTENDENT NAVAL METEOROLOGICAL SERVICES.

IN November last, Mr. M. A. GIBLETT, Superintendent of Airship Meteorology, and I had occasion to visit the Mediterranean on duty, and we were fortunate enough to be offered a passage to Malta in H.M.S. *Barham* (Captain F. A. MARTEN, C.B., C.M.G., C.V.O., R.N.), a battleship of 27,000 tons displacement.

This afforded us a great opportunity of demonstrating the practicability of drawing synoptic charts at sea and basing forecasts on them and also of sending routine weather reports by W/T to the Meteorological Offices at London and Malta, and every facility was given to us for receiving and sending Wireless Messages for this purpose.

The weather charts were drawn twice daily from messages intercepted by wireless and weather observations made on board at 0700 and 1800 G.M.T., the latter being transmitted to London until arrival off Gibraltar, and to Malta after passing through the Straits.

H.M.S. *Barham* left Portsmouth on the 18th November; at the time there was a fine weather system over the British Isles which extended south across the Bay of Biscay and fine calm weather was experienced up to the 25th except for rain and thick weather, when approaching Gibraltar and passing through the Straits, which completely obscured the Rock.

The day previously a low dark arch of cloud fringed with Cirrus had been observed to the southward and the bearing of the darkest part was taken and transmitted by wireless to the Meteorological Office. From this bearing it was possible to deduce that to the

southward there was an area of rain stretching from E. to W. nearly at an angle of 90° to the bearing. It was subsequently found that this bearing gave a correct indication in accordance with the interpretation which we had placed upon our observation. The rainy weather experienced in the Straits was due to our having got within this rain area.

On the afternoon of the 25th in Latitude 37½° N. and Longitude 6° E. we ran into a northerly gale with a heavy sea which necessitated the ship being battened down fore and aft. The gale moderated on approaching Malta, which port was reached on the 27th.

The chief point of interest in this storm was the suddenness in which it commenced. On the morning of the 25th the weather was fine with a light breeze from the N.N.W. CHART No. XIX shows no large area of strong wind in the Mediterranean although forces of 6 were recorded at Perpignan and Genoa, but these were probably only local winds influenced by the ranges of mountains in the vicinity. The barometer appears to be generally steady over the Mediterranean but a slight fall is recorded at Malta.

During the forenoon of the 25th a moderate swell from the N.N.E. got up, which indicated the existence of wind in that direction which must have increased very rapidly, but up to 4 p.m. there was no increase of wind recorded in the *Barham*.

At 4.10 p.m. we ran into what was probably a line squall as shown

by the characteristic fall of temperature ( $5^{\circ}$ ) which is usually associated with this phenomenon. The wind suddenly shifted to the N.E. and increased to force 8 with violent squalls and very heavy rain, the barometer fell 3.2 millibars (.10 in.) and after the passing of the line squall commenced to rise again and the wind backed to the N.W. and remained steady at force 8. The sea rose rapidly and was especially heavy off C. Bon.

In studying CHART XX it will be seen that the cold air in the rear of the depression was a "Mistral" blowing across the southern coast of France which was fed by cold northerly winds from England. This mass of cold air penetrating into a region of much higher tem-

perature caused a marked contrast of temperature and thus gave rise to the rapid development of the depression.

By the morning of the 27th, CHART XXI, the weather had moderated and there is a general rise of pressure over the centre area of the Mediterranean and it will be seen that the depression has disappeared off the Chart. The rate of progression of the centre must have been about 25-30 knots.

It is interesting to note that in Malta the first real indication of the storm was given in the wireless report received from the *Barham*, which emphasises very strongly the great value of reports from ships at sea.

## ICE OF THE SOUTHERN OCEAN.

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

DURING the British Antarctic Expedition 1910-13 a special study of the Glaciology and Meteorology of the Antarctic continent was made, and it is from the published results of the observations made during this expedition by Messrs. C. S. WRIGHT, O.B.E., M.C., B.A.; R. E. PRIESTLEY, M.C., B.A.; and G. C. SIMPSON, C.B., F.R.S.; Glaciologists and Meteorologist respectively to the Expedition, that most of the data used in this article has been obtained.

The ice met with in the waters of the Southern Hemisphere constituting a menace to navigation may be divided into two broad classes, namely Land Ice in the form of Bergs, and Sea Ice in different forms, arising from a common origin.

As is seen from FIGURE 1, vast tracts within the Antarctic continent still remain unexplored, but the results obtained from the most recent expeditions show the South Pole to be situated on a snow-covered plateau about 9,172 ft. above sea level. The edge of the plateau is very steep and bordered on the Pacific side by a narrow range of high mountains which is intersected at right angles by numerous valleys leading down to the sea.

The Ross Barrier (see FIGURE 1) is a huge snow-covered mass of ice which fills the southern end of the Ross Sea, extending from Cape Crozier on the west, to King Edward VII Land on the east. It was first discovered by Sir JAMES ROSS in the *Erebus* and *Terror* in 1841, who, finding it barring his way south, sailed along its northern boundary. Later expeditions of SCOTT, SHACKLETON and AMUNDSEN have traversed and surveyed the Barrier, which is now known to be a practically level, snow-laden floating sheet of ice approximately 500 miles wide by 400 miles broad by 1,400 ft. thick. Its height at the northern or seaward end varies from 6 ft. to 160 ft., while its average surface is 170 ft. above sea level.

The barrier is thought to have originated through the convergence of the floating ice tongues of glaciers in the Ross Sea, these tongues being cemented together by the formation of sheets of ice in the areas between them.

**Formation of Land Ice.**—Research on the formation of glaciers in the Antarctic shows that ice is formed entirely by the growth and modification of snow crystals. The larger crystals grow at the expense of the smaller and tend to unite by a kind of distillation in which water molecules leave small crystals and join large crystals. The growth of the large and the diminution of the small crystals permits them to pack more closely under pressure. When closely packed the crystals still remain distinct, being separated by air spaces at their boundaries. Snow in this condition is known as Névé. The subsequent change from Névé to Ice takes place in exactly the same manner as the change from snow to Névé. In the course of time the crystals grow so as to include the air cavities which in the form of Névé marked the boundaries between them.

The rate of change from snow to ice depends upon the temperature and pressure being quicker at high than at low temperatures, and when subject to great pressure the crystals come in closer contact allowing direct movement of the water molecules between them. In the Antarctic the process is a very slow one, years passing before the snowfall of any season is converted into ice. On the Ross Barrier where the mean yearly temperature is about  $15^{\circ}$  F. below zero it was found that at a depth of two feet the individual crystals still retained their form after a period of two years. Further south, on the Plateau at a height of over 9,000 ft. above sea level, since in the month of January the mean temperature was found to be  $20^{\circ}$  F. below zero,

the change from snow to ice will take place much more slowly than on the Barrier.

**Glaciers.**—The King Edward VII. Plateau on which the Pole is situated is covered with an ice sheet formed from snow in the above manner. This ice is flowing outwards in all directions, but mainly where its motion is least obstructed. The chief flow is therefore down the sloping valleys between the mountains fringing the Plateau in the form of glaciers.

The direction of movement of a glacier is governed by the direction of greatest slope and the thrust occasioned by the weight of the glacier higher up the slope.

When a glacier meets an obstruction it develops an increase of pressure from behind, causing the molecules within the ice to move away from the points of maximum strain. This in the case of the narrowing of the glacier bed causes the upper layers of ice of the glacier to move bodily over the layers below, thereby forming longitudinal pressure ridges and increasing the depth of the glacier. If an obstruction in the form of a transverse bank across the glacier bed is met, pressure ridges are formed parallel to and above the obstruction. Tension strains, such as when one portion of the glacier moves faster than the other, cause the ice to be divided by crevices or sheer cracks running at right angles or parallel to the general direction of flow respectively. The rate of advance of individual glaciers in the Antarctic varies considerably, but it is found that glaciers with a floating extension into the sea have a greater rate of advance than others.

**Ice Tongue.**—When the ice of a glacier reaches the coast it continues to move seaward, its weight being taken by the ocean bed until the water deepens sufficiently to make the ice buoyant when it becomes waterborne. Such an extension of glacier ice from the shore seaward is called an Ice Tongue.

Unlike the glaciers of North Polar regions those of the Antarctic, due chiefly to the lower summer temperature of both sea and air, have floating ice tongues extending for many miles seaward at right angles to the coast, bounded on their seaward sides by vertical cliffs varying in height from a few feet to 160 feet. It is from the calving of these glacier tongues and from such ice formations as the Great Ross Barrier that the bergs met with on the shipping lanes of the Southern Hemisphere owe their origin.

**Calving of Icebergs.**—The calving of icebergs may take place in several ways and for one of several reasons, but chiefly through the undermining action of the surface sea water and the formation and development of cracks and crevices in the Ice Tongue due to the strain exerted by the action of tides, heavy swells and wind pressure.

The density of ice in icebergs is variable. In some the snow is not so completely transformed into ice as in others, while some carry appreciable loads of rock material. An iceberg, if composed of ice only, would float with approximately one-ninth of its mass above water, the weight of a cubic foot of sea water being 64 lbs. and that of a cubic foot of ice 57 lbs., but for the above reasons some bergs may have more and others less than the normal proportion of the ice above water.

**Colour of Ice.**—The white light of the sky reflected from numberless facets of the snow crystals when separated by the included air gives snow its white appearance. In the case of ice formed directly from a snow drift falling upon ice as is usual in the Antarctic, the direction of

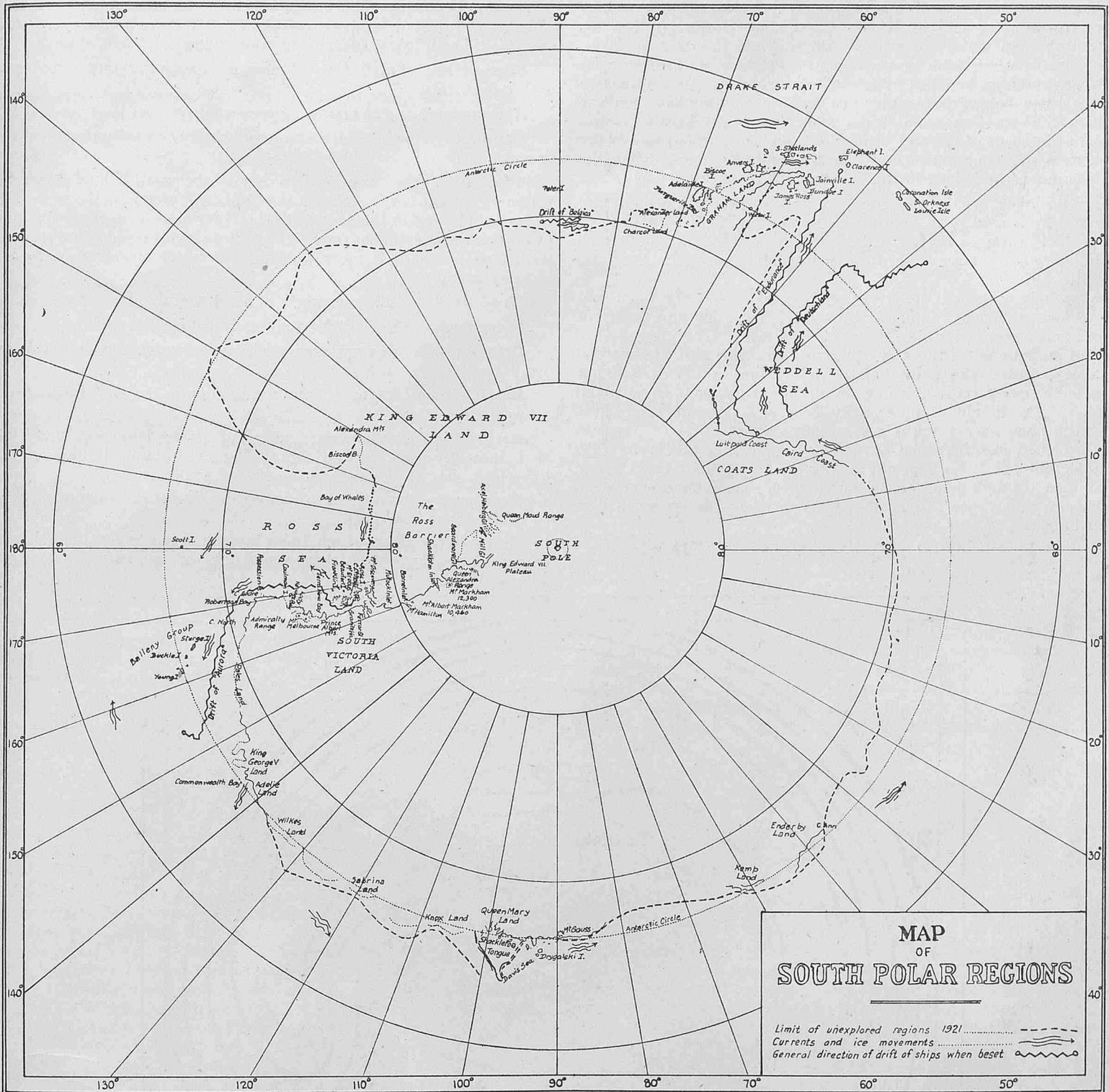


Figure 1.

growth of the crystals is upwards from the ice upon which the snow falls, so that the air is able to escape from between the crystals as they join up, thereby forming clear air free ice which at great thicknesses appears blue. Most glacier ice, however, contains air which is included in the crystals themselves in the form of small spherical bubbles, and this gives to the ice a whitish tinge like the appearance of frosted glass. Many crevices in the glaciers become filled with sand and debris blown down from the surrounding land, thus forming silt bands in the ice which greatly discolour it.

**Dimensions of Icebergs.**—In the Southern Hemisphere, icebergs attain to far greater dimensions than those of northern regions. In height the bergs of the North Polar regions probably surpass those of the south, but it is only in the south seas that bergs are to be found whose lengths can be measured in miles.

The majority of bergs seen on SCOTT's last Expedition varied in height from 40 to 120 feet while the greatest measured height was 140 feet.

The largest bergs are the tabular bergs which are derived from the Ross Barrier or some similar form of land ice formation. They are rectangular in shape, and were observed between 20 and 30 miles in length. Bergs a mile or more in length were observed in hundreds. Compared with glacier bergs, tabular bergs have a relatively large air-content concentrated within the ice granules, and at a distance appear as if formed of plaster of paris owing to their white colour and lustre.

The glacier bergs which are derived from the ice tongues of glaciers are irregular in shape and smaller than the tabular bergs. They are usually of a greenish tint but appear dazzling white under certain conditions of light.

**Formation of Sea Ice.**—In the Antarctic, owing to the fall in temperature towards the end of March, the surface cooling of the sea causes numberless small ice plates called Frazil crystals to form. During calm weather these crystals collect and form a thin scum on the surface, which at first has little stiffness owing to heat conduction from the water below, preventing the brine remaining between the crystals which are themselves fresh from freezing. As the season progresses the sheet of ice and brine thickens, the temperature being reduced to a sufficient extent to allow the brine to freeze, when the whole becomes a rigid sheet of ice.

**Antarctic Pack Ice.**—The shores of the Antarctic continent are surrounded by a medley of floating ice extending north to about the 60th parallel forming a barrier, the forcing of which is attended with great difficulty and danger to ships endeavouring to make the Antarctic continent.

The pack is composed partly of sea ice formed in the open sea, partly of fast ice formed along the Antarctic coast line and partly of land ice broken away from the Antarctic continent. The interposal of capes and ice tongues in the way of moving ice fields and the unequal movement between the floes due to the various kinds of ice that constitute the pack exert pressure on the ice, causing it to raft and hummock. The height of hummocky floes and pressure ridges met with in the pack may reach a maximum of about 30 feet. Captain SCOTT described such ice when navigating the pack in the *Terra Nova* in 1910 as follows: "We first got among the very thick floes at 1 a.m. and jammed through some of the most monstrous I have ever seen. The pressure ridges rose 24 feet above the surface—the ice must have extended at least 30 feet below."

The following definitions correctly describe all ice met with in the pack.

**Slush or Sludge.**—The initial stages in the freezing of sea water when it is of gluey or soupy consistency. The term is also occasionally used for "brash ice" still further broken down.

**Pancake Ice.**—Small floes of new ice approximately circular and with raised rims.

**Hummocking.**—The results of pressure upon sea ice.

**Hummocky Floes.**—Floes composed wholly or partly of re-cemented pressure ice.

**The Pack.**—The term used to denote the main belt of derived ice which, in the Antarctic, girdles the Continent south of the zone of the "Westerlies" and in the Arctic fills the Polar Sea and escapes southward from the outlets of the sea. (French: Banquise de derive.) The term "pack" is used more generally to mean any area of pack-ice however small.

**Close Pack.**—Pack composed of floes mainly in contact.

**Open Pack.**—The floes for the most part do not touch.

**Drift Ice.**—Loose very open pack where water predominates over ice.

**Brash.**—Small fragments and rounded nodules; the wreck of other kinds of ice.

**Bergy Bits.**—Medium sized pieces of glacier ice or of heavy floes, or hummocky-pack washed clear of snow. (Typical "bergy bits" have been described as about the size of a cottage.)

**Growlers.**—Similar pieces of ice to the above but so small as barely to show above sea level.

**Rotten Ice.**—Floes which have become much honeycombed in the course of melting, or which appear black through saturation with sea

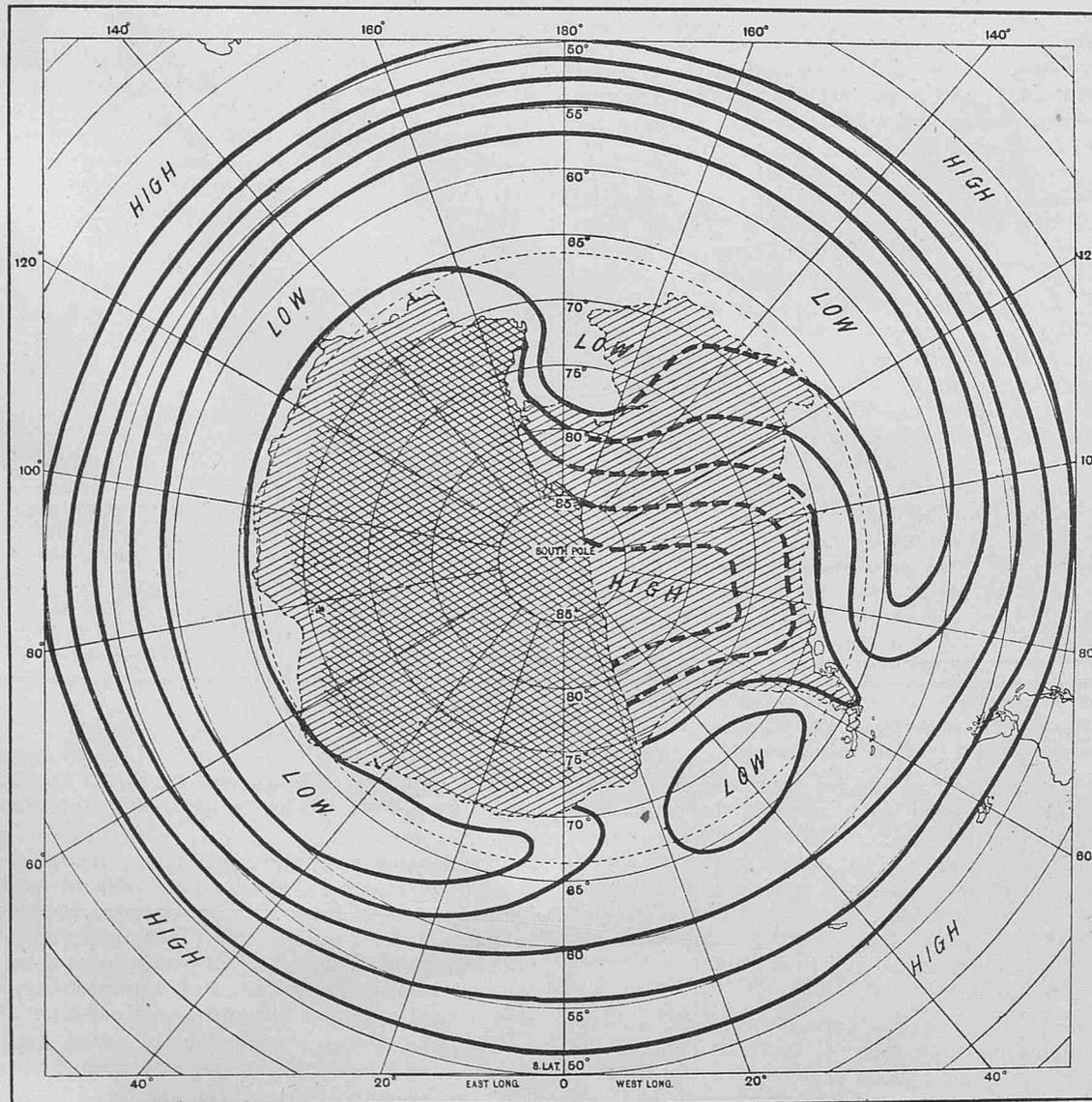


Figure 2. Probable Antarctic Pressure, sea-level.

water. (Thin sheets of newly formed very thin ice also appear black, and may easily be confused with the last type when met in the pack.)

**Level Ice.**—All unhummocked ice no matter of what age or thickness which has platy structure and fibrous appearance when broken.

**Fast Ice.**—Sea ice while remaining fast in the position of growth. True fast ice is only met along coasts where it is attached to the shore or over shoals where it may be held in position by islands or stranded icebergs.

**Pack Ice.**—Sea ice which has drifted from its original position.

**A Floe.**—An area of ice other than fast ice whose limits are within sight. Floes up to two feet in thickness may for convenience of description be termed "light floes"; floes thicker than this, "heavy floes."

**A Field.**—An area of pack ice of such extent that its limits cannot be seen from a ship's masthead.

**A Crack.**—Any fracture or rift in sea ice.

**A Lead or Lane.**—A navigable passage through pack ice.

**A Pool.**—Any enclosed water area in the pack other than a crack or a lead or lane.

**Water Sky.**—Dark streaks on the sky due to the reflection of water spaces or the open sea in the neighbourhood of large areas of sea ice.

**Ice Blink.**—The white or yellowish white glare on the sky produced by the reflection of large areas of sea ice. (The antithesis of water sky.)

**Movement of the Pack.**—Most of the ice contained in the pack has its origin at or near the shores of the Antarctic continent, and this ice is constantly feeding the main ice belt lying further off the coast. The diverse character of the ice forming the pack prevents the fragments freezing together and forming a solid mass during the Polar winter. It is this characteristic which permits the free movement of the pack, otherwise the ice would not be navigable and would probably become permanent by addition of snow.

FIGURE 2 shows the probable atmospheric pressure of the Antarctic at sea-level as defined by Dr. G. C. SIMPSON, meteorologist to SCOTT'S last Antarctic Expedition and now Director of the British Meteorological

Office. In the Figure the single hatched area on the Pacific side of the great escarpment is supposed to be at sea-level or nearly so, while the area on the Atlantic and Indian sides shown by cross hatching is high tableland, the highest region being near the South Pole. The greater part of the isobars shown are based on actual observations and may be taken as correct; these are represented by full lines. The dotted lines represent hypothetical pressure distribution over regions from which there are no observations.

From this Figure it is seen that over the sea circling the Antarctic continent there is an area of low pressure, extending to 60° South Latitude. The winds in the southern part of this area will therefore be from an east or south-easterly direction, while north of the 60th parallel the winds will blow from a west or north-westerly direction.

It is the predominating south-easterly winds and the resultant westerly surface drift that controls the movement of the pack, aided by the westerly component of drift due to the earth's rotation and the effect of deep water currents on the icebergs in the pack whose surging to and fro assists in keeping the ice open.

On FIGURE 1 is shown the general direction of drift of ships engaged in Antarctic exploration when beset in the ice, demonstrating the north-westerly drift of the pack which is estimated to be at the rate of about four or five miles a day.

The steady north-westerly drift of the pack continues until it enters the region of westerly winds, when the general drift changes to the eastward. Field ice is never found in such low latitudes as that of the bergs, and will rarely be met north of the 60th parallel. The icebergs, however, continue their drift in a north-easterly direction, and there is no month in the year during which ice may not be sighted on the southern shipping lanes south of the 40th parallel. In the January, April, July Numbers, and this Number of THE MARINE OBSERVER, Quarterly Ice Charts of the Southern Hemisphere are published showing the position of all reported ice for each month of the Quarter during the years 1902-1925, also the extreme monthly limits of ice reported during the years 1772-1925. In examining these charts it must be borne in mind that the data from which they are compiled is obtained in the majority of cases from reports of ice sighted by vessels traversing the trade routes and as in recent years there has been a tendency to follow more northerly tracks than hitherto icebergs may be much more numerous between the 45th and 60th parallels than is shown on these charts.

## LOCAL WINDS.—IV.

### Australia and New Zealand.

THE vast area covered by the Australian Continent and New Zealand, extending from 10° to nearly 48° S. Latitude, embraces all the main types of wind systems, permanent, seasonal, and cyclonic, and part of the region is traversed by tropical revolving storms.

The local variations from these systems are so numerous that it is not possible within the scope of this article to describe them in detail, and only the more important features are given below.

#### Australia.

**South-East Coast.**—The general distribution of pressure over Australia shows an area of low pressure in the north-west, and an area of high pressure usually centred over New South Wales, with a further area of low pressure south of Tasmania.

During the southern summer, October to April, the barometer falls over the whole continent, the north-western low pressure increasing in area and the high pressure being limited to the coast of New South Wales. Hence it follows, in accordance with BUYS-BALLOT'S law, that the prevailing winds on the S.E. coast, from Cape Howe to Sandy Cape, during this season are north-easterly.

The north-easterly wind sometimes blows a steady gale for three or four days, veering from N. to N.E. in squalls. When likely to be of this duration it sets in with thick overcast weather, and, increasing in strength, is accompanied by heavy rain and an atmosphere so thick that during the squalls objects cannot be distinguished at a distance of a quarter of a mile. These gales are locally known as "Black North-easters"; the barometer gives little indication of their approach, and is not affected by their continuance.

During the summer there also occur the well known "Southerly Bursters." The "Burster" is a sudden shift of wind to the south or south-west, and is most frequent and violent along the coast of New South Wales, but occasionally occurs as far north as Brisbane.

They are preceded, for a period varying from a few hours to three or more days, by hot winds from west or north-west during the early part of summer and towards its close; and in midsummer months by winds from north-east.

As a rule warning of the impending change is given only an hour or so beforehand by the appearance and approach of heavy Cumulus clouds from the southward, sometimes accompanied by lightning. The wind drops to a calm, and after a short interval comes away from the south, frequently blowing with the force of a gale, and producing a large and rapid fall of temperature. At Sydney the thermometer has been known to fall from 100° F. to 64° F. in half an hour.

The number of "Bursters" average 32 during the season, and most of them are associated with the passage eastward of a southern depression having isobars of inverted V-shape on its northern side, and the rapid advance of an anticyclone from West Australia.

During settled summer weather, fairly regular land and sea breezes prevail on this coast, sometimes for weeks together. The sea breeze generally begins at 10 a.m. and dies away after sunset; the land wind commences at about midnight and continues until 8 a.m. North and south winds occasionally interfere with the regularity of the land and sea breezes.

In winter, April to September, average pressure in the interior is high, an anticyclone belt extending across the whole continent. To

the south of this belt, westerly winds predominate, with fine weather, and include most of the coast of New South Wales.

At this season, easterly gales are sometimes experienced, being most violent during June to August. They are associated with a high barometer, and accompanied by heavy rain, and sometimes thunder, lightning and hail.

**Queensland Coast.**—Northward of Sandy Cape the south-east trade wind prevails, and generally blows home to the coast from April to October, with fine weather.

From observations made in the neighbourhood of Claremont Islands, it was found that generally in the morning the wind blew from S. or S.S.E., backing to E.S.E. in the afternoon; the stronger the trade, the earlier in the day did it back to the eastward.

The strongest trade is found in July and August. It backs to the eastward in September and October, and to the north of east in November.

During November to March, the trade is interrupted by the effect of the north-west monsoon, and the winds are more variable with a larger proportion of calms.

It is during this period that the Queensland coast is visited by tropical cyclones, most of which are generated to the eastward of Australia. They approach from the north-east, many striking the coast between Townsville and Cooktown, recurving, and moving off to the south-eastward. As in other localities where tropical cyclones are experienced, these storms are preceded by the usual characteristic warnings.

On approaching Torres Strait, the north-west monsoon may be expected to blow with strength and some regularity towards the end of December. In January and February it is at its height, and then declines, becoming variable, with unsettled weather, in March. The monsoon season is the rainy season, and there are occasionally violent squalls with thunder and lightning.

**North and N.W. Coasts.**—The winds on these coasts are of the monsoonal type, being from the S.E. during the southern winter, and from N.W. or W. during the southern summer.

On the eastern side of the Gulf of Carpentaria, from March until the middle of September, there are land- and sea-breezes, whilst in the middle and at the head of the Gulf the south-east monsoon blows constantly, sometimes freshening to a gale.

After the middle of September, when the north-west Australian low pressure increases in extent the wind blows generally from north to north-east, with an increased number of calms and variables.

Between Cape Wessel and Melville Island, the monsoons are not so regular, but take more the character of land- and sea-breezes; the nights are mostly calm but at times both wind and sea are considerable. During the months of April to June, after a calm night, the land-wind usually springs up at daybreak from S. or S.S.E., gradually becoming more easterly as the sun approaches the meridian. There is then at times a light wind from the eastward or calm; and at other times a fresh sea-breeze sets in from east and north-east, which lasts until sunset, and then falls to a calm, which continues throughout the night, except at a short distance from the land where there are light winds.

Between November and April hurricanes occasionally affect the Northern Territory coast, most of which come from the east, although a few come from the west. The latter appear to be storms which have recurved to the north-west of the Continent, after having perhaps developed in the Arafura Sea.

Between Melville Island and North-west Cape the south-east monsoon prevails from about May to October, and the north-west monsoon from October to April.

During the former monsoon the prevailing direction of the wind is E.S.E., backing to east and E.N.E. during the afternoon. During July and August it frequently blows with a force of 6 to 7 for days in succession, but as a rule, the wind falls lighter after sunset and freshens up again about sunrise.

During October and November, near the Coast, the winds as a rule are variable, with calms, and occasional heavy squalls. In December the north-west monsoon gains strength, interrupted at times by heavy gales, and prevails on the coast until about the middle of March, when variable winds and squally weather again set in, until the S.E. monsoon gains strength.

During the north-west monsoon, especially in January and February, the sea-breeze generally commences at about 10 a.m. and blows strongly from S.W. to W.N.W. all day, sometimes until midnight. When

the wind veers to the northward it blows stronger; and about 4 or 5 p.m. clouds become heavy over the land, with frequent lightning, and occasionally break over the coast line in a heavy squall at about 7 or 8 p.m.

As the North-west Cape is approached the general direction of the wind becomes more westerly or south-westerly, owing to the summer low pressure over N.W. Australia.

December to April is the season for tropical hurricanes on this coast, known locally as "Willy-Willies." These hurricanes come chiefly from three directions, viz., from the east across Northern Territory, from the north, or from the north-west. Of the last two mentioned, a number apparently develop in the Cambridge Gulf or Arafura Sea, move south-westward, recurve, and cross the Australian coast from the W.N.W., most frequently between Broome and Onslow. Some change their direction after reaching the coast, and pass southward along it; others continue into the interior where they disappear, while some proceed across the continent reaching the southern coast near the eastern side of the Bight. These storms are sometimes very violent and destructive, and at times of very small diameter that they give little warning of their approach.

**West Coast.**—The winds on the west coast between North-west Cape and Cape Leeuwin are generally from between S.S.W. and S.S.E. During the southern summer, October to April, they are almost constant from this quarter; but in winter, when the southern limit of the S.E. trade has receded to the northward, their regularity is interrupted by occasional winds from between north and west, which at times blow with considerable violence, and are accompanied by heavy rain and misty weather.

Near the shore land- and sea-breezes are generally experienced throughout the year. At sunrise a land-wind blows from S.E., shifting to east and sometimes north-east, at about noon, and is succeeded by a short interval of calm. The sea-breeze then sets in, mostly from S.S.W., and backs to the eastward of south during the evening. At Fremantle, during the midsummer months, there are strong sea-breezes, force 6 to 7, lasting from three to five days, continuing throughout the night. They back to the southward after midnight, and moderate at S.S.E. or S.E.; and in the middle of the day shift again to S.S.W. from which quarter they again blow strongly until midnight.

During the winter months occur north-west gales, associated with the passage eastward of Southern Ocean low pressure areas. These gales are sometimes experienced as far north as North-west Cape, but they are of longer duration to the southward than to the northward of Fremantle, and are noted for their severity off Cape Leeuwin.

**South Coast.**—On this coast between Cape Leeuwin and Bass Strait, the most settled weather prevails during January to April; the wind being generally south-easterly, and partaking of the nature of land- and sea-breezes, the direction changing towards the land after sunset.

At the end of April the south-easterly winds generally cease, though sometimes they blow at intervals during May.

From May to the end of October, westerly winds prevail, and gales from this direction (N.W. to S.W.), lasting on the average from three to four days, are very frequent.

November and December have sometimes settled weather, with a preponderance of south-easterly winds; but occasional gales from the westward are likely to be experienced.

In Bass Strait the winds are similar to those experienced along the whole of the south coast of Australia, except towards its eastern part where they are more similar to those of the south-east coast.

## New Zealand.

New Zealand lies outside the verge of those regular winds which characterise tropical regions; but as the mean atmospheric pressure is invariably greater at its northern end than at its southern end, it follows that the dominant direction of the wind should be westerly.

The mean pressure is, however, subject to many variations accompanying the passage of southern depressions and anti-cyclones, with the resulting changes in wind direction. The wind is also deflected by the high mountain chains, and consequently often blows up or down the coast.

The effect of the southern depressions is most severe only in South Island; but sometimes their influence is felt all over New Zealand;

while the tail end of cyclones of tropical origin, travelling south-eastward, sometimes cross North Island.

**North Island.**—During the summer months land- and sea-breezes are generally experienced on all coasts. On the east coast between North Cape and Mercury Bay, the sea-breeze sets in regularly from N.E. about 10 a.m. and gradually dies away towards sunset, when it is succeeded by a land-breeze from west. Should the sea-breeze continue after sunset, and the sky become cloudy, usually indicates the onset of a north-east gale ("Black North-easter") lasting for several hours, and accompanied by heavy rain; veering later to north-north-west, and west, with clearing weather.

On the west coast, the sea-breeze is regular from south-west by day, with a light breeze off the land at night.

In winter the regular land- and sea-breezes cannot be depended upon, and N.W., S.W. or variable breezes then prevail.

In Cook Strait, the winds are almost constantly from N.W. or S.E., and on approaching either entrance with a N.E. or S.W. wind, the former will almost certainly change to S.E., and the latter to N.W.

Gales of short duration are very frequent and violent, and liable to sudden changes in direction from N.W. to S.E., or vice-versa; those

from S.E. are most prevalent from May to July, and those from N.W. in spring and summer.

These winds are purely local, and their violence is in a great measure due to the configuration of the shores.

**South Island.**—On the east coast, during summer, the N.E. sea-breeze blows during the day, failing at sunset; and is followed by a light S.W. wind, springing up about midnight and lasting until 9 a.m. These breezes do not blow with the same regularity as on the east coast of North Island, and as we proceed southward they are gradually lost.

Strong N.W. and S.W. winds are frequent; and S.E'ly. gales are not uncommon, bringing thick dirty weather and rain.

In winter S.E. winds prevail at sea, while on the coast the direction is S.W. Gales from S.E. are very common during this season, but the heaviest gales are from the westward.

On the western side of South Island, there are no land- and sea-breezes, and the prevailing direction of the wind is between N.W. and S.W. Gales occur at all times of the year, but most frequently in winter, the most severe being those commencing at N.N.E., shifting through N. to N.W. with heavy squalls and rain.

(To be continued.)

## WEATHER SIGNALS.

### II. WIRELESS WEATHER BULLETINS.

#### AUSTRALIA.

##### Spark and C.W. Issues.

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

##### Perth W/T Station.

Approximate, Latitude 32° 02' S. Longitude 115° 50' E.

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

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

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

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

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

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

##### Geraldton W/T Station.

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

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

At 0200 and 1200 G.M.T., Mondays to Fridays, inclusive, weather forecasts for the ensuing 24 hours.

At 0200 G.M.T. on Saturdays, weather forecast for the next 48 hours.

In addition to the above, observations of barometric pressure, wind direction and force, weather and state of the sea, at Fremantle and Cape Leeuwin are broadcast; 0000 and 0600 observations Mondays to Fridays; 0000 observations on Saturdays; 0000 and 0900 observations on Sundays. When available the 0000 observations of barometric pressure, wind and weather, at Kupang (Timor) are broadcast.

##### Broome W/T Station.

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

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

At 0200 and 1300 G.M.T., Mondays to Fridays, inclusive, and on Saturdays at 0200 G.M.T., weather forecasts.

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

The 0000 observations, referred to previously, of Kupang (Timor) are broadcast when available.

##### Wyndham W/T Station.

Approximate, Latitude 15° 27' S. Longitude 128° 07' E.

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

At 0130 and 1130 G.M.T., Mondays to Fridays, inclusive, weather forecasts for the following 24 hours.

At 0130 G.M.T. on Saturdays, weather forecast for the following 48 hours.

The 0000 observations, referred to previously, of Kupang (Timor) are broadcast when available.

##### Darwin W/T Station.

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

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

At 1100 G.M.T., Weather forecast for the N.W. coast of Western Australia, Gulf of Carpentaria and E. coast of Queensland. From 16th December to 16th April the 2300 weather report for the coast of Queensland, and a forecast for the ensuing 24 hours, are issued by Brisbane Weather Bureau on Sunday mornings. During the remainder of the year Sunday forecasts are suspended. The forecast broadcast on Saturdays is therefore for the following 48 hours.

##### Thursday Island W/T Station.

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

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

##### Cooktown W/T Station.

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

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

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

##### Townsville W/T Station.

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

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

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

At 1100 on Sundays, from 16th December to 16th April, only, the 2300 weather report for the coast of Queensland, and a 24 hours'

forecast issued by the Brisbane Weather Bureau. If an atmospheric disturbance is mentioned the broadcast is made immediately upon receipt of the information from the Weather Bureau. The forecasts on Saturdays from 16th April to 16th December are for the ensuing 48 hours.

#### Willis Islets W/T Station.

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

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

At 0645, 1045 and 2330 G.M.T. During the period from about mid-November to 30th April. Observations *en clair* of barometric pressure, wind direction and force, cloud, weather, state of sea, and characteristic and direction of ocean swell taken at the preceding even hour, except the 1045 G.M.T. broadcast, which contains 0800 observations. During stormy weather however the 1000 observations are substituted in the latter case.

#### Rockhampton W/T Station.

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

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

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

#### Brisbane W/T Station.

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

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

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

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

#### Sydney W/T Station.

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

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

Information broadcast daily, except Sundays.

At 2300 G.M.T., on 600 metres (spark). Weather report of coastal conditions.

Between 2300 and 0030 G.M.T., on 600 metres (spark). Weather forecast for 24 hours if the Weather Bureau is in receipt of sufficient information.

Between 0200 and 0300 G.M.T., on 2,400 (I.C.W.) both weather report and forecast if not available for issue until after 0030 G.M.T.

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

#### Melbourne W/T Station.

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

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

Information broadcast daily, except Sundays.

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

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

(3) A forecast for the ensuing 24 hours.

At 2300 G.M.T. daily a weather forecast for the ensuing 24 hours. In special circumstances this forecast is sometimes accompanied by reports from selected coastal stations.

#### Flinders Island W/T Station.

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

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

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

#### Hobart (Tasmania) W/T Station.

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

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

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

#### Adelaide W/T Station.

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

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

At 1130 and 1330 G.M.T. Information regarding the weather conditions prevailing at 0530, followed by a 24 hours' weather forecast.

On Saturdays a 48 hours' weather forecast *only* is broadcast. Ships may obtain a summary of the 2330 coastal weather reports and a 24 hours' forecast on application to the W/T Station after 0200, daily, except Sundays.

#### Esperance W/T Station.

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

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

At 0300 and 1300 G.M.T., Mondays to Fridays, inclusive; Saturdays at 0300 only. Weather forecasts.

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

#### British New Guinea (Papua).

##### Port Moresby W/T Station.

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

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

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

##### Samarai W/T Station.

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

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

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

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

Approximate, Latitude 4° 24' S., Longitude 152° 19' E.

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

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

#### NEW ZEALAND.

**Wellington W/T Station**, approximate Latitude 41° 16' S., Longitude 174° 46' E., call sign, **VLW**, transmits on request, daily weather reports concerning the following localities:—Auckland, East Cape, Gisborne, Wanganui, Cape Egmont, Farewell Spit, Greymouth, Cape Campbell, Akaroa Heads and the Bluff. The wavelength used is 600 metres (spark).

**Auckland W/T Station**, approximate Latitude 36° 51' S., Longitude 174° 46' E., call sign, **VLD**, transmits on request similar information

concerning the following localities:—Cape Maria Van Diemen, Manukau Heads, Auckland, East Cape, Cape Egmont, Wellington, Napier, Farewell Spit, Greymouth and Cape Campbell. The wavelength used is 600 metres (spark).

NOTE.—Any charges involved will be debited by the Post and Telegraph Department to the ship concerned.

**Awanui W/T Station.** Approximate Latitude 35° 05' S., Longitude 173° 15' E., call sign, VLA, transmits a weather message, free of charge, at 1000 G.M.T., on a wavelength of 600 metres (spark). See also under Apia (Samoa) below.

**SOUTH PACIFIC OCEAN ISLANDS.**

**Samoa.**

A scheme is now in operation for the exchange of weather reports between the following W/T stations and islands in the South Pacific, observations for these reports being taken at 0330 and 2030 G.M.T. :—

W/T Station.	Call Sign.	Position (approximate).	
		Latitude.	Longitude.
Apia (Samoa) - - -	VMG	13° 51' S.	171° 48' W.
Suva (Fiji Is.) - - -	VPD	18° 09' S.	178° 28' E.
Nukualofa (Tonga Is.) -	VSF	21° 08' S.	175° 12' W.
Norfolk I. - - -	—	29° 04' S.	167° 56' E.
Vila (New Hebrides) -	HVW	17° 44' S.	168° 19' E.
Noumea (New Caledonia)	HZG	22° 16' S.	166° 27' E.
Vavau (Tonga Is.) - -	—	—	—
Awanui (New Zealand) -	VLA	35° 05' S.	173° 15' E.

**Procedure during the Hurricane Season, 1st November to 30th April, inclusive.**

Apia W/T station collects the reports from the above mentioned stations and together with its own report, broadcasts the information *en clair*, at 0830 and 2330 G.M.T. (observations of 2030 and 0330 G.M.T. respectively) on a wavelength of 2,000 metres (spark).

The following is the procedure for the broadcasting of the reports by Apia W/T station, the actual message consisting of :—

Name of Station from which report emanates, *i.e.*, Apia, Suva, Nukualofa, etc.

Barometer reading (corrected for temperature and height) in inches and hundredths.

Thermometer, dry and wet bulb readings, in whole degrees.

Wind direction (true) and force by Beaufort scale.

State of sky and weather in Beaufort notation.

G.M.T. at which observations were taken if not in accordance with schedule.

A break sign (— . . . —) separates each report.

**Example :—**

Apia 3016, 80, 79 E.N.E. 3 bc (break sign).

Suva 3008, 79, 78 E.N.E. 5 or, (break sign).

Nukualofa, etc., etc.

After the reports have been broadcast by Apia W/T Station on 2,000 metres (spark) they will be repeated in a similar manner by Suva W/T Station on 600 metres.

**Interchange of Reports between the various Islands and W/T Stations during the Hurricane Season.**

Owing to the inability of some of the islands and stations to intercommunicate direct and having to relay through, the following routine is observed, the reports being transmitted in the form explained above.

Vila exchanges weather reports with Noumea in time to enable the former to transmit both reports to Suva, at a pre-arranged hour.

Suva passes to Apia at 2130 and 0830 G.M.T. the weather reports from Suva, Norfolk Island, Vila and Noumea, the times for Norfolk Island and Vila being arranged by Suva. Nukualofa sends its weather report, together with that of Vavau, to Apia at 2130 and 0415 G.M.T.

Awanui passes to Apia the New Zealand barometer readings, wind, and weather, at a time mutually arranged.

**At Times other than the Hurricane Season.**

The same procedure is followed as in the hurricane season, except that the a.m. observations and times are omitted.

Apia and Suva broadcast the information and use the wave lengths, as explained above, at 0830 G.M.T. only.

For description of wireless hurricane and storm warnings in connection with the scheme, see under Wireless Storm Warnings, p. 184.

**Instructions to Ships, etc.**

All ships within 300 miles, or within good wireless communication of any of the shore stations mentioned above, are invited to co-operate in this scheme, more particularly during the hurricane season, when low barometer readings are observed.

Reports should be similar to those sent by shore stations, but are to include in addition the geographical position of the ship and the time when the observations were taken. These reports will be of greater value if the observations are taken at the times laid down for shore stations, viz. :—0330 and 2030 G.M.T.

As all weather reports between shore stations, or between ship and shore stations, are made in plain language, it is possible for ships to intercept the messages and use the information which they contain for forecasting purposes. Shore stations will always transmit the latest weather report on request.

All ship and shore stations are requested to cease operations while the daily weather reports are being transmitted.

A ship or shore station may broadcast its own warning of a disturbance, if thought necessary.

**Fiji Islands.**

Suva W/T station, call sign VPD, broadcasts weather bulletins *en clair* twice daily, at 0200 and 0930 G.M.T. during the hurricane season (from November 1st to April 30th), besides assisting in the Apia scheme. The bulletins contain observations taken at 2100 and 0300 respectively at the under-mentioned places :—

Apia (Samoa), Nukualofa (Tonga Is.), Vila (New Hebrides), Norfolk I., Suva.

The positions of these stations are given under Samoa, opposite.

The name of the observation station precedes each report.

The observations at Vila are taken at 2200 and 1000.

**Form of Message :—**

Barometer reading (corrected) in inches and hundredths. Dry and wet bulb thermometer readings (in whole degrees Fahrenheit); direction and force of wind (Beaufort scale), state of sky (scale 0–10).

**Example :—**2990 78 76 S.E. 5 10

The 0200 bulletin is not sent on Saturdays, Sundays or holidays.

From May 1st to October 31st, the bulletin is only broadcast at 0930, and contains the observations taken at 2100.

NOTE.—Vessels within W/T range of the Fiji Islands are invited to transmit weather reports to Suva W/T station, especially during the hurricane season. The messages should be similar to that indicated above, preceded by the time of observation (G.M.T.) and the latitude and longitude of the ship reporting.

**WIRELESS STORM WARNINGS.**

**AUSTRALIA.**

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

For approximate positions of the Stations and wavelengths used, see pp. 181–2.

Geraldton - -	VIN	Special warnings of the approach of cyclonic storms of tropical origin, including information regarding barometric pressure at stations on the N.W. coast of W. Australia, immediately upon receipt from the Weather Bureau.
Broome - -	VIO	
Wyndham - -	VIW	

Darwin	VID	Special warnings of the approach of cyclonic storms of tropical origin immediately upon receipt from the Weather Bureau. In the case of cyclonic storms affecting the tropical seaboard of W. Australia the warnings include information of barometric pressure at stations on the N.W. coast of W. Australia.
Thursday Island -	VII	
Cooktown -	VIC	Special storm warnings, immediately upon receipt from the Weather Bureau, and thereafter during the regular W/T watches kept by coastal vessels until receipt of later information from Brisbane Weather Bureau. Ships may obtain special warnings, between watches, if the information is available, upon application to these W/T Stations.
Rockhampton -	VIR	
Brisbane -	VIB	
Townsville -	VIT	Storm warnings immediately on receipt from the Weather Bureau.
Sydney -	VIS	Special storm warnings, immediately on receipt. They are repeated at intervals until receipt of later information from the Weather Bureau.
Hobart (Tasmania)	VIH	Special storm warnings, immediately on receipt from the Weather Bureau and at hourly intervals thereafter until 1000.
Adelaide -	VIA	Special storm warnings immediately on receipt from the Weather Bureau.
Esperance -	VIE	

British New Guinea (Papua).

Port Moresby -	VIG	Special storm warnings for the Queensland coast immediately on receipt from the Weather Bureau when occasion warrants.
Rabaul-Bitapaka (New Britain) -	VJZ	
Samarai -	VIJ	Special storm warnings immediately on receipt from the Weather Bureau and thereafter during the regular W/T watches kept by coastal vessels, until receipt of later information from Brisbane Weather Bureau. Ships may obtain special warnings between watches, if the information is available, upon application to the W/T station.

NEW ZEALAND.

Awanui W/T Station, call sign, VLA, broadcasts storm warnings, when necessary, immediately after the weather bulletin at 1000 G.M.T. The wave length used is 600 metres (spark). Hurricane warnings issued by the Apia (Samoa) W/T station are also repeated. See under Apia (Samoa) W/T storm warnings, below.

SOUTH PACIFIC OCEAN ISLANDS.

Samoa.

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

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

This message is repeated by Suva (Fiji) W/T station on a wavelength of 600 metres and by Awanui (New Zealand) W/T station, immediately after the routine New Zealand weather bulletin at 1000 G.M.T., on a wavelength of 600 metres.

Fiji Islands.

Suva W/T Station, call sign, VPD, broadcasts warnings during the hurricane season (from November 1st to April 30th) at 0200 and 0930 G.M.T., immediately after the weather bulletin and also at other times when necessary.

The 0200 warning is omitted from May 1st to October 31st. Each warning commences with the call sign for “ All Ships ” (CQ).

Cook Islands.

Rarotonga W/T Station, approximate Latitude 21° 12' S., Longitude 159° 48' W., call sign, VMR, transmits a message to Apia W/T station, if there are indications at Rarotonga of an atmospheric disturbance, on a wavelength of 600 metres (spark). The message will contain readings of the corrected barometer, temperature dry and wet bulb, wind direction and force, state of sky and weather, G.M.T. of observations.

III. WIRELESS TIME SIGNALS.

AUSTRALIA (Spark Issues).

Station.	Call Sign.	Wavelength (metres).	G.M.T.	System.
Perth Lat. 32° 01' 51" S. - - - - Long. 115° 49' 31" E. - - - -	VIP	600 spk.	0257-0300 1457-1500	International. (See Figure 1, p. 104, Vol. III, No. 30). Controlled by Perth Observatory.
Melbourne Lat. 37° 50' 05" S. - - - - Long. 144° 58' 46" E. - - - -	VIM	600 spk.	0157-0200 1357-1400	
Adelaide Lat. 34° 51' 14" S. - - - - Long. 138° 31' 55" E. - - - -	VIA	600 spk.	0227-0230 1427-1430	International. (See Fig. 1, as above.) Transmitted automatically by the standard clock of the Adelaide Observatory.

NEW ZEALAND.

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

The transmitting key at the W/T station is automatically operated by the Standard Time Clock of the Observatory (Latitude 41° 17' 03.8" S., Longitude 174° 46' 04" E.).

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

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

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

G.M.T.

h. m. s.		h. m. s.				
22	58	00	to 22	59	05	— VLY (every 15 seconds, the dash is of two seconds duration).
22	59	10	to 22	59	50	— . . . . . etc.
23	00	00	to 23	00	03	— Time signal.
23	00	12	to 23	00	50	— . . . . . etc.
23	01	00	to 23	01	03	— Time signal.
23	01	13	to 23	01	50	— . . . . . etc.
23	02	00	to 23	02	03	— Time signal.
23	02	14	to 23	03	50	— . . . . . etc.
23	04	00	to 23	04	03	— Time signal.
23	04	09	to 23	04	50	— . . . . . etc.
23	05	00	to 23	05	03	— Time signal.
Then	. . . . . VLY		. . . . .			

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

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

Symbols used and their Meanings.



Indicates a violent squall.



Indicates a heavy sea.



Indicates a gale, with clear weather.



Indicates a gale, with thick weather and rain.



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

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

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

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

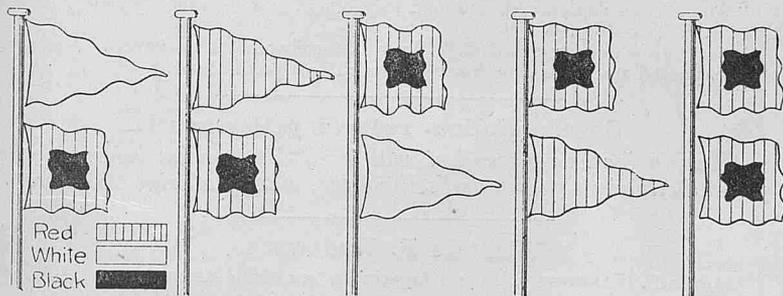
1. Red.
  2. Yellow and blue, horizontal, 2 divisions.
  3. Blue, yellow, red, vertical.
  4. Red and white, in opposite corners.
  5. White, with 5 blue crosses.
  6. Blue and yellow, 6 horizontal stripes.
  7. Blue, with 7 white crosses.
  8. Blue and white, 8 triangles.
  9. Red and white, 10 vertical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

IV.—VISUAL STORM WARNINGS.

AUSTRALIA.

Victoria.

Wind warnings :—



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

The above signals are exhibited from the Commonwealth Weather Bureau, Melbourne.

New South Wales.

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

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

Numbers representing Ports :

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

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

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

Queensland.

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

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

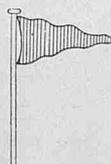
Symbols as follows:—

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

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

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

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



A red pennant indicates that a message has been received at the port from the Commonwealth Weather Bureau reporting the suspected development or existence of a dangerous storm or suspected development of a cyclonic disturbance. Details of such message may be obtained from the Postmaster or Harbour Officials at the port or place where this signal is displayed. A red light is shown at Fort Lytton by night.

When a vessel leaves the port of Brisbane without receiving a Cyclone warning, but observes the above signal at Fort Lytton, the Lightkeeper at the Pile Light will, if requested, transmit particulars of the message by means of semaphore, morse or megaphone.

### NEW ZEALAND.

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

#### Symbols used and their Meanings.

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

Northerly gales.

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

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

Westerly gales.

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

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

Easterly gales.

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

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

South-easterly gales.

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

Southerly gales.



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

Unusual gales.

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

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

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

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

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

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

### SOUTH PACIFIC OCEAN ISLANDS.

#### Fiji Islands.

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

Between sunrise and sunset: Two black circles disposed vertically.

Between sunset and sunrise: Two red lights disposed vertically.

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

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

### GREAT BRITAIN.

#### Gale Warnings by Radio Telephony.

##### SUPPLEMENTARY TO PAGES 34-5, VOL. III., No. 26.

On and after the 1st October, gale warnings will be broadcast, as necessary, by radio telephony by the **British Broadcasting Company** from Daventry on 1,600 metre wavelength, immediately after the time signal at 1300 and 1600 G.M.T. and immediately following the ordinary weather report issued at 1900 G.M.T.

Gale warnings issued at 1300 G.M.T. will be repeated both at 1600 and 1900 G.M.T. and a warning issued at 1600 will be repeated at 1900.

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

The warnings will be in the following form:—

"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 north of line from Exmouth to Spurn Head."

#### Special Notices regarding Personnel.

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

#### Captain F. Wadsworth.

Captain F. WADSWORTH, Marine Superintendent of the ANCHOR LINE, Glasgow, has recently retired.

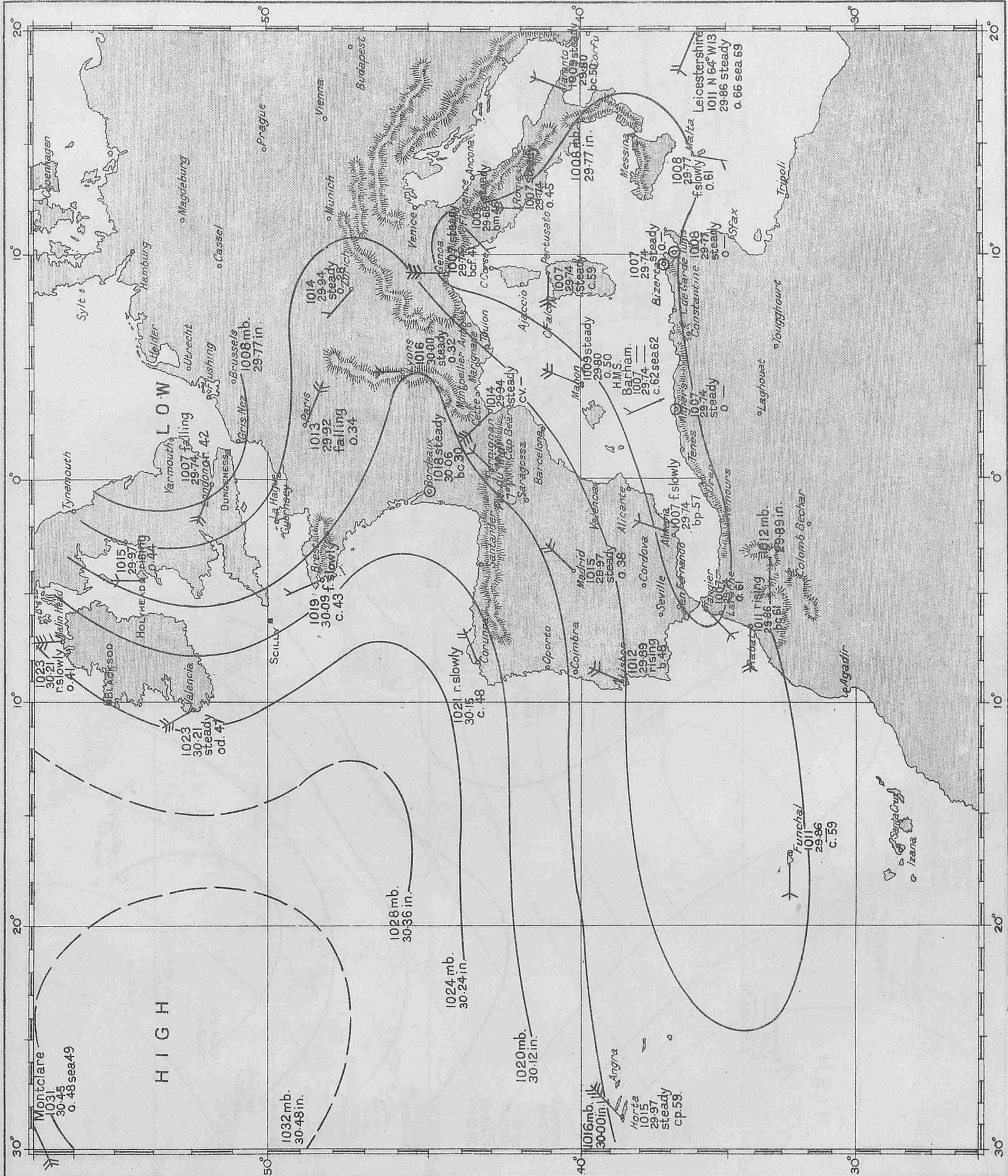
After serving in sail he joined the ANCHOR LINE nearly forty years ago and prior to his appointment as Marine Superintendent commanded many of the Company's finest ships. When afloat he was a keen observer for the Meteorological Office.

Marine observers will join with the Marine Division in wishing Captain WADSWORTH many years health and happiness in his retirement.

### OBITUARY.

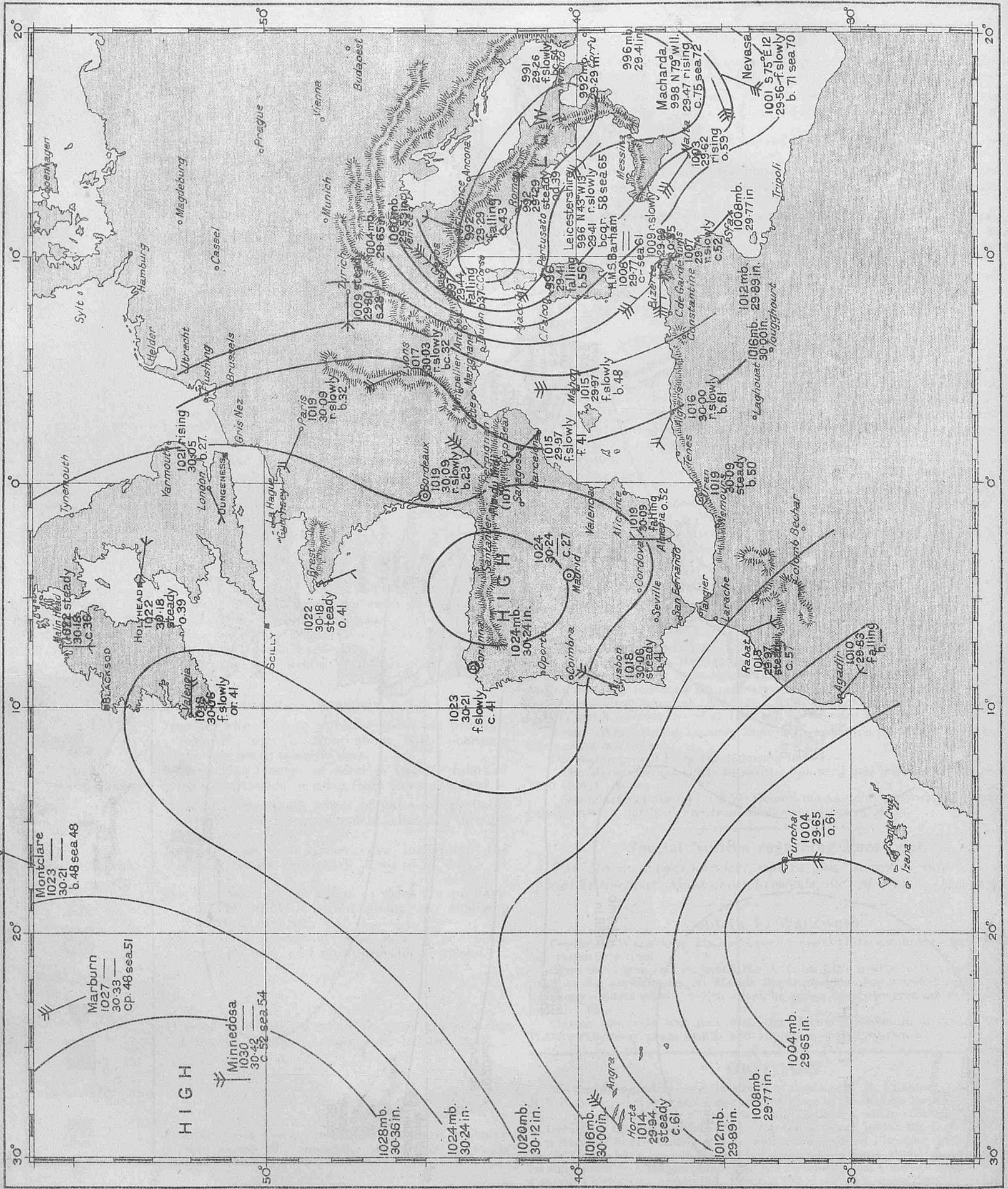
We deeply regret to note the death of Captain M. H. CLARKE, O.B.E., R.D., R.N.R., Chief Surveyor and Emigration Officer to the Marine Department of the Irish Free State Ministry of Industry and Commerce, which took place suddenly in Dublin on the 8th August, 1926. Captain CLARKE joined the Board of Trade as a Nautical Surveyor 27 years ago and was appointed Principal Officer, Dublin, in 1917. In 1922 he was transferred to the Free State Government. On the establishment of a Marine Agency to the Meteorological Office at Dublin in 1924 Captain Clarke was appointed Agent. His death is a great loss to the many interests he served generally and to the seafaring community in particular.

MORNING OF NOVEMBER 25TH 1925.

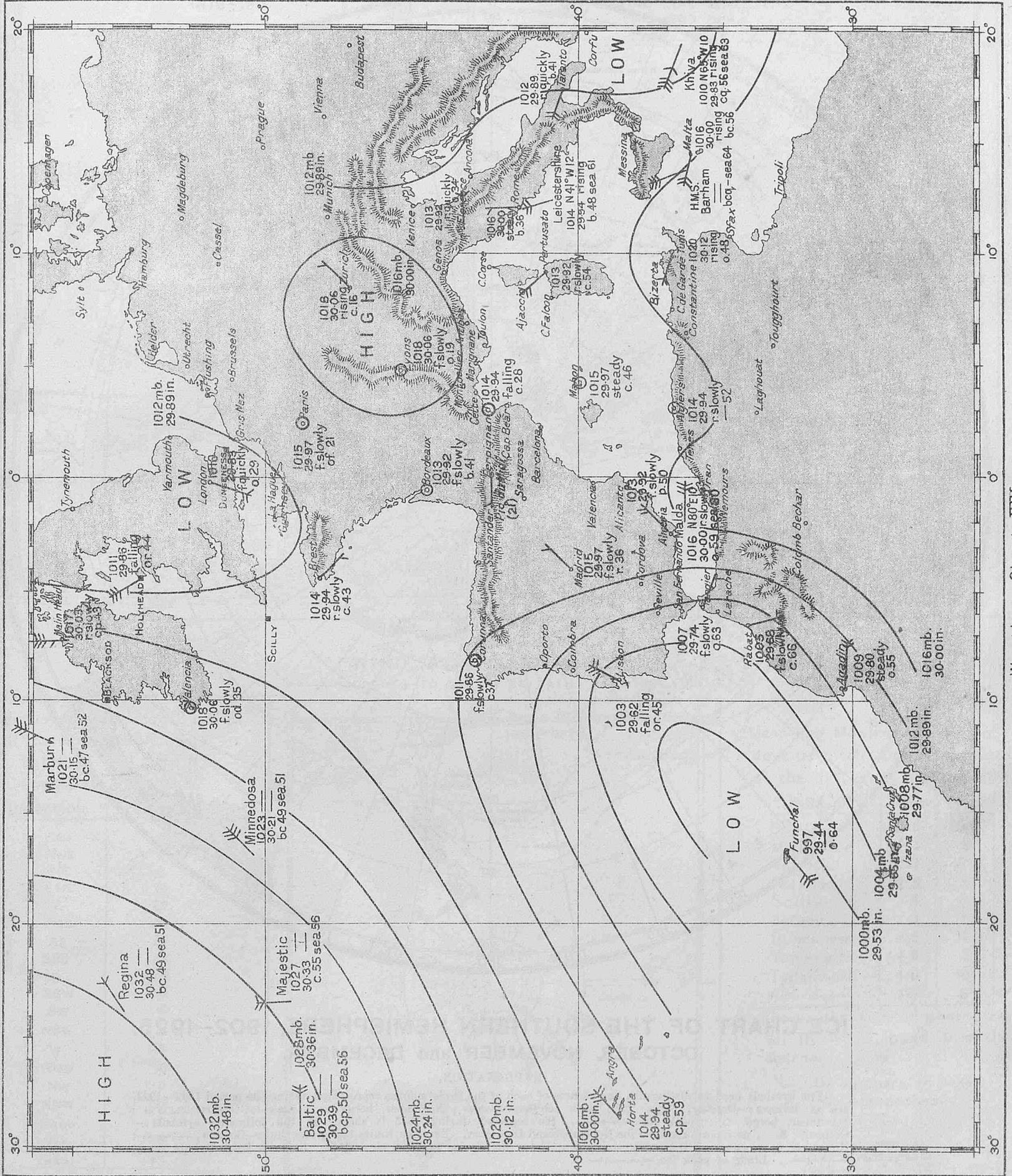


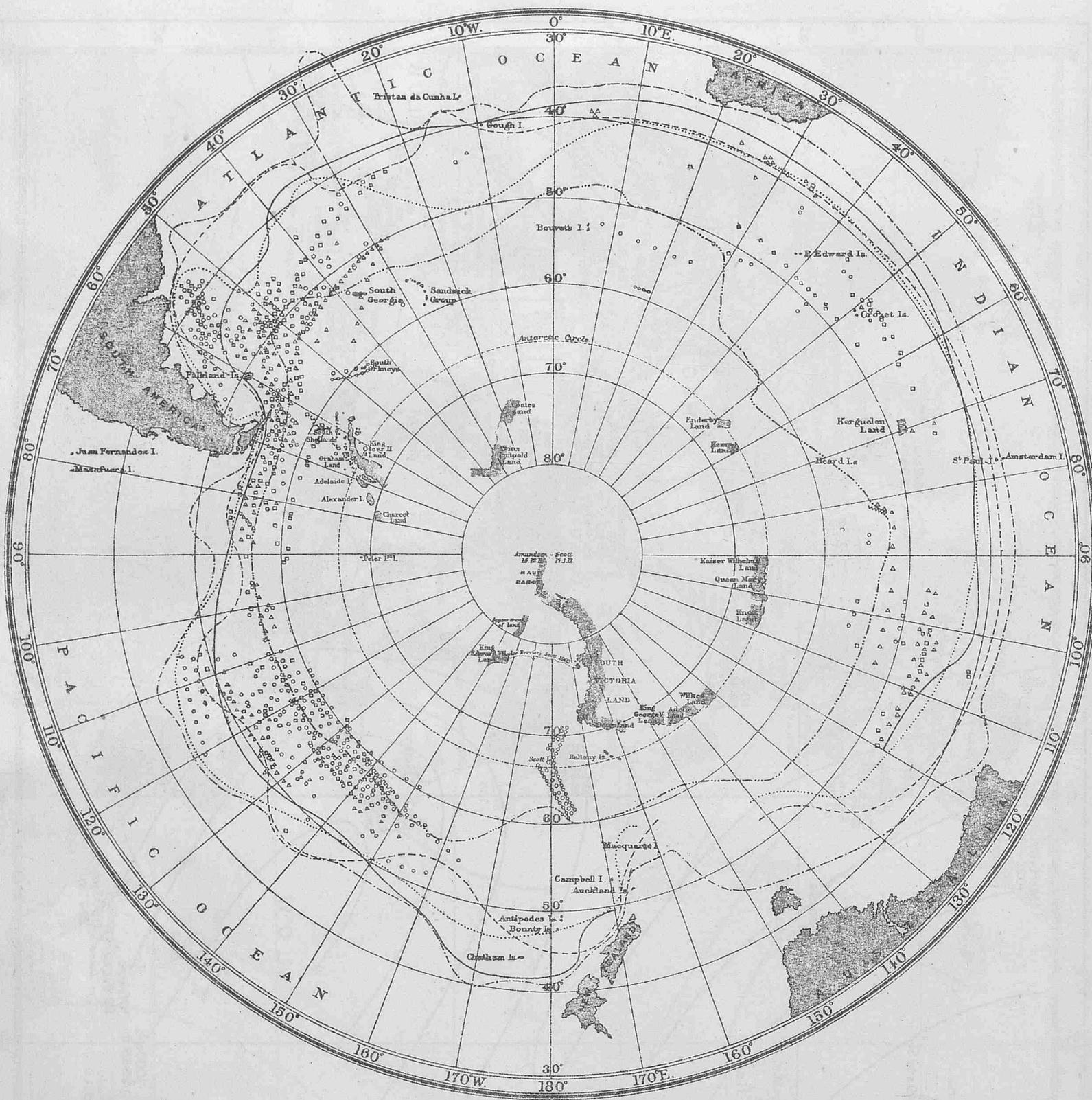
Weather Chart XIX.

MORNING OF NOVEMBER 26TH 1925.



MORNING OF NOVEMBER 27TH 1925.



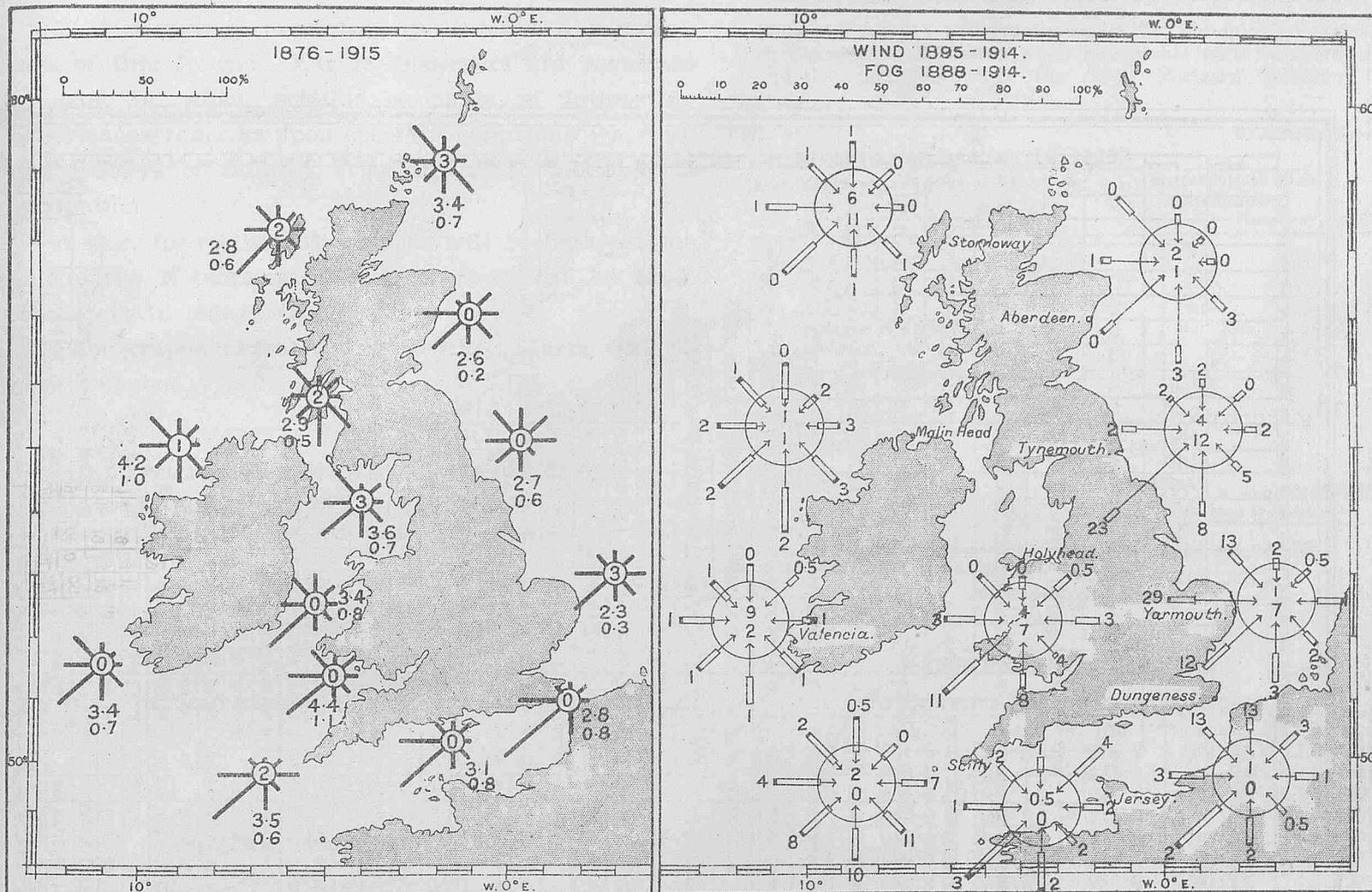


**ICE CHART OF THE SOUTHERN HEMISPHERE, 1902-1925.  
OCTOBER, NOVEMBER and DECEMBER.**

**EXPLANATION.**

The symbols used to distinguish the records of each of the three months represented during the period 1902-1924, are as follows:—October, bergs  $\Delta$ , pack ice  $\sim\sim\sim\sim\sim$ ; November, bergs  $\square$ , pack ice  $\text{|||||}$ ; December, bergs  $\circ$ , pack ice  $\text{---}$ . Ice reported during 1925 is shown by the following symbols:—October,  $\blacktriangle$ ; no reports received for November and December. Extreme limits are given thus:—October,  $\text{---}$ ; November,  $\text{---}$ ; December,  $\text{---}$ ; these include ice reported since 1772. Extreme limit (whole year),  $\text{---}$ . Limit of pack ice,  $\text{---}$ .

WIND AND FOG AT COAST STATIONS. GREAT BRITAIN AND IRELAND.



WIND, FOG AND MIST.

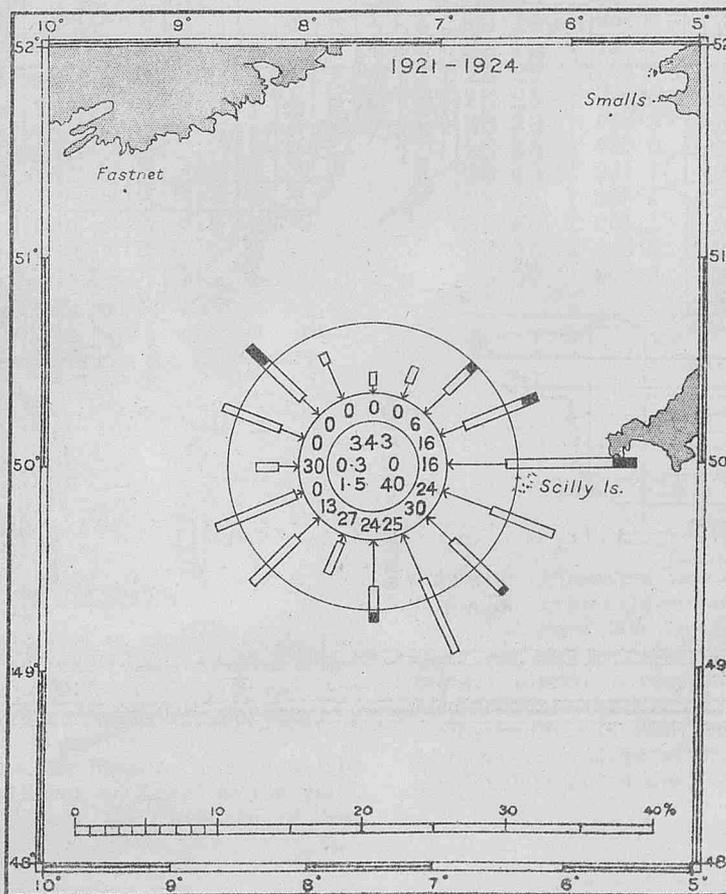
S.W. APPROACHES TO GREAT BRITAIN AND IRELAND.

Frequency of fog per thousand observations for each 2 points of compass 1921-1924.

Latitude 48°-52°N.  
Longitude 5°-10°W.

Direction.	Frequency.
N	0
NNE	0
NE	3
ENE	12
E	20
ESE	20
SE	23
SSE	23
S	15
SSW	9
SW	9
WSW	0
W	9
WNW	0
NW	0
NNW	0
Calm	0
Var.	6
<b>Total</b>	<b>149</b>

Percentage frequency of fog and mist for area = 15%.

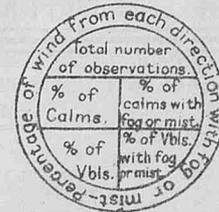


Mean and Maximum number of days with fog during the month at the different stations.

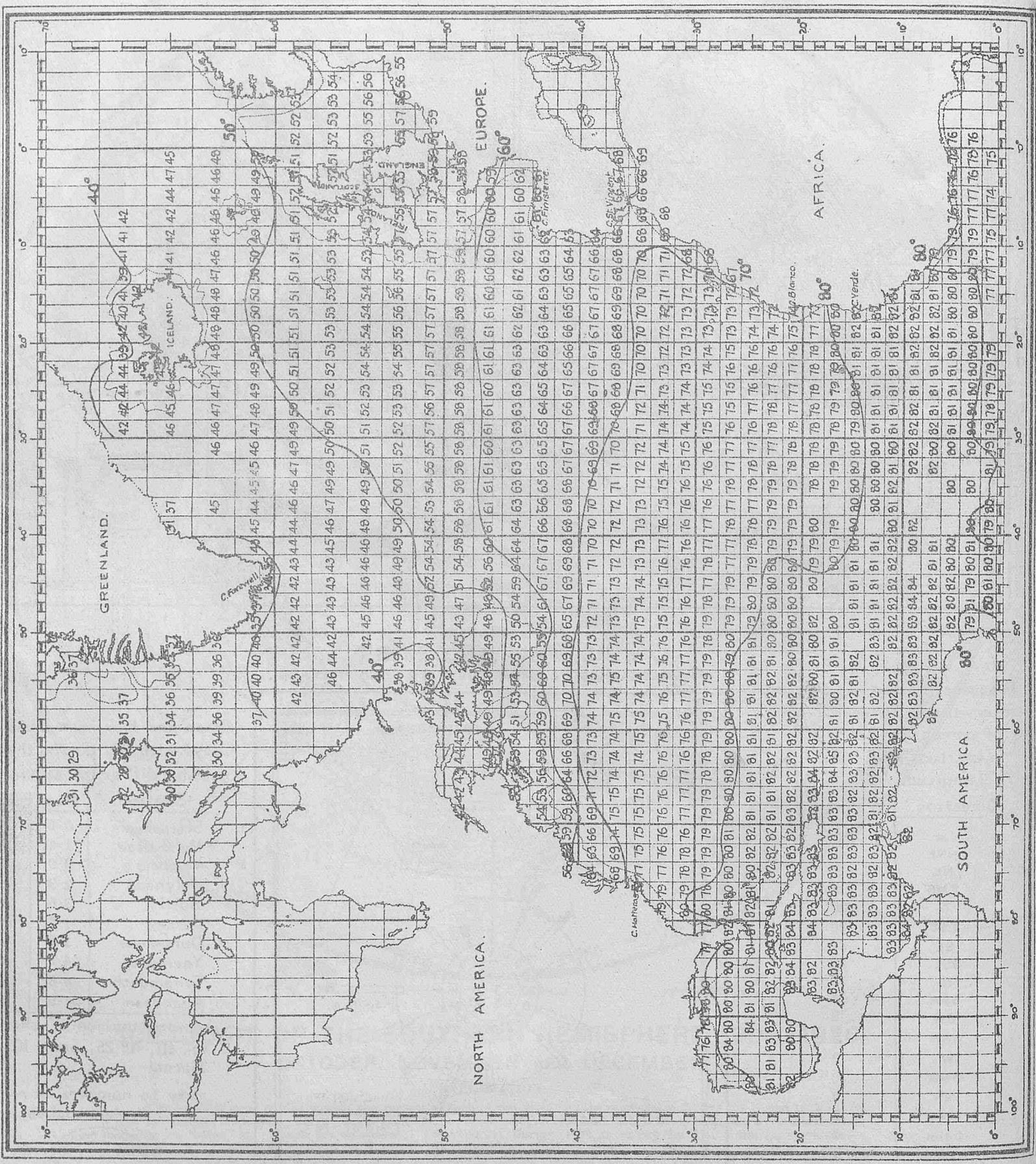
Station.	Mean.	Max.
Stornoway	0.6	3
Malin Head	1.1	4
Valencia	0.9	2
Holyhead	2.3	5
Scilly	3.6	8
Jersey	1.3	4
Dungeness	3.8	10
Yarmouth	4.3	9
Tynemouth	4.8	10
Aberdeen	1.5	5

For explanation of charts see Vol. III, No 25, page 10, of this Journal.

Key to numbers in rose, S.W. Approaches.



MEAN SEA SURFACE TEMPERATURES FOR MONTH OF OCTOBER COMPUTED FROM ALL AVAILABLE SOURCES DURING THE PERIOD 1855 TO 1917. NORTH ATLANTIC.



2212/1925. W. 59.4. D. 1. 1900. 8/26. Hydrographic Office, U.S. Navy.

## NOTICES.

### IMPORTANT.

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

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

Photographs, sketches and weather charts will be most welcome.

### ILLUSTRATIONS FOR THE MARINE OBSERVER.

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

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

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

### POSTAL ARRANGEMENTS.

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

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

S.S..... Captain.....  
 Port of Call.....  
 Date of Homeward Departure.....  
 Postal Address.....

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

### CARE OF INSTRUMENTS.

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

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

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

### BLUE POSTCARD FOR BAROMETER COMPARISON.

Marine Observers will greatly assist by obtaining comparisons with Standard instruments when at suitable ports; also regularly completing and returning the Blue Postcard whether their instruments are M.O. or Ship's.

Form 913.

Barometer Error.

#### TEST CARD FOR BAROMETER ERROR.

To be forwarded with Logs or Reports to

Meteorological Office,  
 Air Ministry,  
 Kingsway, London.

Name of Ship				Ship	
Captain				Capt.	
In Port of				Port	
Mercurial or Aneroid				Date	
Maker's Name and No.				Bar. No.	
Height above Mean Sea Level .....ft.				..... } Too high	
				..... } Too low	
Date 192	Time.	Barometer readings.	Attached Therm.	At	
.....				Date	
.....				This counterfoil will be returned to Ship.	

In British Home Ports please take three readings at 7 a.m., or 6 p.m. G.M.T. If in a colonial or foreign port, read at 8 a.m. Local Standard Time.

### 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		

### TROPICAL REVOLVING STORMS. OBSERVATIONS.

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

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

# ICE CHART.

## WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

- (C) From 1st September to 31st January, inclusive.
  - (F) From 16th May to opening of Belle Isle route, and to 30th November when not using Belle Isle route.
  - (G) From the opening of the Straits of Belle Isle to 14th November.
- Westbound, on approaching Cape Race steer a course to pass 10 miles S. of Cape Race.  
Eastbound, steer from position 25 miles S. of Cape Race.

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 Board of Trade "Notices to Mariners," 1st August, 1926. pp. 133-8.

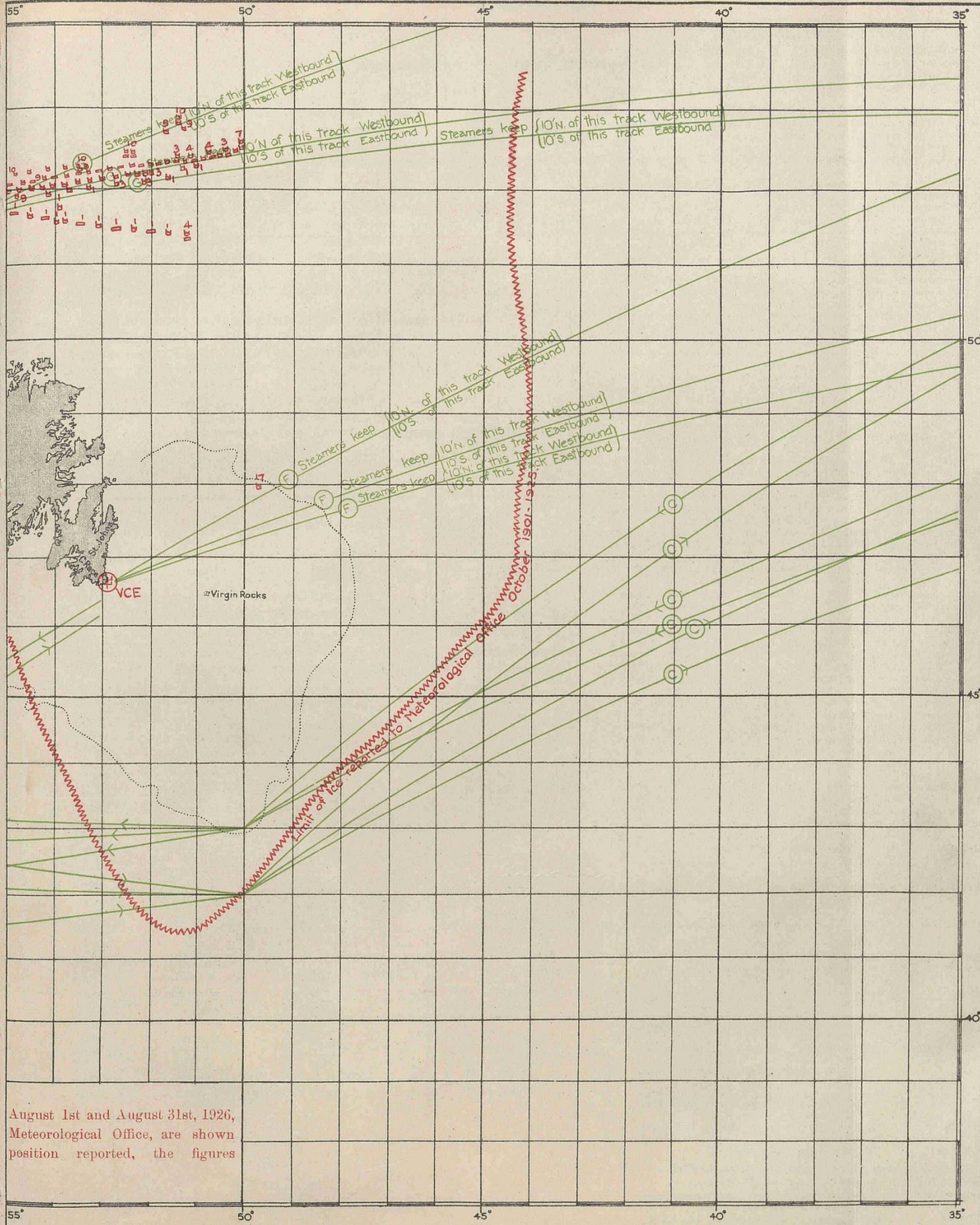
### SYMBOLS USED ON THE CHART.

- 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 DRIFTS OF ICE.

Date.	Ship or Source of Report.	Position.	Remarks
		Lat. Long.	
Oct. 15, 1883	S.S. Elenora...	37° N. 18° W.	Piece.
" 8, 1912	S.S. Putney Bridge...	35°15' N. 44°50' W.	Small berg 35 ft. long, 8 ft. high.
" 2, 1918	U.S. Hydrographic Bulletin.	50°10' N. 40°50' W.	Large berg.
" 19, 1920	Do.	45°22' N. 40°00' W.	Berg.
" 17, 1921	S.S. Mt. Vernon...	45°24' N. 40°07' W.	Berg.
" 6, 1922	S.S. Christian Krogh	48°23' N. 42°18' W.	Berg about 70 ft. high, 400 ft. long.
" 7, 1923	S.S. Eastern Dawn...	50°43' N. 40°42' W.	Berg 60 ft. high.
		40°46' N. 68°54' W.	Large growler about 100 ft. square.

Reports of Ice sighted between August 1st and August 31st, 1926, which have been received by the Meteorological Office, are shown in position reported, the figures indicating the day of the month.



Reports of Ice sighted between August 1st and August 31st, 1926, Meteorological Office, are shown in position reported, the figures indicating the day of the month.

# NOTICES.

## MARINE METEOROLOGY.

### Co-operation of Shipowners, Masters and Mates.

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

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

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

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

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

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

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

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

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

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

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

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

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

Marine Observers who wish to assist in developing the rapid interchange of Meteorological information and Weather Forecasting at sea can do so by using the standard form, *not* in code, of W/T Weather Report suggested in "Weather Signals," given in Vol. III, No. 25, pages 14 and 15. For this purpose a mercurial barometer of which the index error has been ascertained is essential.

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.

### Marine Agencies and Port Meteorological Officers.

LIVERPOOL	..	(Port Meteorological Office), Lieut.-Commander M. Cresswell, R.N.R., Dock Office. Telephone No.: Bank 8959.
CARDIFF	..	Captain T. Johnston, Technical College.
CLYDE	..	Captain M. C. Corrance, Board of Trade Surveyor's Office, 73, Robertson Street, Glasgow.
HULL	..	Captain Geo. B. Sturdy, c/o Mr. W. Hakes, Commercial Road.
LEITH	..	Captains G. Black and C. G. Bonner, V.C., D.S.C., Leith Salvage and Towing Co., Ltd., 2, Commercial Street.
SOUTHAMPTON	..	Captain D. Forbes, Nautical Academy, 1, Albion Place.
TYNE	..	Captain J. J. McEwan, Marine School, South Shields.
HONG KONG	..	Lieut.-Commander O. C. G. Leveson-Gower, R.N., Superintendent, Admiralty Chart and Chronometer Depot.
VANCOUVER	..	T. S. H. Shearman, Esq., Room 40, Post Office Building.
AUSTRALIA	..	The Commonwealth Meteorologist.

The Deputy Directors of Navigation act as sub-agents as follows:—

FREMANTLE	..	Captain J. J. Airey, Dalgety's Buildings.
MELBOURNE	..	Captain L. J. Bolger, Electricity Commissioners Building, 22, William Street.
SYDNEY	..	Commander G. D. Williams, D.S.O., R.D., R.N.R., Customs House.

## LATE PRESS.

### DERELICTS AND FLOATING WRECKAGE.

Date	Position		Description
	Latitude.	Longitude	
<b>NORTH SEA.</b>			
10.8.26	5 m. S.E. by S. from N. Hinder Lt. Vsl.		Large gas buoy, unlit, adrift.
15.8.26	55°04'N.	3°17'E.	Wreckage.
<b>ENGLISH CHANNEL.</b>			
1.8.26	50°15'N.	0°53'W.	Raft, 6 feet square, with iron ladder and mooring chain attached, floating on 4 casks, dangerous to propellers.
<b>NORTH ATLANTIC.</b>			
1.8.26	38°10'N.	69°50'W.	Cylinder.
1.8.26	37°56'N.	69°55'W.	Large cylinder.
1.8.26	26°41'N.	78°44'W.	Wooden structure about 25 feet square, with spar attached, showing about 4 feet out of water.
2.8.26	37°26'N.	72°30'W.	Iron cylinder.
2.8.26	34°29'N.	53°21'W.	Large red bell buoy in working order, lower part heavily covered with marine growth.
4.8.26	38°31'N.	66°51'W.	Piece of wreckage about 40 feet long, showing about 2 feet out of water, apparently part of a wooden vessel.
4.8.26	32°45'N.	78°43'W.	Buoy, with white painted steel structure, surmounted by a black square, with a white flag on top.
4.8.26	27°55'N.	80°10'W.	Piles, apparently attached to submerged wreckage.
4.8.26	27°16'N.	79°23'W.	Apparently forward deck of small schooner, about 50 feet long, with 8 feet hatch coaming painted light grey.
4.8.26	36°22'N.	7°14'W.	Drifting wooden lighter, about 70 feet long, with four short masts and marked <i>Dolerez</i> on the quarter.
4.8.26	39°59'N.	71°07'W.	Raft about 12 feet long and 6 feet wide, composed of heavy logs.
5.8.26	40°24'N.	59°03'W.	Long cylindrical object 15 feet long and 5 feet in diameter, resembling a vertical boiler very buoyant and rusty.
10.8.26	34°52'N.	16°—'W.	Submerged obstacle probably a wreck.

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 Ship's Meteorological Report Form 911 with ship's instruments. Letter M after No. indicates ship's barometer Mercurial; A. ship's barometer Ane-roid.

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

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

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Aba</i> ... ..	Hughes, J. ...	R. A. Roberts, R. A. Downes, L. B. Silvester, S. J. Brit-towe.	M.L.	Elder Dempster ...	Met. Log. 11.11.25 to 11.4.26...	23.4.26.
<i>Abinsi</i> ... ..	Wright, J. B. ...	H. C. Roberts ... ..	No. A.	„ „ ...	Form 911 26.5.26 to 2.7.26 ...	5.7.26.
<i>Achilles</i> ... ..	Hill, R. ... ..	D. MacTavish ... ..	„ A.	A. Holt ... ..	„ 8.10.25 to 19.10.25...	18.11.25.
<i>Actor</i> ... ..	Haylett, E. ...	A. Frew, J. McKay, G. Penston.	M.L.	Harrison ... ..	Met. Log. 28.1.26 to 4.4.26 ...	12.4.26.
<i>Adda</i> ... ..	Toft, J. T. ... ..	E. C. Davis ... ..	No. M.	Elder Dempster ...	„ 20.5.26 to 26.6.26 ...	28.6.26.
50 <i>Adriatic</i> ...	Roberts, J., C.B.E., D.S.O., R.D., Capt., R.N.R.	R. G. Roberts, H. J. Yates ... J. W. Allingham.	W.T.	White Star ... ..	W.T. Reg. 27.6.26 to 17.7.26 ... Form 911 27.6.26 to 18.7.26 ...	21.7.26. 21.7.26.
<i>Aeneas</i> ... ..	Wallace, W. K. ...	J. M. Anderson ... ..	No. A.	A. Holt ... ..	„ 21.3.26 to 9.4.26 ...	17.5.26.
<i>Agapenor</i> ...	Ramsay, J. ... ..	S. G. Ellams ... ..	„ A.	Booth ... ..	„ 28.5.26 to 28.6.26 ...	6.8.26.
<i>Aidan</i> ... ..	Buck, R. H. ... ..	„ „ „ „ „	„ A.	„ „ „ „ „	„ „ „ „ „	„ „ „ „ „
<i>Alban</i> ... ..	Whayman, W. ...	C. D. Lane, A. T. Douglas ...	„ A.	„ „ „ „ „	Form 911 6.12.25 to 22.12.25...	4.1.26.
<i>Albania</i> ... ..	Gronow, S. ... ..	L. Harper ... ..	„ A.	Cunard ... ..	„ 29.8.25 to 22.9.25 ...	24.9.26.
<i>Altipore</i> ... ..	Harrison, R., D.S.O., R.D., Commr., R.N.R.	D. N. Stafford ... ..	„ M.	P. and O. ... ..	„ 2.3.26 to 11.5.26 ...	1.6.26.
<i>Almanzora</i> ...	Mackenzie, G. A. ...	J. Clark ... ..	„ A.	R.M.S.P. ... ..	„ 30.5.26 to 12.7.26 ...	15.7.26.
<i>Alondra</i> ... ..	Prendergast, J. J. ...	H. Peters ... ..	„ A.	Yeoward ... ..	„ 18.7.26 to 8.8.26 ...	12.8.26.
<i>Ampetco</i> ... ..	Vandenkerckhove, A.	A. Aspeslagh ... ..	„ A.	American Petroleum... ..	„ 25.5.26 to 3.7.26 ...	22.7.26.
<i>Antiochus</i> ...	Wilkinson, H. ... ..	E. T. Bayes ... ..	„ A.	A. Holt ... ..	„ 10.11.25 to 31.3.26...	6.4.26.
<i>Aorangi</i> ... ..	Crawford, R. ... ..	A. Lansey, J. W. Bray, G. H. Kime, H. A. Titchfield.	M.L.	Canadian-Australasian	Met. Log. 13.1.26 to 29.4.26 ...	29.5.26.
<i>Appam</i> ... ..	Yardley, H. A., D.S.C.	Prendergast, Dutton, W. Page	„	Elder Dempster ...	„ 23.12.25 to 23.5.26...	5.6.26.
30 <i>Aquitania</i> ...	Charles, Sir J. T., W. K.B.E., C.B., R.D., Commodore, R.N.R.	J. L. Croasdaile, J. Locke, D. MacLean.	W.T.	Cunard ... ..	W.T. Reg. 25.7.26 to 9.8.26 ...	12.8.26.
<i>Arabic</i> ... ..	Davies, J. ... ..	R. Walker, H. G. Morgan, W. Clements.	No.	White Star ... ..	„ 21.4.26 to 13.5.26 ... Form 911 20.4.26 to 14.5.26 ...	17.5.26. 17.5.26.
<i>Arafura</i> ... ..	Gordon, A. S. ...	J. T. Heddle, G. C. Smith, O. B. Godfrey, F. O. Colvin.	M.L.	Eastern and Australian	Met. Log. 6.1.26 to 4.4.26 ...	14.5.26.
<i>Archimedes</i> ...	Downs, E. B. ... ..	J. M. Edgar ... ..	No. A.	Lamport & Holt ...	Form 911 22.3.26 to 9.6.26 ...	16.7.26.
<i>Ariguani</i> ... ..	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	G. Dobson ... ..	M.L.	Elders & Fyffes ...	„ 28.2.26 to 3.4.26 ...	8.4.26.
<i>Armada Castle</i> ...	Millard, L. A., Knight, A.	„ „ „ „ „	„	Union Castle ... ..	Met. Log. 9.8.25 to 4.4.26 ...	19.4.26.
<i>Arracan</i> ... ..	Willis, M. ... ..	R. McInnes, M. S. Stuart, C. C. Weir.	„	P. Henderson ... ..	„ 4.1.26 to 11.4.26 ...	26.4.26.
<i>Arundel</i> ... ..	Short, H. ... ..	Mr. Hill ... ..	C.C.	Southern Rly. ... ..	Telegraphic Report 6.7.26 ...	6.7.26.
<i>Arundel Castle</i>	George, J., O.B.E. ...	C. S. Keen ... ..	No.	Union Castle ... ..	Met. Log. 26.2.26 to 20.6.26 ...	13.7.26.
<i>Assyria</i> ... ..	Donald, D. R. ... ..	A. Middleton ... ..	No. A.	Anchor ... ..	Form 911 16.8.25 to 7.9.25 ...	9.9.25.
<i>Astronomer</i> ...	Richards, J. ... ..	H. Thomas, J. Glen, — Win-stanley.	M.L.	Harrison ... ..	Met. Log. 18.2.26 to 16.6.26 ...	24.6.26.
<i>Athenic</i> ... ..	Davies, E. ... ..	W. Hill ... ..	No. A.	White Star ... ..	Form 911 23.6.26 to 7.7.26 ...	26.7.26.
<i>Atrous</i> ... ..	Salter, G. H. ... ..	J. C. Podmore ... ..	„ A.	A Holt ... ..	„ 7.7.26 to 19.7.26 ...	6.8.26.
<i>Atsuta Maru</i> ...	Saito, B. ... ..	K. Murazumi ... ..	„ A.	Nippon Yusen Kaisha	„ 23.2.26 to 8.3.26 ...	15.3.26.
<i>Auditor</i> ... ..	Owen, W. T. ... ..	T. E. Steel ... ..	„ M.	Harrison ... ..	„ 11.3.26 to 25.4.26 ...	10.5.26.
<i>Ausonia</i> ... ..	Gibbons, G., R.D., Commr., R.N.R.	E. R. B. Freeman... ..	„ A.	Cunard ... ..	„ 17.4.26 to 11.7.26 ...	13.7.26.
<i>Avon</i> ... ..	Adam, C., R.D., Commr., R.N.R.	E. S. Dunch ... ..	„ M.	R.M.S.P. ... ..	„ 24.3.26 to 2.7.26 ...	17.7.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Balfour</i> ...	Dott, J. ...	S. W. Keay ...	No. A.	Canadian Pacific	Form 911 26.5.26 to 23.6.26 ...	30.6.26.
<i>Balranald</i> ...	Townshend, W. P., Commr., R.N.R.	...	M.L.	P. & O. Branch	...	...
51 <i>Baltic</i> ...	White, E. R., Commr. R.N.R.	H. R. Wilkinson, H. C. Gray, D. K. Crawford.	W.T.	White Star ...	W.T. Reg 12.7.26 to 31.7.26 ... Form 911 12.7.26 to 31.7.26 ...	5.8.26. 5.8.26.
<i>Bambra</i> ...	Turner, J. E. ...	H. W. Norris, J. E. Turner, F. Humble.	M.L.	State Service, Australia	Met. Log. 25.11.25 to 3.5.26 ...	15.6.26.
<i>Bampton Castle</i> ...	Hutchings, A. H. ...	J. W. S. Brooks ...	No.	Union Castle	12.3.26 to 3.7.26 ...	16.7.26.
<i>Banbury Castle</i> ...	Singeisen, E. A., D.S.C., R.D., Capt., R.N.R.	...	"	"	...	...
<i>Banffshire</i> ...	Wynne, R. H. ...	J. M. Bowie ...	No. A.	Turnbull Martin	Form 911 23.3.26 to 27.4.26 ...	6.5.26.
<i>Baron Murray</i> ...	Edgar, J. E. ...	W. G. Arthur, H. Thompson	" A.	Hogarth & Sons	" 8.5.26 to 10.6.26 ...	21.7.26.
<i>starpeta</i> ...	Beytagh, L. S. F. ...	J. W. Knight ...	" M.	British India	" 16.6.26 to 15.7.26 ...	3.8.26.
<i>Baychimo</i> ...	Cornwall, S. A. ...	E. J. Hankin ...	" A.	Hudson's Bay Co.	" 20.4.26 to 4.6.26 ...	28.7.26.
<i>Baymaud</i> ...	Poellmer, G. ...	...	" M.	...	...	...
<i>Beaufort</i> ...	Rice, W. V., D.S.O., Commr., R.N.	J. Taylor ...	M.L.	His Majesty's Ship	Met. Log. 14.8.25 to 13.11.25...	11.1.26.
59 <i>Belgenland</i> ...	Howell, T. ...	J. M. Appleby, F. Clitty ...	W.T.	Red Star ...	W.T. Reg. 14.6.26 to 2.7.26 ... Form 911 13.6.26 to 3.7.26 ...	8.7.26. 8.7.26.
<i>Benalder</i> ...	Cole J. H., D.S.C. ...	T. S. Rawlingson ...	No. A.	Ben Line ...	" 8.6.26 to 7.7.26 ...	10.8.26.
<i>Bendigo</i> ...	Nicholl, R. N. C. ...	H. J. Cholerton ...	" M.	P. & O. Branch	" 10.6.26 to 29.6.26 ...	19.7.26.
<i>Benloe</i> ...	McCorquodale, A. ...	G. M. Duff ...	" A.	Ben Line ...	" 12.8.25 to 29.8.25 ...	30.9.25.
31 <i>Berengaria</i> ...	Diggle, E. G., R.D., Capt., R.N.R.	J. A. Myles, W. C. A. Robson, E. W. Connell ...	W.T.	Cunard ...	W.T. Reg. 4.7.26 to 19.7.26 ...	21.7.26.
<i>Berrima</i> ...	Townshend, W. P., R.D., Commr., R.N.R.	T. Ferguson ...	No. M.	P. & O. Branch	Form 911 29.4.26 to 21.6.26 ...	24.6.26.
<i>Bintang</i> ...	Morzer Bruyns, M. F.	A. A. H. Blankestyn ...	" M.	Nederland	" 23.3.26 to 13.6.26 ...	22.6.26.
<i>Bogota</i> ...	Dunn, R. E., O.B.E.	T. R. Thomas ...	" A.	R.M.S.P. Co.	" 8.10.25 to 28.10.25...	5.11.25.
<i>Bolingbroke</i> ...	Jones, D. C. ...	C. A. Mott ...	M.L.	Canadian Pacific	Met. Log. 30.6.25 to 16.1.26 ...	20.1.26.
<i>Borda</i> ...	Dott, J. F. ...	...	No. M.	P. & O. Branch	Form 911 9.5.26 to 28.6.26 ...	30.6.26.
<i>Bothwell</i> ...	Holland R. ...	...	" A.	Canadian Pacific	" 3.6.26 to 3.7.26 ...	9.7.26.
<i>Brandon</i> ...	Jones, D. J. C. ...	G. Mowatt ...	" A.	"	" 15.2.26 to 17.3.26 ...	20.3.26.
<i>Brecon</i> ...	Henderson, W. ...	T. Beck ...	" A.	"	" 29.6.26 to 27.7.26 ...	3.8.26.
<i>Brenda</i> ...	McCombie, G. ...	F. E. Bevis ...	" A.	Scottish Fishery Board	" 1.6.26 to 30.6.26 ...	3.7.26.
<i>Brighton</i> ...	Lamont, A. ...	F. R. Ness ...	" A.	Southern Railway	Telegraphic Report 2.8.26 ...	2.8.26.
<i>British Advocate</i> ...	Hill, A. ...	Mr. Munton ...	" C.C.	British Tankers	Form 911 20.4.26 to 9.6.26 ...	14.6.26.
<i>British Engineer</i> ...	Taylor, R. J. ...	G. H. Wylie ...	No. M.	"	" 26.1.26 to 9.3.26 ...	12.4.26.
<i>British Miller</i> ...	Joures, T. W. ...	E. L. W. Evans ...	" M.	"	" 30.6.26 to 16.7.26 ...	4.8.26.
<i>British Soldier</i> ...	Putt, R. O. ...	H. J. Crangle ...	" A.	Lampert & Holt	...	...
<i>Bronte</i> ...	Crappier, J. S. ...	...	" A.	"	Form 911 29.3.26 to 1.7.26 ...	5.7.26.
<i>Browning</i> ...	Connorton, W. A. ...	A. B. Murray ...	" A.	"	" 20.1.26 to 12.2.26 ...	22.3.26.
<i>Bruyere</i> ...	Denson, W. ...	R. Mowbray ...	" A.	Henderson	...	...
<i>Burma</i> ...	Cattanach, J. C. ...	...	" A.	"	Met. Log. 14.7.25 to 21.11.25...	26.1.26.
<i>Cambria C.S.</i> ...	Sherwood, C. A., D.S.C.	H. Selby, A. J. English, B. C. Farrow.	M.L.	Eastern Tel. Co.	...	...
<i>Cambria</i> ...	Teller, J. E. ...	V. S. Phillips ...	C.C.	L.M. & S. Rly.	Telegraphic Report 7.8.26 ...	7.8.26.
<i>Cameronia</i> ...	Smart, R. W. ...	C. Paton ...	No. A.	Anchor	Form 911 4.7.26 to 24.7.26 ...	3.8.26.
<i>Camito</i> ...	Forrester, W. T., O.B.E.	W. T. Broome, H. J. Perrett, P. C. Congdon, F. Dudgeon.	M.L.	Elders & Fyfes	Met. Log. 25.1.26 to 14.6.26 ...	16.6.26.
<i>Canada</i> ...	Jones, T. ...	G. T. Kavanagh ...	No. M.	White Star-Dominion	Form 911 24.4.26 to 17.5.26 ...	19.5.26.
<i>Canadian Inventor</i> ...	Boulton, F. W. ...	T. Edgar ...	" A.	Canadian Govt. Mercantile Marine.	" 21.11.25 to 9.12.25 ...	1.2.26.
<i>Canadian Miller</i> ...	McConechy, W. T. ...	C. E. Moore, H. Ruegg ...	" A.	"	" 14.3.26 to 23.6.26 ...	15.7.26.
<i>Canadian Scottish</i> ...	Wallace, C. ...	A. E. Webster ...	" A.	"	" 9.5.26 to 10.6.26 ...	27.7.26.
<i>Canadian Skirmisher.</i> ...	Millar, W. H. ...	R. J. Watson ...	" A.	"	" 30.5.26 to 5.7.26 ...	7.8.26.
<i>Canadian Winner</i> ...	Hocking, N. P. ...	R. Girling, J. Cochrane ...	" M.	"	" 12.6.26 to 15.7.26 ...	13.8.26.
35 <i>Carmania</i> ...	Brown, F. G., R.D., Capt., R.N.R.	M. Boston, L. R. Simpson, D. E. Sibson.	W.T.	Cunard ...	W.T. Reg. 28.6.26 to 13.7.26 ... Form 911 27.6.26 to 2.7.26 ...	20.7.26. 17.7.26.
<i>Carnarvon Castle</i> ...	Hague, J. W., Commr., R.N.R.	...	M.L.	Union Castle	...	...
34 <i>Caronia</i> ...	Hossack, W. H., R.D., Capt., R.N.R.	R. F. Bovey, T. Ashcroft, D. Butler.	"	Cunard	W.T. Reg. 12.7.26 to 28.7.26 ... Form 911 11.7.26 to 30.7.26 ...	5.8.26. 5.8.26.
52 <i>Cedric</i> ...	Hickson, V. W., Lt.- Commr., R.N.R.	J. J. Farrell, P. Conway, H. Daman.	"	White Star	W.T. Reg. 5.7.26 to 25.7.26 ... Form 911 19.7.26 to 25.7.26 ...	28.7.26. 28.7.26.
53 <i>Celtic</i> ...	Summers, F. F., R.D., Commr., R.N.R.	A. Thompson, G. T. Kavanagh, F. E. Patchett.	"	"	W.T. Reg. 18.7.26 to 8.8.26 ... Form 911 18.7.26 to 8.8.26 ...	12.8.26. 12.8.26.
<i>Centaur</i> ...	Rose, A. F. ...	L. Johnstone, E. Potts ...	No. M.	A. Holt & Co.	" 2.4.26 to 6.6.26 ...	5.7.26.
<i>Ceramic</i> ...	Roberts, J., C.B.E., D.S.O., R.D., Capt., R.N.R.	D. W. Chamberlain ...	" A.	White Star	" 20.4.26 to 24.5.26 ...	26.5.26.
<i>Changte</i> ...	Gambrill, F. C. ...	J. Thomas, Tyer, J. A. Allan	M.L.	Yuill & Co...	Met. Log. 2.2.26 to 28.3.26 ...	19.6.26.
<i>China</i> ...	Cossey, W. F. ...	D. A. C. Butler ...	No. M.	P. & O.	Form 911 30.4.26 to 23.6.26 ...	25.6.26.
<i>Chindwara</i> ...	Brisley, P. L. ...	W. Welch ...	" M.	British India	" 29.8.25 to 17.12.25...	11.1.26.
<i>City of Baroda</i> ...	Houghton, W. ...	A. Beaton, J. Cook, W. H. Dalton.	M.L.	Ellerman	Met. Log. 19.9.25 to 31.5.26 ...	4.6.26.
<i>City of Benares</i> ...	Spencer, H. ...	C. G. Inglis ...	No. A.	"	Form 911 27.3.26 to 13.4.26 ...	22.4.26.
<i>City of Brisbane</i> ...	Seaborne, F. O., D.S.C.	R. W. Watkin ...	" A.	"	" 24.5.26 to 4.6.26 ...	18.6.26.
<i>City of Canterbury</i> ...	Bremner, D. M. ...	E. Garner ...	" A.	"	" 20.3.26 to 13.6.26 ...	15.6.26.
<i>City of Chester</i> ...	Letton, F. W. ...	F. C. Wilson, H. Asher, W. Speakman.	M.L.	"	Met. Log. 15.11.25 to 3.3.26 ...	8.3.26.
<i>City of Edinburgh</i> ...	Wyper, J. ...	N. G. Fraser ...	No. M.	"	Form 911 15.6.26 to 2.7.26 ...	12.7.26.
<i>City of Hong Kong</i> ...	Walton, H. L., O.B.E., R.D., Commr., R.N.R.	A. M. Westlake ...	" A.	"	" 18.6.26 to 17.7.26 ...	9.8.26.
<i>City of London</i> ...	Martin, D. ...	J. J. McTigue ...	" A.	"	" 8.3.26 to 2.4.26 ...	12.4.26.
<i>City of Marseilles</i> ...	Brown, G. ...	W. A. MacAdams, G. F. L. Coates.	" A.	"	" 25.2.26 to 18.3.26 ...	22.3.26.
<i>City of Rangoon</i> ...	Dunning, T. W. J. ...	A. Gibb, V. S. Turner, A. H. Cosker, G. Lawrey.	M.L.	"	Met. Log. 14.12.25 to 4.6.26 ...	28.6.26.
<i>City of Yokohama</i> ...	McDonald, W. D. ...	R. A. Fulton ...	No. A.	"	Form 911 25.5.26 to 23.7.26 ...	3.8.26.
<i>Clan Alpine</i> ...	Lennox, W. J. ...	G. Short ...	" A.	Clan	...	...
<i>Clan Lamont</i> ...	Urquhart, P. ...	P. de Gruchy ...	" A.	"	Form 911 22.5.26 to 21.6.26 ...	26.7.26.
<i>Clan Lindsay</i> ...	Worthington, J. H. ...	T. E. Woodall ...	" A.	"	" 25.6.26 to 8.7.26 ...	3.8.26.
<i>Clan Macbeth</i> ...	Young, A. H., R.D., Lieut.-Commr., R.N.R.	W. Hurst ...	" A.	"	" 18.4.26 to 11.5.26 ...	10.6.26.
<i>Clan Macfadyen</i> ...	Stenson, F. J., R.D., Capt., R.N.R.	J. W. Charles ...	" A.	"	" 19.5.26 to 19.7.26 ...	13.8.26.
<i>Clan Macgillivray</i> ...	West, W. F. ...	P. G. de Gruchy ...	" A.	"	" 18.12.25 to 17.1.26...	11.2.26.

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Clan Macindoe</i> ...	Law, A. ...	J. G. Baillie ...	No. A.	Clan ...	Form 911 24.2.26 to 19.6.26 ...	28.6.26.
<i>Clan Mackellar</i> ...	Scotland, A. ...	D. McAllister ...	" A.	" ...	" 28.6.26 to 20.7.26 ...	9.8.26.
<i>Clan Mackinnon</i> ...	McLean, J. G. ...	W. F. Isaac, S. Y. Strange, J. E. Clayton.	M.L.	" ...	Met. Log. 25.3.26 to 14.7.26 ...	19.7.26.
<i>Clan Macphee</i> ...	Gourlay, J. B. ...	D. S. Rae, J. O. Woodall, J. J. Millar.	"	" ...	" 6.9.25 to 14.5.26 ...	24.6.26.
<i>Clan Macnaughton</i> ...	Thomson, W. ...	A. J. Storkey, D. MacDiarmid	No. A.	" ...	Form 911 25.5.26 to 18.6.26 ...	12.7.26.
<i>Clan Mactaggart</i> ...	Gray, J. N. ...	W. J. Henderson ...	" A.	" ...	" 19.4.26 to 23.5.26 ...	26.5.26.
<i>Clan MacTavish</i> ...	Higgins, C. J. ...	" ...	" A.	" ...	" ...	" ...
<i>Clan Macwhirter</i> ...	Waterhouse, J. ...	" ...	" A.	" ...	" ...	" ...
<i>Clan Macwilliam</i> ...	Williamson, A. ...	R. W. Roberts ...	" A.	" ...	Form 911 16.6.26 to 7.7.26 ...	3.8.26.
<i>Clan Malcolm</i> ...	Neill, G. A. ...	S. M. Werray Easterbrook, N. MacLeod.	M.L.	" ...	Met. Log. 18.10.25 to 5.4.26 ...	13.4.26.
<i>Clan Morrison</i> ...	Porterfield, W. M. ...	L. C. Higgins ...	No. A.	" ...	Form 911 26.6.26 to 14.7.26 ...	3.8.26.
<i>Clan Murdoch</i> ...	Miller, W. ...	P. McMillan ...	" A.	" ...	" 24.3.26 to 14.4.26 ...	17.5.26.
<i>Clan Ranald</i> ...	Laird, C. ...	T. O. Marr ...	" A.	" ...	" 15.7.26 to 1.8.26 ...	13.8.26.
<i>Clan Ross</i> ...	Jones, R. C. ...	G. Short ...	" A.	" ...	" 28.4.26 to 19.5.26 ...	25.5.26.
<i>Clan Urquhart</i> ...	Gibb, A. F. W. ...	T. G. Mitchell ...	" A.	" ...	" 29.3.26 to 4.4.26 ...	10.5.26.
<i>Colonia, C.S.</i> ...	Campos, V., O.B.E., Lt.-Com m r., R.N.R.	S. A. Garnham, C. A. Bullock, L. J. Hegarty, W. E. Matthews, W. Anderson.	M.L.	Telegraph Construction & Maintenance.	Met. Log. 16.1.26 to 29.4.26 ...	25.5.26.
<i>Colonian</i> ...	Gittins, R. P. ...	T. A. Schofield-Miller ...	No. A.	Leyland ...	Form 911 21.3.26 to 31.3.26 ...	3.7.26.
<i>Comcrin</i> ...	Borland, J. Mc. I., C.B., D.S.O., R.D., Capt., R.N.R.	E. A. O. Chambers ...	" M.	P. & O. ...	" 19.6.26 to 30.6.26 ...	15.7.26.
<i>Concordia</i> ...	Morris, J. ...	T. Philip, J. McIntosh, J. Davies, H. A. Hartley.	M.L.	Anchor Donaldson ...	Met. Log. 7.8.25 to 8.2.26 ...	19.2.26.
<i>Corinthic</i> ...	Hart, F. ...	F. Kean, M. Bennett, F. G. Rogers.	"	White Star ...	" ...	" ...
<i>Cornish City</i> ...	James, D. P. ...	" ...	No. A.	Reardon Smith ...	" ...	" ...
<i>Cornwall</i> ...	Haines, F. P. ...	T. Hains ...	" A.	Federal ...	Form 911 10.4.26 to 25.5.26 ...	28.5.26.
<i>Crawford Castle</i> ...	Morgan, A. O., R.D., Commr., R.N.R.	J. E. R. Wilford ...	" A.	Union Castle ...	" 19.6.26 to 17.7.26 ...	21.7.26.
<i>Cristales</i> ...	Isaacson, J. M. ...	S. Browne, R. Southerland, D. M. Baker.	M.L.	Elders & Fyffes ...	Met. Log. 17.3.26 to 19.7.26 ...	21.7.26.
<i>Culebra</i> ...	Mackay, A. S., R.D., Commr., R.N.R.	P. Cooper, H. V. Todd, C. A. Payne, F. G. Dawson.	"	R.M.S.P. Co. ...	" 11.1.26 to 14.6.26 ...	22.6.26.
<i>Cumberland</i> ...	Deith, G. T. ...	E. F. Hopkins ...	No. A.	Federal ...	Form 911 18.2.26 to 19.6.26 ...	22.6.26.
<i>Cuthbert</i> ...	Barlow, F. P. ...	S. E. Adams ...	" A.	Booth ...	" 12.3.26 to 23.5.26 ...	22.6.26.
<i>Cyclops</i> ...	Cosker, W. ...	H. L. Cole ...	" A.	A. Holt ...	" 4.3.26 to 16.3.26 ...	8.4.26.
<i>Dardanus</i> ...	Williams, D. T. ...	C. F. Morgan ...	" M.	" ...	" 29.4.26 to 13.5.26 ...	14.6.26.
<i>Durian</i> ...	Masters, W. ...	A. S. Holland ...	" A.	Leyland ...	" 17.1.26 to 8.3.26 ...	10.3.26.
<i>Darro</i> ...	Matthews, G. P. ...	W. Halder Campe ...	" M.	R.M.S.P. Co. ...	" 12.6.26 to 8.8.26 ...	12.8.26.
<i>Demerara</i> ...	Willan, F. C. L. ...	J. J. C. Blake ...	" M.	" ...	" 31.5.26 to 22.7.26 ...	27.7.26.
<i>Demosthenes</i> ...	Orriss, F. A. ...	J. F. Cruickshank ...	" M.	Aberdeen ...	" 2.5.26 to 23.5.26 ...	28.6.26.
<i>Deseado</i> ...	Hannam, F. S. ...	C. C. Dingle, L. D. Jennings	" M.	R.M.S.P. Co. ...	" 19.4.26 to 13.6.26 ...	17.6.26.
<i>Desna</i> ...	Huff, G. F. ...	J. W. Smith ...	" M.	" ...	" 1.5.26 to 27.6.26 ...	3.7.26.
<i>Deucalion</i> ...	Findlay, J. ...	W. L. Michie, R. Wilson ...	" A.	A. Holt ...	" 20.5.26 to 17.6.26 ...	19.7.26.
<i>Dieppe</i> ...	Marmery, S. ...	Mr. Parsons ...	C.C.	Southern Railway ...	Telegraphic Report 13.8.26 ...	13.8.26.
<i>Dimboola</i> ...	Roy, C. M. ...	G. A. Molyneux ...	No. A.	Melbourne S.S. Co. ...	Form 911 14.5.26 to 17.7.26 ...	9.8.26.
<i>Discoverer</i> ...	Ling, J. T. ...	C. C. Heaton ...	" M.	Harrison ...	" 28.3.26 to 16.6.26 ...	24.6.26.
<i>Discovery, R.R.S.</i> ...	Stenhouse, J. R., D.S.O., D.S.C., O.B.E., R.D., Commr., R.N.R.	T. W. Goodchild ...	M.L.	Discovery Expedition	Met. Log. 8.1.23 to 7.5.26 ...	11.8.26.
<i>Domala, M.V.</i> ...	Buswell, W. ...	C. E. Merchant ...	No. M.	British India ...	Form 911 20.2.26 to 21.4.26 ...	6.5.26.
<i>Dominia, C.S.</i> ...	Campos, V., O.B.E., Lt.-Commr., R.N.R.	" ...	M.L.	Telegraph Construction and Maintenance.	" ...	" ...
<i>Doric</i> ...	S. Bolton, D.S.C., R.D., Commr., R.N.R.	W. F. Dennison ...	No. A.	White Star ...	Form 911 9.7.26 to 31.7.26 ...	4.8.26.
<i>Doric Star</i> ...	Thomas, R. T. ...	L. McDermott ...	" M.	Blue Star ...	" 28.6.26 to 15.7.26 ...	26.7.26.
<i>Dorington Court</i> ...	Isaacs, W. A. ...	E. D. A. Gibbs ...	" A.	Haldin & Co. ...	" 12.9.25 to 6.11.25 ...	20.11.25.
<i>Dorset</i> ...	Kettlewell, C. R. ...	E. Smith, H. S. Rogers, S. T. Woodhouse.	M.L.	New Zealand S.S. Co. ...	Met. Log. 13.6.25 to 29.12.25...	6.1.26.
<i>Dromore Castle</i> ...	Vincent, E. S., R.D., Commr., R.N.R.	D. H. McDougall ...	No. A.	Union Castle ...	Form 911 11.4.26 to 17.5.26 ...	31.5.26.
<i>Dryden</i> ...	Major, T. W. ...	G. W. Major ...	" M.	Lampart & Holt ...	" 12.6.26 to 29.6.26 ...	26.7.26.
<i>Duendes</i> ...	Cox, F. D. ...	H. Jones ...	" M.	P.S.N. Co. ...	" 15.2.26 to 3.3.26 ...	8.3.26.
<i>Dundrum Castle</i> ...	Weller, H. E. ...	W. S. Byles ...	" A.	Union Castle ...	" 5.5.26 to 7.6.26 ...	28.6.26.
<i>Dunrobin</i> ...	Ramsay, J. D. ...	C. H. Kindall ...	" A.	Glen & Co. ...	" 14.7.26 to 27.7.26 ...	9.8.26.
<i>Duquesa</i> ...	Ellis, F., D.S.C. ...	W. Myerscough, W. D. Thornton.	" M.	Furness Withy ...	" 19.4.26 to 14.7.26 ...	19.7.26.
<i>Durenda</i> ...	Wilson, W. ...	K. G. Pullman ...	" M.	British India ...	" 1.1.26 to 9.1.26 ...	1.2.26.
<i>Edinburgh Castle</i> ...	Wilford, T. H. ...	" ...	No.	Union Castle ...	Met. Log. 8.1.26 to 24.1.26 ...	29.5.26.
<i>Egyptian Prince</i> ...	Ord, T. ...	" ...	"	Prince ...	" ...	" ...
<i>El Cordobes</i> ...	Noton, F. G. ...	S. C. N. Burrigge ...	No. A.	British & Argentine S.N. Co.	Form 911 15.4.26 to 14.5.26 ...	25.5.26.
<i>Elmina</i> ...	Millson, H. E. ...	H. Readman, J. M. Stuart, D. S. Mackenzie, J. A. McGough.	M.L.	Elder Dempster ...	Met. Log. 2.12.25 to 19.4.26 ...	25.5.26.
<i>El Paraguayo</i> ...	Smith, F. C. ...	J. Allerton ...	No. M.	Houlder Bros. ...	Form 911 18.4.26 to 9.7.26 ...	12.7.26.
<i>Elpenor</i> ...	T. W. Hannay ...	M. Robertson ...	M.L.	A. Holt ...	Met. Log. 1.11.25 to 1.3.26 ...	4.3.26.
<i>Elysia</i> ...	Duncan, A. R. ...	" ...	"	Anchor ...	" ...	" ...
<i>Empress of Asia</i> ...	Douglas L. D., R.D., Lt.-Com m r., R.N.R.	R. H. Foley, L. Johnston, L. C. Hogg, T. M. W. Golby.	"	Canadian Pacific ...	Met. Log. 8.2.26 to 16.5.26 ...	23.6.26.
<i>Empress of Australia</i> ...	Hailey, A. J. ...	R. Leicester, J. Downes ...	"	" ...	" 21.3.25 to 17.12.25...	12.1.26.
<i>Empress of Canada</i> ...	Robinson, S., C.B.E., R.D., Commr., R.N.R.	W. S. Halliday, L. C. Barry, J. W. Thomas.	"	" ...	" 20.2.26 to 30.5.26 ...	28.6.26.
<i>Empress of France</i> ...	Griffiths, E. ...	E. Roberts, F. Chodzko, W. Ewens.	"	" ...	" 27.1.26 to 13.4.26 ...	19.4.26.
<i>Empress of Russia</i> ...	Hosken, A. J. ...	G. R. Newell, H. B. Metcalfe, J. S. Clark, J. H. Reid.	"	" ...	" 17.10.25 to 22.2.26 ...	29.3.26.
<i>Empress of Scotland</i> ...	Latta, R. G. ...	B. Grant, W. Bacon, F. G. Hutchings.	"	" ...	" 14.11.25 to 20.4.26...	26.4.26.
<i>Endeavour</i> ...	Commr. S. A. Geary-Hill, D.S.O., R.N.	R. M. Southern, G. S. Norrington, B. V. B. Baker, E. H. B. Baker, J. Torlesse.	"	His Majesty's Ship ...	" 3.3.26 to 30.6.26 ...	17.7.26.
<i>Essequibo</i> ...	Duncan, E. E. ...	A. Lyall ...	No. M.	R.M.S.P. Co. ...	Form 911 21.5.26 to 5.7.26 ...	16.7.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Eumaeus</i> ...	Read, J. W. ...	W. J. Ryan ...	No. A.	A. Holt ...	Form 911 28.6.26 to 7.8.26 ...	10.8.26.
<i>Euripides</i> ...	Roberts, T. V. ...	H. S. Cox, G. R. Fisher, G. Perry. ...	M.L.	Aberdeen ...	Met. Log. 17.7.25 to 16.4.26 ...	23.4.26.
<i>Eurybates</i> ...	Carnon, C. G. ...	C. Napier ...	No. A.	A. Holt ...	Form 911 9.4.26 to 28.4.26 ...	31.5.26.
<i>Explorer</i> ...	Lamont, A. ...	Scientific Staff ...	M.L.	Scottish Fishery Board	Met. Log. 2.3.25 to 17.10.25 ...	29.12.25.
<i>Ferdale</i> ...	Daniel, F. ...	D. Jones, A. Murdoch ...	No. M.	Commonwealth Govt.	Form 911 14.5.26 to 17.6.26 ...	22.6.26.
<i>Fitzroy</i> ...	Silk, H. V., Lt-Commr., R.N.	M. E. Welby ...	M.L.	His Majesty's Ship ...	Met. Log. 25.8.25 to 16.11.25...	21.11.25.
<i>Flandria</i> ...	Veldkamp, G. J. ...	T. Doornbosch ...	No. M.	Holland Lloyd ...	Form 911 14.5.26 to 1.7.26 ...	3.7.26.
<i>Flinders</i> ...	Law, E. F. B., Lt-Commr., R.N.	D. W. Deane ...	M.L.	His Majesty's Ship ...	Met. Log. 27.3.26 to 24.7.26 ...	6.8.26.
<i>Francisco</i> ...	Collins, F. ...	C. Walker ...	No. A.	Ellerman Wilson ...	Form 911 23.1.26 to 5.2.26 ...	15.2.26.
<i>Freya</i> ...	Angus, W. ...	J. Murray ...	" A.	Scottish Fishery Board	" 9.7.26 to 30.7.26 ...	4.8.26.
<i>Garret</i> ...	Visser, C. W. ...	C. J. Van denboom ...	" M.	Rotterdam Lloyd ...	" 20.1.26 to 20.2.26 ...	12.4.26.
<i>Gascoyne</i> ...	Rutt, W. N. ...	R. Simpson ...	" A.	Dalgety & Co. ...	" 19.1.26 to 24.2.26 ...	30.3.26.
<i>Gelria</i> ...	Bakker, T. J. ...	T. van der Mast ...	" M.	Holland Lloyd ...	" 28.5.26 to 15.7.26 ...	26.7.26.
<i>Glenamoy, M.V.</i> ...	Homan, C. E. ...	K. H. Bishop ...	" A.	Glen Line ...	" 11.7.26 to 23.7.26 ...	3.8.26.
<i>Glenapp, M.V.</i> ...	Roberts, W. E. ...	S. W. Bell ...	" A.	" ...	" 14.11.25 to 27.12.25 ...	4.1.26.
<i>Glenishane</i> ...	Beer, E. ...	R. A. Dale ...	" A.	" ...	" 22.3.26 to 8.7.26 ...	12.7.26.
<i>Gloucestershire</i> ...	Robin, E. ...	M. W. Simmons ...	" A.	Bibby ...	" 8.5.26 to 19.7.26 ...	21.7.26.
<i>Gorgon</i> ...	Hughes, J. W. ...	E. W. Powell ...	" A.	A. Holt & Co. ...	" 30.5.26 to 15.6.26 ...	26.7.26.
<i>Gourko</i> ...	Aspinall, A. E. ...	G. B. Bray, S. N. Stokes, J. D. Birch. ...	No.	Ellerman Wilson ...	Met. Log. 16.5.26 to 1.11.25 ...	10.12.25.
<i>Haliartus</i> ...	Marsh, L. V. ...	W. H. Upton ...	No. A.	R. P. Houston ...	Form 911 11.4.26 to 8.5.26 ...	7.6.26.
<i>Harmony, Auxy.</i> ...	Jackson, J. C. ...	A. W. Bush ...	" A.	Moravian Mission ...	" 1.12.25 to 18.12.25...	29.12.25.
<i>Hatarana</i> ...	Denne, G. H. A., Beedle, T. S.	F. Wells, C. Parkes, W. T. Barnes. ...	M.L.	British India ...	" 12.6.25 to 27.2.26 ...	29.3.26.
<i>Hauraki, M.V.</i> ...	Davey, A. H. ...	J. A. Pearson ...	No. M.	Union S.S. Co. N.Z. ...	" 12.1.26 to 17.3.26 ...	29.4.26.
<i>Henry Holmes, C.S.</i> ...	Bicker Caarten, A.	R. J. M. Pearce ...	" M.	W. I. & Panama Telegraph Co.	" 6.9.25 to 4.4.26 ...	28.6.26.
<i>Herald</i> ...	Harvey, J. R., O.B.E., Commr., R.N.	W. C. Jenks ...	M.L.	His Majesty's Ship ...	Met. Log. 25.9.25 to 25.12.25	24.2.26.
<i>Herefordshire</i> ...	Mann, R. P. ...	H. R. Mackay ...	No. A.	Bibby ...	Form 911 25.4.26 to 3.7.26 ...	12.7.26.
<i>Herschel</i> ...	Davies, G. W. ...	J. M. Edgar ...	" A.	Lampport & Holt ...	" 14.10.25 to 15.12.25	29.12.25.
<i>Hertford</i> ...	Urguhart, D. ...	A. Robertson ...	" A.	Federal ...	" ...	" ...
<i>Hibernia</i> ...	Tanner, E. B. ...	R. Woodall ...	C.C.	L.M. & S. Rly. ...	Telegraphic Report, 12.8.26 ...	12.8.26.
<i>Highland Enterprise</i> ...	Pond, R. H. ...	J. H. Tilton ...	No. A.	Nelson ...	Form 911 12.12.25 to 11.2.26...	10.3.26.
" <i>Glen</i> ...	Jones, T. J. ...	W. Jealous ...	" A.	" ...	" 29.3.26 to 26.5.26 ...	31.5.26.
" <i>Heather</i> ...	Powell, G. A. ...	J. H. Fitton, J. Hardy ...	" A.	" ...	" 13.12.25 to 24.6.26 ...	14.7.26.
" <i>Laddie</i> ...	Alford, C. ...	E. F. Smart ...	" A.	" ...	" 15.3.26 to 8.5.26 ...	19.5.26.
" <i>Piper</i> ...	Collings, D. ...	A. S. Jones, J. S. Collins, W. T. Breen, E. F. Smart. ...	M.L.	" ...	Met. Log. 20.6.25 to 3.11.25 ...	18.11.25.
" <i>Pride</i> ...	Davies, G. A. ...	F. Falconer, R. R. Soanes, G. E. Leech. ...	No.	" ...	" 5.12.25 to 31.1.26 ...	4.2.26.
" <i>Prince</i> ...	Brown, J. B. ...	N. Hunter ...	No. A.	Prince ...	Form 911 9.7.26 to 6.8.26 ...	12.8.26.
" <i>Rover</i> ...	Ashby Graves, F. ...	C. C. Legg ...	" A.	Nelson ...	" 25.5.26 to 19.7.26 ...	30.7.26.
" <i>Warrior</i> ...	Robinson, R. H. ...	J. O. Simons ...	" M.	" ...	" 25.3.26 to 19.5.26 ...	26.5.26.
<i>Hildebrand</i> ...	Maddrell, J. ...	A. Allan ...	" A.	Booth ...	" 22.5.26 to 8.7.26 ...	13.7.26.
<i>Hobsons Bay</i> ...	Kydd, O. J. ...	R. Pearce, A. Badman, T. Morrison, H. Hendy. ...	M.L.	Commonwealth Govt.	Met. Log. 30.3.26 to 11.7.26 ...	17.7.26.
<i>Holbein</i> ...	Gough, W. A. ...	H. L. Rudd ...	No. A.	Lampport & Holt ...	Form 911 13.2.26 to 28.4.26 ...	5.5.26.
<i>54 Homeric</i> ...	Holme, A. ...	A. E. Dyer, J. W. Best ...	W.T.	White Star ...	W.T. Reg. 16.7.26 to 30.7.26 ...	3.8.26.
<i>Honorata</i> ...	Holland, E. ...	H. J. Wilde ...	No. A.	New Zealand S.S. Co.	Form 911 16.7.25 to 27.1.26 ...	2.2.26.
<i>Hubert</i> ...	Pym, J. H. ...	S. G. Edwards ...	" A.	Booth ...	" 28.3.26 to 8.6.26 ...	3.7.26.
<i>Hurunui</i> ...	Burton Davies, J. ...	J. C. Tuckett, F. G. Capon, F. Pover, G. R. Hogg. ...	M.L.	New Zealand S.S. Co.	Met. Log. 21.6.25 to 6.7.26 ...	14.7.26.
<i>Ingoma</i> ...	Barrow, R. K. ...	A. M. Hughes ...	No. M.	Harrison ...	Form 911 16.6.26 to 31.7.26 ...	6.8.26.
<i>Intaba</i> ...	Gibbins, W. A. ...	A. H. Thompson ...	" A.	" ...	" 30.5.26 to 13.7.26 ...	16.7.26.
<i>Iris, C.S.</i> ...	Hughes, H. R. ...	" ...	M.L.	Pacific Cable Board ...	" ...	" ...
<i>Iroquois</i> ...	Jackson, A. L., Commr., R.N.	A. K. Baxendell ...	"	His Majesty's Ship ...	Met. Log. 17.8.25 to 30.11.25...	27.1.26.
<i>Ixion</i> ...	Williams, R. J. ...	A. S. Brotherton ...	No. A.	A. Holt ...	Form 911 21.3.26 to 22.5.26 ...	7.6.26.
<i>Japanese Prince</i> ...	Naylor, E. ...	T. H. Sessions ...	" A.	Prince ...	" 22.4.26 to 22.7.26 ...	3.8.26.
<i>Jervis Bay</i> ...	Chaplin, W. R. ...	R. W. Laycock ...	" M.	Commonwealth Govt.	" 16.5.26 to 18.6.26 ...	24.6.26.
<i>John Pender, C.S.</i> ...	Smythe, T. W. ...	A. E. Everall ...	" A.	Eastern Tel. Co. ...	" 18.5.26 to 11.6.26 ...	29.6.26.
<i>Justin</i> ...	Evans, L. ...	A. R. Fasting ...	" A.	Booth ...	" ...	" ...
<i>Kaikoura</i> ...	McNish, R. ...	C. A. H. Landfield, F. Cooke, C. H. Tilston ...	M.L.	New Zealand S.S. Co.	Met. Log. 19.9.25 to 19.6.26 ...	29.6.26.
<i>Kaisar-i-Hind</i> ...	Manley, G. ...	G. R. Baker ...	No. M.	P. & O. ...	Form 911 19.6.26 to 6.7.26 ...	16.7.26.
<i>Kamo Maru</i> ...	Shiratori, S. ...	H. Yesaki ...	" A.	Nippon Yusen Kaisha	" 13.6.26 to 13.7.26 ...	21.7.26.
<i>Kangaroo</i> ...	Norris, H. C. ...	R. J. Sinclair, V. J. Denton, J. Egglestone. ...	M.L.	State Service Australia	Met. Log. 21.9.25 to 27.2.26 ...	14.6.26.
<i>Kashmir</i> ...	Stringer, R.H., O.B.E., R.D., Commr., R.N.R.	J. H. Anderson ...	No. M.	P. & O. ...	Form 911 22.5.26 to 27.6.26 ...	12.8.26.
<i>Kathlamba</i> ...	Mordue, J. A. ...	" ...	" A.	Ellerman Bucknall ...	" 26.6.26 to 16.7.26 ...	3.8.26.
<i>Kellett</i> ...	Maxwell, P. S. E., Commr., R.N.	D. G. V. Williams ...	M.L.	His Majesty's Ship ...	Met. Log. 29.7.25 to 16.11.25...	18.11.25.
<i>Kenilworth Castle</i> ...	Chave, Sir B., K.B.E., Attwood, J., Owen, S. ...	H. L. Iddes, T. M. Gordon ...	"	Union Castle ...	" 17.1.26 to 11.7.26 ...	15.7.26.
<i>Kent</i> ...	Downton, M. M. ...	F. M. Knight ...	No. A.	New Zealand S.S. Co.	Form 911 26.4.26 to 17.5.26 ...	24.6.26.
<i>Khyber</i> ...	Browning, J. B., R.D., Commr., R.N.R.	C. B. Roche ...	" M.	P. & O. ...	" 16.6.26 to 19.7.26 ...	23.7.26.
<i>Kia Ora</i> ...	McIntosh, A. ...	E. A. Hickling ...	M.L.	Shaw Savill & Albion	" 27.2.26 to 9.4.26 ...	13.4.26.
<i>Kildonan Castle</i> ...	Imiah, C. B. ...	G. H. Pickering ...	No. A.	Union Castle ...	" 2.1.26 to 21.2.26 ...	1.3.26.
<i>Kitano Maru</i> ...	Gotoh, M. ...	M. Hara ...	" A.	Nippon Yusen Kaisha	" 12.9.25 to 6.10.25 ...	13.11.25.
<i>Knight Companion</i> ...	Read, G. C. ...	J. J. Daniel ...	" M.	A. Holt ...	" 29.4.26 to 15.5.26 ...	26.5.26.
<i>Kovno</i> ...	Dossor, W. A. ...	J. J. Collier, H. Redfern, S. Duckells, A. Snowdon, J. C. Nettleship, C. Williams. ...	M.L.	Ellerman Wilson ...	Met. Log. 7.11.25 to 4.4.26 ...	3.6.26.
<i>Kweiyang</i> ...	Byers, G. ...	" ...	" A.	China Nav. Co.	" ...	" ...
<i>Kyogle</i> ...	Coalstad, C. ...	C. B. Odman, E. W. Hughes ...	No. A.	Commonwealth Light-house Service.	Form 911 17.8.25 to 9.11.25 ...	14.12.25.
<i>Lady Denison Pender, C.S.</i> ...	West, G. W., Pattison, G. H. ...	F. Lawrence ...	" A.	Eastern Tel. Co. ...	" 9.5.26 to 7.7.26 ...	7.8.26.
<i>Laguna</i> ...	Kirkwood, J. H. ...	W. P. Boon ...	" A.	Pacific S.N. Co. ...	" 25.6.26 to 13.7.26 ...	3.8.26.
<i>Lahore</i> ...	Gordon, L. M., R.D., Commr., R.N.R.	A. D. Dennis ...	" M.	P. & O. ...	" 26.2.26 to 27.4.26 ...	17.5.26.
<i>Lalande</i> ...	Hamill, H. ...	R. S. Hagley ...	" A.	Lampport & Holt ...	" 30.3.26 to 12.4.26 ...	15.6.26.
<i>Lanashire</i> ...	de Legh, P. ...	R. Cumming ...	" A.	Bibby ...	" 19.6.26 to 8.7.26 ...	12.8.26.

LIST OF VOLUNTARY OBSERVING SHIPS

V

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received
36 <i>Lancastria</i> ...	Malin, R. G., Lt.-Commr., R.N.R.	R. P. Campbell, L. R. Sharp, F. G. Russell	W.T.	Cunard ...	W.T. Reg. 20.6.26 to 6.7.26 ...	19.7.26.
<i>Laomedon</i> ...	Beswick, W., D.S.C., Lt.-Commr., R.N.R.	A. Yarwood ...	No. A	A. Holt ...	Form 911 19.6.26 to 8.7.26 ...	19.7.26.
<i>La Paz, M.V.</i> ...	Dunn, R. E. ...	F. T. Gale ...	" M.	Pacific S.N. Co. Lampport & Holt ...	" 13.2.26 to 4.3.26 ...	25.3.26.
<i>Laplace</i> ...	Shaw, W. ...	R. B. Langley ...	No. A.	"	" 6.5.26 to 31.5.26 ...	10.6.26.
55 <i>Lapland</i> ...	Howell, T. ...	E. Cornellie, F. Good, Flett ...	W.T.	Red Star ...	Met. Log. 1.1.26 to 8.5.26 ...	17.5.26.
<i>Lassell, M.V.</i> ...	Hickman, V. T. ...	F. J. Durrant ...	No. A.	Lampport & Holt ...	W.T. Reg. 30.5.26 to 19.6.26 ...	23.6.26.
<i>Leicestershire</i> ...	English, G. L. ...	J. Cullen, W. A. Kent, D. Y. Sharrock, J. Logan.	M.L.	Bibby ...	Form 911 17.10.25 to 7.11.25 ...	9.11.25.
<i>Leighton, M.V.</i> ...	Lindesay, J. M. ...	H. A. Bolding ...	No. A.	Lampport & Holt ...	Met. Log. 20.2.26 to 9.3.26 ...	29.3.26.
<i>Leitrim</i> ...	Robertson, A. ...	H. G. Lettis ...	" A.	Dowie, J., & Co. ...	Met. Log. 9.4.26 to 19.6.26 ...	1.7.26.
<i>Loch Katrine</i> ...	Shillitoe, B. ...	K. Whitaker ...	" M.	R.M.S.P. Co. ...	Form 911 2.3.26 to 3.4.26 ...	19.4.26.
<i>London Commerce</i> ...	Young, H. J., D.S.C.	H. P. Longland ...	" A.	Furness Withy ...	" 14.3.26 to 22.4.26 ...	31.5.26.
<i>London Importer</i> ..	Williamson, J. M. ...	J. S. Williams, A. B. Gloyne	M.L.	"	" 9.3.26 to 30.5.26 ...	7.6.26.
<i>Loriga, M.V.</i> ...	Makin, F. W. ...	W. N. Anders ...	No. A.	Pacific S.N. Co. ...	Met. Log. 13.3.26 to 16.4.26 ...	22.4.26.
<i>Losada, M.V.</i> ...	Meldrum, G. W. ...	E. Baxter ...	" M.	"	Form 911 8.2.26 to 26.4.26 ...	28.5.26.
					Met. Log. 16.10.25 to 2.4.26 ...	13.8.26.
					" 23.11.25 to 15.2.26 ...	18.2.26.
<i>Macedonia</i> ...	Potter, H. W., R.D., Commr., R.N.R.	E. R. Bodley ...	" M.	P. & O. ...	" 1.5.26 to 22.5.26 ...	31.5.26.
<i>Macharda</i> ...	Richardson, T. ...	D. M. Fulton ...	" M.	Brocklebank ...	" 3.6.26 to 18.6.26 ...	12.7.26.
<i>Mahana</i> ...	Kershaw, W. A. R. ...	F. M. Smith, J. C. K. Rogers	M.L.	Shaw, Savill & Albion	" 13.1.26 to 20.2.26 ...	1.3.26.
<i>Maharaja</i> ...	Elliott, G. F. ...	T. E. Turner ...	No. M.	Asiatic S.N. Co. ...	" 18.4.26 to 25.5.26 ...	14.6.26.
<i>Mahia</i> ...	Williams, G. ...	R. Naeff ...	No.	Shaw, Savill & Albion	"	"
<i>Mahar</i> ...	Rowe, J. P. ...	C. Shaw, H. T. Scoins, G. Henshaw.	M.L.	Brocklebank ...	Met. Log. 20.3.26 to 23.6.26 ...	15.7.26.
<i>Maimyo</i> ...	Scurr, T. W. ...	H. M. Drummond ...	No. A.	"	Form 911 25.4.26 to 4.6.26 ...	6.7.26.
<i>Maiwara</i> ...	Brown, T. M. ...	"	M.L.	Burns Philp ...	"	"
58 <i>Majestic</i> ...	Metcalfe, G. R. ...	W. Pearson, J. Paine, A. Young, W. T. Fitzgerald.	W.T.	White Star ...	W.T. Reg. 9.7.26 to 22.7.26 ...	26.7.26.
<i>Makambo</i> ...	McLean, J. ...	F. C. Vogelmann, T. R. Lang, W. O. L. Wilding.	M.L.	Burns Philp ...	Met. Log. 3.3.26 to 15.6.26 ...	10.8.26.
<i>Makura</i> ...	Worrall, L. C. H. ...	O. C. Bray, J. M. Hood, A. Foster.	"	Canadian-Australasian	" 11.3.25 to 19.2.26 ...	4.5.26.
<i>Malabar</i> ...	"	"	"	Burns, Philp & Co. ...	"	"
<i>Malakuta</i> ...	Adamson, F. L. ...	J. H. Round ...	No. M.	Brocklebank ...	Form 911 28.2.26 to 12.4.26 ...	26.4.26.
<i>Malancha</i> ...	Sharpe, G. ...	R. Humble ...	" M.	"	" 17.7.26 to 27.7.26 ...	4.8.26.
<i>Malda</i> ...	Gray, T. N. ...	J. McLean Brown ...	" M.	British India	" 24.5.26 to 28.6.26 ...	3.7.26.
<i>Mamari</i> ...	Falconer, H. ...	"	No.	Shaw, Savill & Albion	"	"
<i>Manchester Brigade</i> ...	Stott, C. H. ...	E. Hale ...	" A.	Manchester Liners	Form 911 3.6.26 to 1.7.26 ...	6.7.26.
<i>Manchester Corporation.</i>	Everest, J. E. ...	W. L. Lavers ...	" A.	"	" 5.6.26 to 18.6.26 ...	24.6.26.
<i>Manchester Hero</i> ...	Riley, J. E. ...	J. H. Emmitt, H. Anderton, B. M. Brown.	M.L.	"	Met. Log. 3.10.25 to 20.7.26 ...	27.7.26.
<i>Manchester Merchant.</i>	Struss, F. D. ...	E. W. Jeffries ...	No. A.	"	Form 911 2.5.26 to 16.6.26 ...	22.6.26.
<i>Manchester Shipper</i>	Dormer, A. E. ...	"	M.L.	"	Met. Log. 19.9.25 to 8.5.26 ...	31.5.26.
<i>Manipur</i> ...	Cochran, G. N. ...	R. Penston ...	No. M.	Brocklebank ...	Form 911 2.3.26 to 16.5.26 ...	17.6.26.
<i>Mantua</i> ...	Randell, G. G. ...	J. Paice ...	" M.	P. & O. ...	" 20.5.26 to 23.7.26 ...	26.7.26.
<i>Manzanares</i> ...	Maxwell Brown, W. E.	G. S. Gracie ...	" A.	Elders & Fyffes	" 10.11.25 to 25.11.25 ...	4.1.26.
<i>Marburn</i> ...	Stewart, A. ...	R. H. W. Jackson ...	" M.	Canadian Pacific	" 24.4.26 to 17.5.26 ...	20.5.26.
<i>Marella</i> ...	Mortimer S. ...	J. A. Street ...	M.L.	Burns Philp	Met. Log. 2.4.25 to 25.8.25 ...	1.12.25.
<i>Marengo</i> ...	Collins, T. ...	F. Eghin, J. E. Stott, J. Donovan, B. Bryon, J. Ford	"	Ellerman Wilson	" 19.9.25 to 8.3.26 ...	16.3.26.
<i>Margha</i> ...	Brown, A. M. ...	"	"	"	"	"
<i>Marsina</i> ...	Milne, R. A., R.D., Commr., R.N.R.	J. Strachan, P. Wright, J. Ball.	"	British India	" 21.2.26 to 2.5.26 ...	4.6.26.
<i>Mastrah</i> ...	Williams, G. E. ...	N. Morrison ...	No. A.	Burns, Philp & Co. ...	Form 911 20.5.26 to 25.6.26 ...	3.8.26.
<i>Matakana</i> ...	Mallett, R. ...	"	No.	Brocklebank	"	"
	Thurston, H. P. ...	H. W. Thompson, J. Hart, S. P. Stockholm, Turnbull.	M.L.	Shaw, Savill & Albion	Met. Log. 28.2.26 to 14.7.26 ...	22.7.26.
<i>Mataram</i> ...	Hutchison, W. ...	K. L. Thompson ...	No. A.	Burns Philp & Co. ...	Form 911 12.3.26 to 28.5.26 ...	12.7.26.
<i>Matheran</i> ...	Williams, J. D. Sandeman, W. ...	R. E. Gartside, S. W. Barker, H. B. Kelly.	M.L.	Brocklebank ...	Met. Log. 14.11.25 to 27.3.26 ...	23.6.26.
<i>Mathura</i> ...	Bacon, A. E. ...	H. H. Armstrong ...	No. M.	"	Form 911 1.2.26 to 3.3.26 ...	8.3.26.
<i>Mathiana</i> ...	Langlands, D. H. ...	G. Earl ...	" M.	British India	" 29.4.26 to 27.5.26 ...	31.5.26.
<i>Mawngauvi</i> ...	Davey, A. H. ...	T. A. MacPherson ...	" M.	Union S.S. Co. of N.Z.	" 22.5.26 to 31.5.26 ...	12.7.26.
32 <i>Mauventania</i> ...	Rostron, Sir A. H., K.B.E., R.D., Capt., R.N.R.	E. R. Taylor, A. Mackellar, L. L. Harper.	W.T.	Cunard ...	W.T. Reg. 20.6.26 to 5.7.26 ...	8.7.26.
<i>Media</i> ...	Mallett, R. ...	S. C. Cramb ...	No. A.	T. & J. Brocklebank...	Form 911 2.5.26 to 28.6.26 ...	7.7.26.
56 <i>Megantic</i> ...	Trant, E. L., Commr., R.N.R.	F. A. Billiard, J. Clarke, N. E. Banks.	W.T.	White Star ...	W.T. Reg. 4.7.26 to 24.7.26 ...	28.7.26.
22 <i>Melita</i> ...	Notley, A. H. ...	J. Shearer, D. Dunn ...	"	Canadian Pacific	" 3.7.26 to 21.7.26 ...	23.7.26.
<i>Memnon</i> ...	Evans, D. I. ...	L. S. Evans ...	No. A.	A. Holt ...	Form 911 30.11.25 to 17.12.25 ...	21.12.25.
<i>Menominee</i> ...	Pollard, W. F., D.S.O., R.D., Capt., R.N.R.	R. Day ...	" A.	Atlantic Transport ...	" 16.11.25 to 3.3.26 ...	13.3.26.
					" 15.10.25 to 21.11.25 ...	25.11.25.
<i>Mercian</i> ...	Gardner, J. ...	R. Hughes ...	" A.	Leyland ...	" 12.9.25 to 20.9.25 ...	23.9.25.
21 <i>Metagama</i> ...	Freer, A., Commr., R.N.R.	R. Walker, A. Mansey ...	W.T.	Canadian Pacific ...	W.T. Reg. 4.7.26 to 23.7.26 ...	26.7.26.
<i>Miami</i> ...	Makepeace, S. ...	A. F. Woodhouse, J. W. Kendall.	No. A.	Elders & Fyffes ...	Form 911 20.10.25 to 21.11.25 ...	24.11.25.
<i>Minderoo</i> ...	Richardson, E. ...	B. J. Bennie, W. J. McPhedran, J. H. Oxtan.	M.L.	West Australia Nav. Co.	Met. Log. 10.11.25 to 1.5.26 ...	6.7.26.
<i>Mima</i> ...	Mackenzie, G. G. ...	J. H. Hennessey ...	No. A.	Scottish Fishery Board	Form 911 23.6.26 to 11.8.26 ...	12.8.26.
23 <i>Minnedosa</i> ...	McQueen, D. S. ...	L. Hammersley, F. W. Roberts, W. F. MacGowan.	W.T.	Canadian Pacific ...	W.T. Reg. 19.6.26 to 7.7.26 ...	19.7.26.
<i>Minnetonka</i> ...	Gates, T. F., C.B.E.	H. E. McCartney ...	No. M.	Atlantic Transport ...	Form 911 19.7.26 to 7.8.26 ...	10.8.26.
<i>Minnewaska</i> ...	Claret, F. H., C.B.E., Commr., R.N.R.	A. T. Smith ...	" M.	"	" 5.7.26 to 24.7.26 ...	27.7.26.
<i>Mirror, C.S.</i> ...	Gibson, L. ...	A. G. Watts ...	" M.	Eastern Tel. Co. ...	" 5.5.26 to 17.5.26 ...	22.6.26.
<i>Moldavia</i> ...	Burleigh, C. W., D.S.O., R.D., Capt., R.N.R.	G. E. Owen ...	" M.	P. & O. ...	" 7.4.26 to 23.5.26 ...	10.6.26.
<i>Mongolian Prince</i>	Durrant, G. D. ...	M. Gibson ...	" A.	Prince ...	" 13.9.25 to 15.10.25 ...	26.10.25.
<i>Monkbarns, Ship</i>	Davies, W. ...	R. Baise ...	" A.	J. Stewart & Co. ...	" 23.10.25 to 16.11.25 ...	29.12.25.
24 <i>Montcalm</i> ...	Hamilton, G. ...	H. McFadyen ...	W.T.	Canadian Pacific ...	W.T. Reg. 18.7.26 to 6.8.26 ...	9.8.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
25 <i>Montclare</i> ...	Webster, G. S., R.D., Lt.-Commr., R.N.R.	R. Fegan, H. S. Knight, A. Harrison, E. F. Aikman.	W.T.	Canadian Pacific ...	W.T. Reg. 27.6.26 to 17.7.26 ... Form 911 27.6.26 to 16.7.26 ...	20.7.26. 20.7.26.
<i>Montferland</i> ...	Van Noppen, C. D.	W. Slooten ...	No. M.	Holland Lloyd ...	1.4.26 to 26.6.26 ...	3.7.26.
27 <i>Montnairn</i> ...	Turnbull, J., C.B.E., R.D., Capt., R.N.R.	F. E. Williams, B. Leslie, T. Jones.	W.T.	Canadian Pacific ...	W.T. Reg. 18.7.26 to 5.8.26 ...	9.8.26.
<i>Montoro</i> ...	Donaldson, A.	K. Morris ...	No. A.	Burns, Philp & Co. ...	Form 911 2.9.25 to 19.10.25 ...	14.12.25.
26 <i>Montrose</i> ...	Landy, E.	A. Watt, R. Woods, J. Patrick.	W.T.	Canadian Pacific ...	W.T. Reg. 21.3.26 to 4.6.26 ...	17.6.26.
20 <i>Montroyal</i> ...	Sibbons, H.	J. H. Tudor, W. P. Hains ...	"	" "	Form 911 4.7.26 to 22.7.26 ... Met. Log. 3.7.26 to 22.7.26 ...	26.7.26. 26.7.26.
<i>Moresby</i> ...	Edgell, J. A., O.B.E., Capt., R.N.	C. F. Mills ...	M.L.	His Majesty's Australian Ship.	Met. Log. 4.7.25 to 13.12.25	10.2.26.
<i>Morvada</i> ...	Mills, T. L., O.B.E., R.D., Commr., R.N.R.	A. J. Norris ...	No. M.	British India ...	Form 911 14.3.26 to 4.6.26	8.6.26.
<i>Mulbera</i> ...	Steadman, W. R.	F. Broomhead ...	" M.	"	" 22.5.26 to 6.7.26 ...	8.7.26.
<i>Nagara</i> ...	Buret, T. J. C.	F. A. C. Thacker ...	" M.	R.M.S.P. Co. ...	" 16.1.26 to 19.3.26 ...	26.3.26.
<i>Nagoya</i> ...	Davis, H. C.	P. Haworth ...	" M.	P. & O. ...	" 23.1.26 to 14.2.26 ...	8.3.26.
<i>Nardana</i> ...	Moth, F. L.	S. C. T. Smith ...	" M.	British India ...	" 15.9.25 to 25.10.25 ...	31.10.25.
<i>Nellore</i> ...	Hignett, A. H., R.D., Lt.-Commr., R.N.R.	S. H. Baldwin ...	" M.	P. & O. ...	" 20.3.26 to 12.6.26 ...	14.7.26.
<i>Nestor</i> ...	Owen, R. D., O.B.E.	D. Rees, F. J. Silva, D. W. Stroud.	M.L.	A. Holt ...	Met. Log. 24.1.26 to 30.5.26 ...	4.6.26.
<i>Newby Hall</i> ...	Edge, T. P.	R. H. Stewart, G. E. M. Jenkins, R. M. Redhead, D. F. Galloway.	"	Ellerman ...	" 18.12.25 to 15.5.26 ...	10.6.26.
<i>Niagara</i> ...	Showman, A. C.	J. Dawson, A. P. Cousin, D. McKenzie, T. Haulton.	"	Canadian-Australian ...	" 14.1.26 to 28.5.26 ...	23.6.26.
<i>Ningchow</i> ...	Wilson, C. A.	G. H. Oldridge ...	No. A.	A. Holt ...	Form 911 11.6.26 to 5.8.26 ...	9.8.26.
<i>Norna</i> ...	Wright, J.	T. Mather ...	" A.	Scottish Fishery Board	" 1.6.26 to 20.6.26 ...	28.6.26.
<i>Norseman</i> , C.S. ...	Barter, H. O., R.N., Commr., R.N.R.	E. Pearce ...	" M.	Western Tel. Co. ...	" 6.5.26 to 16.6.26 ...	13.7.26.
<i>Northwestern Miller</i> ...	Nuttall, E. L.	"	" A.	Furness Withy ...	"	"
<i>Nova Scotia</i> ...	Furcaux, S.	"	" A.	"	"	"
<i>Nubian</i> ...	Watmough, T. M.	H. R. Gaskill ...	" A.	Leyland ...	Form 911 23.12.25 to 24.1.26 ...	28.1.26.
<i>Oaklands Grange</i> ...	Routledge, R.	E. J. Longheed ...	" A.	Houlder Bros.	" 15.4.26 to 15.5.26 ...	25.5.26.
42 <i>Ohio</i> ...	Parker, W. H., C.B.E., R.D., Capt., R.N.R.	D. R. Miller, H. Baylis, E. A. E. Littlewood.	W.T.	R.M.S.P. Co. ...	W.T. Reg. 26.6.26 to 17.7.26 ... Form 911 25.6.26 to 18.7.26 ...	20.7.26. 20.7.26.
57 <i>Olympic</i> ...	Marshall, W., C.B., D.S.O., R.D., Capt., R.N.R.	H. J. C. Day, A. Fisher, J. Law.	"	White Star ...	W.T. Reg. 1.7.26 to 14.7.26 ... Form 911 23.7.26 to 6.8.26 ...	17.7.26. 9.8.26.
<i>Orama</i> ...	Staunton, H. G., C.B.E., R.D., Commr., R.N.R.	T. L. Shurrock, T. Fox Russell, C. K. Blake.	M.L.	Orient ...	Met. Log. 1.7.26 to 6.8.26 ... Met. Log. 7.3.26 to 8.6.26 ...	9.8.26. 21.6.26.
<i>Oranian</i> ...	Hoskins, W.	R. H. Theaker ...	No. A.	Leyland ...	Form 911 16.8.25 to 3.9.25 ...	17.9.25.
<i>Orari</i> ...	Robinson, F. W.	F. Longheed, C. Wilkinson, W. Tarr.	M.L.	New Zealand S.S. Co.	Met. Log. 15.9.25 to 9.6.26 ...	17.6.26.
40 <i>Orbita</i> ...	Warner, G. E., R.D., Capt., R.N.R.	C. V. Fletcher, H. H. Treweeks, A. Chamberlin.	W.T.	R.M.S.P. Co. ...	W.T. Reg. 17.7.26 to 8.8.26 ... Form 911 17.7.26 to 8.8.26 ...	12.8.26. 12.8.26.
<i>Orcoma</i> ...	Dominy, R. H., C.B.E., Commr., R.N.R.	R. Griffiths, R. Gill, T. Naylor.	M.L.	Pacific S.N. Co. ...	Met. Log. 22.5.26 to 4.8.26 ...	12.8.26.
41 <i>Orduna</i> ...	Smith, W. E., D.S.O., R.D., Capt., R.N.R.	H. G. Whittle, S. Robbins, R. W. Sumpton, J. E. P. Matthews.	W.T.	R.M.S.P. Co. ...	W.T. Reg. 11.7.26 to 31.7.26 ... Form 911 10.7.26 to 2.8.26 ...	5.8.26. 5.8.26.
<i>Orestes</i> ...	Hanney, T. W.	T. Berry ...	No. A.	A. Holt ...	"	"
<i>Oriana</i> ...	Ross, J.	W. Pearce, R. D. Eckford, W. Salmon.	M.L.	Pacific S.N. Co. ...	Met. Log. 11.5.26 to 19.7.26 ...	3.8.26.
<i>Orita</i> ...	Splatt, W. A.	T. R. Scott, D. W. Hutchinson, R. W. Hanson, G. R. Bubb, A. M. Hughes	"	"	" 17.2.26 to 29.5.26 ...	9.6.26.
<i>Ormonde</i> ...	Knowles, C. H., D.S.O., Commr., R.N.	"	"	His Majesty's Ship ...	" 4.9.25 to 4.12.25 ...	22.12.25.
<i>Ormonde</i> ...	Shelford, W. S., Lt.-Commr., R.N.R.	B. Winsor, H. Petit Dan, J. F. Thompson.	"	Orient ...	" 7.2.26 to 11.5.26 ...	17.5.26.
<i>Ormuz</i> ...	O'Sullivan, F. R.	F. J. L. Butler, W. Wickham, Addison.	"	"	" 21.3.26 to 25.6.26 ...	30.6.26.
<i>Oronsay</i> ...	Owens, A. L., R.D., Lt.-Commr., R.N.R.	Hatch, Rice, W. Elliot	"	"	" 21.2.26 to 25.5.26 ...	31.5.26.
<i>Oroya</i> ...	Peates, A.	G. Lewis ...	No. M.	Pacific S.N. Co. ...	Form 911 27.4.26 to 5.7.26 ...	12.7.26.
<i>Orsova</i> ...	Cameron, E. P., R.D., Commr., R.N.R.	L. J. Vesty, R. J. Galpin, J. F. Castle-Bartley.	M.L.	Orient ...	Met. Log. 4.4.26 to 8.7.26 ...	17.7.26.
<i>Orviato</i> ...	James, L. V., D.S.C.	L. E. Fordham, J. Goldsworthy, A. Hawker, A. H. Dyer.	"	"	" 24.8.25 to 17.3.26 ...	23.3.26.
<i>Osterley</i> ...	Sarson, M. J.	H. Tanner, N. A. Whinfield, S. Burnnand.	No.	"	" 24.1.26 to 27.4.26 ...	20.5.26.
<i>Otira</i> ...	Elford H. E.	E. J. Riccard ...	No. M.	Shaw, Savill & Albion	Form 911 19.3.26 to 7.4.26 ...	7.5.26.
<i>Otranto</i> ...	Simmer, G. L., R.D., Commr., R.N.R.	R. H. Rogerson ...	" M.	Orient ...	" 29.1.26 to 10.4.26 ...	15.4.26.
<i>Ovid</i> ...	Groom, A. C. B.	"	" A.	Shakespear Shipping Co.	" 10.5.26 to 19.5.26 ...	26.5.26.
<i>Oxfordshire</i> ...	Crumplin, W. E.	F. C. Brooks ...	" A.	Bibby Bros. ...	" 27.5.26 to 2.8.26 ...	9.8.26.
<i>Pacific Shipper</i> , M.V. ...	Newman, G. W. A.	G. Davis ...	" A.	Furness Withy ...	" 4.7.26 to 2.8.26 ...	4.8.26.
<i>Pacuare</i> ...	Harvey, A. E.	"	No.	Elders & Fyffes ...	"	"
<i>Pakeha</i> ...	W. P. Clifton Mogg	E. T. Baker, A. Black, A. Lockhart	M.L.	Shaw, Savill & Albion	Met. Log. 26.9.25 to 28.2.26 ...	8.3.26.
<i>Pareora</i> ...	Evans, J. O.	N. Turner ...	No. A.	Hain S.S. Co. ...	Form 911 28.3.26 to 8.5.26 ...	7.7.26.
<i>Paris</i> ...	Cook, C. L.	Mr. Biles ...	C.C.	Southern Rly. ...	Telegraphic Report. 14.4.26 ...	14.4.26.
<i>Patrician</i> ...	Pugh, —	"	No. M.	Harrison ...	"	"
<i>Patrol</i> , C.S. ...	Welsh, T. K.	H. F. P. Albrecht ...	M.L.	Eastern Extension (A. & C.) Telegraph Co.	Met. Log. 8.7.25 to 3.2.26 ...	1.4.26.
<i>Persic</i> ...	Bulman, J. B.	R. Conway ...	No. A.	White Star ...	Form 911 27.9.25 to 4.11.25 ...	17.3.26.
<i>Peshawar</i> ...	Hester, C. W., R.D., Commr., R.N.R.	D. G. Baillie, J. K. Crone, R. D. Whyte-Mackay.	M.L.	P. & O. ...	Met. Log. 16.1.26 to 2.7.26 ...	9.7.26.
<i>Philadelphun</i> ...	Baker, J. A.	W. T. Godwin ...	No. A.	Leyland ...	Form 911 9.10.25 to 1.11.25 ...	16.11.25.
<i>Polyearp</i> ...	Evans, T. G.	C. W. Smethurst ...	" A.	Booth ...	" 8.6.26 to 29.7.26 ...	4.8.26.
<i>Port Adelaide</i> ...	Hayter, S. W.	R. W. Linklater, G. Lovegrove, J. L. Porter.	M.L.	Commonwealth & Dominion.	Met. Log. 6.2.26 to 11.6.26 ...	21.6.26.

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Port Albany</i> ...	Robinson, C. A. ...	E. A. Leavett, A. G. Newbury, W. Eastoe, N. A. Crowe.	M.L.	Commonwealth & Dominion.	Met. Log. 14.11.25 to 13.4.26...	21.4.26.
„ <i>Auckland</i> ...	Durham, R. S. ...	R. B. Stannard ...	No. A.	„ „ „	Form 911 4.3.26 to 20.7.26 ...	26.7.26.
„ <i>Bowen</i> ...	Gilling, W. ...	W. R. Johnston ...	„ A.	„ „ „	„ 7.4.26 to 11.5.26 ...	6.7.26.
„ <i>Caroline</i> ...	Renaut, F. A. ...	H. H. Smith, E. Fenton, C. Chamberlin, A. T. C. Cooper.	M.L.	„ „ „	Met. Log. 3.10.25 to 11.4.26 ...	19.4.26.
„ <i>Darwin</i> ...	Sawbridge, I. R. ...	E. T. N. Lawrey, G. F. Pannett.	No. A.	„ „ „	Form 911 23.4.26 to 6.6.26 ...	24.6.26.
„ <i>Denison</i> ...	Ferris, J. ...	W. H. Sadler, J. C. Goddard	„ M.	„ „ „	„ 15.6.25 to 14.8.25 ...	21.9.25.
„ <i>Dunedin</i> ...	Lea, W. H. ...	E. G. Jones ...	M.L.	„ „ „	„ 7.1.26 to 1.5.26 ...	19.5.26.
„ <i>Hacking</i> ...	Hoad, A. C. ...	C. Newton ...	„	„ „ „	„ 1.2.26 to 10.7.26 ...	12.7.26.
„ <i>Hobart</i> ...	Craven, R. ...	G. Langford ...	„	„ „ „	„ 6.3.26 to 25.6.26 ...	8.7.26.
„ <i>Hunter</i> ...	Cottell, S. C. ...	A. Cooper, C. F. Post, J. T. Weldie.	„	„ „ „	Met. Log. 30.10.25 to 2.4.26 ...	14.4.26.
„ <i>Kembla</i> ...	Van den Bergh, C. ...	W. A. C. Sadler ...	No. A.	„ „ „	„ „ „	„ „ „
„ <i>Melbourne</i> ...	Kearney, F. J. ...	D. G. H. Bradley, J. A. Fairbairn, A. G. Starkey.	M.L.	„ „ „	Met. Log. 17.10.25 to 1.4.26 ...	7.4.26.
„ <i>Napier</i> ...	Jones, C. N. ...	M. E. Craven, A. R. Martin...	No. A.	„ „ „	Form 911 15.4.26 to 17.5.26 ...	25.6.26.
„ <i>Nicholson</i> ...	Jack, J. ...	J. L. Lewis, A. McDonald, P. A. Munday, C. Jolly.	M.L.	„ „ „	Met. Log. 20.2.26 to 18.7.26 ...	24.7.26.
„ <i>Pirie</i> ...	Higgs, W. G. ...	H. C. Jentry, W. G. Jones, N. M. Muzzill, S. Hearn.	„	„ „ „	„ 26.8.25 to 27.2.26 ...	2.3.26.
„ <i>Sydney</i> ...	Higgs, W. G. ...	G. L. H. Dean, K. D. Morgan, H. G. Boys Smith.	„	„ „ „	„ 26.6.26 to 29.7.26 ...	5.8.26.
„ <i>Victor</i> ...	Swan, L. H. ...	W. Howe, W. Renouf, W. J. Watson.	„	„ „ „	„ 6.9.25 to 2.6.26 ...	7.6.26.
„ <i>Wellington</i> ...	Farmer, F. ...	P. H. Pedrick ...	No. A.	„ „ „	Form 911 22.3.26 to 24.7.26 ...	6.8.26.
<i>President Jackson</i>	Griffith, J. ...	B. Christensen, A. L. Herre...	„ A.	Pacific Mail S.S. Co....	„ 19.4.26 to 21.5.26 ...	22.7.26.
<i>President Jefferson</i>	Nichols, F. R. ...	C. Rancich ...	„	Admiral Oriental Line	„ 4.6.26 to 20.7.26 ...	9.8.26.
<i>President Wilson</i>	Nelson, H. ...	A. M. Quinlan ...	No.	Dollar ...	„ 24.3.26 to 14.5.26 ...	3.7.26.
<i>Protea, H.M.S.A.S.</i>	Woodhouse, A. F. B., Lt.-Commr., R.N.	R. J. Whitley ...	No. M.	South African Naval Service.	„ 15.4.26 to 4.5.26 ...	29.6.26.
<i>Pyrrhus</i> ...	Elford, W. J. ...	J. L. Millar... ..	„ A.	A. Holt ...	„ 25.3.26 to 20.6.26 ...	22.6.26.
<i>Rangura</i> ...	King, A. M., D.S.C.	H. C. Slinn ...	„ M.	P. & O. ...	„ 12.6.26 to 12.7.26 ...	4.8.26.
<i>Regina</i> ...	Smith, R. G. ...	G. W. Couch, R. H. Shaw, C. Cochrane.	M.L.	White Star-Dominion	W.T. Reg. 5.4.26 to 20.4.26 ...	22.4.26.
<i>Reindeer</i> ...	Langdon, C. ...	„ „ „	C.C.	G.W. Railway	Form 911 5.4.26 to 20.4.26 ...	26.4.26.
<i>Remuera</i> ...	Cameron, J. J. ...	P. McCullum, P. Shakespeare	No. A.	New Zealand S.S. Co.	Telegraphic Report 15.5.26	15.5.26.
<i>Rhodesian Transport.</i>	Fowler, W. H. ...	W. Heritage ...	„ A.	Houlder Bros.	Form 911 13.3.26 to 19.4.26 ...	27.7.26.
<i>Rimutaka</i> ...	Hemming, F. A. ...	F. Bishop ...	M.L.	New Zealand S.S. Co.	„ 14.11.25 to 12.3.26...	18.3.26.
<i>Risaldar</i> ...	Park, G. ...	A. J. Cavallo, H. Hardwick, C. M. Knight.	„	Asiatic S.N. Co. ...	Met. Log. 31.5.25 to 29.3.26 ...	1.4.26.
<i>Romney</i> ...	Syms, G. ...	J. W. McMullan ...	No. A.	Lamport & Holt ...	„ 11.10.25 to 9.4.26 ...	11.5.26.
<i>Rotorua</i> ...	Hunter, J. B. ...	D. F. Clegg, E. Lawrence, R. H. Cockerill.	M.L.	N.Z.S. Co. ...	Form 911 27.4.26 to 7.7.26 ...	13.8.26.
<i>Royal Fusilier</i> ...	Dawson, J. ...	J. Fraser ...	No. A.	London & Edinburgh S.S. Co.	Met. Log. 13.2.26 to 29.5.26 ...	8.6.26.
<i>Royal Transport...</i>	Dove, J. ...	R. W. Wass ...	„ A.	Houlder Bros. ...	Form 911 20.6.26 to 15.7.26 ...	19.7.26.
<i>Ruapehu</i> ...	McKellar, A. W., R.D., Capt., R.N.R.	- Lettington, J. D. Tooms, A. J. Webb, R. Russel.	M.L.	New Zealand S.S. Co.	„ 24.1.26 to 24.7.26 ...	6.8.26.
<i>St. Albans</i> ...	Smith, G. L. ...	J. W. Kavanagh, J. F. Heddle, H. J. Jeans, W. McIntyre.	„	Eastern and Australian	Met. Log. 20.11.25 to 22.3.26...	27.3.26.
<i>St. Helier</i> ...	Mulhall, W. ...	C. Bell ...	C.C.	G.W. Railway	„ 5.8.25 to 2.12.25 ...	24.3.26.
<i>St. Julien</i> ...	Langdon, C. H. ...	C. Joy ...	„	„	„	„
<i>St. Patrick</i> ...	Bearpark, E. W. ...	J. Hill ...	No. A.	Rankin Gilmour ...	Telegraphic Report 11.8.26 ...	11.8.26.
<i>Salaga</i> ...	Sola, P., D.S.O.	G. E. Dutton ...	„ A.	Elder Dempster ...	Form 911 15.1.26 to 1.2.26 ...	15.2.26.
<i>Sumaria</i> ...	McNeil, S. G. S. ...	H. L. Pryse ...	„ A.	Cunard ...	„ 12.1.26 to 9.2.26 ...	15.2.26.
<i>Sandown Castle</i> ...	Jackson, C. R. ...	P. G. MacIver ...	„ A.	Union Castle ...	„ 27.6.26 to 19.7.26 ...	22.7.26.
<i>Saxoleine</i> ...	Rodgers, C. S. ...	B. Johnsen ...	„ A.	Hunting & Son ...	„ 16.12.25 to 23.2.26...	26.2.26.
<i>Saxon</i> ...	Knight, A. ...	T. M. Lockwood ...	„ A.	Union Castle ...	„ 18.2.26 to 9.3.26 ...	29.3.26.
<i>Scindia</i> ...	Mathews, W. ...	R. S. Paton ...	„ A.	Anchor ...	„ 19.2.26 to 11.4.26 ...	13.4.26.
<i>Scotia</i> ...	Prichard, S.D. ...	O. W. L. Jones ...	C.C.	L.M. & S. Rly. ...	„ 8.5.26 to 16.7.26 ...	12.8.26.
<i>Scottish Bard</i> ...	McDonnell, S. ...	J. W. Lilley ...	No. A.	Tankers Ltd. ...	Telegraphic Report 20.7.26 ...	20.7.26.
<i>33 Scythia</i> ...	Prothero, W. ...	A. Nicholson, J. C. Munro, J. W. Caunce.	W.T.	Cunard ...	Form 911 31.1.26 to 15.2.26 ...	9.3.26.
<i>Sheaf Lance</i> ...	Earl, C. ...	„ „ „	No.	W. A. Souter ...	W.T. Reg. 5.7.26 to 24.7.26 ...	28.7.26.
<i>Sheaf Mount</i> ...	Groves, C. V. ...	C. A. Goold ...	No. A.	„	Form 911 4.7.26 to 24.7.26 ...	28.7.26.
<i>Sheaf Spear</i> ...	Whitfield, G. A., O.B.E.	W. H. Grisewood, N. Thompson.	M.L.	„	Form 911 10.6.26 to 8.7.26 ...	22.7.26.
<i>Socrates</i> ...	Taylor, F. C. ...	W. E. Jordan ...	No. A.	Lamport & Holt ...	Met. Log. 18.3.26 to 20.6.26 ...	26.6.26.
<i>Soekaboemi</i> ...	Z. W. Flach ...	A. van Reenen ...	„ M.	Rotterdam Lloyd ...	Form 911 21.2.26 to 10.5.26 ...	28.5.26.
<i>Somerset</i> ...	Barnett, H. ...	J. J. Youngs ...	„ M.	N.Z.S. Co. ...	„ 2.5.26 to 30.7.26 ...	12.8.26.
<i>Somersetshire</i> ...	Leitch, R. C. ...	P. Hawkins, R. C. Leitch, H. G. Walton.	M.L.	Bibby ...	„ 15.12.25 to 21.1.26...	26.1.26.
<i>Somme...</i>	Miles, F. R., Commr., R.D., R.N.R.	J. Watson ...	No. A.	R.M.S.P. Co. ...	Met. Log. 14.12.25 to 18.3.26	8.4.26.
<i>Spectator</i> ...	Harding, C. H. J. ...	D. Fraser, J. G. F. Betson ...	„ A.	Harrison ...	Form 911 1.5.26 to 23.7.26 ...	13.8.26.
<i>Spero</i> ...	Norton, W. J. ...	T. E. Fea ...	M.L.	Ellerman Wilson ...	„ 20.11.25 to 20.2.26...	26.2.26.
<i>Stockwell</i> ...	Thowless, E. ...	W. Gibson ...	No. A.	Brocklebank ...	Met. Log. 12.12.25 to 14.6.26...	1.7.26.
<i>Stuart Prince</i> ...	Kemp, E. J. ...	W. Venn ...	„ A.	Prince ...	Form 911 6.6.26 to 15.7.26 ...	6.8.26.
<i>Suva Maru</i> ...	Okuno, Y. ...	T. Nosaka ...	„ A.	Nippon Yusen Kaisha	„ 18.2.26 to 6.3.26 ...	26.4.26.
<i>Sylvafield...</i>	Biddick, E. ...	R. A. Hanson ...	„ A.	Hunting & Son ...	„ 21.3.26 to 4.4.26 ...	5.5.26.
<i>Tainui</i> ...	Hartman, W. H. ...	P. S. Horwood ...	„ A.	Shaw, Savill & Albion	„ 10.7.26 to 27.7.26 ...	13.8.26.
<i>Tairoa</i> ...	Summers, W. G. ...	S. A. Bannister ...	„ A.	„	„ 17.3.26 to 22.4.26 ...	26.4.26.
<i>Tahiti</i> ...	Aldwell, B. L. ...	W. Gould ...	„ A.	Union S.S. Co. of N.Z.	„ 30.3.26 to 12.5.26 ...	17.5.26.
<i>Tairing</i> ...	Hamilton, H. E. ...	A. M. Frame, T. G. Stratford, W. Bailley, L. A. Bailie.	M.L.	Yull & Co. ...	„ 22.4.26 to 11.6.26 ...	26.7.26.
<i>Talhybius</i> ...	Ireland, T. R. ...	P. Elder ...	No. A.	A. Holt ...	Met. Log. 22.1.26 to 17.5.26 ...	19.7.26.
<i>Tanda</i> ...	Pilcher, E. ...	R. Lloyd Harry, B. Dun, H. Jeans, F. Colvin.	M.L.	E. & A. S.S. Co. ...	Form 911 19.9.25 to 26.10.25...	2.11.25.
<i>Tambora</i> ...	Huisman, N. ...	H. Van Manen ...	No. M.	Rotterdam Lloyd ...	Met. Log. 3.3.26 to 30.5.26 ...	10.7.26.
<i>Teiresias</i> ...	Dodds, R. ...	W. H. Newby ...	„ A.	A. Holt & Co. ...	Form 911 15.2.26 to 31.3.26 ...	15.4.26.
<i>Tekoa</i> ...	Barnett, H. ...	D. M. Lambert ...	„ M.	New Zealand S.S. Co.	„ 13.12.25 to 14.1.26...	28.1.26.

Name of Vessel.	Captain.	Observing Officers.	Official Meteorological Equipment.	Line.	Last Log, Register, or Report Contributed. Received up to 13.8.26.	Date Received.
<i>Telamon</i> ...	Duggan, C. ...	G. Bevan ...	No. A.	A. Holt ...	Form 911 20.4.26 to 21.6.26 ...	3.7.26.
<i>Teucer</i> ...	Hodgson, R. N. ...	R. T. Harries ...	" A.	" ...	" 19.7.26 to 28.7.26 ...	4.8.26.
<i>Themistocles</i> ...	Jermyn, W. M. ...	R. J. Buckland ...	" M.	Aberdeen ...	" 3.6.26 to 22.7.26 ...	3.8.26.
<i>Theseus</i> ...	Jones, E. ...	W. A. Fyffe ...	" A.	A. Holt ...	" 1.4.26 to 3.8.26 ...	13.8.26.
<i>Titan</i> ...	Wilkinson, T. G. ...	S. C. Timmouth, J. Morris, N. L. Thompson.	M.L.	" ...	Met. Log. 20.10.25 to 11.3.26...	18.3.26.
<i>Tongariro</i> ...	White Parsons, V.C.	G. B. H. Jones ...	No. M.	New Zealand S.S. Co.	Form 911 2.4.26 to 9.5.26 ...	25.5.26.
<i>Transylvania</i> ...	Bone, D. W. ...	A. Middleton ...	" A.	Anchor ...	" 11.7.26 to 1.8.26 ...	7.8.26.
<i>Traveller</i> ...	Worthington, B. ...	" ...	No.	T. & J. Harrison ...	" ...	" ...
<i>Trematon</i> ...	Evans, B. ...	R. Gregory, J. Toms, J. Bell.	M.L.	Hain S.S. Co. ...	Met. Log. 2.9.25 to 8.2.26 ...	2.3.26.
<i>Turakina</i> ...	Hamilton, E. S. ...	A. N. Marshall, G. S. Shepherd	No. M.	New Zealand S.S. Co.	Form 911 9.2.26 to 4.5.26 ...	26.5.26.
<i>Tuscavia</i> ...	Gemmell, W. J. ...	J. Hamilton ...	" A.	Anchor ...	" 3.7.26 to 24.7.26 ...	28.7.26.
<i>Tyndareus</i> ...	Scott, J. R. ...	A. G. Phillips, C. E. Mock, A. R. McDavid.	M.L.	A. Holt ...	Met. Log. 7.1.26 to 9.6.26 ...	6.8.26.
<i>Ulimaroa</i> ...	Wylie, W. J. ...	J. Gilbertson ...	No. M.	Huddart Parker, Ltd.	Form 911 13.3.26 to 25.5.26 ...	22.7.26.
<i>Ulysses</i> ...	Gordon, A. L. ...	F. H. Barley ...	" A.	A. Holt ...	" 12.4.26 to 20.5.26 ...	26.7.26.
<i>Umvolosi</i> ...	Barnes, E. W. ...	R. L. B. Ryde ...	" A.	Bullard King ...	" 21.6.26 to 9.7.26 ...	3.8.26.
<i>Valacia</i> ...	Doyle, M. ...	N. Grayson ...	" M.	Cunard ...	" 8.1.26 to 19.5.26 ...	31.5.26.
<i>Vardulia</i> ...	Hughes, W. ...	A. Watts ...	" A.	" ...	" 3.11.25 to 14.11.25...	8.2.26.
<i>Vasconia</i> ...	Inch, F. ...	G. Watts ...	" A.	" ...	" 22.1.26 to 15.3.26 ...	26.3.26.
<i>Verbania</i> ...	Pooley, T. S. M. ...	W. Bradley ...	" A.	" ...	" 4.4.26 to 7.5.26 ...	11.5.26.
<i>Verentia</i> ...	Wray, C. M. ...	F. H. Wood ...	" A.	" ...	" 11.1.26 to 24.3.26 ...	6.4.26.
<i>Vigilant</i> ...	Simpson, E. S. ...	J. Hunter ...	" A.	Scottish Fishery Board	" 1.7.26 to 31.7.26 ...	4.8.26.
<i>Waimana</i> ...	Andrews, C. M. ...	" ...	" A.	Shaw, Savill & Albion	" 21.4.26 to 1.6.26 ...	8.6.26.
<i>Waiotapu</i> ...	Norton, A. ...	W. Johnson ...	" A.	Canadian-Australasian	" 5.5.26 to 18.6.26 ...	3.8.26.
<i>Wairuna</i> ...	" ...	" ...	M.L.	Union S.S. Co. of N.Z.	" ...	" ...
<i>Walner Castle</i> ...	Chave, Sir B., K.B.E.	H. A. Deller ...	No. A.	Union Castle ...	Form 911 7.5.26 to 23.5.26 ...	7.6.26.
<i>Wangaratta</i> ...	Scutt, W. ...	T. W. Wordingham, G. R. Millard, K. M. Morrison, N. A. Pope.	M.L.	British India ...	Met. Log. 6.3.26 to 30.7.26 ...	3.8.26.
<i>Warfield</i> ...	Steel, R. ...	H. Coffey ...	No. A.	" ...	Form 911 16.6.26 to 2.7.26 ...	12.7.26.
<i>War Nizam</i> ...	Moncrieff ...	" ...	No.	British Tankers ...	" ...	" ...
<i>Welshman</i> ...	Rollerson, W. ...	W. A. Fletcher ...	No. M.	White Star-Dominion	Form 911 29.4.26 to 25.5.26 ...	31.5.26.
<i>Westmoreland</i> ...	Upton, H. C. ...	R. G. Kers ...	M.L.	Federal ...	" 18.9.25 to 3.4.26 ...	3.5.26.
<i>William Scoresby,</i> R.S.S.	Mercer, G. M., D.S.C. Lt.-Commr., R.N.R.	" ...	"	Falkland Islands Gov- ernment.	" ...	" ...
<i>Windsor Castle</i> ...	Strong, H., R.D., Commr., R.N.R.	F. Wilbraham ...	"	Union Castle ...	Form 911 26.3.26 to 16.5.26 ...	26.5.26.
<i>Winifredian</i> ...	Harrocks, W. ...	A. Crone ...	No. M.	Leyland ...	" 22.5.26 to 21.6.26 ...	29.6.26.
<i>Woodarra</i> ...	Reilly, J. V. ...	L. D. Graham, G. Hyland, L. C. Comber, J. Wallace.	M.L.	British India ...	Met. Log. 27.9.25 to 13.2.26 ...	22.2.26.
<i>Yorkshire</i> ...	Adamson, B. W. ...	E. E. Jones ...	"	Bibby ...	Form 911 11.12.25 to 17.2.26...	19.2.26.
<i>Zealand</i> ...	Harvey, H. ...	W. N. Jenkins ...	No. M.	Red Star ...	" 20.6.26 to 12.7.26 ...	13.7.26.
<i>Conway H.M.S.</i>	Broadbent, H. W., R.D. Capt., R.N.R.	The Senior Cadets...	Cadets' M.L.	" ...	Cadets' Met. Log. 10.5.26 to 24.7.26	29.7.26.
<i>Pangbourne Nauti- cal College.</i>	Tracy, A. F. G., Commr., R.N.	" "	"	" ...	Cadets' Met. Log. 2.5.26 to 24.7.26...	6.8.26.
<i>Worcester, H.M.S.</i>	Sayer, M. B., O.B.E., R.D., Capt., R.N.R.	" "	"	" ...	Cadets' Met. Log. 7.5.26 to 28.7.26...	31.7.26.
<i>Abaco</i> ...	" ...	The Keepers ...	Lighthouse Register.	" ...	Lighthouse Register 20.7.25 to 31.12.25	9.3.26.
<i>Cay Lobos</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.7.25 to 31.12.25	8.3.26.
<i>Double Headed Shot</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.7.25 to 31.12.25	21.4.26.
<i>Inagua</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.7.25 to 31.12.25	9.3.26.
<i>Sombrero</i> ...	" ...	" ...	"	" ...	Lighthouse Register 1.1.26 to 30.6.26	5.8.26.
<i>Walling Island</i> ...	" ...	" ...	"	" ...	Lighthouse Register 18.7.25 to 16.1.26	8.3.26.
<i>Cape Pembroke</i> (Falkland Is.).	" ...	" ...	"	" ...	Lighthouse Register 1.7.25 to 31.12.25	24.2.26.

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

Name of Vessel.	Captain.	Observing Officer.	Line.	Last Case of Water Samples, Reports, etc., Received up to 31.7.26.	Date Received.
<i>Herschel</i> ...	Carey, J. J. ...	T. Lester Guy ...	Lampport & Holt	Water Samples ...	23.6.26.
<i>Hildebrand</i> ...	Maddrell, J. ...	A. Allan ...	Booth ...	" ...	14.7.26.
<i>Holbein</i> ...	Gough, W. A. ...	H. L. Rudd ...	Lampport & Holt	" ...	19.5.26.
<i>Miami</i> ...	Makepeace, S. ...	H. E. Lees ...	Elders & Fyffes	" ...	14.6.26.
<i>Pacuare</i> ...	Harvey, A. E. ...	H. G. Cruickshank ...	"	" ...	"

October M.O., 1926.