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THE MARINE OBSERVER.

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## GENERAL INTELLIGENCE OF WEATHER, CURRENT AND ICE FOR NAVIGATION.

Of recent years enquiries from yachtsmen and others have made it evident that there are many amateur seafarers and not a few seamen and others concerned with navigation outside the Corps of Voluntary Marine Observers, who, wishing for intelligence of Weather, Current and Ice at sea do not know how to get it.

These notes are written with a view to showing where and how such information may be obtained and the Corps of Voluntary Marine Observers, Agents and all regular readers of this JOURNAL are invited to assist by drawing the attention to these notes of those to whom the subject may appeal. Shipping and Yachting journals may render a service to their clients by placing the matter before them.

First let us proceed to instance by example our meaning.

A yachtsman wishing to prepare for the Fastnet Yacht Race wishes to know what are the average conditions of wind, or what winds are most frequent in the month of August from the mouth of the English Channel to the Fastnet.

The answer is given at the end of this number, for we do not know of any better or more reliable information regarding the winds in this vicinity than the Wind, Fog and Mist roses for the S.W. approaches to Great Britain and Ireland which are being published month by month in THE MARINE OBSERVER this year. An article by Commander HENNESSY, R.N.R., upon these roses will be found on page 106 of the May, 1930, number. Anyone can see at a glance at the August rose that Westerly Winds predominate with the greatest frequency from S.W. There are occasional gales, more strong winds than light, very few calms and occasional variables. The keen yachtsman may ascertain the exact probabilities from this rose, which is constructed from no less than 563 observations made by professional seamen in deep sea ships who have acted as Voluntary Marine Observers during the years 1921 to 1928.

A yachtsman about to sail upon a spring cruise to the West Indies in an auxiliary yacht wishes to know the best route to take using his engines as little as possible and to have information of a favourable slant at the commencement of his outward passage.

We point to "Ocean Passages for the World" by Rear-Admiral B. T. SOMERVILLE, published by authority of the Lords Commissioners of the Admiralty, and to the Atlases of Meteorological Ocean Charts published by authority of the Meteorological Committee, all of which may be purchased from J. D. POTTER, the Admiralty Chart Agent, or H.M. Stationery Office. A list of the latter is published each month. The tracks recommended are laid down from averages of experiences of many sailing ships. For information of a favourable slant at the commencement of the passage we recommend the British Wireless "Weather Shipping" Bulletin which gives complete information of weather for Home waters from the hundred fathom line to the Westward and as far South as the Latitude of Ushant. Also to the W/T and Visual Gale Warning Signals for the British Isles, both of which are fully described each year in the February number of this JOURNAL.

We tell our enquirer that the British Wireless "Weather Shipping" Bulletin gives twice daily the actual conditions prevailing at 10 stations round the British and Irish Coasts, a general inference of the conditions over the British Isles with information of the existing pressure system and forecasts for 12 hours for the Western, Southern and Eastern Areas and their districts. But, says he, I want a forecast, if possible, for the first part of my route to the latitude of Finisterre. Arrangements are therefore made for such a forecast to be telegraphed to his yacht at her port of departure and for this service, which is not broadcast information for all to use, a charge is of course made. On page 184 will be found a description of the special services which the Meteorological Office is prepared to perform for those who require additional information to that broadcast by Wireless Telegraphy and Telephony.

A firm wishes to despatch for delivery to Australia a small steamer and the master engaged to take her out wishes to ascertain the best route so that suitable arrangements may be made for coaling.

"Ocean Passages of the World," the Meteorological Ocean Charts and Admiralty Pilots are of course recommended and every vessel fitted with Wireless Telegraphy or Radio Telephony reception is advised to make full use of the information of Weather which is broadcast to shipping.

Formerly, ship salvors, towage contractors and others engaged upon work with shipping round the British Coasts made frequent requests for information of Weather and forecasts of Weather at sea and round the British Coasts to be telegraphed to them at the ports or wirelessed to them at sea.

The service of the British Wireless "Weather Shipping" Bulletin and Wireless Gale Warnings is general to all shipping, it provides the most essential information of Weather for navigation in Home waters, the former as a matter of routine and the latter immediately when necessary. Before this Bulletin was established in 1924 a

consensus of opinion of seamen interested in Marine Meteorology was obtained.

The principle of broadcasting information of general utility to navigation is both economical and efficient and the cost of this service is defrayed from the public funds. Other information of Weather required by Wireless or Telegram for single ships is charged for.

By the International Convention for Safety of Life at Sea, 1929, 18 maritime nations have agreed to warn ships of gales and storms by W/T and visual signals and to issue by radio Weather bulletins suitable for shipping as far as possible upon a uniform procedure, such services being rendered by the national services in the best position to serve the various areas.

Thus it will be seen that though the British Meteorological Office may serve individual ships with reports and forecasts for routes passing neighbouring countries, shipping should utilize the broadcast information for areas adjacent to other countries from the respective Meteorological Services.

In THE MARINE OBSERVER will be found during the course of each year's numbers information of "Weather Shipping" Bulletins, Gale and Hurricane Warning Signals and Ice signals in all parts of the World arranged geographically.

The Admiralty Atlases of Currents provide information of the general set and drift of current in all parts of the Oceans. The currents are being re-charted along the trade routes month by month in THE MARINE OBSERVER. This re-survey of currents is providing information of the vagaries of current as well as its mean set and drift, and shortly a new atlas of currents on the main trade routes of the North Atlantic will be published. Information of Ice both in the North and South is published from time to time in THE MARINE OBSERVER.

For spreading information of the existing conditions of Weather at sea in all parts of the World in accordance with the International Convention of Safety of Life at Sea, 1929, "Selected Ships" make routine Wireless reports, for particulars of which, together with Decode, the Meteorological Office Publication M.O. 329, published and sold by H.M. Stationery Office, price 3d., should be consulted.

Thus Marine Meteorological information is always available to all who require it, that most essential for navigation being broadcast or published, and that required for special purposes by direct enquiry to the Meteorological Office, by letter, telegram or Wireless telegram. The latter service is dealt with in detail on page 184.

It should always be remembered that the work of the British Corps of Voluntary Marine Observers has been mainly instrumental in making these services possible, for they have provided the data from which the necessary knowledge has been gained.

## THE CURRENT DURING THE S.W. MONSOON SEASON SOUTH OF CEYLON.

UNDER the heading Currents and Navigation in the Indian Ocean in the February MARINE OBSERVER, in calling attention to the Quarterly Charts of Current on the Tracks Cape Leeuwin to Perim direct and via Colombo, we mentioned the custom of steering for a position on the equator to the Westward of that cut by the rhumb line between Rottneest and Galle on account of the probability of a strong Westerly set during May to September.

It is now established that the strength of this current changes in latitude month by month, and as this information will be useful to navigators, particularly when approaching Ceylon from the Southward, we draw their special attention to the six little monthly charts

for the region South of Ceylon on which resultant currents are charted in one degree squares. The matter is dealt with comprehensively by Mr. BARLOW on page 175.

We again remind Commanders of ships using the tracks from Perim to the Leeuwin direct and via Colombo that their remarks will be welcome and may give great assistance in elucidating this matter of currents and navigation while these tracks are being re-charted, for it will be too late if they are not received soon after the publication of this number.

London,  
May 7th, 1930.

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.

## POSITION LINE INSTRUMENT.

Designed and Used by Captain R. Harrison, D.S.O., R.D.,  
R.N.R., of R.M.S. *Naldera*.

THIS instrument is used in making a sketch in my work book of position lines of observed stars.

It consists of a celluloid protractor to which has been fitted a T square of the same material, sliding in a shoe pivoted at the centre of the protractor.

The centre bar of the T square can be marked to any scale. The divisions on my instrument are the same distance apart as the lines in a foolscap work book and this is found to give a sketch of a convenient size.

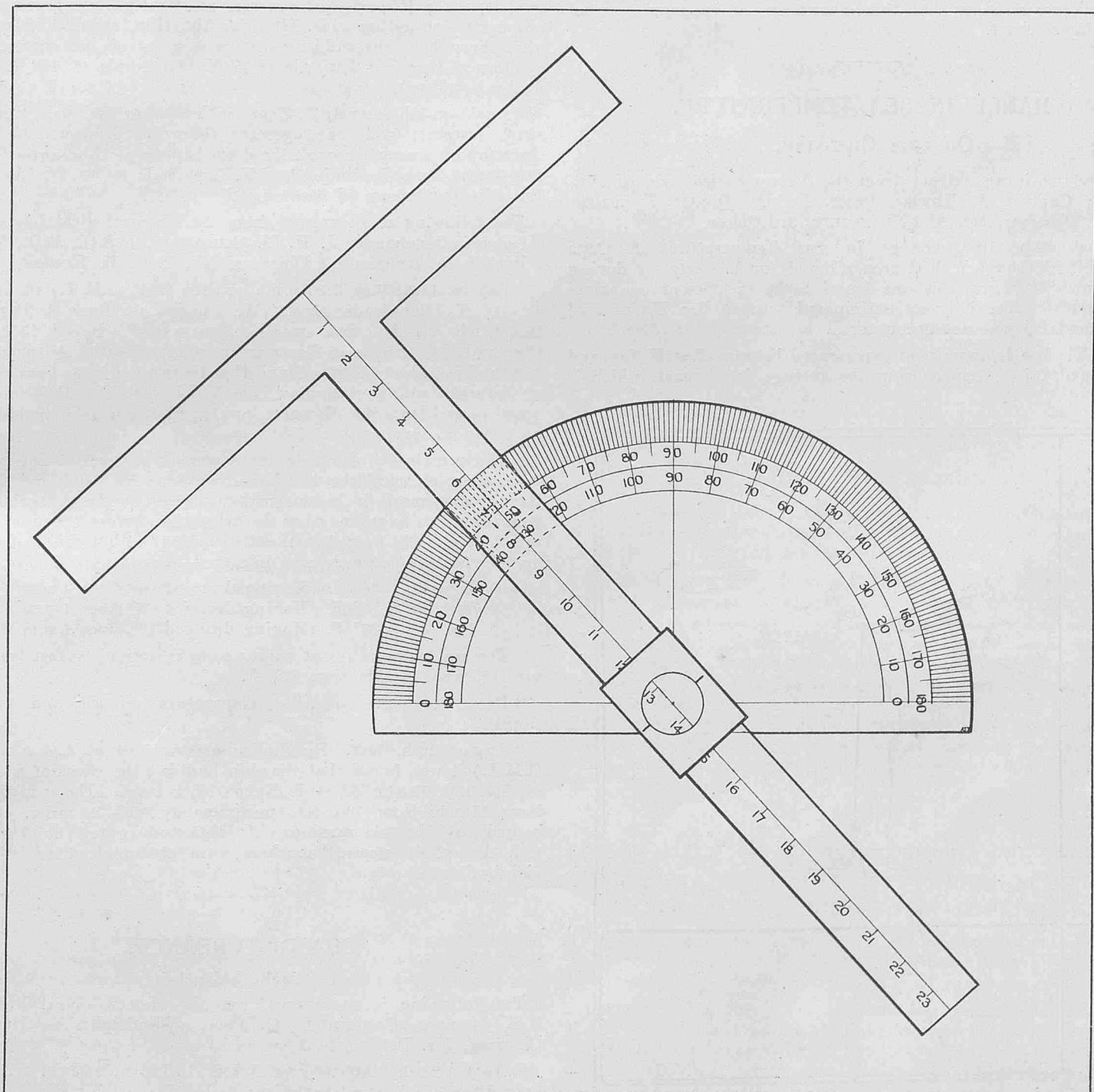
In using the instrument the centre bar of the T square is set to the bearing of the star (calculated for a plane chart) and with the intercept number of minutes in the centre of the pivot.

It is placed in alignment on a page of the work book with the centre in the D.R. position.

The position line for each star is ruled at the end of the T square.

After the intersection of the position line has been made the Difference of Latitude and Departure between the D.R. and observed positions can be measured by the T square.

As the instrument lies flat it can be carried quite safely between the pages of the work book.



## ABNORMALLY STRONG EASTERLY SETS.

## China Sea.

THE following is an extract from the Meteorological Report of S.S. *Malwa*, Captain R. H. STRINGER, Hong Kong to Singapore. Observer, Mr. F. D. SHAW, 4th Officer.

"The *Malwa* left Hong Kong for Singapore at 12.32 on August 17th, 1929. On the 13th, 14th and 15th she had encountered strong adverse sets coming down the China Coast; these sets were to continue as the following data will show:—Position off North East Head on the 17th at 13.40. Latitude  $22^{\circ} 04'$  N. Longitude  $114^{\circ} 21'$  E. to Noon on 18th Latitude  $16^{\circ} 22'$  N. Longitude  $113^{\circ} 26'$  E., N.  $87^{\circ}$  E. 23 miles (in 22.8 hours). Noon 18th to Noon 19th, Latitude  $11^{\circ} 07'$  N. Longitude  $110^{\circ} 46'$  E., East 31 miles (in 24.5 hours). Noon 19th to Noon 20th, Latitude  $06^{\circ} 18'$  N. Longitude  $107^{\circ} 27'$  E., N.  $71^{\circ}$  E. 40 miles (in 24.5 hours). Noon 20th to Singapore (arrived 13.13) N.  $13^{\circ}$  E. 35 miles (in 25.2 hours).

NOTE.—The current roses for the China Sea on the back of the Meteorological Charts for the East Indian Seas show that sets between N. and E. are frequently experienced during August in the regions indicated. The drifts, however, with the exception of the second, are stronger than those shown on the appropriate roses of the August chart.

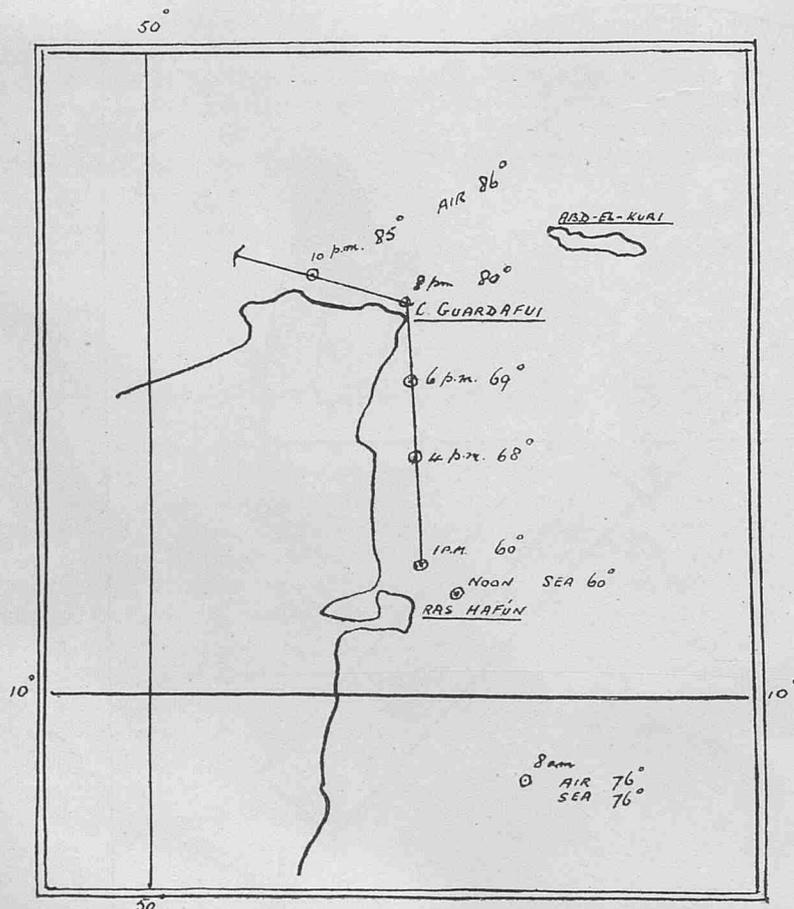
## CHANGE IN SEA TEMPERATURE.

## Off Cape Guardafui.

THE following is an extract from the Meteorological Log of S.S. *Somerset*, Captain J. HOWELL PRICE, D.S.O., D.S.C. Fremantle to Aden. Observer, Mr. A. E. BAMFORTH, 3rd Officer.

"August 29th, 1929, change in Sea Temperature off Cape Guardafui. Although  $5^{\circ}$  had been allowed for Easterly set during the previous 24 hours, this was found to be insufficient on subsequent landfall. The N'ly set anticipated between Ras Hafun and Cape Guardafui was not encountered.

NOTE.—The sea temperatures experienced between Ras Hafun and Cape Guardafui are much below the average for August, which is



$74^{\circ}$  as shown on the chart published in THE MARINE OBSERVER, Volume V, No. 56 (August, 1928). These averages are, of course, for  $2^{\circ}$  squares and in this vicinity these averages cover observations of a wide range of temperature. As long ago as 1891 an Atlas of Meteorological Charts for this vicinity was compiled under the supervision of Navigating Lieut. BAILLIE, R.N., then Marine Superintendent, primarily with the intention of showing that an idea mooted that sea surface temperature might be used to indicate latitude when rounding Cape Guardafui from the south, would be dangerous. Those who have navigated this vicinity have noticed smaller areas of comparatively cold water no doubt produced by upwelling.

## CURRENT RIPS.

## North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Hubert*, Captain R. B. FURNEAUX, Para to Liverpool. Observer, Mr. A. S. RICHARDSON, 3rd Officer.

"4th August, 1929. I noticed ahead what appeared to be a low shore line, stretching from horizon to horizon. On approaching, saw it was a line of confused sea, of slightly lighter colour than the water on either side. It took the ship about 4 minutes to pass through. She suddenly swung a point off her course. The position at time was Latitude  $1^{\circ} 35'$  N. Longitude  $46^{\circ} 14'$  W. Wind E. by N. (True).

"Again on 5th August, 1929, met with another such belt, this being much rougher, and much greater than the previous one. The duration of passage through the disturbance was 15 minutes. Ship's position at time, Latitude  $5^{\circ} 05'$  N. Longitude  $44^{\circ} 09'$  W. As before, the ship was thrown off her course."

The following is an extract from the Meteorological Log of S.S. *Ariguaní*, Commander J. H. H. SCUDAMORE, D.S.C., R.D., R.N.R., Kingston to Avonmouth. Observer, Mr. R. G. H. HOBSON.

"August 11th, 1929, 7.20 p.m., at ship (2249 G.M.T.) in Latitude  $40^{\circ} 00'$  N., Longitude  $49^{\circ} 12'$  W., wind East force 2, Barometer 1023.5 mb. steady. Sea smooth. Course  $062^{\circ}$ . Speed 13.7 knots. Observed that the sea to Eastward of ship appeared disturbed. On approaching nearer it was found that there were three distinct lanes of disturbed water, stretching in a N.N.E./S.S.W'ly direction. The vessel passed from smooth water into the first lane of disturbed water at 7.28 p.m. leaving it at 7.30 p.m.

"The remaining alternate lanes were traversed at intervals of 2 minutes, clearing the last disturbed lane at 7.40 p.m. The sea then became more or less normal, although in the gathering dusk it appeared to be rather more disturbed than before 7.28 p.m. There was a very slight haze over the disturbed area, but this had cleared by 8.0 p.m. Thermometers as follows:—

Dry Bulb  $70^{\circ}$  F. (Having dropped  $6^{\circ}$  since 4 p.m.)  
Wet Bulb  $67^{\circ}$  F. (Having dropped  $3^{\circ}$  since 4 p.m.)  
Sea  $68^{\circ}$  F. (Having dropped  $10^{\circ}$  since 4 p.m.)

"The sea temperature at engine-room injection, 20 feet below sea surface, was at this time  $69^{\circ}$  F.

"From 8.0 p.m. onwards, temperatures of air and sea rose rapidly.

"August 12th, 1929. By Stellar observations at 4.44 a.m. (0748 G.M.T.) it was found that the ship had felt the effect of a current setting  $040^{\circ}$ , 11.8 miles, since Noon 11th instant. The current from Noon 11th to Noon 12th set approximately  $025^{\circ}$ —24 miles. Having regard to the observations of disturbed water at 7.30 p.m. 11th August it seems that there were abnormal currents in the vicinity."

## SEA DISTURBANCE.

## North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Gloxinia*, Captain F. G. POOL, Philadelphia to Hamburg. Observer, Mr. D. COUGHLAN.

"August 23rd, 1929, 6.30 p.m. A.T.S., in Latitude  $39^{\circ} 54'$  N., Longitude  $57^{\circ} 25'$  W., after a calm sea and light variable winds all day,

suddenly encountered a very heavy N.E. swell, with confused tumbling sea, which persisted until 8.45 p.m. A.T.S., then dropped again to slight N.E. swell and slight sea. The sudden difference was most marked at both the beginning and end of sea disturbance. The barometer was steady at 30.14 in. Air temperature, Dry 71° F., Wet 63° F. and Sea 77° F. Clouds were Cirrus (tufted) stretching N. and S., and Stratus and Cumulus on the horizon. The wind was N.N.E., force 2. Cirrus clouds afterwards cleared and at 8 p.m. sky was clear overhead. The sea disturbance was sufficient to make the vessel ship water over fore-castle head and well decks for a short time, and had the appearance of the sea underneath a waterspout, or that caused by disturbance under water."

## DISCOLOURED WATER.

### East Coast of Africa.

THE following is an extract from the Meteorological Report of S.S. *Hydaspes*, Captain P. E. WILLIAMS, Cape Town to Mombasa. Observer, Mr. J. W. CHARLES, 2nd Officer.

"August 13th, 1929. At 10.42 A.T.S. (0815 G.M.T.). Position Latitude 6° 49' S., Longitude 39° 36' E. Course 291°. 12.5 knots. Ship crossed line dividing two distinct colours of water. Dividing line ran N.N.E. and S.S.W. in an irregular line from horizon to horizon. Water to E'ard. dark indigo in colour, temperature 77° F., density 1025. Water to W'ard. pale green in colour, temperature 75° F., Density 1023.5. Temperature of air 78° F. When entering Dar-Es-Salaam Bay, another 'line' was observed a little further to the West, running approximately in same direction, the colour of the water being changed back to dark indigo."

## DRIFTING KELP.

### Southern Ocean.

THE following is an extract from the Meteorological Log of S.S. *Junee*, Captain F. W. FLETCHER, when searching for *Kobenhavn* in the Southern Ocean.

"During the voyage we have sighted patches of drifting kelp, frequently, almost daily in fact. I have wondered all the time whether it came from Kerguelen, or Amsterdam, or St. Pauls. To-day, Thursday, 22nd August, in Latitude 42° 35' S., Longitude 78° 00' E., we passed several large patches. To my mind this indicates it comes from Kerguelen, as I do not think it would drift practically due south nearly 250 miles from St. Pauls."

NOTE.—The Admiralty Pilot for the Southern Indian Ocean gives a caution with regard to the large patches of loose kelp to be met with in the neighbourhood of Kerguelen Island (Latitude 48° 27' S., Longitude 68° 47' E.).

## PHOSPHORESCENCE.

### Arabian Sea.

THE following report has been received from Mr. A. J. BROWN, 3rd Officer, S.S. *Kasama*.

"Whilst reading the August, 1929, number of THE MARINE OBSERVER I saw the reports of unusual phosphorescence in the Arabian Sea, and as we experienced a similar occurrence in corresponding month fairly near the same locality, I thought you might be interested to know of it.

"On Friday, 2nd August, 1929, in the Gulf of Aden, Latitude 12° 49' N., Longitude 50° 26' E., course 264°, 11 knots. At 9.30 p.m. A.T.S. the ship appeared to be approaching a bank of mist and at 9.45 p.m. ran into 'White Water'.

"In a short time the sea from horizon to horizon appeared as one expanse of snow. It has been described as the colour of milk, which is an excellent description, but should not be confused with what is usually termed 'Milky' for this was a pure white.

"The sea immediately moderated. The usual sparkling effect was totally absent, the phosphorescence evidently being at a considerable depth.

"This was a most extraordinary sight and lasted until 11.45 p.m., when we ran out of the 'White Water' into that of a normal colour."

## Indian Ocean.

THE following is an extract from the Meteorological Report of S.S. *Alipore*, Captain E. E. N. DAWSON, Penang to Colombo. Observer, Mr. W. L. DOBBIN, 3rd Officer.

"On August 3rd, 1929, between Penang and Colombo, at 8.50 p.m., ship passed through a  $\frac{1}{4}$  mile belt of brilliantly phosphorescent water, the particles of phosphorescence were of large size. Position by D.R. Latitude 5° 50' N., Longitude 87° 50' E. The belt was visible for some distance as a glow on the water, and the phenomenon was unusual inasmuch that except for this one patch no further phosphorescence was encountered.

"Again off Dondra Head, at 9.0 p.m. on 5th August, large patches of phosphorescence resembling pack ice were encountered, emitting a greenish glow."

## SPEED OF PORPOISES.

### Red Sea.

THE following is an extract from the Meteorological Log of S.S. *Buteshire*, Captain W. J. PAGE, Fremantle to Hull, via Suez. Observer, Mr. S. R. J. WOODS, 3rd Officer.

"August 18th, 1929, in Latitude 20° 16' N., Longitude 37° 33' E. Course and speed 006°, 11 knots.

"Porpoise abeam of Bridge travelling on a parallel course to that of Vessel at 10hrs. 50mins. 12secs. Porpoise abeam of Stem at 10hrs. 50mins. 18secs.

"Estimated difference of speed 11 knots.

"The distance from the Bridge to the Stem is 115ft."

## ARCHED SQUALLS.

### Eastern North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Walmer Castle*, Captain W. MORTON BETTS, Southampton to Cape Town. Observer, Mr. G. H. PICKERING.

"28th August, 1929, 10.10 p.m. to 11.30 p.m., between Latitude 23° 35' N., Longitude 17° 32' W., and Latitude 23° 14' N., Longitude 17° 31' W. A succession of line squalls passed over ship at intervals of from 6 to 10 minutes. They arched up from S. by W. and lay in an approximate East and West direction, extending from horizon to horizon. During their passage over, the wind veered to between S.E. and South, force 5, backing immediately after to between N.E. and North, force 5. Sky was cloudless between squalls and there was no rain, but the air was very wet as shown by the temperatures which remained the same throughout, dry bulb 70.3° F., wet bulb 68.3° F."

## LOCAL GALE NEAR CONSTANTINOPLE AND THE CURRENTS SUBSEQUENTLY EXPERIENCED WHEN APPROACHING FROM THE SOUTHWARD.

THE following is an extract from the Meteorological Report of M.V. *Irania*, Captain P. A. ADAMS, Falmouth to Constantinople. Observer, Mr. E. ALLEN, 3rd Officer.

"August 29th, 1929, (Ship's Time throughout 2 hours ahead of G.M.T.). Approaching the Dardanelles from the Southward. Wind North, force 6 since clearing the Doro Channel. Weather fine, misty, visibility moderate to good, moderate. N'ly sea. 14.00. Off C. Helles, Wind backing to N.W. force 5, but on

entering Dardanelles suddenly veered sharp round to N.E. force 5, showing that, off the Cape there must have been two distinct currents of air—one coming round from the direction of the Gulf of Xeros and the other following the Strait. Coming up to Chanak it was curious to note that this stream of air seemed only about 100 feet high and bushes on the banks of the Strait that height from sea-level were absolutely motionless. As ship proceeded up the Strait the wind remained ahead following each bend until we cleared it at 19.10, after having had a total of 17 miles adverse current in 5.2 hours, or an average of 3.3 knots while passing through. After entering the Sea of Marmora the wind continued fresh from the E.N.E. and very gusty, while it was observed that thin banks of St.-Cu. clouds with rain overhead did not appear to have any motion with reference to stars in the zenith.

"In the Log it is noted that light rain showers were experienced up to midnight with frequent vivid lightning, which, first appearing to the southward, latterly spread across the heavens overhead and astern to the westward. From the time of entering the Sea to midnight a current was experienced setting due West at an average of 1.8 knots. This set due West was all the more curious as the ship appeared to be making towards the land on the port hand all the time. At midnight a course was shaped for a position 6 miles South of Erekli Light with a view to attempting to avoid the more or less general adverse current running down the centre of the Sea. From midnight to 02.49, when a running fix had been obtained off Erekli Light, the current experienced was negligible, and the sea slowly moderated—a welcome fact to a small ship. The wind, however, remained force 5, having backed to the N.E. at 04.00 on August 30th. It was now off the land and there was not enough fetch for it to raise any sea. From Erekli, a course was steered to a position 3 miles South of San Stefano Lighthouse where a danger angle indicated that the ship had been set 320 degrees 1.7 miles in the interval of 2.7 hours. The passage of the Bosphorus was accomplished after stopping at Constantinople for four hours, and here a current of approximately 3 knots was experienced running to the Southward. At Constantinople we were informed that a N'yly gale of exceptional and unusual violence had prevailed for the three preceding days. One 5,000 ton Italian steamer in ballast took two hours to cover the 4 miles from the entrance of the Bosphorous to her anchorage off the city in the teeth of the gale."

## TYPHOON.

### China Sea.

The following is an extract from the Meteorological Report of S.S. *Talma*, Captain R. W. HOCKING, Yokohama to Osaki. Observer, Mr. G. H. SPRIGGE.

"The *Talma* left Yokohama at 0.30 p.m. on 14th August, 1929, and after steering various courses, passed 2.5 miles off Mikomoto Jima Lt. at 7.42 p.m. Up to this position the barometer was steady at 29.83 in. (corrected), but there was a heavy southerly swell, and there had been frequent heavy rain squalls accompanied by light breezes from the N.E.

"At 10.00 p.m. the wind veered to the S.E. At midnight, the barometer, which stood at 29.80 in. (corrected) commenced to fall, and continued to do so till it reached its lowest reading of 29.471 in. (corrected), at 4.00 p.m. on the 15th, at which time the wind had reached its greatest velocity of force 9.

"At 1.00 a.m. of the 15th a good dipping bearing of Omai Zaki Lt. was obtained placing the ship 196° distance 24.8 miles. This was the last observed position before the typhoon. From this position the course steered was 240°, speed by log 9 knots to 4.00 a.m., 8½ to 8.00 a.m., and 7 to 10.20 a.m., when the ship was hove to heading 114° with wind and sea on the starboard bow. Up to this time the wind was from the S.E. veering to S. by E. force 7. Sea moderate to heavy with swell heavy from the S.S.W. Sky overcast and frequent violent wind and rain squalls. At noon the wind had increased to force 9 with the barometer reading 29.541 in. (corrected). The wind stayed at this velocity and veered slowly to the south, where it commenced to abate from 5.00 p.m.

"At 9.40 p.m. the course was reset 270°, speed 8 knots by log. At 2.45 a.m. of the next day (16th) a wireless bearing was obtained of Shio Misaki Radio giving 286°, and at 5.00 a.m. an observation of Jupiter placed the ship in Lat. 33° 04' N., Long. 136° 55' E., using the wireless bearing brought forward with a position line of the planet (13/193). Course was then altered to 286° and speed increased to 11 knots. At 9.55 a.m. another bearing of Shio Misaki Radio was taken giving 278½°. Course was then altered to 270° and at 0.30 p.m. Kaskine Zaki Lt. Ho. was observed bearing 286½°, distance 12 miles.

"Working back to 9.40 p.m. on 15th, and working forward from 1.00 a.m. of 15th to 10.40 a.m., when the vessel was hove to, gives a current of 102°, distance 114 miles. This set may be considerably in error owing to the lack of sights, and the ship flying light at the time, but it was noticed that on rounding Shio Misaki point, the current was flowing strong into the Gulf of Yedo, at one time at the rate of 5 to 6 knots.

"While the vessel was hove to, weather reports were exchanged with S.S. *Bellerophone*, who gave the following information:—

9.00 a.m. on 15th. Lat. 33° 07' N., Long. 135° 19' E. Bar. 29.40 in.

Wind S.S.E. Full gale force.

Noon on 15th. Lat. 32° 56' N., Long. 135° 26' E. Bar. 29.49 in.

Wind S.S.W. Force 8.

7.00 p.m. on 15th. Lat. 32° 18' N., Long. 135° 04' E. Bar. 29.64 in.

Wind S.S.W. Force 7.

Tokyo Observatory sent out the following positions of this typhoon:—

14th.	1200 hrs.	Lat. 31½° N.	Long. 134° E.	Direction N.
"	1800 "	" 32° N.	" 133½° E.	" N.
15th.	0600 "	" 33° N.	" 134° E.	" N.N.E.
"	1200 "	" 33° N.	" 134½° E.	" N.N.E.
"	1400 "	" 34° N.	" 134½° E.	" N.E.
				(from Kobe).
"	1800 "	" 35° N.	" 135½° E.	" N.N.E.
16th.	0600 "	" 39° N.	" 139° E.	" N.E.

Later filled in."

## WEATHER CHARTS MADE AT SEA.

### North Pacific.

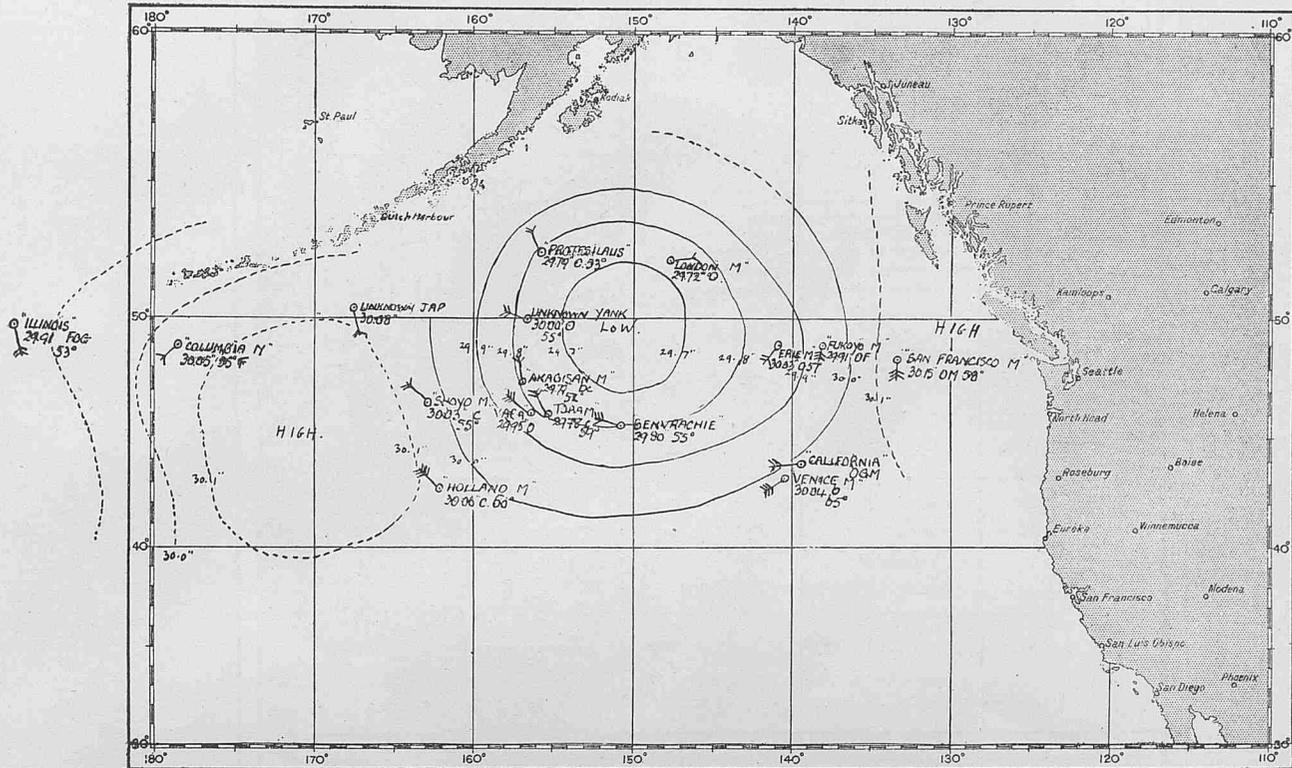
Two Weather Charts of a series made on board S.S. *Protesilaus*, Captain D. L. C. EVANS, from Victoria, B.C., to Yokohama, by Mr. E. A. H. GEPP, who remarks as follows:—

"It will be observed that in the weather charts accompanying this Log Book, and in those previously despatched to the Meteorological Office, the system of synchronized observations by "Selected Ships," with reference to the plotting of data, could not be employed, due to the small number of "Selected Ships" within W/T communication at one time. Recourse has thus been had to the only available sources of information, namely, that sent out by vessels, irrespective of nationality, at Noon and 8h. 00m. p.m. (A.T.S.). Accuracy, particularly in the barometer readings of the smaller Japanese vessels, cannot be relied upon, but a large number of these observations serve as a general guide to the existing conditions. The coded synoptic reports from Tokyo Observatory and San Francisco Naval Radio Station, augmented by those from Dutch Harbor Radio Station, employed in conjunction with data received from various vessels (British, American and Japanese), the reports of which long experience has shown to be accurate, provide sufficient data to make up comparatively accurate

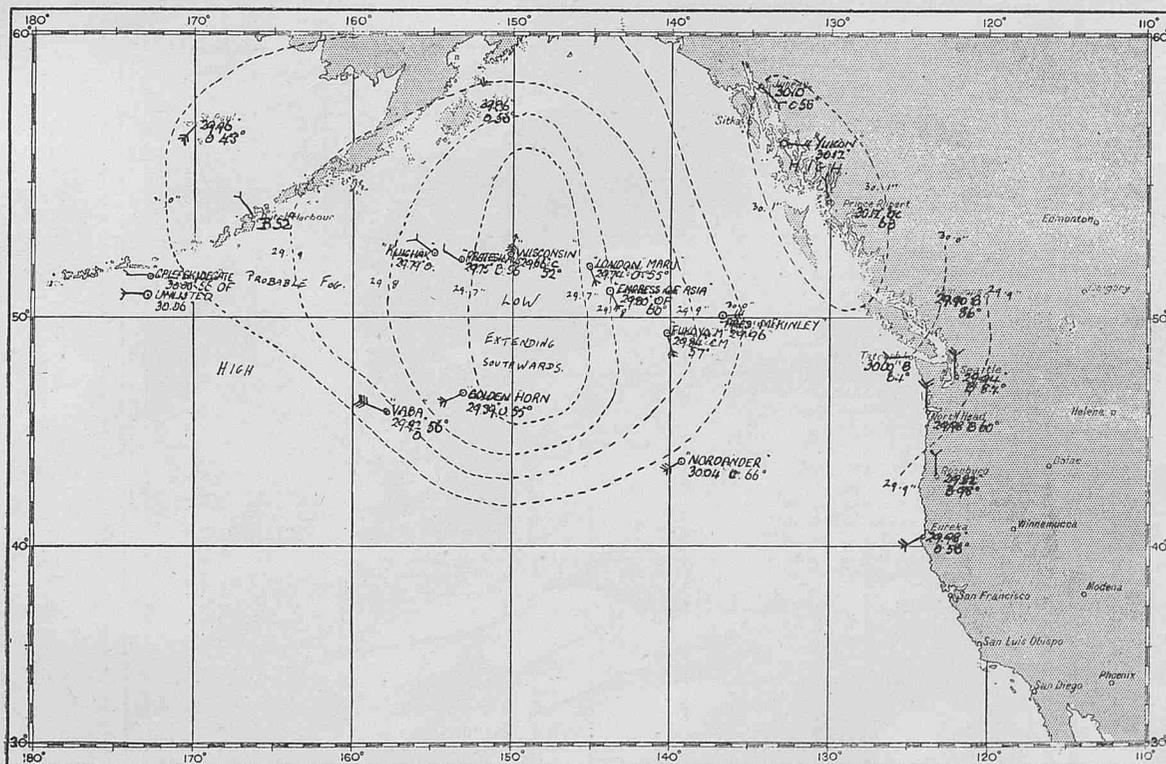
charts and forecasts. It has been found that the 'en clair' reports, which follow the coded groups in the Tokyo Weather Reports, often show discrepancies with respect to the position, speed and direction of movement, and depth, of depressions over the ocean to the East of Japan."

NOTE.—Mr. GEPP has made particularly good use of the data available. The reports plotted would in many cases mislead a less skilled observer for it is evident that some of the Barometer readings were incorrect. Weather charts made at sea in the N. Pacific illustrating the need for synchronization have been published in THE MARINE OBSERVER from time to time.

The International agreements reached last year which became operative on May 1st, 1930, in British ships should do much to remedy the difficulties which the Corps of Voluntary Marine Observers have done so much to surmount.



Forecast for 24 hours from 6 p.m. (A.T.S.) Saturday, 10th August, 1929—Barometer will rise very slowly but steady. Winds will remain moderate to light North-Westerly to Westerly. Mainly cloudy or overcast, with fog or mist occurring to-night and to-morrow.

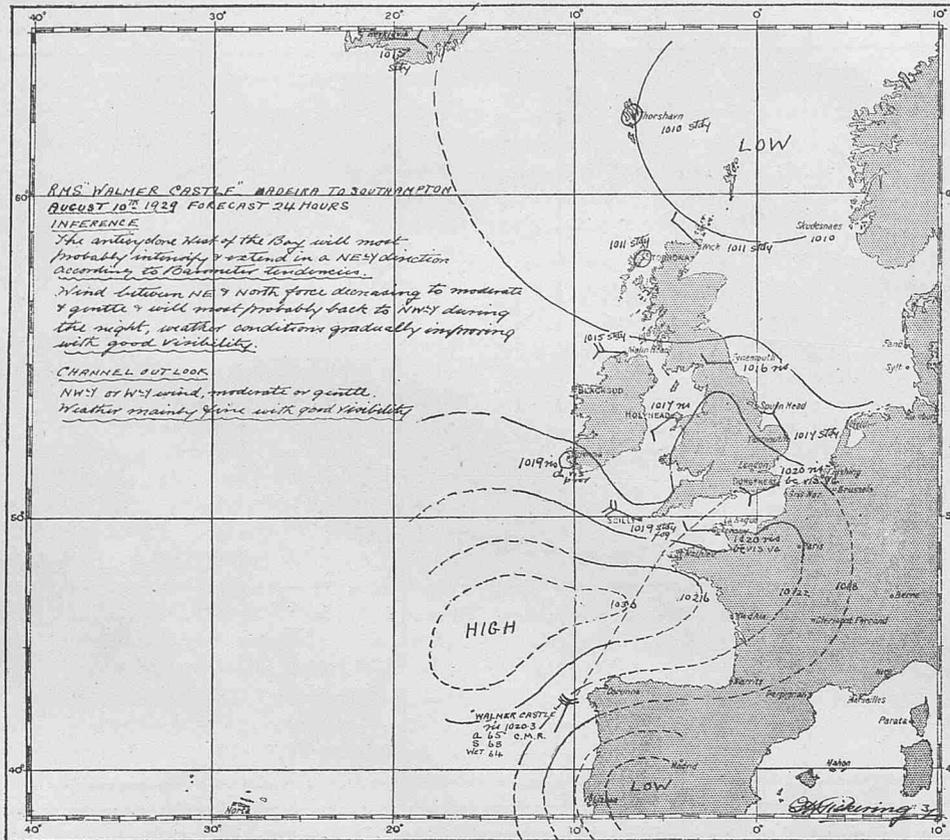


Forecast from 4 a.m. (A.T.S.) Sunday, 11th August, 1929.—Moderate Northerly winds, becoming light North-Easterly and later variable light airs, mainly Westerly. Barometer continuing to rise. Fine weather with clear skies, but fog or mist will occur p.m. to-day, two or three consecutive days of fog are indicated.

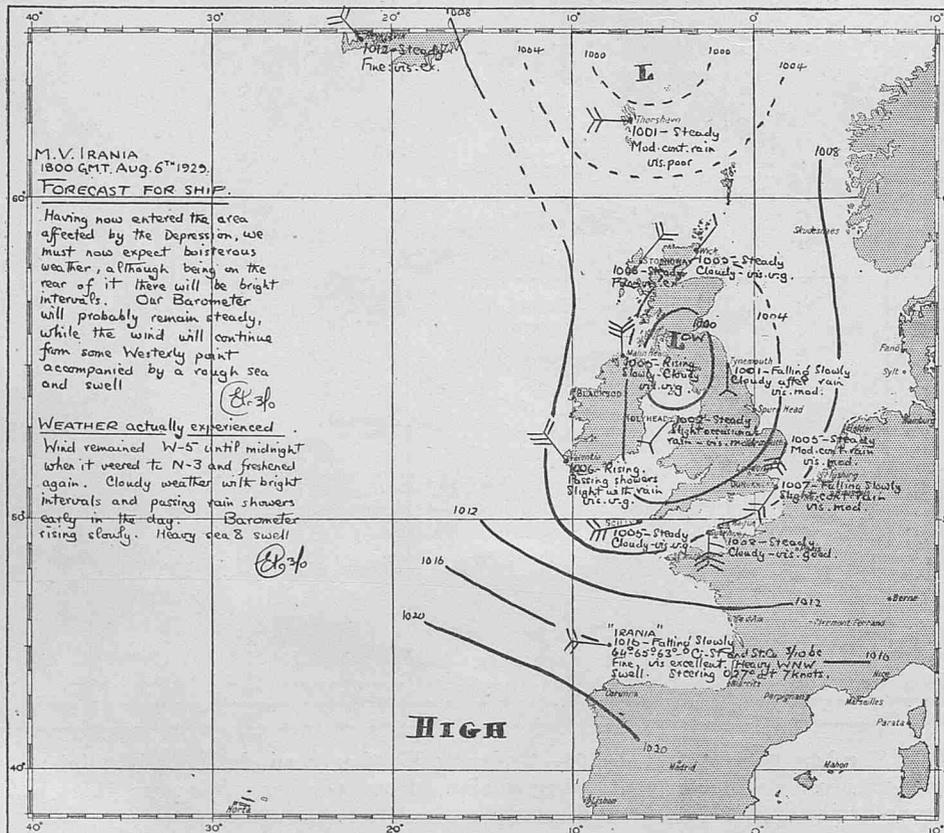
WEATHER CHARTS MADE AT SEA (continued).

Eastern North Atlantic.

Weather Charts made at sea on Board S.S. *Walmer Castle*, Captain W. MORTON BETTS, Cape Town to Southampton, by Mr. G. H. PICKERING.

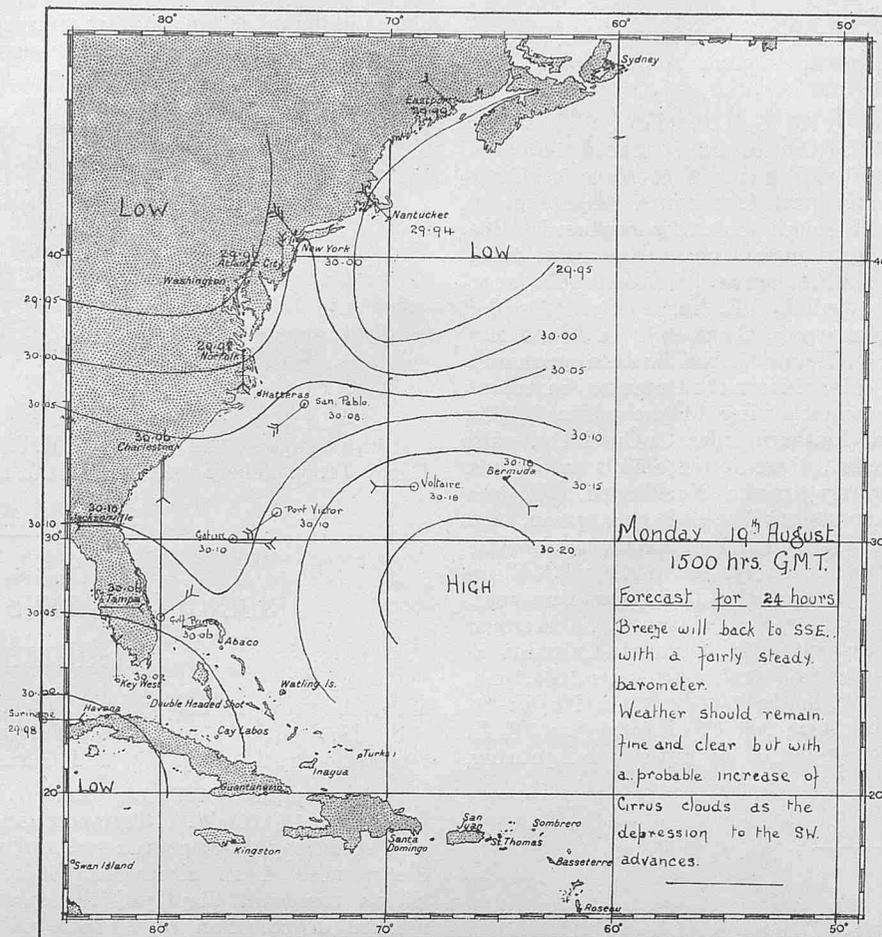


Weather Chart made at sea on board M.V. *Irania*, Captain F. A. ADAMS, Constanza to Havre, by Mr. E. ALLEN, 3rd Officer.



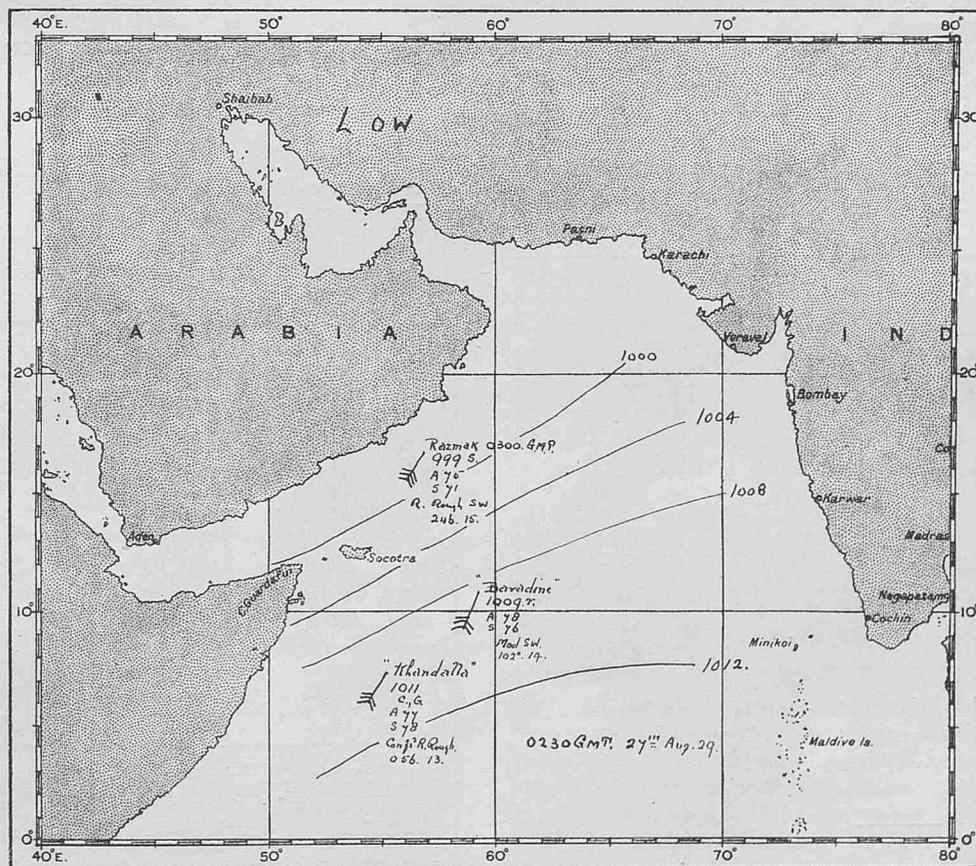
Western North Atlantic.

Weather Chart made at sea on board S.S. *Port Victor*, Captain G. S. HALL, Newport, News. to Colon, by Mr. J. S. MOATE.



Arabian Sea.

Weather Chart made at sea on board S.S. *Baradine*, Captain C. H. C. ALLIN, Suez to Colombo by Mr. C. B. ROCHE, Chief Officer.



## CLOUD PHENOMENON.

## South Pacific.

THE following is an extract from the Meteorological Log of S.S. *Karamea*, Captain A. McINTOSH, Panama to Auckland, N.Z. Observer, Mr. K. D. FISHER, 2nd Officer.

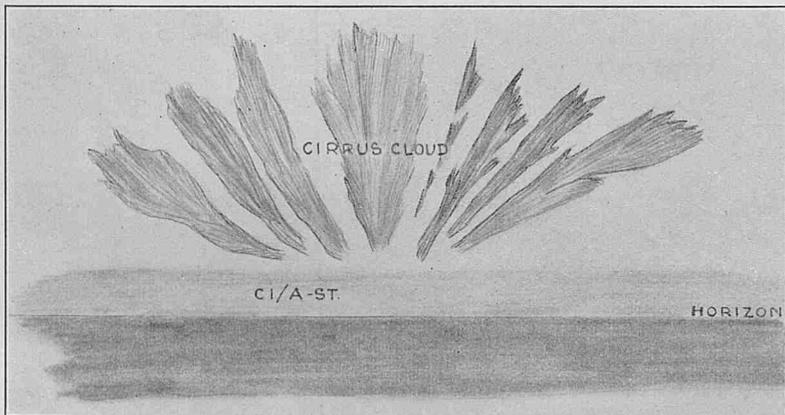
"August 19th, 1929, 4.00 p.m. (0130 G.M.T. 20th). Latitude 28° 24' S., Longitude 142° 46' W. Course 249°. Speed 14.5 kts. Barometer 1008.0 mb. falling rapidly, Wind E.N.E. force 5. Overcast with continuous heavy rain for past four hours. Temperature Air 64.5° F., Sea 64.5° F. Swell rough and very confused. Sea rough and having a curious clipped appearance to the wave tops. 4.20 p.m. wind suddenly veered to S.S.E. force 6, increasing in force. 5.00 p.m., Barometer 1006.4 mb., wind S.E. force 8-9. 'Break' slowly from Westward, showing blue sky about 2/10 in which sun shining brightly (about 10° Alt.) Clouds on the Eastern extremity of 'Break' Ci-St. and A-Cu., also Mammato-Cumulus in about three lines, draping the edges and showing bright white in the sunlight. On the Northern and Southern sides Ci-Cu/A-Cu. with St-Cu/Nb. and low driving Fr.,St., these lower clouds taking on an ugly copper colour, particularly to the Northward. To the Southward between the lower clouds, patches of pale green. In the centre of blue patch a line (N. and S.) of small hard white puffs, not unlike shrapnel. 5.24 p.m., Barometer 1006.9 mb. Wind backing slowly. 'Break' more or less overhead, sky clouding over. 5.35 p.m., Barometer 1007.2 mb. E.S.E. force 7. Western extremity approaching. Edges draped with Mammato-Cumulus as before, solid mass of St-Cu., etc., behind. 5.47, Barometer 1007.2 mb. Wind steady E. by S. force 7. Cloudy 8/10. St-Cu/Nb/Fr-St. streaming with the wind. Temperature Air 62° F. and Sea 61° F. 7.15 p.m. Fierce squall wind accompanied by rain and lightning. Wind E. by S. force 8/9.

## RADIATING CIRRUS.

## China Sea.

THE following is an extract from the Meteorological Log of S.S. *Glenamoy*, Captain C. E. HOMAN, Yokohama to Dalny. Observer, Mr. F. B. C. WHETHERLY.

"August 11th, 1929, at 0100 G.M.T. in Latitude 35° 25' N., Longitude 124° 00' E. Sky  $\frac{3}{4}$  covered with Cirrus cloud. Fan shaped formation of clouds observed with point of radiation bearing N.W. by W. Altitude approximately 18°. Vertical arc from point of radiation 90°. Barometer 1010.0 mb. Air Temperature 83.5° F., Sea Temperature 83° F., Wind E.N.E. force 1-2, Sea E.N.E., slight swell, S. by E. slight.

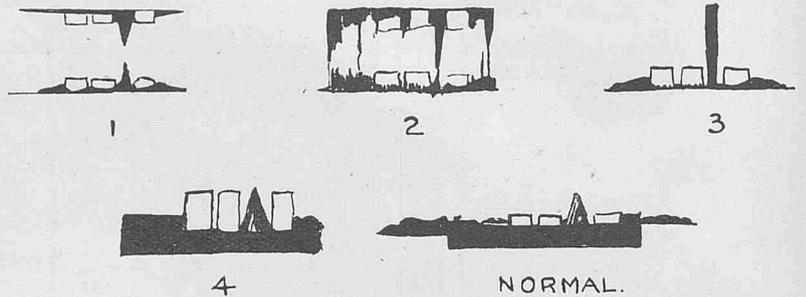


"At the time of observation, the centre of a typhoon was situated within 60 miles of Latitude 25 $\frac{1}{2}$ ° N., Longitude 121 $\frac{1}{2}$ ° E., approximately 600 miles from *Glenamoy*."

## MIRAGE.

## Western Australia.

THE following is an extract from the Meteorological Log of S.S. *Gascoyne*, Captain L. JOHNSON, Fremantle to Derby, W.A. Observer, Mr. J. S. McBRYDE, 2nd Officer.



"12th August, 1929, 0720 G.M.T. to 0745 G.M.T. Mirage of Derby Jetty. There were large bush fires burning up country."

## RISING OF VENUS AND SIRIUS.

## North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Eldonpark*, Captain R. BURNS, River Plate to Antwerp. Observer Mr. D. RANKINE, 2nd Officer.

"29th August, 1929, at 02.28 A.T.S. in Latitude 34° 26' N., Longitude 16° 15' W. Observed planet Venus rise showing remarkable colouring, it appeared red and white by turns almost with the distinctness of an alternating shore light. Half an hour later Sirius rose and displayed the same colouring though in a less marked degree than in the case of Venus. Weather at this time flat calm, slightly W'ly swell. Cumulus cloud 1/10 over Northern horizon, Barometer 30.14 in. Air temperature 70° F."

## ANTI-SOLAR RAYS AND RAINBOWS.

## China Sea.

THE following is an extract from the Meteorological Report of S.S. *Ningchow*, Captain H. E. BEALE, Kobe to Singapore. Observer, Mr. H. MORLEY, 4th Officer.

"On August 26th, 1929, at 5.30 a.m., when in Latitude 15° 31' N., Longitude 113° 12' E. A sharp shower of rain, which had been



threatening for some time had just passed over when a number of diffused rays of light appeared radiating from a common centre obscured by a small bank of Cumulo-Nimbus Clouds, bearing S. 80° W. (True). The rays of light were a pale pink in colour and were shown up in sharp relief by a dark blue sky. When the sun rose five to ten minutes later, two arcs of separate rainbows appeared in the position shown in the diagram. The amplitude (True) of the sun was N. 80° E., being diametrically opposite the rays and when it had attained an altitude of two or three degrees, first the rays and then the rainbows slowly faded out, leaving the sky with a normal appearance.

"The clouds at the time of the observation were:—Nimbus over the whole of the northern portion, while Cumulo-Nimbus, Strato-Cumulus and detached Cumulus covered three-fifths of the remaining sky. The only upper cloud visible was a small amount of Cirrus. Total cloud amount nine. Weather fine with occasional showers. Light airs and smooth sea"

## METEORS.

### North Atlantic.

THE following is an extract from the Meteorological Report of S.S. *Orcoma*, Captain J. G. HARVEY, Colon to Plymouth. Observer, Mr. W. J. RUTTER, 3rd Officer

"August 5th, 1929. 0530 G.M.T. Latitude 35° 32' N., Longitude 56° 52' W. Observed meteor of exceptional brilliance which appeared to come out of the Square of Pegasus and went away S.W. The 'tail' of the meteor was of considerable length, very brilliant, and was visible until it dipped beyond the horizon. The trail was visible in the sky for more than 3 minutes after the first flash. Wind S.W. force 4. Visibility good. Sky 3/10 cloudy. Cirrus A-Cu. Barometer 1020.4 mb. Temperature Air 80° F."

THE following is an extract from the Meteorological Report of S.S. *Glamorganshire*, Captain H. WOMERSLEY, London to Pacific Ports. Observer, Mr. C. PRYOR, 3rd Officer.

"August 30th, 1929, at 0050 G.M.T. in Latitude 37° 11' N., Longitude 34° 57' W., a bright meteor appeared midway between  $\alpha$  Ophiuchi and  $\delta$  Aquilae, travelling to the S.S.W. and disappeared midway between  $\lambda$  Aquilae and  $\eta$  Serpentis. Colour white.

Magnitude 1 to 0. The meteor disappeared in a sudden flash of brilliance, leaving a thin trail of reddish colour. Duration about 2 seconds."

### Bay of Biscay.

THE following is an extract from the Meteorological Report of M.V. *Irania*, Captain P. A. ADAMS, Mediterranean to Continental Ports. Observer, Mr. R. HAY, 2nd Officer.

"August 7th, 1929, 0207 G.M.T., in Latitude 40° 43' N., Longitude 7° 51' W. Observed what appeared to be an aerolite fall to earth. At first sky became brightly illuminated to the westward as if by continued lightning, then from behind the clouds the object appeared, a bright flaming ball about the size of half the diameter of a full moon and having a ragged tail streaming away behind in its path of travel. It did not move as quickly as the apparent motion of a shooting star, nevertheless it was not visible for more than a few seconds before it disappeared either into the sea or below the horizon. It bore about 290° from ship and on its first appearance beneath clouds had an altitude of roughly 10°. Cloudy and overcast with heavy Nimbus clouds, passing drizzling rain, Wind W.N.W. force 5, Barometer 1016 mb. Temperature, Air, Wet 59°, Dry 62°, Sea 63°."

NOTE.—This may have been a meteor and if so would probably fall to earth as an aerolite since it was seen at a very low altitude below Nb. cloud. On the other hand it is possible that it was a case of ball lightning.

### Arabian Sea.

THE following is an extract from the Meteorological Log of S.S. *Buteshire*, Captain W. J. PAGE, Fremantle to Hull via Suez. Observer, Mr. S. R. J. WOODS, 3rd Officer.

"August 11th, 1929, at 22.05 A.T.S., 1840 G.M.T., in Latitude D.R. 5° 38' N., Longitude D.R. 53° 34' E. Observed a bright meteor bearing N. 26° W. true. It first appeared at an altitude of 50° and travelling along a line joining Vega and the Moon disappeared bearing S. 80° W. at an altitude of 15°. It completed its flight in 1.5 seconds, but its 'tail' was visible for 4 seconds afterwards. It was about four times the magnitude of Vega (the nearest bright star) and gave three exceptionally bright flashes, lighting up the sky, immediately before its disappearance."

## INDIAN OCEAN CURRENTS.

### I—The Region of Ceylon during the South-West Monsoon.

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

THIS article is the first of a series dealing with the currents of the Indian Ocean on the tracks from Cape Leeuwin to Perim, direct and via Colombo. In the present volume of THE MARINE OBSERVER, new charts of currents on these tracks are being published, based on the observations of ships regularly observing for the British Meteorological Office during the period 1910-1928. The method employed in the construction of the charts, both as regards the resultant current directions and the current roses, is precisely the same as in the charts previously published. The number of observations on which the charts depend is very satisfactory on the whole, but a few arrows which have been computed from only 3 to 5 observations will be noted.

Admiral SOMERVILLE in his "Ocean Passages for the World" states with reference to the currents in the neighbourhood of Ceylon:—"The position of the island of Ceylon is a meeting or dividing point for the oceanic current systems of the Indian Ocean,

the Arabian Sea and the Bay of Bengal; and this fact probably accounts for the very varying reports, given by vessels approaching the island from all positions, as to their direction and velocity. When within from 12 to 15 miles off the coast, or within the 100-fathom contour line, the currents are very variable, and on the eastern and western sides of the island currents may be met with running parallel to the coast, but in diametrically opposite directions, at the same time and within a few miles of each other; but it would appear that the coast currents generally circulate round the island in the direction of the hands of a watch during the north-east, and in a contrary direction during the south-west Monsoon; being variable at the changes." In the present article we are not, however, concerned with the coastal currents of Ceylon; the region to be investigated is the open ocean lying between the south coast of Ceylon and the Equator which is traversed by the track from Cape Leeuwin to Perim via Colombo, Latitude 0° to 4° N., Longitude

80°E. to 88° E. and Latitude 4° N. to 6° N., Longitude 76° E. to 84°E. It is shown on the six monthly inset charts given in this number.

As is well known, the currents of the North Indian Ocean are seasonal, a general S.W. to W. set occurring during the period of the N.E. Monsoon and a general N.E. to E. set occurring during the period of the S.W. Monsoon. Between Ceylon and the Equator the sets are, broadly speaking, due W. and due E., South of the Equator the Counter-Equatorial Current runs to the eastward throughout the year, but more strongly during the N.E. Monsoon. Further south is the Equatorial Current setting west throughout the year. We shall see how far THE MARINE OBSERVER charts confirm the older current charts, and in particular, what new or more detailed information may be obtained from them.

The chart of arrows for the quarter May to July shows that the mean current is E.S.E. for the region of Latitude 4° N. to 6° N., Longitude 76° E. to 80° E., and is E. between Ceylon and the Equator in Longitude 80° E. to 88° E. The mean drifts vary from 6.6 to 17.4 miles per day, the area of smallest mean drift being Latitude 0° to 4° N., Longitude 80° E. to 84° E. During the next quarter, August to October, the conditions are very similar and the mean drifts over the region vary from 6.1 to 23.0 miles per day, but the sets are not quite so uniformly due E. Taking the respective numbers of observations into consideration, as well as the mean drifts, the flow of current over the region as a whole is approximately 13 miles per day during the Summer quarter and a little stronger, 15 miles per day, during the Autumn quarter.

Only two of the roses on the charts come under discussion in the present article, since that for Longitude 76° E. to 80° E. includes the currents west of Ceylon and those of the west coast of India as far as Latitude 10° N. Examining these two roses, the southern of which extends beyond the region selected to Latitude 2° S., we see that in both quarters the majority of the currents set between E.N.E. and E.S.E. but that all other directions, including due westerly sets, are also represented. A number of differences between the two quarters will be noticed. In the northern rose the E.N.E. sets increase and the E.S.E. sets decrease in Autumn, but on the other hand the Autumn quarter shows a considerable increase of S.E. sets. In the southern rose E. and E.S.E. sets predominate during the Summer quarter, but the E. sets increase considerably in frequency, though not in maximum strength, during the Autumn quarter.

The following information as to the prevalence and strength of the westerly currents in the whole area under consideration has been derived from a study of the individual currents over the period 1910 to 1928. Out of the total of 355 currents used in the preparation of the charts for the two quarters, only 57 have a westerly component, as shown in Table I.

TABLE I.

Number of Currents with Easterly and Westerly Components between Ceylon and the Equator during the months May to October. (Period 1910 to 1928.)

## MAY TO JULY.

—	With Westerly Components.	With Easterly Components.	Setting Due N. or S.	Drift nil.	Total.
Number of observations of Current.	32	137	4	3	176

## AUGUST TO OCTOBER.

Number of observations of Current.	25	147	7	0	179
Totals for the 6 months	57	284	11	3	355

It is interesting to note that of the 11 currents shown in the third column all set S., with one exception in May to July. A few drifts with sets a few degrees east or west of the north or south points were observed, but they fall within the first or second columns.

Of the 57 currents observed with westerly components only 12 had drifts exceeding 20 miles per day. These are given in full in Table II.

TABLE II.

Sets observed with Drifts exceeding 20 miles per day, having Westerly Components, during the months of May-October, in the region between Ceylon and the Equator. (In Column 7 L denotes 24-hour observations, S those derived from shorter periods.)

Name of Ship.	Date.	Middle.		Current.		Period.	Wind.	
		Latitude N.	Longitude E.	Set.	Drift. (24 hrs.)		Direction.	Force.
<i>Peleus</i> ...	May 29, 1920.	3 30'	83 30'	S. 34° W.	34	L	W.S.W.	4
<i>Otway</i> ...	June 24, 1914.	1 42	83 43	N. 57° W.	26	L	S.W.	3
<i>Ormuz</i> ...	June 24, 1923.	0 55	84 10	N. 70° W.	27	L	S.W.	5
<i>Hobson's Bay</i>	June 13, 1924.	2 14	83 02	W.	36	S	S.W.	4
<i>Ormuz</i> ...	June 16, 1924.	2 13	83 27	N. 84° W.	59	S	S.W. by W.	3
<i>Westmoreland</i>	June 30, 1926.	0 22	85 03	N. 22° W.	22	L	S. by E.	2
<i>Orsova</i> ...	July 21, 1923.	2 16	82 54	N. 65° W.	24	L	S.S.W.	3
<i>Orvieto</i> ...	Aug. 12, 1922.	1 30	83 32	N. 32° W.	55	S	W. by S.	3
<i>Orama</i> ...	Aug. 15, 1927.	2 23	83 20	N. 45° W.	21	L	S.S.W.	3
<i>Hurunui</i> ...	Sept. 14, 1924.	3 49	82 12	N. 5° W.	27	S	S.W. by W.	4
<i>Clan Morrison</i>	Oct. 21, 1924.	3 54	81 18	S. 21° W.	30	S	—	—
<i>Woodarra</i> ...	Oct. 26, 1927.	4 35	82 30	N. 59° W.	23	L	Var.	1

It will be seen that 5 out of the 12 strong currents with westerly components given in Table II were observed during the month of June. Two of these were experienced by S.S. *Ormuz* and S.S. *Hobson's Bay* in June, 1924, in very nearly the same locality within three days of one another. Another interesting feature of the table is that, excluding the one observation of variable wind and the one case of no wind observation, the winds shown blow always from a direction between W. and S. In other words the S.W. Monsoon was blowing throughout the observations of abnormal westerly current and these therefore cannot be related to the wind. It is possible that some explanation of these abnormal currents may be found when the wider stretches of the Indian Ocean are investigated in the subsequent articles.

The two maximum drifts experienced in the region are as follows:—S.S. *Orontes*, May 13th, 1914, Latitude 0° 19' N., Longitude 84° 15' E., S. 71° E., 65 miles per day, and S.S. *Elpenor*, August 8th, 1922, Latitude 5° 58' N., Longitude 83° 46' E., N. 76° E., at the rate of 64 miles per day. A larger drift, S. 89° E., 90 miles per day, was experienced by S.S. *Orontes* on May 5th, 1920, in Latitude 0° 30' S., Longitude 85° 30' E., this mid-position being just outside the area under consideration.

A more detailed investigation of the currents south of Ceylon has been made to see whether information could be obtained as to variations of current in different parts of the area and the existence of counter-currents. For this purpose the mean resultant current arrows were re-computed for each of the six months in areas of one degree square and are charted in the six inset charts in this number, each current being placed in the centre of its square. Making due allowance for the fact that a few of the arrows represent single currents, it is at once obvious that the region of strongest current in the S.W. Monsoon period varies with the

month. In May, currents are strongest near the equator and weakest closely south of Ceylon. In June the state of affairs is exactly reversed. In July the current is more evenly distributed, but is again strongest in the north of the area. In August a very strong flow passes eastward between Latitude  $5^{\circ}$  N. and  $6^{\circ}$  N., the mean sets elsewhere being mainly weak. In September there is a redistribution of current fairly equally over the whole area, but in October the conditions are very similar to those of May, with the strongest current near the Equator. The currents of September definitely represent a transition between those of August and October. In this connection reference should be made to the MARINE SUPERINTENDENT'S Note on "Currents and Navigation in the Indian Ocean," published on page 38 of THE MARINE OBSERVER, February, 1930. The variation of the latitude of the strongest current in different months is only partially shown on the older current charts.

A closer examination of the monthly charts in the inset chart will show that there are indications of small areas of counter-current and of currents whose mean sets depart considerably from due E., but in most of these cases the number of observations is not sufficiently great to draw definite conclusions from. An exception to this statement will, however, be found in the June charts where in two adjacent squares there are mean sets to W.N.W. The squares are Latitude  $1^{\circ}$  N. to  $2^{\circ}$  N., and  $2^{\circ}$  N to  $3^{\circ}$  N., both in Longitude  $83^{\circ}$  E. to  $84^{\circ}$  E. The mean currents are N.  $63^{\circ}$  W., 6.3 miles per day, based on seven observations, and N.  $59^{\circ}$  W., 6.7 miles per day, based on eight observations. In closely adjacent squares will be found a mean current of 10.7 miles per day, N.  $38^{\circ}$  W. in June (three observations) and one of 7.7 miles per day, S.  $61^{\circ}$  W. in July (four observations). This is the most conclusive evidence of counter-current shown on the charts and it is in agreement with the Admiralty current charts which show counter-currents during June in about Latitude  $2^{\circ}$  N. The Admiralty charts show no definite counter-currents in any other of the six months, May to October. It

is probable that, generally speaking, isolated westerly sets occur rather than definite streaks of counter-current in fixed localities.

THE MARINE OBSERVER charts are in general agreement with the older current charts as to the strong eastward-setting current experienced to the south of Ceylon during the months of May to October. In the article on the Monsoons of the Indian Ocean, China Seas and the Eastern Mediterranean published in THE MARINE OBSERVER, Vol. VI, 1929, it was stated on page 132 that in the belt south of India, in Latitude  $0^{\circ}$  to  $5^{\circ}$  N., Longitude  $60^{\circ}$  E. to the coasts of Sumatra, the S.W. Monsoon is less steady and not so strong as it is in the Arabian Sea and the Bay of Bengal. It may, however, be seen on the Monthly Meteorological Charts of East Indian Seas that the S.W. Monsoon between Ceylon and the Equator is on the whole stronger and steadier than it is elsewhere in the belt specified above. This will explain the relative steadiness of the eastward current in that region. There is a further point of interest in which the wind and current charts confirm one another. The transition month from the N.E. to the S.W. Monsoon is April, and that from the S.W. to the N.E. Monsoon October, for the North Indian Oceans as a whole, but between Ceylon and the Equator the S.W. Monsoon persists later and is still blowing with less strength and rather less steadily in November. The monthly current charts bear this out by showing that the eastward-setting current is well maintained during October. The transition months will be more fully dealt with in the later articles.

To summarise, the chief fact brought out in this investigation of the currents southward of Ceylon during the south-west monsoon is the shifting of the flow of strongest current from the equator at the beginning and ending of the S.W. Monsoon to closely south of Ceylon during the height of the monsoon in June, July and August. The existence of a restricted area of counter-current in about Latitude  $2^{\circ}$  N. in June has also received confirmation.

*(To be continued).*

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

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WEATHER SIGNALS.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

Urgent Meteorological reports should be made at any time. Any ship at any time encountering a tropical revolving storm should report to all ships and the appropriate station, continuing to report at intervals of three hours so long as the ship remains under the influence of the storm.

Ships experiencing gales in which the wind reaches Force 10 or above in the Beaufort Scale should inform all ships within range.

Ships encountering Ice or other navigational dangers should report immediately to all ships and the appropriate station; see instructions for Danger to Navigation Signals for all ships, page 27, Vol. VII, No. 73.

For full particulars of "Selected Ships" Routine Meteorological Reports with Schedule for Communication, see pages 22 to 24, Vol. VII, No. 73.

See List of W/T Stations detailed to receive reports from **A Selected Ships** with particulars up to date on previous page.

In parts of the world where such stations and particulars are not given, British **A Selected Ships** should make their reports to **CQ** on 2100 metres (143 Kc/s) as stated on page 24, Vol. VII, No. 73 (January, 1930, MARINE OBSERVER).

**B Selected Ships** when within range of stations ringed in on Chart IX, in making their reports to **CQ** should make special endeavour to ensure that the report is received at these shore stations.

According to agreement reached by the International Meteorological Conference, 1929, all arrangements for the co-operation of shipping in Voluntary Marine Meteorological work are to be made through the Meteorological Services of the different countries in which the ships are registered and owned, in accordance with the agreed upon International plan for all parts of the World.

II.—WIRELESS WEATHER SIGNALS.

WIRELESS WEATHER BULLETINS.

The method of decoding station weather reports made in code from shore stations intended for shipping was described in the British "Weather Shipping" Bulletin, on page 52 of Volume VII, No. 74. (The February, 1930 Number.)

The same method of decoding weather reports applies in all cases where the International Ships' Wireless Weather Telegraphy Code is used having regard to the Key figures given in each case where they differ from the British Weather Shipping Bulletin.

Canada, Nova Scotia, Newfoundland and Labrador, etc.

(C.W., I.C.W. and Spark Issues.)

THE following stations broadcast weather bulletins, giving forecasts,\*\* on 600 metres spark, unless otherwise indicated. Where the times of transmission are omitted, forecasts are sent on request. Stations marked with an asterisk (\*) are open during the season of navigation only.

Country.	W/T Station.	Call Sign.	Position (approx.).		Time, G.M.T.	
			Lat. N.	Long. W.		
Canada (Nova Scotia).	†Lurher Lt. Vsl. ...	VGA	43° 49'	66° 32'	—	
	†Yarmouth ...	VAU	43° 46'	66° 07'	0430, 1630	
	†Chebucto Head ...	VAV	44° 30'	63° 31'	0440, 1640	
	North Sydney ...	VCO	46° 13'	60° 15'	—	
	Sable Island ...	VCT	43° 56'	60° 02'	—	
Canada ...	§Louisburg ...	VAS	46° 09'	59° 57'	0400, 1600	
	Grindstone Island ...	VCN	47° 23'	61° 54'	—	
	†Fame Point, Que. ...	VCG	49° 07'	64° 36'	0430, 1630	
	*Clarke City, Que. ...	VCK	50° 11'	66° 37'	—	
	†Father Point, Que. ...	VCF	48° 31'	68° 28'	0420, 1620	
	†Quebec ...	VCC	46° 48'	71° 12'	0410, 1610	
	†Montreal ...	VCA	45° 34'	73° 38'	0400, 1600	
	*Heath Point Lt. Vsl. (Anticosti I.) ...	VGH	49° 03'	61° 30'	—	
	Canada (New Brunswick).	†St. John ...	VAR	45° 14'	66° 03'	0400, 1600
	Newfoundland and Labrador.	†Belle Isle ...	VCM	51° 53'	55° 22'	0440, 1640
Cape Race ...		VAZ	46° 39'	53° 04'	0420, 1620	
Point Amour ...		VCL	51° 27'	56° 50'	—	
St. Pierre and Miquelon Is.	St. Pierre ...	HYS	46° 47'	56° 11'	0100, 1300	
Hudson Bay and Strait.	*†Port Churchill ...	VAP	58° 47'	94° 09'	—	
	*†Cape Hopes ...	VAY	61° 05'	69° 33'	—	
	Advance					
	*†Nottingham Is. ...	VCB	63° 06'	77° 56'	—	
	*Resolution Is. ...	VAW	61° 20'	64° 50'	—	

† The station keeps watch for the first half of every odd hour from 1200 to 0000, and from 0300 to 0330, G.M.T.  
 ‡ Wavelength, 600 metres (I.C.W.).  
 § Wavelength, 2,804 metres (C.W.).

Wireless Telephony R/T Issues.

THE following stations broadcast weather forecasts,\*\* issued by the Canadian meteorological service, by word of mouth.

Country.	Station.	Call Sign.	Position (approx.).		Time G.M.T.	Wave-length R/T.
			Lat. N.	Long. W.		
Canada (New Brunswick).	St. John... ..	CFBO	45° 14'	66° 03'	1000, 1200	337 m.
Canada (Nova Scotia).	Sambro Outer Bank Lt.-V.	VGX	44° 22'	63° 26'	1200 1730	435 m.
	Louisburg ...	VAS	46° 09'	59° 57'	0800, 1700	435 m.

United States of America (Atlantic Coast).

C.W. Issues.

Washington.—Arlington W/T Station, approximate Latitude 38° 52' N., Longitude 77° 05' W., call sign **NAA**, broadcasts weather bulletins at 0300 and 1500 G.M.T., on wavelengths of 2653 metres (C.W.) and 4409 metres (C.W.) simultaneously.

The bulletins are divided into two parts and begin with the words "Weather Bureau Bulletin."

First Part.

Part I of the 0300 and 1500 G.M.T. bulletins contains observations taken at 0100 and 1300 G.M.T., respectively, from the stations in the list below, followed by weather reports from ships at sea.

\*\* Details of areas, periods and elements not available.

Key letters	Name of station	Latitude north	Longitude west
TP	The Pas, Man	53° 35'	101° 12'
WG	Winnipeg, Man	49° 55'	97° 10'
BK	Bismarck, N. Dak	46° 49'	100° 49'
O	Omaha, Nebr.	41° 16'	95° 58'
KC	Kansas City Mo.	39° 05'	94° 35'
OK	Oklahoma City, Okla	35° 29'	97° 31'
DA	Dallas, Tex.	32° 45'	96° 48'
GV	Galveston, Tex.	29° 19'	94° 50'
DU	Duluth, Minn.	46° 49'	92° 09'
M	Marquette, Mich.	46° 33'	87° 26'
LC	La Crosse, Wis.	43° 50'	91° 12'
CH	Chicago, Ill	41° 50'	87° 40'
SL	St. Louis, Mo.	38° 39'	90° 13'
CN	Cincinnati, Ohio	39° 07'	84° 30'
NV	Nashville, Tenn.	36° 11'	86° 50'
LR	Little Rock, Ark.	34° 41'	92° 15'
VK	Vicksburg, Miss	32° 17'	90° 50'
NO	New Orleans, La.	30° 00'	90° 05'
P	Pensacola, Fla.	30° 25'	87° 12'
L	Alpena, Mich.	45° 05'	83° 25'
D	Detroit, Mich.	42° 21'	83° 03'
F	Buffalo, N.Y.	42° 53'	78° 50'
PB	Pittsburgh, Pa.	40° 26'	79° 57'
LB	Lynchburg, Va.	37° 27'	79° 08'
CT	Charlotte, N.C.	35° 17'	89° 39'
AT	Atlanta, Ga.	33° 45'	84° 21'
TA	Tampa, Fla.	27° 59'	82° 29'
K	Key West, Fla.	24° 40'	81° 48'
MI	Miami, Fla.	25° 46'	80° 12'
NU	Nassau, Bahamas	25° 05'	77° 23'
TI	Turks Island, W.I.	21° 20'	71° 10'
SJ	San Juan, P.R.	18° 29'	66° 06'
JA	Jacksonville, Fla.	30° 21'	81° 40'
C	Charleston, S.C.	32° 50'	79° 58'
WL	Wilmington, N.C.	34° 18'	77° 59'
H	Cape Hatteras, N.C.	35° 14'	75° 32'
NF	Norfolk, Va.	36° 51'	76° 18'
BAL	Baltimore, Md.	39° 18'	76° 38'
AC	Atlantic City, N.J.	39° 22'	74° 27'
NY	New York, N.Y.	40° 43'	74° 01'
T	Nantucket, Mass.	41° 15'	70° 00'
BN	Boston, Mass.	42° 22'	71° 02'
N	Northfield, Vt.	44° 08'	72° 40'
E	Eastport, Me.	44° 54'	67° 00'
CK	Cochrane, Ont.	49° 04'	80° 58'
DC	Doucet, Que.	48° 17'	76° 40'
PN	Parry Sound Ont.	45° 20'	80° 01'
ML	Montreal, Que.	45° 31'	73° 34'
FP	Father Point, Que.	48° 30'	68° 30'
BC	Port Aux Basques, N.F.	47° 33'	59° 10'
CR	Cape Race, N.F.	46° 40'	53° 04'
SAB	Sable Island, N.S.	43° 56'	60° 00'
HX	Halifax, N.S.	44° 38'	63° 35'
B	Bermuda...	32° 18'	64° 42'
HT	Horta, Azores	38° 32'	28° 29'

The stations are indicated by the letters given above and are followed by two groups of five figures.\*

**Ship Reports.**—Weather reports from ships in the Atlantic Ocean, and during the hurricane season additional reports from ships in the Gulf of Mexico and Caribbean Sea, follow the land stations' reports as follows:—

**0300 G.M.T. bulletin** contains 0000 G.M.T. observations; also Noon G.M.T. observations which were received too late for inclusion in the 1500 G.M.T. bulletin.

**1500 G.M.T. bulletin** contains Noon G.M.T. observations; also 0000 G.M.T. observations received too late for inclusion in the 0300 G.M.T. bulletin.

**NOTE.**—Ship reports of previous observations are only included when conditions are unusual.

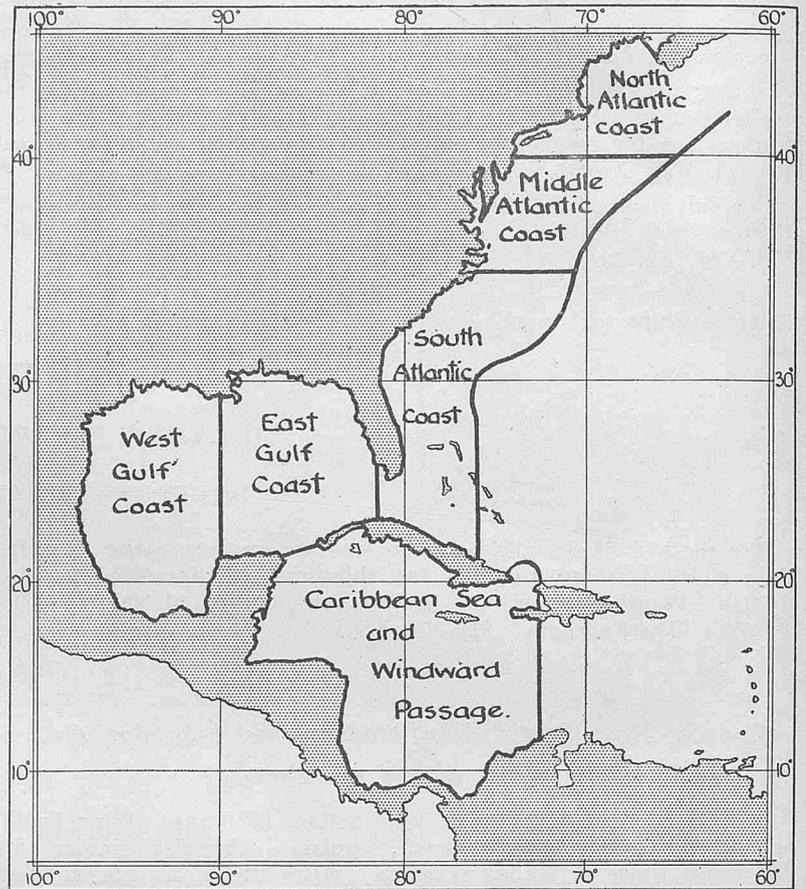
The reports from ships are given in two five-figure groups\* for each ship preceded by the call sign of the ship.

\* No information is available up to time of going to press as to changes of Key Letters or Code, following the Conference of Safety of Life at Sea, 1929, and the International Meteorological Conference at Copenhagen, 1929.

Second Part.

Part II of the bulletin is in plain language, and consists of a summary of general pressure distribution, including the location of high and low areas, and the barometer readings at their centres; wind and weather forecasts for the areas shown on the CHARTLET below.

Storm warnings are also broadcast for these areas, and flying weather forecasts for each of six aviation zones.



Weather Information broadcast for the benefit of Shipping approaching New York Harbour.

The following W/T stations broadcast weather conditions at Sandy Hook from observations made one hour previous to the times of transmission. The information will include barometric pressure, temperature, wind direction and force, state of sky, state of sea, and visibility.

W/T Station.	Call Sign.	Position (approx.)		Time, G.M.T.	Wave-length. Metres.
		Latitude.	Longitude		
Tuckerton, N.J....	WSC	39° 33' N.	74° 23' W.	1400, 2200	650 (I.C.W.).
Chatham (Marion), Mass.	WCC	41° 43' N.	70° 46' W.	1400, 2200	2,200 (C.W.).

United States of America, Caribbean Sea, Gulf Coast and West Indian Islands.

Weather bulletins are broadcast from the under-mentioned W/T stations. They are of the same general character and can be similarly decoded. They are based upon observations taken in the U.S.A. at 0100 and 1300 G.M.T., and one hour earlier at stations in the Gulf of Mexico and Caribbean Sea. The bulletins are divided into two parts.

Part I contains observations from stations in the following lists given in a five-figure group\* for each station preceded by the indicator letter or letters of the station.

If observations from any station cannot be supplied, the indicator letters and code figures will be omitted altogether. If only a portion of the observations are missing, the letter "X" will be sent in lieu.

**Part II.**—Sent in plain language, consists of wind and weather forecasts, storm and hurricane warnings for the various areas shown on the CHARTLET on p. 180.

For particulars of storm and hurricane warnings, see p. 182.

**W/T Stations from which the Bulletins are Broadcast.**  
(C.W. and Spark Issues.)

**Almirante-Panama**—by arrangement with the United Fruit Co. (owners of the W/T station).

Approximate Latitude 9° 20' N., Longitude 82° 17' W.

Call Sign **RXB** Wavelength, 4,075 metres (C.W.).

Times of broadcast, 0445 and 1730 G.M.T.

At 1730 G.M.T. **Part I**, observations from following stations broadcast *only during the hurricane season*, June to November inclusive. **Part II** broadcast daily *throughout the year*.

Observation Stations in Part I. of Bulletin.			Part II. of Bulletin.
Indicator Letters.	Station.	Position (approx.) Lat. Long.	
CG	Cape Gracias, Nic.	15° 00' N. 83° 13' W.	Storm and Hurricane Warnings. Wind and Weather forecasts for West Gulf of Mexico. Wind and Weather forecasts for East Gulf of Mexico. Wind and Weather forecasts for Caribbean Sea and Windward Passage. See Chartlet, p. 180.
BZ	Belize, Honduras	18° 00' N. 88° 20' W.	
BFD	Bluefields, Nic.	12° 00' N. 83° 45' W.	
W	Willemstadt, Curaçao.	12° 10' N. 69° 00' W.	
SJ	San Juan, P.R.	18° 28' N. 66° 06' W.	
PP	Port au Prince, Haiti.	18° 37' N. 72° 17' W.	
CFG	Cienfuegos, Cuba	22° 11' N. 80° 33' W.	
GUE	Guane, Cuba	- - - - -	
KN	Kingston, Jamaica	18° 10' N. 76° 48' W.	
TI	Turks I., Bahamas	21° 31' N. 71° 08' W.	

At 0445 G.M.T., **Part II** only of bulletin, broadcast *daily throughout the year*.

NOTE.— The above bulletins are sent by W/T to **Almirante W/T** station from the **Tropical Radio Telegraph Station at New Orleans La.**, call sign **WNU** at 0430 and 1630 G.M.T. on a wavelength of 3331 metres (C.W.) and ships are invited to intercept them.

**Key West, Fla.**—Approximate Latitude 24° 33' N., Longitude 81° 48' W.

Call sign **NAR**. Wavelength, 2,655 metres (C.W.).

Time of broadcast, 0400 G.M.T.

Observation Stations in Part I. of Bulletin.			Part II. of Bulletin.
Indicator Letters.	Station.	Position (approx.) Lat. Long.	
H	Hatteras, N.C.	35° 14' N. 75° 32' W.	Wind and Weather forecasts for South Atlantic Coast. Wind and Weather forecasts for East Gulf of Mexico. Wind and Weather forecasts for West Gulf of Mexico. Wind and Weather forecasts for Caribbean Sea and Windward Passage. Storm and Hurricane Warnings. See Chartlet, p. 180.
CA	Charleston, S.C.	32° 43' N. 79° 52' W.	
JA	Jacksonville, Fla.	30° 19' N. 81° 51' W.	
MI	Miami, Fla.	39° 35' N. 84° 13' W.	
K	Key West, Fla.	24° 33' N. 81° 48' W.	
P	Pensacola, Fla.	30° 21' N. 87° 19' W.	
BW	Port Eads, La.	28° 57' N. 89° 23' W.	
GV	Galveston, Tex.	29° 19' N. 94° 48' W.	
BY	Brownsville, Tex.	25° 53' N. 97° 26' W.	
FW	Fortworth, Tex.	32° 30' N. 97° 40' W.	
KN	Kingston, Jam.	18° 01' N. 76° 48' W.	
TI	Turks Island	21° 31' N. 71° 08' W.	
HA	Havana, Cuba	23° 10' N. 82° 22' W.	
GO	Guantanamo Bay (Cuba).	19° 54' N. 75° 12' W.	
CG	Cape Gracias, Nic.	15° 00' N. 83° 13' W.	
SJ	San Juan, P.R.	18° 28' N. 66° 06' W.	

**Key West W/T Station** also broadcasts wind and weather forecasts, storm and hurricane warnings for the Florida, South Atlantic and east Gulf of Mexico Coasts at 1800 G.M.T. on a wavelength of 2,655 metres (C.W.).

**San Juan P.R.** (July 1 to November 15, inclusive).—Approximate Latitude 18° 28' N., Longitude 66° 06' W.

Call sign, **NAU**.

Time of broadcast, 0045 G.M.T.

Wavelengths, 6,250 metres (C.W.) and 2,655 metres (C.W.).

Observation Stations in Part I. of Bulletin.				Part II. of Bulletin.
Indicator Letters.	Station.	Position (approx.) Lat. Long.		
SJ	San Juan, P.R.	18° 28' N.	66° 06' W.	Hurricane Warnings.
ST	St. Thomas, Virgin Is.	18° 23' N.	64° 55' W.	
BT	Basseterre, St. Kitts	17° 18' N.	62° 43' W.	
RS	Roseau, Dominica	15° 17' N.	61° 24' W.	
BB	Bridgetown, Barbados.	13° 09' N.	59° 35' W.	
SD	Santo Domingo, D.R.	18° 28' N.	69° 53' W.	
PL	Puerto Plata, D.R.	19° 49' N.	70° 42' W.	
LU	Castries, St. Lucia	14° 01' N.	61° 00' W.	
W	Willemstadt, Curaçao.	12° 10' N.	69° 00' W.	
PS	Port of Spain, Trinidad.	10° 40' N.	61° 30' W.	
SM	St. Martins, D.W.I.	18° 02' N.	63° 04' W.	

**Repetition of "Arlington" bulletin.**

**San Juan W/T Station** re-broadcasts Part I and portions of Part II of the 0300 and 1500 G.M.T., Washington-Arlington (NAA) bulletins, previously explained on pp. 179-80, at 0400 and 1600 G.M.T., respectively, on a wavelength of 6,246 metres (C.W.). This re-broadcast is **not** made when conditions do not permit the reception of the Arlington bulletin at San Juan.

**Repetition of "San Juan" bulletin.**

**Guantanamo, Cuba**, approximate Latitude 19° 55' N., Longitude 75° 09' W.

Call sign, **NAW**.

Time of broadcast, 0115 G.M.T.

Wavelength, 2,655 metres (C.W.).

During the hurricane season, July 1 to November 15, inclusive, this W/T station repeats the 0045 G.M.T. bulletin broadcast by San Juan, explained above, at 0115 G.M.T.

**Barbados.**

**Bridgetown W/T station**, approximate position latitude 13° 06' N, longitude 59° 37' W, call sign **VPO**, broadcasts the following weather information, received from the Meteorological Station, Codrington (latitude 13° 07½' N., longitude 59° 36' W.), when unsettled weather conditions prevail or indications of stormy weather are observed:—

Barometric pressure, barometric tendency, wind direction and force (or velocity in miles per hour), weather at time of observation, and G.M.T. of the observation.

If possible the approximate position of the centre of a tropical cyclonic disturbance will be broadcast.

The above information may be transmitted in code.\*

**WIRELESS STORM WARNINGS.**

**United States of America (Atlantic Coast).**

Storm warnings are broadcast when necessary by the following stations, at the times indicated:—

W/T Station.	Call Sign.	Position. (Approx.) Latitude, Longitude.	Time. G.M.T.	Wavelength. (Metres.)
Jupiter, Fla. ...	NAQ	26° 57' N. 80° 05' W.	1630, 2300	1,621 (I.C.W.).
St. Augustine, Fla. ...	NAP	29° 53' N. 81° 17' W.	1700	1,621 (Spark).
Savannah, Ga. ...	NEV	32° 05' N. 81° 06' W.	1600, 2330	1,621 (I.C.W.).
Charleston, S.C. ...	NAO	32° 52' N. 79° 58' W.	1530, 2300	2,458 (C.W.).
Norfolk, Va. ...	NAM	36° 50' N. 76° 18' W.	0100, 1330, 1600, 2100,	2,458 (C.W.).
Washington (Arlington)	NAA	38° 52' N. 77° 05' W.	0300*	2,653, 4,409 C.W. simultaneously.
			1500*	
Philadelphia ...	NAI	39° 53' N. 75° 11' W.	1545, 2200	2,883 (C.W.).
New York ...	NAH	40° 28' N. 74° 00' W.	1530, 2130	2,939 (C.W.).
Boston, Mass. ...	NAD	42° 21' N. 70° 57' W.	1600, 2200	2,939 (C.W.).

\* In Part II of the Weather Bulletin.

\* No information is available up to time of going to press as to changes of Key Letters or Code, following the Conference of Safety of Life at Sea, 1929, and the International Meteorological Conference at Copenhagen, 1929.

Hurricane warnings are broadcast when necessary on 600 metres I.C.W. and repeated at 2-hour intervals by:—

- Jupiter W/T Station, NAQ, until 0500 G.M.T.
- St. Augustine W/T Station, NAP, until 2300 G.M.T.
- Savannah W/T Station, NEV, until 0100 G.M.T.
- Charleston W/T Station, NAO, for 24 hours.
- Norfolk W/T Station, NAM, for 12 hours.

**United States of America (Caribbean Sea, Gulf Coast) and West Indian Islands.**

(C.W. and Spark Issues.)

STORM and hurricane warnings are broadcast by the following W/T Stations for the various areas etc. shown on the CHARTLET, p. 180. When a storm exists that is likely to affect an area, the location and expected direction of movement of the storm centre will be given, followed by any storm or hurricane warnings and advices to shipping that have been issued.

**Almirante, Panama.**—Call sign **RXB**. Wavelength 4,075 metres (C.W.). Times, 0445 and 1730, G.M.T., *daily, throughout the year.*

This station broadcasts storm warnings in Part II of Weather bulletin explained on p. 181 for the Gulf of Mexico and Caribbean Sea, also warnings of "Northers" during the winter months. When a hurricane is in progress, information regarding its location, direction and progress, etc., will be broadcast every two hours, at the even hour, after issue by the Weather Bureau.

**Brownsville, Tex.**—Approximate Latitude 25° 52' N., Longitude 97° 26' W., call sign **NAY**. Wavelength 2,885 metres (C.W.):—

At Midnight and 1700 G.M.T., broadcasts storm warnings for west Gulf Coast etc.

Hurricane warnings also broadcast, when issued by local weather bureau. These are repeated at 2 hour intervals until 0500 G.M.T.

**Galveston, Tex.**—Approximate Latitude 29° 19' N., Longitude 94° 47' W., call sign **WGV**. Wavelength 830 metres (I.C.W.):—

At 1630 G.M.T. (except Sundays and holidays) and 2300 G.M.T., broadcasts storm warnings for west Gulf Coast etc.

Hurricane warnings also broadcast, same routine as Brownsville.

**New Orleans, La.**—Approximate Latitude 29° 57' N., Longitude 90° 02' W., call sign **NAT**. Wavelength 2,885 metres (C.W.):—

At 1600 and 2200 G.M.T., broadcasts storm and hurricane warnings for south Atlantic and Gulf Coasts.

**Key West Fla.**, call sign **NAR**:—

At 0400 G.M.T. on a wavelength of 2,655 metres (C.W.), broadcasts storm warnings for south Atlantic Coast (Hatteras to Key West) and for east and west Gulf Coasts (Key West to Brownsville) and all hurricane warnings. At 1800 G.M.T., on a wavelength of 2,655 metres (C.W.), broadcasts storm and hurricane warnings for the Florida, south Atlantic and east Gulf of Mexico Coasts. Storm and hurricane warnings are also broadcast on 600 metres.

**San Juan P.R.**, call sign **NAU**, **June 1 to November 30, inclusive.**

At 1500 G.M.T., on 6,250 metres (C.W.) broadcasts hurricane warnings. These form Part II of the weather bulletin explained on p. 181. In the absence of a tropical storm the words "Weather normal over eastern Caribbean" will be sent each day. Hurricane warnings and information relating thereto are broadcast whenever issued by the Weather Bureaux at Washington D.C. and San Juan and repeated at 2 hour intervals until 0500 G.M.T.

- |  |   |  |
|--|---|--|
| <b>Guantanamo (Cuba)</b> —NAW—2,653 (I.C.W.)   | } | These W/T stations broadcast hurricane warnings when issued by the Weather Bureaux at Washington D.C. and San Juan, and repeat them at about 4-hour intervals. |
| <b>Port au Prince (Haiti)</b> NSC—2,271 (spk.) |   |  |
| <b>St. Croix</b>                               |   |  |
| <b>St. Thomas</b>                              |   |  |
| <b>St. John's</b>                              |   |  |
| Virgin Islands                                 | } | NBR—438 (I.C.W.)   |
| NBB—2,271 (spk.)                               |   |  |
| NBO—600 (spk.)                                 |   |  |
| <b>Santo Domingo</b> —HIA—600 (spk.)           |   |  |
| <b>Ensenada (Porto Rico)</b> —WPR—600 (spk.)   |   |  |

NOTE.—Guantanamo W/T station repeats the San Juan bulletin, containing hurricane warnings, explained on p. 181 during the hurricane season, June 1 to November 30 inclusive, on a wavelength of 2,655 metres (I.C.W.) at 0115 G.M.T.

**Barbados.**

See Weather Bulletins issued as necessary during the hurricane season, page 181.

No information of a regular Wireless Storm Warning Service has yet come to hand, but these messages will go some way in supplying warnings for shipping.

In addition to which Bridgetown W/T station re-broadcasts urgent weather reports from ships in or near hurricanes.

Marine Observers visiting Barbados are advised to consult the Harbour Master at Bridgetown and to give him every assistance in working up this service.

**WIRELESS ICE WARNINGS.**

**Canada, Nova Scotia, Newfoundland and Labrador, etc.**

(Spark I.C.W. and C.W. Issues.)

The following W/T stations broadcast ice warnings. Stations marked with an asterisk (\*) are open during the season of navigation only.

W/T Station.	Latitude N.	Longitude W.	Call Sign.	Wave length (Metres).	G.M.T. of issue.
St. John, N.B. ...	45° 15'	66° 01'	VAR	600 (I.C.W.)	0400, 1600
†Lurcher Lt.-V. ...	43° 49'	66° 32'	VDR	600 (Spk.)	On request.
Yarmouth ...	43° 46'	66° 07'	VAU	600 (I.C.W.)	0430, 1630
Chebucto Head ..	44° 30'	63° 31'	VAV	600 (I.C.W.)	0440, 1640
Sable Island ...	43° 56'	60° 02'	VCT	600 (Spk.)	On request.
North Sydney ...	46° 13'	60° 15'	VCO	600 (Spk.)	On request.
†Louisburg ...	46° 09'	59° 57'	VAS	2804 (C.W.)	0400, 1600.
†Grindstone Island	47° 24'	61° 51'	VCN	600 (Spk.)	On request.
*Fame Point ...	49° 07'	64° 36'	VCG	600 (I.C.W.)	0430, 1630
Father Point ...	48° 31'	68° 28'	VCF	600 (I.C.W.)	0420, 1620
Quebec ...	46° 48'	71° 12'	VCC	600 (I.C.W.)	0420, 1610
*Clarke City ...	50° 11'	66° 37'	VCK	600 (Spk.)	On request.
*Heath Pt. Lt.-V.	49° 03'	61° 30'	VGH	600 (Spk.)	On request.
Cape Race ...	46° 39'	53° 04'	VAZ	600 (Spk.)	0420, 1620
Pt. Amour ...	51° 27'	56° 52'	VCL	600 (Spk.)	On request.
Belle Isle ...	51° 53'	55° 22'	VCM	600 (I.C.W.)	0440, 1640

† The station keeps watch for the first half of every odd hour from 1200 to 0030, and from 0300 to 0330, G.M.T.

‡ Broadcasts Gulf of St. Lawrence Ice Patrol report giving ice conditions between C. Race and Quebec and recommended route to be followed.

**III. WIRELESS TIME SIGNALS.**

**Canada (Nova Scotia).**

Spark Issue.

**Chebucto Head D/F Station**, Latitude 44° 30' 01" N., Longitude 63° 31' 20" W., call sign **VAV** broadcasts a time signal daily (Sundays excepted) at 14h. 00m. 00s., G.M.T., on a wavelength of 600 metres (spark).

The procedure is as follows:—

G.M.T.			Signal.
h.	m.	s.	
13	58	00 to 13 58 57	A dot (●) is transmitted at each second.
13	59	00	(●) Time signal.
13	59	03 to 13 59 50	A dot (●) is transmitted at each second.
14	00	00	(●) Time signal.

For the purpose of these signals the observatory at St. John (New Brunswick) is connected by land telegraph to Chebucto Head D/F Station.

**United States of America (Atlantic Coast).**

(C.W. and I.C.W. Issues.)

Time Signals are broadcast according to the United States System (See Diagram of Washington—Annapolis W/T Time Signals below), from the following W/T Stations:—

**Washington—Arlington**, Latitude 38° 52' 05" N., Longitude 77° 04' 47" W., call sign **NAA** on wavelengths\* of 435 and 2,653 metres (I.C.W.) on high power, at 3h. 00m. 00s., and 17h. 00m. 00s., G.M.T. and on 2653 metres (I.C.W.) at 08h. 00m. 00s.

The time signals are broadcast daily and are controlled by the Naval Observatory, Washington. They are broadcast simultaneously on the above-mentioned wavelengths.

The transmission of each time signal will be followed by the letters **VA**. In case of error or failure the words "No Time" will be sent together with the time when the next correct time signal will be made.

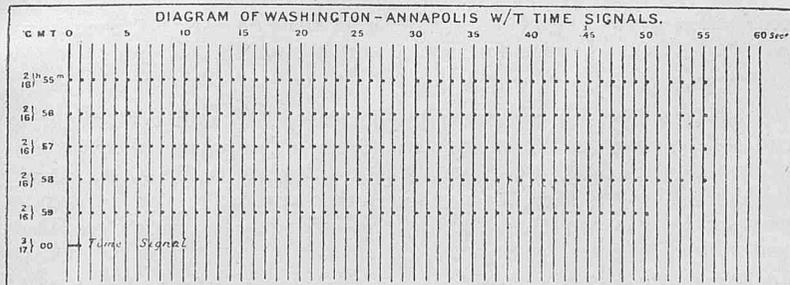
The error of the time signal is generally less than 0.1 second.

**Washington—Annapolis**, Latitude 38° 59' 00" N., Longitude 76° 27' 00" W., call sign **NSS**, on a wavelength of 16,840 metres (C.W.) at 3h. 00m. 00s., 8h. 00m. 00s., and 17h. 00m. 00s. G.M.T.

The time signals are relayed from the U.S. Naval Observatory and are broadcast on high power.

See Washington—Arlington for alternative broadcast times in case of failure.

The error of the time signal is generally less than 0.1 second.



The following W/T Stations broadcast a time signal at 17h. 00m. 00s., G.M.T., only when Washington—Arlington is out of action (Sundays and holidays excepted):—

Station	Latitude.	Longitude.	Call Sign.	Wavelength. Metres.
New York ...	40° 48' 00" N.	73° 50' 00" W.	NAH	2,939 (C.W.).
Norfolk ...	36° 49' 33" N.	76° 17' 46" W.	NAM	2,458 (I.C.W.).
Charleston ...	32° 51' 36" N.	79° 57' 49" W.	NAO	2,458 (I.C.W.).

\* Sharp tuning to the transmitting wavelengths is necessary in order to receive satisfactorily.

**Panama.**  
(C.W. Issues.)

W/T Stations.	Call. Sign.	Wavelength metres.	Time of Signal being made G.M.T.		Notes
			h. m. s.	h. m. s.	
Colon - - - Lat. 9° 22' 09" N. Long. 79° 54' 07" W.	NAX	2,271 (I.C.W.)	3 55 00	4 00 00	Sent daily.
			17 55 00	18 00 00	

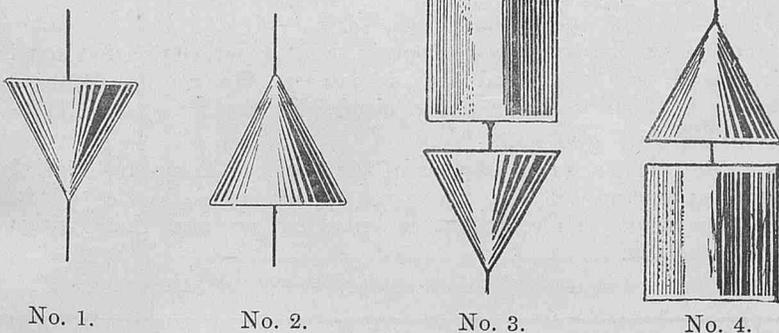
**United States of America, Gulf Coast.**  
(C.W. Issues.)

Station	Call. Sign.	Wavelength (C.W.)	Time of Signal		Notes
			h. m. s.	h. m. s.	
New Orleans - Lat. 29° 56' 50" N. Long. 90° 02' 18" W.	NAT	2,883 (C.W.)	16 55 00	17 00 00	Sent daily.
Key West - Lat. 24° 33' 22" N. Long. 81° 48' 21" W.	NAR	2,828 (C.W.)	16 55 00	17 00 00	

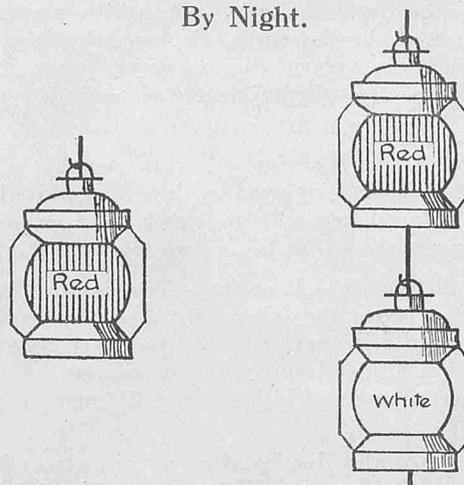
NOTE.—The Key West time signals are operated by long distance telegraphic control lines from Washington D.C.

**IV. VISUAL STORM WARNINGS.**

**Canada.**  
By Day.



**By Night.**



Nos. 1 or 3.

Nos. 2 or 4.

Storm signals are hoisted on warning being received from the Meteorological Office, Toronto, at Camperdown (Halifax), Canso, Digby, Halifax, Liscomb, Liverpool, and Yarmouth, Westport (Brier Island) in Nova Scotia; at Point Lepreau, St. Andrews, St. John in New Brunswick; Eastport (State of Maine), at several places on the coasts of Cape Breton island, New Brunswick, Prince Edward Islands, Quebec, Newfoundland and British Columbia.

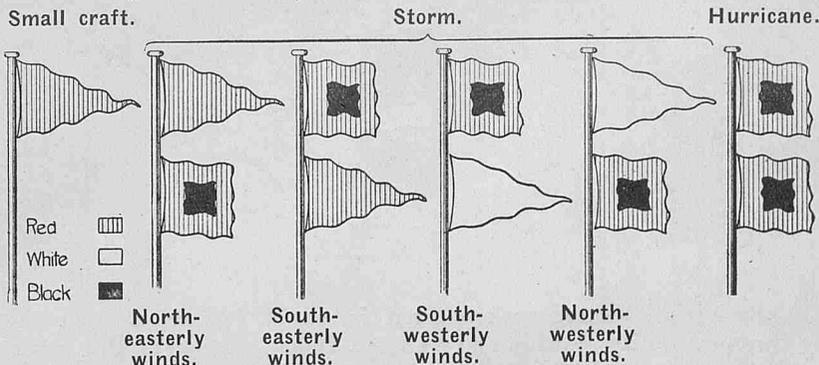
**Signification: Day or Night Signals.**

- No. 1, hoisted to indicate the probability of a gale; at first, from an easterly direction.
- No. 2, hoisted to indicate the probability of a gale; at first, from a westerly direction.
- No. 3, hoisted to indicate the probability of a heavy gale; at first, from an easterly direction.
- No. 4, hoisted to indicate the probability of a heavy gale; at first, from a westerly direction.

It must be borne in mind that the storm signals do not necessarily mean that a storm will occur at the place where the signal is displayed, but that one is expected either there or within such a distance that vessels leaving port would be liable to be caught in it.

**United States of America.**

**Visual, Small-Craft, Storm and Hurricane Warnings.**



Flags, 8 feet square. Pennants, 8-foot hoist, 15-foot fly. Storm warnings are displayed by the U.S. Weather Bureau at some 380 stations on the Atlantic, Gulf and Pacific coasts of the United States, and on the Great Lakes.

**Explanation of Warnings.**

*The Small-Craft Warning.*—A red pennant indicates that moderately strong winds that will interfere with the safe operation of small craft are expected. No night display of small-craft warnings is made.

*The North-East Storm Warning.*—A red pennant above a square red flag with black centre displayed by day, or two red lanterns, one above the other, displayed by night, indicate the approach of a storm of marked violence, with winds beginning from the North-East.

*The South-East Storm Warning.*—A red pennant below a square red flag with black centre displayed by day, or one red lantern displayed by night, indicates the approach of a storm of marked violence, with winds beginning from the South-East.

*The South-West Storm Warning.*—A white pennant below a square red flag with black centre displayed by day, or a white lantern below a red lantern displayed by night, indicates the approach of a storm of marked violence, with winds beginning from the *South-West*.

*The North-West Storm Warning.*—A white pennant above a square red flag with black centre displayed by day, or a white lantern above a red lantern displayed by night, indicates the approach of a storm of marked violence, with winds beginning from the *North-West*.

*Hurricane or Whole Gale Warning.*—Two square flags, red with black centres, one above the other, displayed by day, or two red lanterns, with a white lantern between, displayed by night, indicate the approach of a tropical hurricane or of one of the extremely severe and dangerous storms which occasionally move across the Great Lakes.

These warnings are also displayed at certain places in the following West Indian Islands:—St. Kitts, Porto Rico, Jamaica (Kingston), Vieques Island, Santa Domingo, Haiti, Dominica, St. Thomas, Virgin Islands of the U.S.A., Grand Turk Island, Swan Island, Turks Island and Cuba.

### Barbados.

Storm signals are hoisted at the following places on the island to give warning of the approach of a hurricane:—

Mount Standfast, St. James.  
South Point Lighthouse.  
Harrison's Point Lighthouse.  
Commercial Hall.  
Crane Hotel, Saint Philip.  
Beaumont Hotel, Bathsheba.  
Highgate Signal Station.  
Districts B, C, D, E and F Police Stations.

By Day:—



By Night:—Three rockets fired in rapid succession from the Harbour Police Station and two red lights, one above the other, displayed from the flagstaffs of the stations above.

### Special Notices Regarding Personnel.

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

### Obituary.

The death of Commander CHARLES HESTER, R.D., R.N.R., which took place recently at his home at Hove, Sussex, after only a few days' illness is noted with regret.

A native of Somerset, CHARLES HESTER commenced his sea career in 1892 when he was apprenticed to Messrs. DEVITT and MOORE, serving his time in their sailing ships.

On obtaining his second mate's certificate he joined the PENINSULAR and ORIENTAL STEAM NAVIGATION COMPANY and at the time of his retirement early in 1929 was in command of their R.M.S. *Khyber*.

### GREAT BRITAIN AND IRELAND.

#### Additional Wireless Telegraphic and Land Line Services which are performed for shipping, with charges.

SUPPLEMENTARY TO PAGES 51 TO 55, VOL. VII, No. 74.

The following list indicates the information which may be obtained on request, at any time, night or day.

#### Weather Forecasts.

Special weather forecasts can be made at the Meteorological Office for a period of 24 hours for areas within the region contained between the parallels of 70° N. and 35° N. and between the meridians of 12° W. and the coast of the Continent of Europe.

**Procedure for Ships at Sea.**—Request weather forecast through the nearest coast W/T. station in Great Britain or Ireland, specifying required date and area, and giving ship's name.

**Charge.**—7s. 6d.

**Procedure for Shipowners and Masters of Ships in port about to sail.**—Telephone to Meteorological Office (Telephone No. Holborn 3434, Extension 174) or send **reply paid** telegram to Weather, Phone, London (allowing 10 to 20 words as necessary for reply), requesting weather forecast and specifying date and area for which required, and address to which to be sent.

**Charges—None**, if the information is required immediately and the reply paid telegram covers the telegraphic charges.

If the information is required for a specified day in advance, or for a number of days, a registration fee of 6d. per week (minimum fee 6d.) in addition to cost of telegrams. In this case application for the forecasts may be made by letter.

**Procedure for Salvage Officers and others requiring warning of gales or winds from specified directions, or particular kinds of weather.**—Write to the Meteorological Office, London, stating the purpose or locality and the warnings required, with the period.

**Charge.**—2s. 6d. for each message, plus telegraphic charges.

#### Weather Reports.

Information of the actual local weather conditions prevailing at any of the following stations may be obtained:—

*Aberdeen.	*Hoylake.	Southend.
*Bangor, Co. Down.	Inchkeith.	Spurn Head.
Barry Island.	*Kildonan.	†St. Annes Head.
Beachy Head.	Lizard.	St. Catherines Point.
*Broughness.	*Mumbles.	*Stornoway.
Cape Wrath.	Needles.	*Torr Head.
†Dover Pier.	*Polhawn Cove.	†Tynemouth.
Dunnet Head.	*Portpatrick.	†Wick.
*Holyhead.	Prawle Point.	

\* These stations cannot give information about barometric pressure.

† Reports from these stations include information as to the state of the sea.

**Procedure for Ships at Sea.**—Request through nearest W/T. coast station in Great Britain or Ireland, specifying the name of the station for which observed weather conditions are required.

**Charge.**—7s. 6d.

NOTE.—For Home waters the Areas and Districts used in the British "Weather Shipping" Bulletin may be used with advantage to indicate the localities for which forecasts are required.

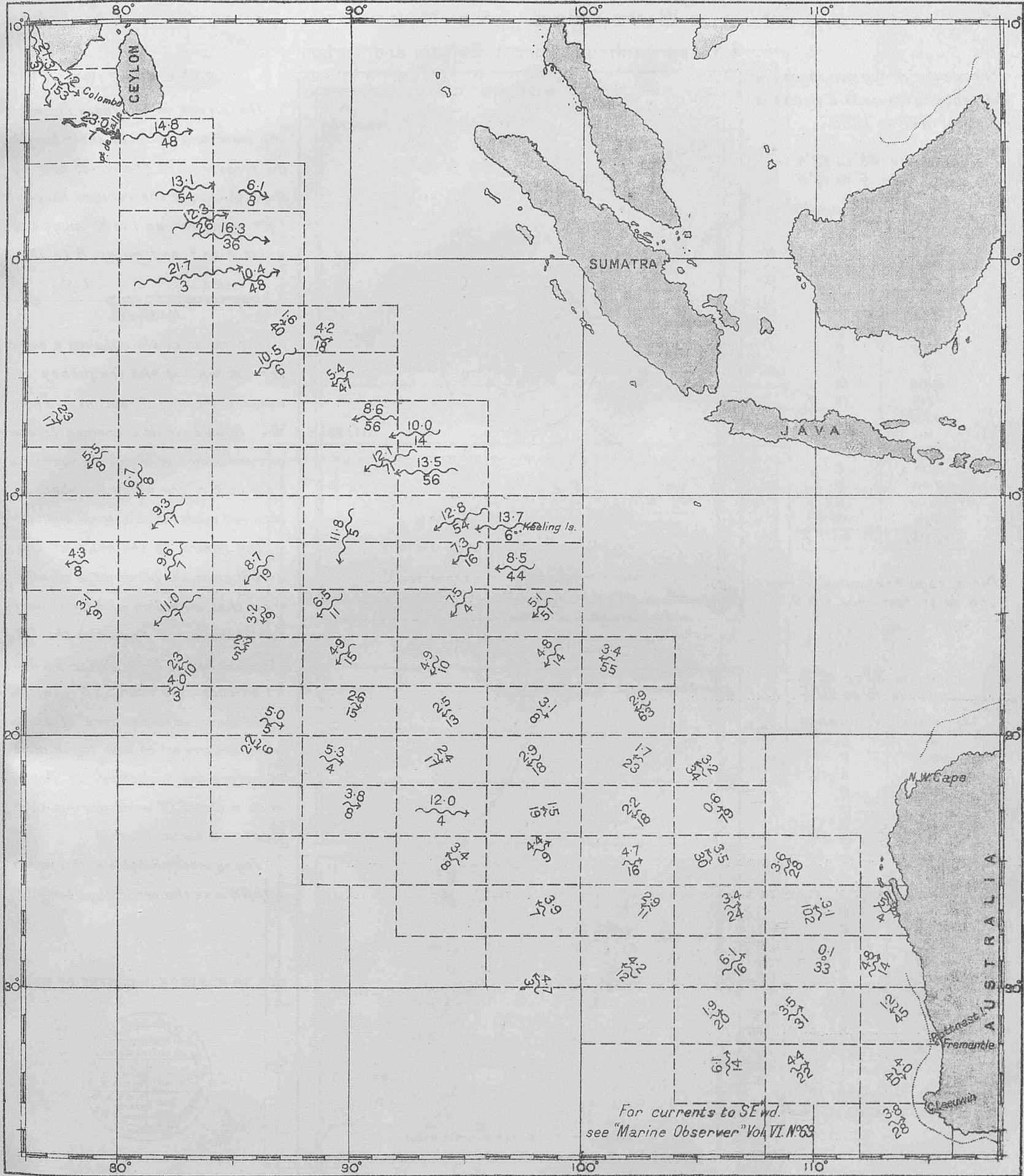




CURRENTS ON THE TRACKS FROM CAPE LEEUWIN TO PERIM, DIRECT AND VIA COLOMBO, (EASTERN PORTION).

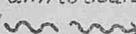
AUGUST, SEPTEMBER AND OCTOBER.

Observations of ships regularly observing for the British Meteorological Office 1910-1928.



EXPLANATION OF CURRENT ARROWS.

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

In cases where the arrows drawn to scale are inconveniently long the symbol  is substituted.

# AUGUST, WIND, FOG AND MIST.

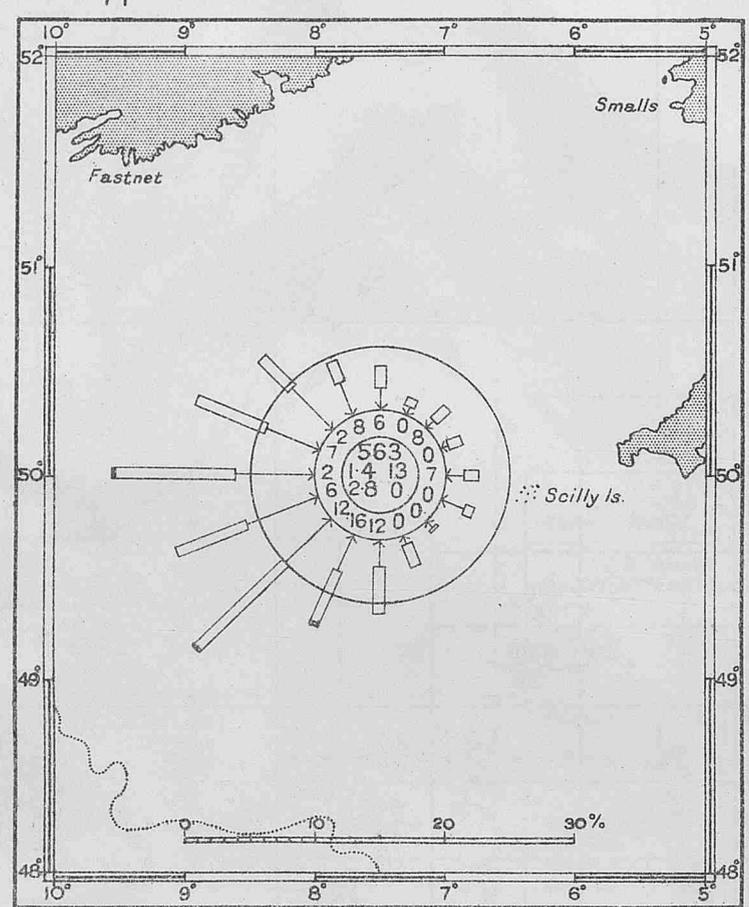
## S.W. Approaches to Great Britain and Ireland

Frequency of fog per thousand observations for each 2 points of compass, 1921 to 1928.

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

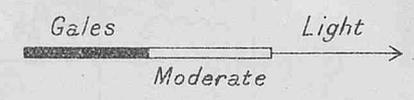
Direction.	Frequency.
N	2
NNE	0
NE	2
ENE	0
E	2
ESE	0
SE	0
SSE	0
S	7
SSW	12
SW	18
WSW	7
W	4
WNW	7
NW	2
NNW	4
Cal'm	2
Var.	0
<b>TOTAL</b>	<b>69</b>

Percentage Frequency of Fog and Mist for area = 6.9 %.



### EXPLANATION.

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



The outer circle supplies a scale for estimating the frequency of winds from any direction. From the heads of the arrows to the circumference of the circle represents 5 per cent of the whole number of observed winds. (100 per cent = 10° longitude).

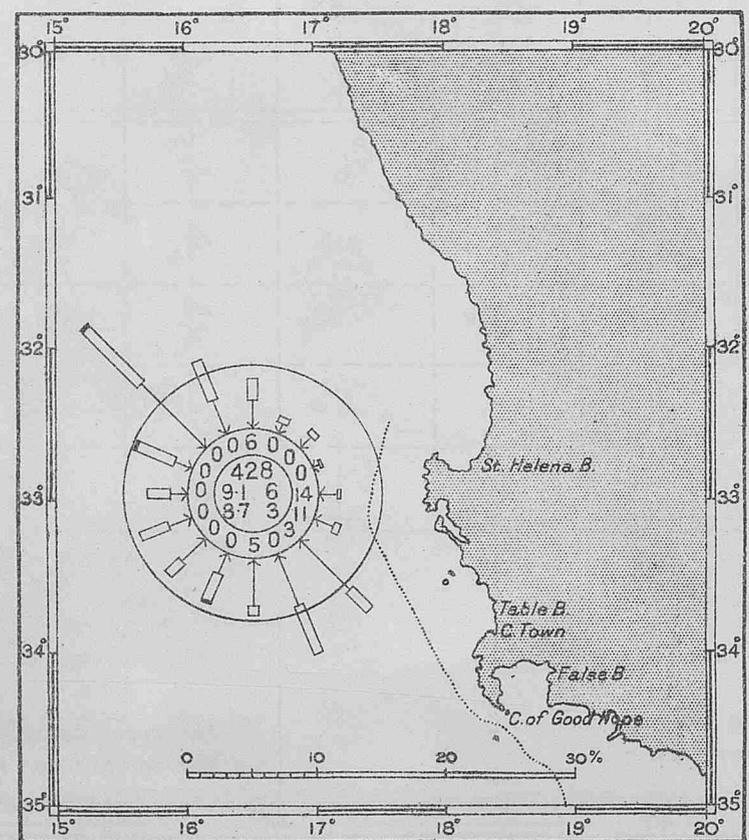
The figure at the head of the arrow gives the percentage of wind from that direction with fog or mist, for example: - In August, in the S.W.

## Approaches to Table Bay.

Latitude 30° to 35° S.  
Longitude 15° to 20° E.

Direction.	Frequency.
N	2
NNE	0
NE	0
ENE	0
E	2
ESE	2
SE	2
SSE	0
S	2
SSW	0
SW	0
WSW	0
W	0
WNW	0
NW	0
NNW	0
Cal'm	12
Var.	2
<b>TOTAL</b>	<b>24</b>

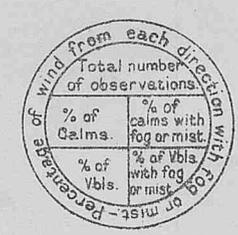
Percentage Frequency of Fog and Mist for area = 2.4 %.



Approaches to Great Britain & Ireland on all occasions when SSW'y winds were observed 16 per cent of them were accompanied with fog or mist, therefore the probability of fog or mist with a SSW wind during this month is about 1 in 6.

Fog is most probable in this month with SW winds, the percentage being 1.8.

### KEY TO NUMBERS IN CENTRE OF ROSES.

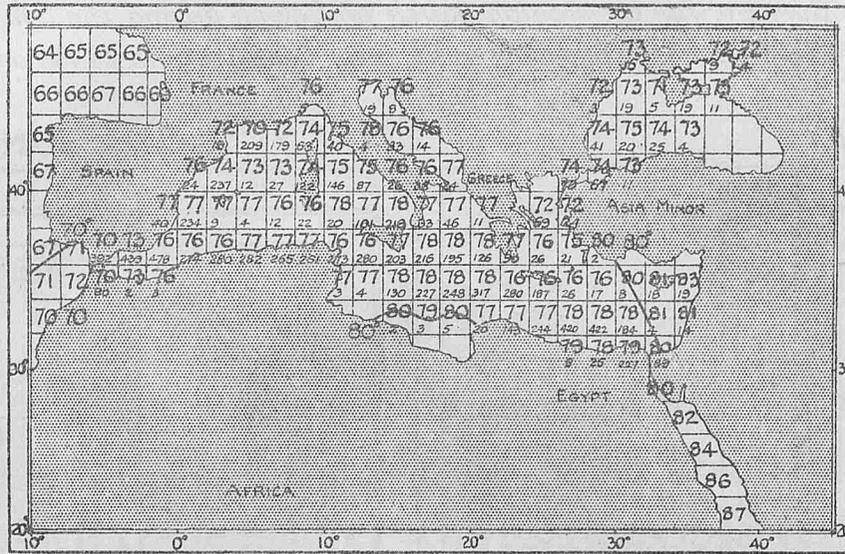


Compiled from observations of British Ships received since the adoption of the Hollerith system of extraction covering the years 1921 to 1928.

# MEDITERRANEAN SEA SEA SURFACE TEMPERATURES

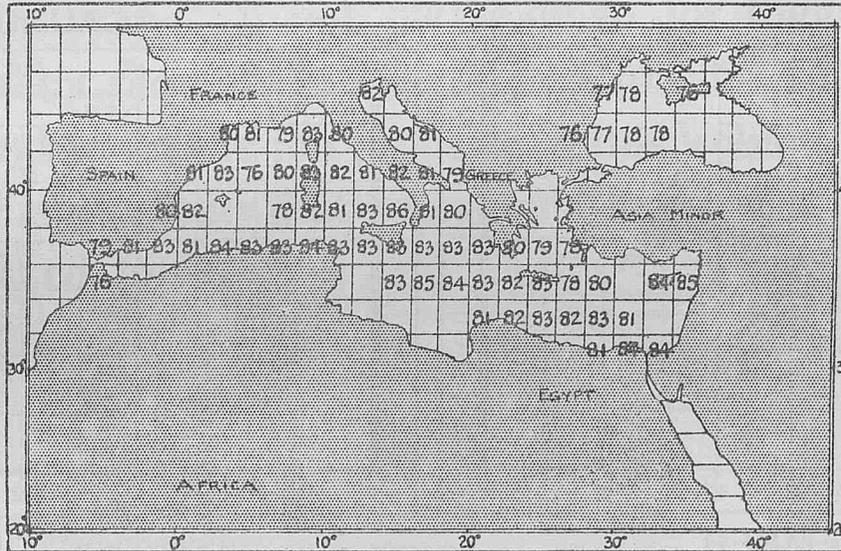
MEAN.

AUGUST.

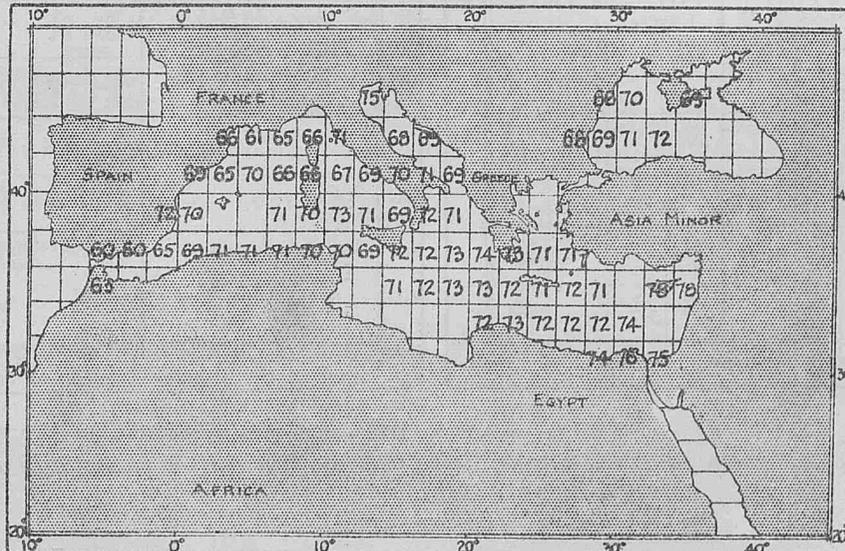


Small figure gives number of observations.

MAXIMUM.



MINIMUM.

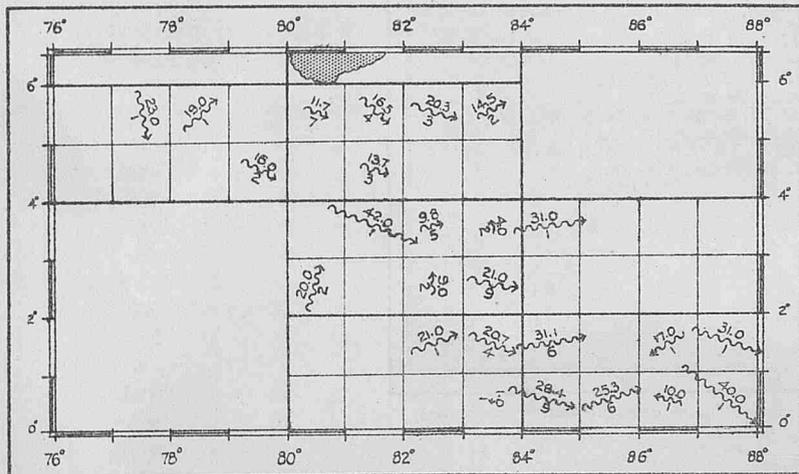


Computed from observations of British Ships during the years 1900-1914 in the Mediterranean and Black Seas.

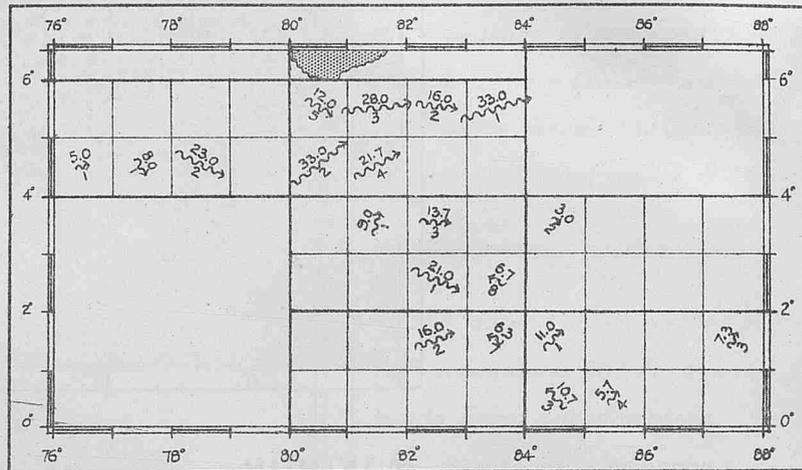
Maximum and Minimum figures are not shown unless the Mean Temperature has been computed from not less than 12 observations.

Charts of Monthly Mean Current for the Region South of Ceylon during the S.W. Monsoon Period.  
 Companion Charts to Charts of Currents on the Tracks from Cape Leeuwin to Perim direct, and via Colombo.

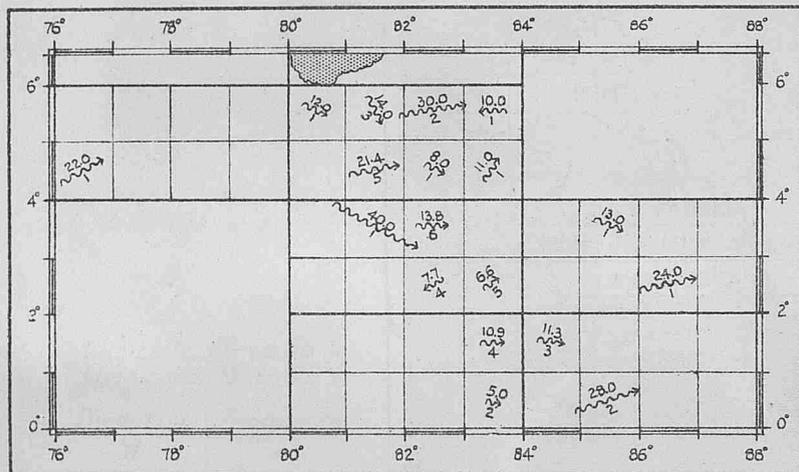
MAY



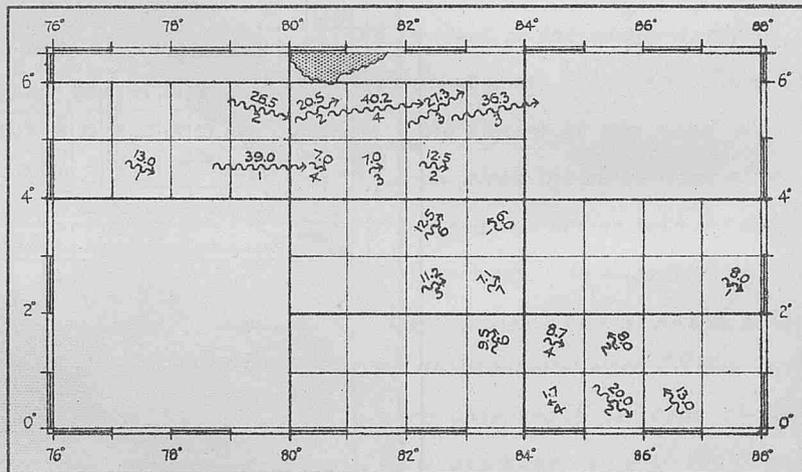
JUNE



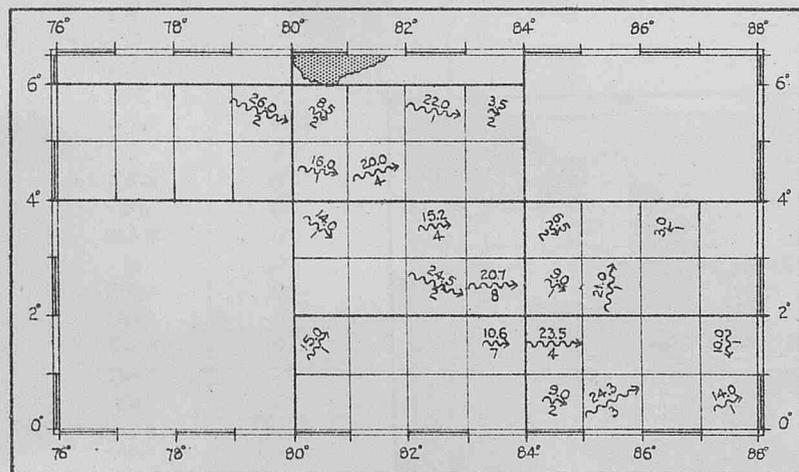
JULY



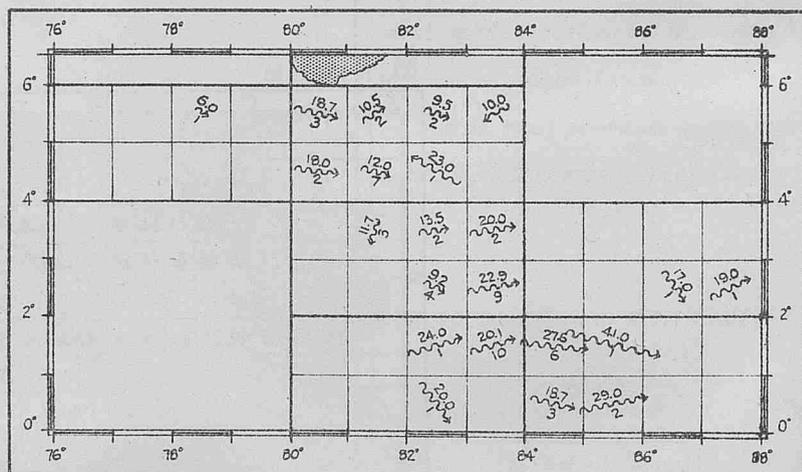
AUGUST



SEPTEMBER



OCTOBER



Computed from observations of British Ships during the years 1910-1928.

LOOK!

Have you read the notices which appear on this page, and the Marine Superintendent's notes which come before "The Marine Observer's Log," each month, in the January to July Numbers this year? If not, please do so, for they contain many requests to Agents and Marine Observers, and to do the job properly in this Voluntary work it is necessary that you should know what you are asked to do.

POSTAL ARRANGEMENTS.

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

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

S.S..... Captain.....

Port of Call.....

Date of Homeward Departure.....

Postal Address.....

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

ICE REPORTS.

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

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

"Selected Ships" on the Trade Routes of the Southern Ocean are requested to add to their routine Wireless Weather reports information of floating ice seen or reported within the last 24 hours so that this information may be disseminated to the utmost advantage of all concerned.

# ICE CHART.

## WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

NOTE.—In case of necessity owing to extreme southerly drift of ice, operative dates will be fixed for Track A.

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

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

### ROUTE NOTICES.

For latest information re Tracks see pages 89-90 of Vol. VII, No. 76, April, 1930, Number.

### SYMBOLS USED ON THE CHART

- ▣ Iceberg.
- △ Floeberg.
- ▭ Growler.
- Field Ice, Floe Ice, Pack Ice, Hummocky Ice, Bay Ice.
- Drift Ice, Brash Ice, Sludge Ice, Pancake Ice.
- ⊕ Indicates W/T Ice Warning Station.

### PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
Aug. 12, 1903	S.S. Saxon Prince ...	37°52'N.	71°30'W.	Piece 3 ft. high, 40 ft. long.
" 7, 1908	S.S. Caronia ...	50°31'N.	18°55'W.	2 pieces 10 ft. square and 15 ft. square.
" 2, 1909	S.S. Shimosa ...	37°16'N.	42°06'W.	Piece 18 ft. by 5 ft., 2 ft. out of water.
" 14, 1912	S.S. Ulstermore ...	43°55'N.	39°16'W.	Piece.
" 27, 1912	S.S. Lux ...	42°30'N.	15°23'W.	50 ft. sq., 4 ft. out of water.
" 10, 1915	S.S. St. Louis ...	41°02'N.	48°00'W.	Berg.
" 18, 1915	S.S. St. Leonards ...	41°09'N.	56°43'W.	—
" 21, 1915	S.S. Strathgarry ...	40°46'N.	68°20'W.	Growler.
" —, 1915	Do.	39°00'N.	48°20'W.	Piece 20 ft. long, 4 ft. high.
" 29, 1920	U.S. Hyd. Bulletin	40°30'N.	47°52'W.	Berg.

Reports of Ice sighted between June 1st and June 30th, 1930, which have been received by the Meteorological Office, are shown by the Symbols plotted in the position reported, the figures indicating the day of the month.

### LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 12th June, 1930, was received from the Canadian Signal Service, Quebec:—  
 "Belle Isle Strait, no field ice, numerous bergs and growlers. Cape Race occasional bergs sighted, other points no ice."

### ICE IN GREENLAND WATERS.

INFORMATION RECEIVED BY CABLEGRAM FROM DANISH METEOROLOGICAL INSTITUTE, COPENHAGEN.  
 15th June....."Free of ice 75 miles off Cape Farewell". Icebergs met with in Latitude 58°."  
 25th June....."Between Cape Farewell and Arsuk, no Storis met with twenty bergs sighted, navigation unimpeded"

Captains and officers who wish to co-operate regularly with the Meteorological Office should apply *by letter* to The Director, Meteorological Office, Air Ministry, Kingsway, London, W.C.2, or in person to the Marine Superintendent at the same address, or any of the gentlemen whose names and addresses appear below, acting as agents at the respective ports. A general description of Marine Meteorological Work, including the particulars desired from intending Marine Observers, is given in Chapter I of THE MARINE OBSERVER'S HANDBOOK, 5TH EDITION, which may be obtained from H.M. Stationery Office direct, or through any bookseller, price 2/6.

The names of vessels regularly observing for the Meteorological Office, London, together with their Commanders and Observing Officers, are given monthly in THE MARINE OBSERVER, which may be obtained from H.M. Stationery Office, price 2s., 2s. 2d. post free.

The Captains and Officers of regular observing ships constitute the Corps of Voluntary Marine Observers. For certain branches of this work tested instruments are lent to the Captains of British ships registered at ports in Great Britain. A certain number of Regular Observing ships are detailed as "Selected Ships" for the purpose of the World Wide Scheme of Routine Ships' Wireless Weather Telegraphy Reporting. These "Selected Ships" are indicated monthly in the "Fleet List" in THE MARINE OBSERVER by a number.

Only ships registered at Ports in Great Britain will, in future, be included in the Meteorological Office, London, "Fleet List."

Marine Observers are asked to send in their Meteorological Log through the appropriate Port Meteorological Officer or Agent (accompanied by Form 138 in the case of "Selected Ships") at intervals of not more than six months. The Meteorological Record Form 911 (accompanied by Form 138 in the case of "Selected Ships") should be posted direct to the Meteorological Office, London, at the end of each voyage.

When sending in the Meteorological Log or Record, Regular Observing ships will render great assistance if they will notify the Port Meteorological Officer or Agent of their requirements.

The Port Meteorological Officers and Agents inspect official instruments at regular intervals, replacing those which are defective.

Where ships' instruments are found by comparison to be reliable they may be used for the work of "Selected Ships." A reliable mercurial barometer is essential as part of the equipment of a "Selected Ship."

A copy of THE MARINE OBSERVER is sent monthly to the Captain of every observing ship for the information and guidance of the officers doing this work. He is also supplied with THE MARINE OBSERVER'S HANDBOOK and such charts and atlases as are considered necessary as Meteorological equipment for The Work of a Regular Observing ship in a particular trade.

WIRELESS AND WEATHER AN AID TO NAVIGATION, published by H.M. Stationery Office, which affords information and guidance for the practical application of Marine Meteorology to Navigation, may be purchased through any bookseller, price 5s.

Returns made by Regular Observing ships are acknowledged monthly in THE MARINE OBSERVER, and a list of those Commanders and Officers who have performed specially fine work is published yearly in THE MARINE OBSERVER and Excellent Awards are made to them.

The work done by Regular Observing Ships in making written returns, and by "Selected Ships" in broadcasting routine information by W/T, together with "Weather Shipping" Bulletins broadcast from the shore, conforming with the recommendations of the International Convention of Safety of Life at Sea, 1929, provide the necessary information for the use of all shipping. Thus by shipowners encouraging the specialist work in those of their ships whose names appear in THE MARINE OBSERVER, this Voluntary Work under the supervision of the Meteorological Office provides a service to all shipping at minimum cost to the National funds.

Shipowners are asked to facilitate the forwarding of postal matter from the Air Ministry addressed to the Captains of their ships.

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

LONDON ... .. Captain L. A. BROOKE SMITH, R.D., R.N.R.,  
Marine Superintendent.  
Commander J. HENNESSY, R.D., R.N.R., Senior  
Nautical Assistant.  
Room 319, Adastral House, Kingsway, W.C.2.  
(Telephone No.: Holborn 3434 Extension 421).  
Nearest station Temple, District Railway.

THAMES ... .. Lieut. C. H. WILLIAMS, R.N.R., Port Meteorological  
Officer, Royal Albert Docks, E.16.  
(Telephone No.: Albert Docks 2659. Tele-  
graphic Address: Barometric Aldock, London).

MERSEY ... .. Lieut. Commander M. CRESSWELL, R.N.R., Port  
Meteorological Officer, Dock Office, Liverpool.  
(Telephone No.: Bank 8959. Telegraphic  
Address: Meteorite, Liverpool).

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

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

CLYDE ... .. Mr. ROBERT CLEARY, Master Mariner, The  
Clutha Stevedoring Co., Ltd., Princes Dock,  
Glasgow. (Telephone No.: 513 Ibrox).

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

Date.	Position.		Description.
	Latitude.	Longitude.	
<b>NORTH SEA.</b>			
8.6.30	55°29'N.	1°21'W.	Ship's small boat, bottom up in water, painted buff colour and seemingly in good condition.
<b>ENGLISH CHANNEL.</b>			
9.6.30	49°52'N.	0°15'E.	Spherical buoy adrift, painted white and red.
13.6.30	50°29'N.	0°25'E.	Torpedo floating vertically about 18 inches above water painted red on top, with two eyebolts attached. Dangerous to navigation.
20.6.30	49°16'N.	4°06'W.	Ship's lifeboat awash—dangerous to navigation.
<b>IRISH SEA.</b>			
13.6.30	6m. S.W. by W. (mag.) from Corsewall Pt.		Considerable quantity of floating timber, in pieces about 8 ft. long.
<b>NORTH ATLANTIC.</b>			
4.6.30	46°10'N.	38°13'W.	Large red conical gas buoy marked "G.S."
5.6.30	31°33'N.	74°48'W.	Gas buoy.
6.6.30	44°10'N.	42°28'W.	Unlighted gas buoy, painted red with small flag.
7.6.30	39°40'N.	70°30'W.	Spar buoy projecting 15 ft. out of water and marked A 7
8.6.30	100 yds. E. of Craven Shoal Gas and Bell Buoy.		Buoy adrift.
9.6.30	39°02'N.	51°31'W.	Large red buoy with ball top mark
9.6.30	41°17'N.	68°00'W.	White conical buoy.
10.6.30	31°45'N.	73°43'W.	Gas buoy, painted red, with black superstructure, light not burning and buoy covered with marine growth.
10.6.30	39°26'N.	55°01'W.	Gas buoy with light burning and surmounted by a staff and flag.
11.6.30	38°22'N.	73°53'W.	Stern frame of a sailing vessel with rail attached.
11.6.30	41°50'N.	55°06'W.	Broken mast, apparently attached to submerged wreckage
16.6.30	49°28'N.	24°24'W.	Large can buoy, with broken superstructure and chain mooring attached lying on side. Buoy painted red with No. 6 in white. Dangerous to navigation.
16.6.30	44°12'N.	14°40'W.	Conical red painted buoy.
21.6.30	50°11'N.	6°41'W.	Large spar—dangerous to navigation.
24.6.30	46°40'N.	8°20'W.	Heavy log—dangerous to navigation.
<b>NORTH PACIFIC.</b>			
1.6.30	7°52'N.	79°42'W.	Tree trunk about 40 ft. long, and 3 ft. in diameter.

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