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THE MARINE OBSERVER.

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THE PRACTICAL SIDE OF THE WORK AND ITS UTILITY TO THE MERCHANT NAVY.—II.

Following what we said last month it is well to mention just a few of those experiences which have been reported which have made for safe navigation and where fuel, time and money were saved through the practice of Wireless and Weather as an Aid to Navigation and careful consideration of Meteorological conditions.

The first has probably influenced the development of this work as much or more than any experience since the Great War.

On the morning of September 8th, 1921, Captain R. G. SHADFORTH, in S.S. *Dundrennan*, broadcast a report giving his position and weather when he was on the outskirts of a Hurricane about 150 miles South of Barbados and being in the navigable semicircle stood away from the vortex. His report was received by Commander H. T. ENGLAND, R.N., H.M.S. *Valerian* (since lost in the West Indian Hurricane of October, 1926), who was thereby enabled to plot the position of the centre and with this information rendered assistance to the Schooner *Lillian J. Barnes* with 200 native passengers on board on a lee shore off Barbados. Captain SHADFORTH'S report probably originated the information upon which Wireless Warnings of this Hurricane were made by the Meteorological Services which reached many ships.

In October, 1924, Messrs. W. E. ALLEN and F. BOLINGBROKE, Observing Officers of the Cable Ship *Stephan*, Captain G. F.

CARLTON (ships under whose command did so much to develop the work upon reorganization after the Great War), were able to put before their Commander weather charts and information which enabled him to avoid a belt of dense fog on the Portuguese Coast.

By adding somewhat to distance *Stephan* kept clear of fog, saved at least 12 hours' steaming and caught her tide in London when other vessels were delayed.

In December, 1924, Captain A. MACKAY, of S.S. *Culebra*, who is now an Elder Brother of Trinity House, reported that he saved two days' steaming on his homeward passage from the West Indies through the careful study of Meteorological Ocean Charts and information received from other ships by Wireless Telegraphy.

Many other cases have been reported in writing or verbally and there are many cases which we have heard of indirectly long after the event, where those responsible have been too modest to report them.

At this time of World-wide trade depression, when British shipping and seamen are working so splendidly under difficulties, we are most anxious not to increase unnecessarily the work of the Commanders and Officers. But we do ask them to do all they can to make use of the information which is being provided by "Selected Ships" to all who require it at sea.

The British complement of the International Voluntary fleet of 1,000 Selected Ships, 312, is now only 10 short of that number.

There is need of information of the names of "Selected Ships" of other nations, and we hope that the other Countries party to the Convention of Safety of Life at Sea, 1929, may soon see their way to publish similar lists to that given in the MARINE OBSERVER each month, then all may know what foreign ships may be expected to make routine Wireless Meteorological reports.

As is stated in the general description and instructions for British "Selected Ships" given on pages 22 to 24 of the January number:—

"This broadcasting by 'B Selected Ships' on 600 metres spark of routine meteorological reports has its weak points, but at present there is no alternative; and it is of the utmost importance that reports from 'Selected Ships' should be available to all ships and meteorological centres through certain stations in all parts of the World, particularly in the hurricane regions and in the regions of heavy weather in the less frequented trade routes of the Southern Ocean."

Now it is evident from the records made on board some "B Selected Ships" in their Registers of Wireless Meteorological Reports that the Observing Officers are entering for the times of "message sent" that of the scheduled time of commencement of the sending period as a matter of course, or that the messages are being broadcast at that time irrespective of other "B Selected Ships" within range. If the latter is the case there will be jamming.

Referring to the instructions again the following occurs:—

"The movements of a number of 'B Selected Ships' are uncertain and in some areas there may be more than are required to report, when the full number of 'Selected Ships' of all nations has been reached. Control from coast Wireless Stations is impracticable; moreover, in some areas where there is not a great deal of shipping and in certain seasons it will be necessary for other ships, as well as 'Selected Ships,' to make reports, and this applies particularly to Hurricane, Cyclone and Typhoon regions. All that can be said is that at present on the most frequented mail liner routes, notably the Trans-North Atlantic, no routine wireless meteorological reports are necessary from 'B Selected Ships' at certain shore stations, except in cases of urgency.

"In all parts of the World which cannot be adequately served by 'A Selected Ships,' 'B Selected Ships' should broadcast their reports to CQ (all ships) on 600 metres spark at scheduled times.

"This may result in interference, but at least ships and stations which are anxious to obtain information at no great range will be able to receive it, for obviously those on the spot will arrange matters of communication within the schedule time laid down, and when reports are not received, repetition will be asked for as necessary."

Mark well this last paragraph quoted.

Now in the Eastern North Atlantic, where there is more congestion of Wireless communication than in any other part of the World, the reporting by "A Selected Ships" is being regulated successfully by means of the position chart (which is close beside me and of which a photograph appeared with my notes in the July number) through Highbridge W.T. Station, Portishead. We have called this the control system for want of a better word, whereas it is in reality a system of guidance, for we simply help to guide by making a roll call of *Chosen* "Selected Ships" suitably disposed and in the order that they should report by W.T. so that there may not be jamming.

The first to provide proof of the benefit of this system to ships at sea was Mr. H. E. D. McCARTNEY, Observing Officer, S.S. MINNETONKA, Captain T. F. GATES, C.B.E., who sent in a weather chart made from the reports of *Chosen* "Selected Ships" for the day.

Some day it may be possible to detail certain "Selected Ships" in distant parts at sea to guide the order of reporting by "B Selected Ships," but that cannot be yet. Meanwhile, if "B Selected Ships," disposed over various regions of the oceans, will from day to day appoint by mutual arrangement the Master of some particular "Selected Ship" in a commanding position to guide this W.T. traffic in routine Meteorological reports, jamming may disappear.

Ocean Currents and Navigation.

In the September number last year we set out as clearly and concisely as we could in a note entitled "Information of Current and Safe and Economical Navigation" what work was being done

regarding Ocean Currents, how and why it was being done and its bearing upon Navigation. Not only was this note published for the general information and the encouragement of Marine Observers, but we also wished to centre as much attention as possible upon the good being done by British "Selected Ships" in including observations of set and drift of current in their routine W.T. weather reports to all ships, at the time when the British Empire and International Meteorological Conferences, 1929, were to assemble.

The benefit of the inclusion of observations of set and drift of current in Selected Ships' Routine Reports was duly stressed at those Conferences.

In the new instructions in the MARINE OBSERVERS' HANDBOOK, Fifth Edition, and the new editions of the Meteorological Log, Form 911 and the Register for Selected Ships Coded Wireless Meteorological Reports, special attention has been given to Current and provision is made for the inclusion of set and drift in Selected Ships Reports to All Ships.

Now it may be found that messages are unduly long if six or seven groups of coded figures giving the weather as well as set and drift of current in plain language are included in the same report, and especially so when it is necessary to report ice sighted as well to all ships.

Remember that these reports addressed to All Ships by "B Selected Ships" are primarily intended for the use of navigators, though they are to be intercepted by certain shore stations and used by the Meteorological Services.

Such being the case generally if information of current is given in the message the four Universal Groups of the International Ships' Wireless Telegraphic Weather Code will give the necessary information. Here is the example, given in Chapter I of WIRELESS AND WEATHER AN AID TO NAVIGATION, abbreviated and coded:

CQ Weather. 50307 61713 06302
19873. Current WSW three-quarter knot
from 28N. 65W. to 30N. 61W. Christales.

It is simple, concise, and can be understood by everyone who has the Decode.

The section current charts which are being published this year are revealing several facts which have not come to light before and which will prove interesting to Navigators in the Indian Ocean.

Next year we hope to chart the currents observed since 1910 on the trade routes off the South and East coasts of Africa as far East as Mauritius.

As an example of the help which may be received from the Agulhas Current to a ship homeward bound round the Cape, the following note written by Captain GEORGE F. PARSON, of the Ship *Earnoch*, in 1893 in his Meteorological Log is of interest.

Agulhas Current.

"Commencing from June 10th, 1893, in Latitude 29° 06' S., Longitude 34° 42' E., and carrying on the dead reckoning (carefully kept) till the 23rd, would place the ship in

Latitude 30° 36' S., Longitude 31° 07' E.
whereas she was in " 37° 02' S., " 21° 00' E.

showing difference of	6 26	10 07
	60	60

D. Latitude	386	D. Long.	607
		dept.	504

or S. 53° W. 633 miles current.

"During heavy gale from 16th to 18th unfortunately got out of current to the Southward, or the results would have been still more favourable, but at times the sea was very rough, and it is questionable whether it would be advisable to keep a deeply laden ship in the strength of it during such heavy weather.

"I have always made a point of studying the current, but never before reaped so much benefit from it."

The greatest set and drift which *Earnoch* experienced was S. 88° W. 99 miles on June 20th.

None can afford to neglect to try and benefit by such sets, and information of current broadcast will greatly assist shipping in benefiting by prevailing currents.

London.

28th July, 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.

DISTURBED WATER.

South Atlantic Ocean.

The following extract is taken from the Meteorological Report of S.S. *Banbury Castle*, Captain LE BROCC, New York to Cape Town. Recorder, Mr. L. E. H. PARTINGTON, 2nd Officer.

"At 6.30 a.m., November 9th, in Latitude $0^{\circ} 29' S.$, Longitude $19^{\circ} 49' W.$, about Sunrise, the Chief Officer observed on the Starboard beam, distance half-a-mile, an area of disturbed water, about 80 feet in diameter; the water had the appearance of boiling, and was heaped about four feet above sea level, white vapour rising a further six feet above it.

"It appeared as though boiling water was being forced to the surface. This phenomenon was still in sight twenty minutes after passing. Speed 10 knots. Appearance unchanged throughout. Sky clear, slight cumulus, sea smooth. Slight S'ly swell. Wind S.E., force 2. Temperature Air 77° , Sea 80° . Visibility excellent."

SUBMARINE EARTHQUAKE SHOCK.

North Atlantic.

The following report has been received from Captain W. H. PARKER, C.B.E., R.D., R.N.R., R.M.S. *Olympic*.

"At 3.30 p.m. on 18th November, 1929, when in Latitude $42^{\circ} 12' N.$, Longitude $56^{\circ} 56' W.$, steering 261° , speed 22 knots, calm sea, light airs, overcast dark gloomy sky, a violent tremor and sustained vibration was felt on the bridge which lasted approximately 2 minutes. I was in the Chart Room at the time, and immediately put down the work I had in hand and went on the bridge. Two officers were on watch and two look-out men on duty, one in the Crow's Nest and the other on the bridge. Nothing had been sighted ahead and nothing was seen astern; for the moment I thought we had cast a propeller blade, but as the engine continued working normally I began to fear we had struck or passed over a submerged wreck. I went aft as the vibration ceased to examine the wake of the ship for possible signs of wreckage, but neither I nor the Quartermaster on the after bridge saw anything.

"The Carpenter very carefully sounded the ship fore and aft and with an officer examined No. 2 Hold and tank tops, and found everything in order, the wells being dry and no sign of any damage in the Hold, the propellers all right, and the Patent Log as well as the Forbes Log working all right. I was forced to consider the possibility of an earthquake, and discussed this with my officers after they had reported all well below.

"I should observe that the depth of water about our position would be as per chart 2,564 fathoms, or approximately $2\frac{1}{2}$ miles deep.

"I would mention that the Boatswain and the Watch on deck were working in the Mail Room, and found themselves in darkness, as the electric lights were shaken out and extinguished; the Boatswain described it as an earthquake or submarine eruption. The look-out man in the Crow's Nest described the sensation of feeling as though the engines had been put full astern.

"The Junior Engineer in the forward stokehold described it as though the anchors had been let go and the chain rattling out of the hawsepipe.

"Most of the passengers were at the Cinema in the Lounge, and, apparently, from inquiries I have made, nobody felt any vibration there. The same applies to several other parts of the ship.

"The wireless reports during the night confirm our conjecture regarding an earthquake, which I note is as follows:—

"'Boston. Atlantic Coast line from Rhode Island to Newfoundland was shaken for an hour and a-half by earth tremors of considerable intensity.'

"Louisburg, Cape Briton, reports:—

"'Maximum shock, a severe one, was felt at the station between 4 p.m. and 4.30 p.m. Canadian Atlantic time, corresponding to 3.30 p.m. E.S.T.'

"Our distance from Louisburg was roughly 257 miles at 3.30 p.m., 312 miles from Cape Race, Newfoundland, and 640 miles from Rhode Island."

PHOSPHORESCENCE.

New Zealand Waters.

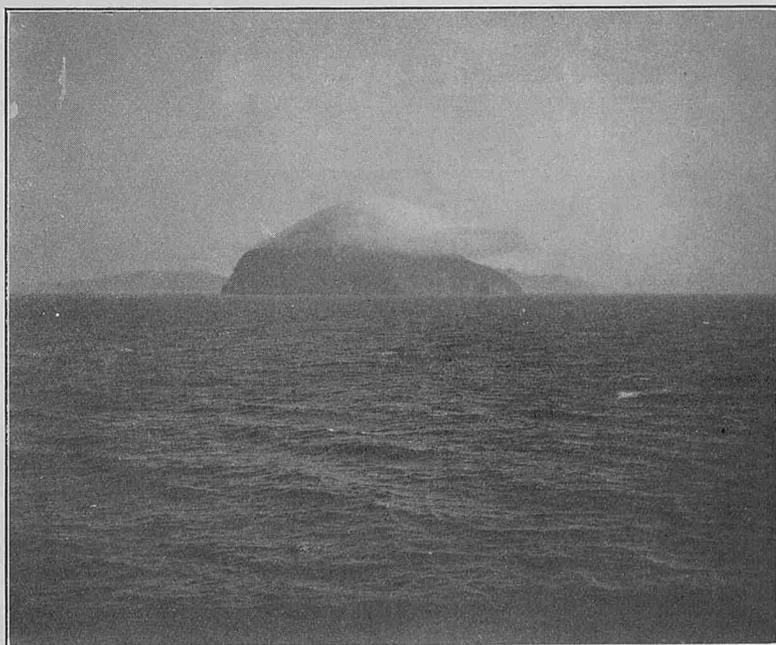
The following is an extract from the Meteorological Log of S.S. *Norfolk*, Captain G. F. MEAD, Lyttelton to Port Chalmers. Observer, Mr. P. L. SHAKESPEARE, 3rd Officer.

"November 26th, 1929, at 9.20 p.m. (New Zealand Summer Time). Vessel coasting between Lyttelton and Port Chalmers, when off the vicinity of Timaru, passed through a large patch of extremely phosphorescent water, of approximately two miles in area. Wind was West, force 3, causing a moderate westerly sea. This phenomenon illuminated the surrounding atmosphere to such an extent that it was impossible to distinguish the stern lights of two ships which were ahead. The breaking of the waves had a definite effect in varying the intensity of the light. Large shoals of porpoises and small fish were in the vicinity of the vessel during these observations. Barometer being 29.50in., Temperatures, air 55° , sea 53° ."

CLOUD CAP

On Rodondo Island.

The accompanying photograph, taken by Captain R. WILLIAMS, S.S. *Cambridge*, Balboa to Brisbane, has been received with Ship's Meteorological Log.



Rodondo Island. Latitude $39^{\circ} 14' S.$, Longitude $146^{\circ} 23' W.$ Bearing North (True), distant $1\frac{1}{2}$ miles. Wilson's Promontory open to the Eastward. Wind N.E., force 3. November 28th, 1929.

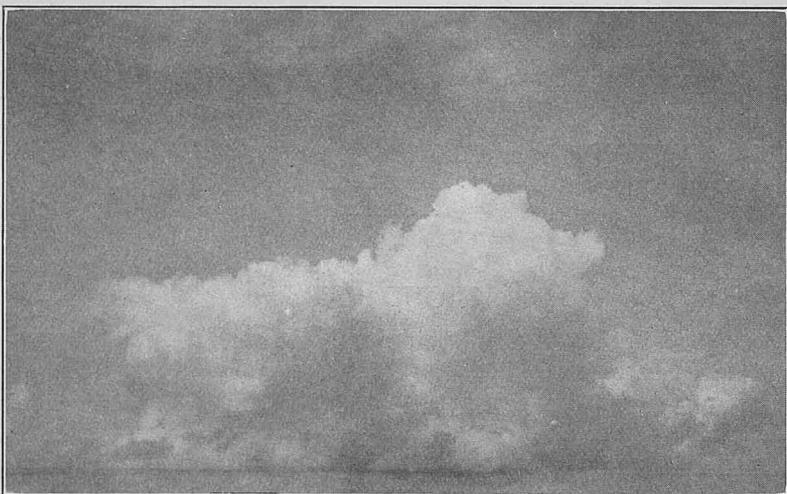
CLOUD PHOTOGRAPHS.

Indian Ocean.

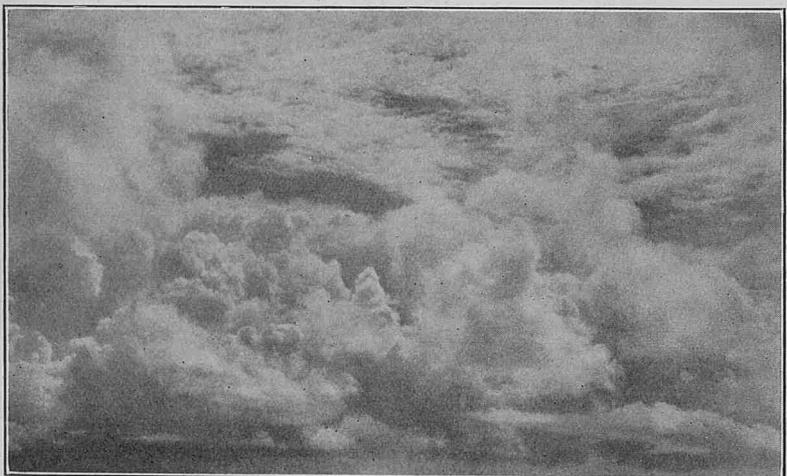
THE accompanying photographs have been received with the Meteorological Log of S.S. *Buteshire*, Captain A. W. P. GIBB, Aden to Fremantle, and were taken by Mr. P. McMILLAN, 2nd Officer.



Ci-Cu. nearly overhead. Photograph taken on November 7th, 1929, in Latitude $12^{\circ} 09' N.$, Longitude $50^{\circ} 16' E.$, at 2.30 p.m.



Cu-Nb. Bearing N.N.E. Altitude of lower edge 1° . Taken at 2.00 p.m. on November 10th, in Latitude $4^{\circ} 24' N.$, Longitude $61^{\circ} 53' E.$



Cu-Nb. Bearing S.S.E. Altitude of lower edge about 1° . Taken at 3.00 p.m. on November 11th, 1929, in Latitude $1^{\circ} 11' N.$, Longitude $66^{\circ} 00' E.$

CLOUD MOVEMENT.

South Pacific Ocean.

THE following is an extract from the Meteorological Log of S.S. *Tahiti*, Captain W. MARTIN, Wellington, N.Z., to San Francisco. Observer, Mr. F. W. GIBSON, 2nd Officer.

"10th November, 1929, in Latitude $20^{\circ} 20' S.$, Longitude $157^{\circ} 02' W.$ 1731 G.M.T. Barometer 1013 mb. Temperature, Dry Bulb $73\frac{1}{2}^{\circ}$, Wet Bulb $66\frac{1}{2}^{\circ}$. Wind S.S.E., force 2-3, freshening.

"At 7.12 a.m. M.T.S. Observed the clouds to be moving in different directions as follows:—

"Cirrus, Cirro-Stratus, Cirro-Cumulus clouds moving from the North, rate of movement by qualitative scale being 1-2. The Cirro-Stratus clouds were in the form of a long column stretching from East to West and moving sideways.

"The middle clouds were Alto-Cumulus in small groups moving from the South, scale movement being 1-2. The lower clouds consisted of Cumulus of the tropics and Fracto-Cumulus moving from the E.S.E., scale movement 2. On the horizon to the Southward observed long rolls of Stratus clouds which appeared to be stationary. All clouds gradually dispersing."

THUNDERSTORMS.

Off Casquets.

THE following reports have been received:—

S.S. *Sambur*, Captain C. Joy, on 12th November, 1929.

"During the passage from Weymouth to Guernsey on 12th November, 1929, the weather experienced was Westerly Gale, accompanied by Heavy Squalls, Hail, Thunder and Lightning.

"These squalls were very severe and the lightning very heavy; whilst one was working up just as we were about 4 miles North of the Casquets, at 11.5 a.m., a terrific explosion took place, and a meteor was noticed (even in the daylight) very brilliantly away to the S.S.W.

"Some minutes elapsed before the squall broke, and when it did the thunder was quite a different noise from that we had heard from the meteor.

"I noticed no difference in the visibility or any difference in the compass."

S.S. *Sambur*, Captain C. W. SANDERSON, on 26th November, 1929.

"When off the Casquets, about 6.30 a.m. on the 26th November, 1929, I experienced a very vivid flash of lightning, accompanied by a tremendous peal of thunder.

"That this thunder was not very far distant is evident by the fact that the lightning was followed simultaneously by the report of thunder.

"During this period the wind was W.S.W., hurricane force, for about four minutes, with a very heavy squall of hail.

"Following this phenomenon the visibility was exceptional and the land appeared very near."

NOTE.—The phenomenon observed by Captain Joy was probably not a meteor, but ball lightning. This rather infrequent form of lightning appears as a dazzling ball of light falling vertically, or sometimes passing more or less horizontally. The path is much slower than the ordinary lightning flash and can be watched.

CYCLONE.

Eastern North Pacific.

The following report has been received from Mr. T. HACKETT, Chief Officer, M.V. *Silverelm*.

"The following is an account of a cyclonic storm of considerable intensity encountered whilst on passage from San Francisco to Macassar on November 16th-17th, 1929. Position of ship at Noon, 16th, Latitude 35° 38' N., Longitude 154° 08' W.

"Owing to its being so unusual to meet a storm, travelling in this particular direction in so high a Latitude, I made careful note of same, giving you my opinion of the position of the vessel, as the storm travelled to the Westward.

"SAN FRANCISCO WEATHER REPORT:—Abnormal high pressure in North-East Pacific.

"HONOLULU REPORTING:—Gentle to moderate S.E'y winds on all steamer routes to and from San Francisco.

"Glass falling from 4.00 a.m. one-tenth per hour, increasing wind very slowly changed to N.E. by N. and remained steady. It is quite evident that vessel is in right-hand semi-circle, but almost on line of progression, and that storm can only be travelling between W.N.W. and N.W., because, assuming it to be travelling S.E. and vessel in rear, we would have felt its influence sooner.

"Threatening appearance, with rain and squalls, gradually getting worse, quickly rising sea.

"Equally hazardous to heave to as to try and run across before centre of storm reached the vessel. Storm may recurve, also wind would be blowing vessel into vortex heave to on right-hand side and so close to path. Master decided on latter and kept vessel before it.

"The storm centre would be about N.N.E. of us, about 5.00 p.m. Precipitous N'y seas inclining to North-West.

"Between 5.00 p.m. and 7.00 p.m. it was only just possible to keep vessel before the sea, which was by this time mountainous, yawing two points each side, and propeller at times being clear of water.

"1.00 a.m. wind had backed to N.W., and this caused a most confused Sea. Vessel hauled up with wind on starboard bow.

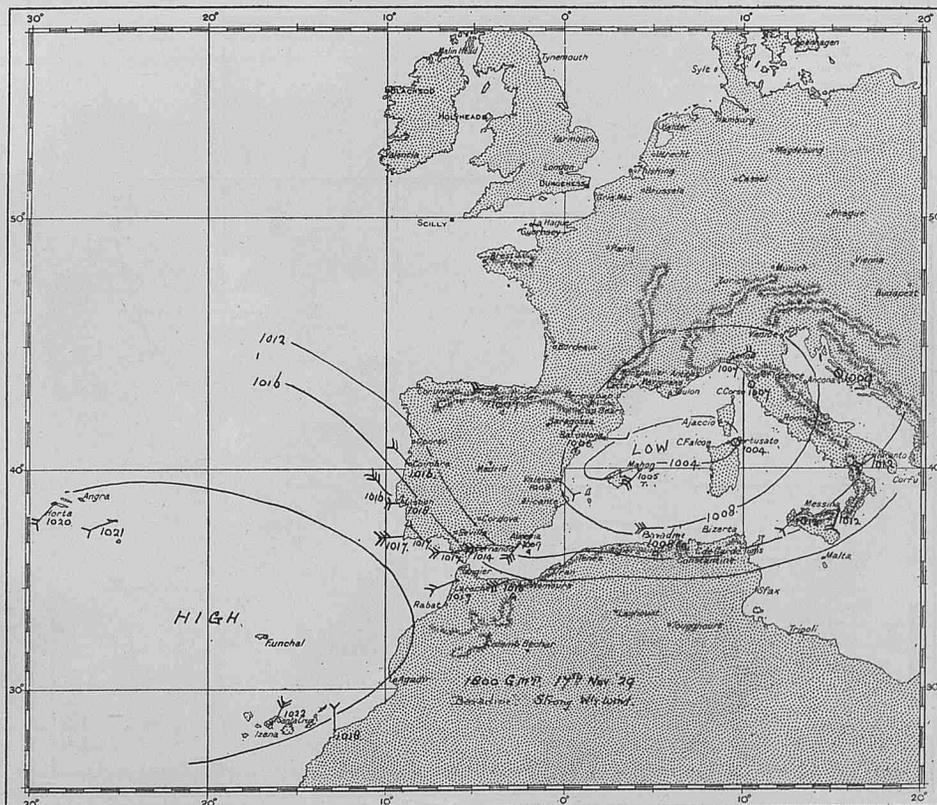
"We now had a severe knocking about, pitching and pounding badly, with exceptionally heavy rolls. Clinometer showed 33 degrees once or twice, with regular 28 and 29 degrees.

"I am of the opinion that the storm was now inclined a little further N'y and moving to the Westward, at about twelve miles per hour speed, as the vessel's position in storm field only changed a very little, the wind slowly moderating and finally taking off two days after from a Westerly direction. We still had these high N'y rollers for two days, and had the storm been travelling much faster than the ship we would have got the S.W'y wind."

WEATHER CHARTS MADE AT SEA.

Two Weather Charts from a complete series made at sea on board S.S. *Baradine*, Captain C. H. C. ALLIN, Fremantle to Plymouth, via Suez, by Mr. C. B. ROCHE, Chief Officer.

Western Mediterranean.



VISIBILITY.

Azores.

THE following is an extract from the Meteorological Report of S.S. *Ingoma*, Captain W. GIBBINGS, London to West Indies. Observer, Mr. R. J. WEEKS, 3rd Officer.

"On November 14th, 1929, at 10 a.m., observed Pico Mountain (7,613) Latitude $38^{\circ} 28' N.$, Longitude $28^{\circ} 25' W.$ Bearing S $10^{\circ} W.$ (true), estimated distance from the vessel by Dead Reckoning 91 miles. Vessel's position at noon was Latitude $39^{\circ} 50\frac{1}{2}' N.$, Longitude $28^{\circ} 24' W.$, with 'Pico' bearing S. $\frac{1}{2}^{\circ} W.$ True 83 miles.

"At 10 a.m. the whole mountain was visible to the horizon, altitude $0^{\circ} 14'$, but at noon the summit appeared above the horizon, the bottom being obscured. At 1 p.m. the altitude was $0^{\circ} 28'$, and the summit of the mountain appeared to be suspended in the air and gradually increasing its altitude. Weather at 10 a.m., moderate W'y wind, sky clouded 9-10ths St.-Cu.

"At noon the sky was 4-10ths clouded, stratus, wind west, moderate; the lines of stratus covering parts of the mountain were very distinct, their colouring varying from light pink to yellow. The mountain was obscured by clouds at 1.58 p.m."

AURORA BOREALIS.

North Atlantic Ocean.

THE following is an extract from the Meteorological Log of S.S. *Port Pirie*, Captain J. J. HUBSON, Cardiff to Australia, via New York and Panama. Observers, Messrs. T. B. MILBURN and W. B. HOPKINS.

"On the evening of Saturday, November 2nd, 1930, 7.40 p.m., A.T.S., Latitude $42^{\circ} 58' N.$, Longitude $50^{\circ} 22' W.$, an Aurora was observed extending across the horizon from about North to N.W. When first observed it took the form of a large arc with a beam of light (as from a searchlight) extending vertically from each end. The two vertical beams gradually disappeared, and gave place to one beam of considerable brightness extending vertically from the centre of the arc, which attained an altitude of approximately ten degrees, and from the time of first appearing until it was obscured was eight minutes. 9.30 p.m. the Aurora again became visible in the form of an arc which extended from N.E. to W.N.W., the summit attaining an altitude of ten degrees. Toward midnight the arc of light increased considerably in brilliance, casting a vivid reflection upon the sea. At this period several beams of light appeared to shoot up vertically to an altitude of twenty degrees, and the main arc at times became irregular. It was observed that the western end of the arc was the more brilliant."

North Atlantic Ocean.

THE following is an extract from the Meteorological Log of S.S. *Newfoundland*, Captain A. W. FOXWORTHY, St. John's, N.F., to Liverpool. Observer, Mr. R. F. HANDLEY, 2nd Officer.

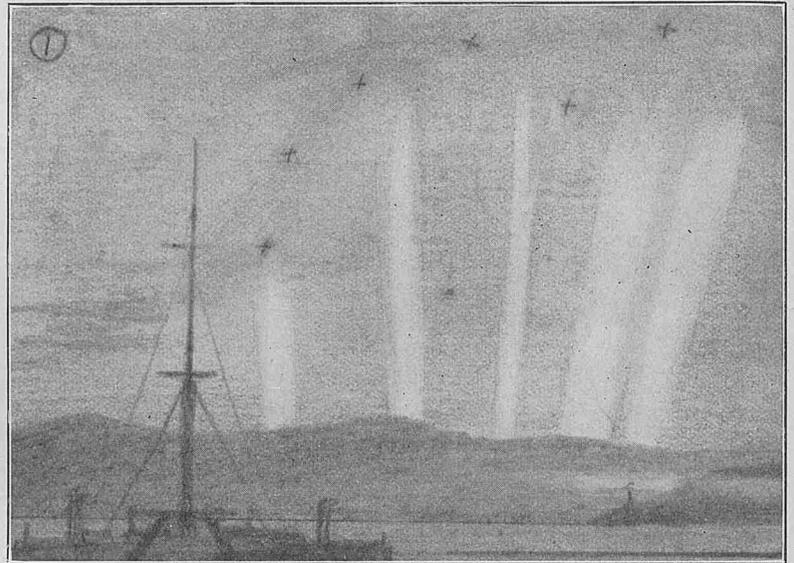
"November 3rd, 1929, at 00.10 a.m., Latitude $51^{\circ} 24' N.$, Longitude $41^{\circ} 40' W.$, observed very bright patch ahead in the sky bearing 64° . Passing A-Cu, St-Cu. Stars were very brilliant and sky 3-10ths covered. Then sky cleared and very fine display of 'Searchlight' Aurora took place, the most remarkable thing being that the rays travelled horizontally and not vertically as is usual, running practically parallel and overhead on the ship's course from about 66° to 246° . This continued for two hours, when it became overcast with Nb. and St. I have never seen this particular formation before, and have been in these latitudes for a number of years. The other officers also make that statement."

North Pacific.

THE following is an extract from the Meteorological Log of S.S. *Parana*, Captain C. E. RATHKINS, Balboa to Seattle. Observer, Mr. J. R. BATY, 3rd Officer.

"At 2345 (Standard Time $120^{\circ} W.$), Thursday, 7th November, 1929. Whilst approaching the Straits of Juan de Fuca, with Tatoosh Island Light bearing 026° , distant 19 miles, a fine display of Aurora Borealis was observed.

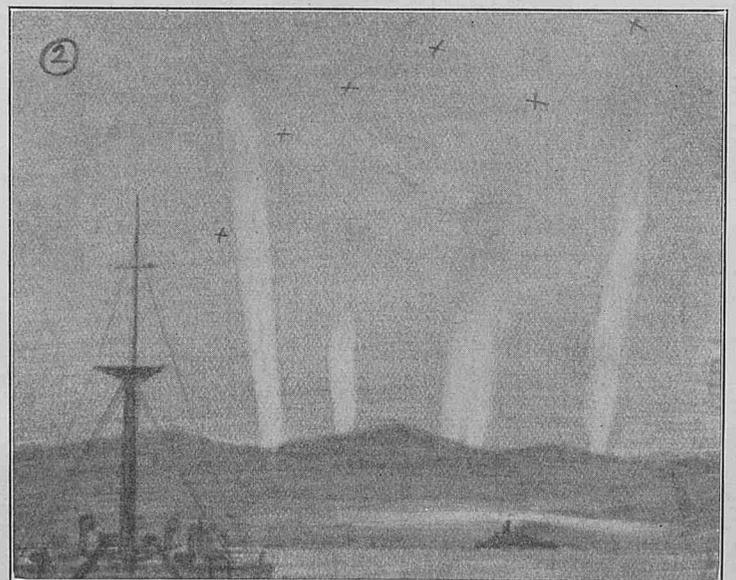
"The beams appeared to come from behind the high land of Vancouver Island and to dissipate in the constellation of Ursa Major at an altitude of approximately 25° . The beams were of varying intensity and size (see sketches 1 and 2), and were flicker-



ing in the manner suggestive of the hunting motion of a searchlight.

"The brilliant white colour of the beams was predominant, but colours of the spectrum were noted before this phenomenon finally became lost to view at 0015 (Standard Time).

"Barometer 1024 mb. Temperature, Dry Bulb 47° , Wet Bulb 44° . Wind N.E. by N., force 2. Clouds Stratus, amount 1."

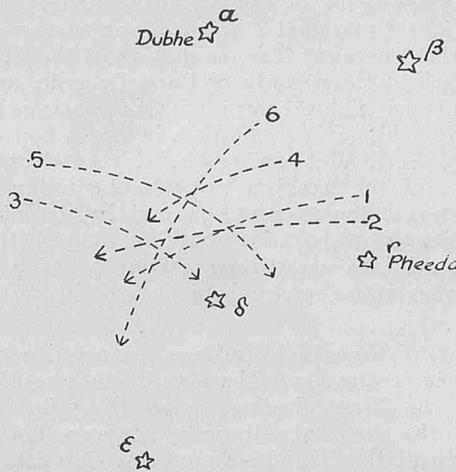


METEOR.

Bay of Bengal.

THE following is an extract from the Meteorological Report of S.S. *Logician*, Captain R. F. HERSCHEL, Liverpool to Calcutta. Observer, Mr. T. WINSTANLEY, 2nd Officer.

"November 5th, 1929, 2.16 a.m. Apparent time ship in Latitude 12° 00' N., Longitude 84° 22' E. Observed brilliant meteor low down in the sky to S.W. It first appeared to rise vertically but very slowly to an altitude of about 45°, and then for a few seconds appeared to be stationary, after which it travelled quickly overhead, increasing in size and brilliancy, finally expending itself to the N.E. During the time it was visible the whole sky appeared to be illuminated. The meteor had all the appearances of a rocket, the tail being composed of many stars, which increased with the altitude, and was of a light greenish colour. The whole thing appeared to be very low in the sky. The sky at the time was overcast with Ci-Cu. and Cu-Nb. clouds—wind S.E. by S., force 4-5."



METEOR SHOWER.

North Pacific.

THE following is an extract from the Meteorological Log of S.S. *Parana*, Captain C. E. RATHKINS, Balboa to Seattle. Observer, Mr. D. MACFADYEN, 2nd Officer.

"0300 A.T.S. (1030 G.M.T.), November 1st, 1929, Latitude 27° 10' N., Longitude 115° 00' W., whilst coasting off Lower California, observed the phenomenon shown in accompanying diagram, representing a shower of small meteors. These bodies, six in number, appeared in the constellation of Ursa Major at an altitude of 25° above the horizon. They were not of great brilliancy, and the whole six traversed their trajectories in the space of about 20 seconds. Bearing of phenomenon 030° (over California). Weather fine and clear with cloudless sky."



INDIAN OCEAN CURRENTS.

III.—Currents on the Tracks during the S.W. Monsoon Months.

The first two articles of this series dealt with small areas north of the equator during the S.W. Monsoon. The present article will refer to the currents of the Indian Ocean along the tracks as a whole during the months of May to October. For brevity these will be referred to as the second and third quarters, seasonal names not being appropriate in an ocean extending north and south of the equator. The present article must be regarded only as a general introduction to the fourth article, which will deal with the remaining quarters of the year, and will then summarise the currents throughout the year and give information derived as to the seasonal variation and speed of the currents.

Before considering the currents on the tracks in detail it is desirable to make a brief survey of the currents of the Indian Ocean such as may be found in Sailing Directions and other works of reference. The North Indian Ocean is very small in comparison with the North Atlantic and North Pacific Oceans. Its situation in regard to the great land mass of Asia, over which a great area of high pressure is established in winter and an area of low pressure in summer, cause it to be under the influence of the Monsoons

throughout the year. It is well known that the currents north of the equator 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. The currents of the South Indian Ocean are similar in general to those of the South Atlantic and South Pacific Oceans. Throughout the year there is an area of high pressure centred at about Latitude 30° S. in all three oceans. Thus there is in the South Indian Ocean a general flow of current N. and N.W. round the eastern side of the high-pressure area in the latitudes of the S.E. Trade Wind corresponding to the Benguela Current of the South Atlantic and the Humboldt Current of the South Pacific. On the northern side of the high-pressure area this merges into a westward-flowing Equatorial Current. On the western side of the high-pressure area there is a current flowing southward along the coast of Africa from about Latitude 10° S., known as the Mozambique Current, and further south as the Agulhas Current, corresponding to the Brazil Current of the South Atlantic. These southward-flowing currents, together with the local currents influenced by the Island of Madagascar, do not,

however, come within the scope of the present articles. As in the other oceans, a Counter-Equatorial Current flows eastward to the north of the Equatorial Current. The main body of the Equatorial Current meets the African Coast south of Cape Delgado, and while the circulation round the high-pressure area is continued by the southward-flowing Mozambique Current there is also a flow of water northward, during the S.W. Monsoon season, which merges into the north-easterly current of the Arabian Sea. In a similar manner, but throughout the year, the South Equatorial Current of the Atlantic Ocean divides, seaward of Cape San Roque, the main body passing southward into the Brazil Current, but a portion going N.W. and merging into the circulation of the North Atlantic Ocean.

Two other main points in which Indian Ocean currents differ from those of the other oceans should be noted. As a result of the seasonal currents of the North Indian Ocean there is no North Equatorial Current, the seasonal Monsoon currents flowing immediately to the north of the Counter-Equatorial Current. Hence, during the S.W. Monsoon period, when the seasonal current is setting N.E. to E., there is no distinction, at any rate as regards set, between the general current in the Arabian Sea and the Bay of Bengal on the one hand and the Counter-Equatorial Current on the other, the two merging into one another. The second point is that the area of high pressure does not extend so far northward in the South Indian Ocean as it does in the other oceans. Consequently, the northern limit of the South Equatorial Current is about Latitude 10° S., and the Counter-Equatorial Current flows between this parallel and the Equator. In the Atlantic and Pacific Oceans the northern limit of the South Equatorial Current lies north of the Equator, and the Counter-Equatorial Current is consequently north of the Equator.

The S.E. Trade Current—Reference to the MARINE OBSERVER charts indicates that in both quarters this current is weak and variable and the mean arrows only show the trend of the circulation in isolated squares. The roses on the Colombo track, between Latitude 30° S. and 16° S., show, however, a slight but distinct preponderance of currents setting from N.W. to N. Further west, on the direct Perim track, the currents, being nearer the centre of the high-pressure area, are even more variable, as would be expected. Over the whole region south of Latitude 16° S. few mean currents are shown exceeding 6 miles per day; the strongest is one of 12.0 miles per day, setting E., deduced from only four observations, in Latitude 22° S. to 24° S., Longitude 92° E. to 94° E. in the third quarter. Comparing this current with the Benguela Current for the same quarter on the direct Cape Route as charted in MARINE OBSERVER, Volume I, 1924, we find that while the Benguela Current is shown to average only 3 to 5 miles a day, the mean arrows set very regularly to N.W. throughout.

The South Equatorial Current.—This is also a relatively weak current in both quarters, the greatest mean drift shown being 15.0 miles per day, W., in Latitude 12° S. to 14° S., Longitude 72° E. to 74° E., in the second quarter. The South Equatorial Current is shown only in parts, where it is crossed by the tracks, but making due allowance for this, it does not constitute a steady stream either as regards set and drift. It is weakest on the direct track passing East of the Chagos Archipelago, that is, in Longitude 76° E. to 88° E., in the second quarter. Two other points of interest may be noted. The set of the South Equatorial Current is mainly south-westerly on all the tracks. In the second quarter there is a region between the South Equatorial Current and the Counter-Equatorial Current on the direct track occupied by variable currents, while in the third quarter there is no such intermediate region.

The S.W. Monsoon Current, Arabian Sea.—In the second quarter this current, speaking generally, is stronger than it is in the third quarter. In the third quarter, east of Longitude 60° , the mean sets are south-easterly with drifts of 4 to 12 miles per day. In the second

quarter the mean set is particularly consistent, E.S.E., along the parallels of Latitude 6° N. to 8° N. from Longitude 52° E. to the Eight Degree Channel and Cape Comorin, the mean drift over the greater part of this distance being approximately 12 miles per day. The greatest mean drift, outside the East African Coast Current, is 19.4 miles per day in the second quarter, in Latitude 8° N. to 10° N., Longitude 56° E. to 60° E.

In the Gulf of Aden the sets are north-easterly in both quarters, except towards the African Coast, where a counter-current of 10.3 miles per day, S.W., is shown in the third quarter between Longitude 48° E. and Cape Guardafui.

As stated above, the Monsoon Current merges into the Counter-Equatorial Current during the S.W. Monsoon period. In both quarters there is a sudden increase of current strength in Latitude 0° to 2° N., and we may therefore consider that the parallel of 2° N. in the longitudes of the Arabian Sea represent the southern boundary of the Monsoon Current and the northern boundary of the Counter-Equatorial Current.

The East African Coast Current.—This has been dealt with, for the months of July to September, in the second article of this series, but some general remarks may be added here. The current as a whole is stronger in the third quarter than in the second, so that the stronger East African Coast Current occurs during the period of weaker Monsoon Current. The difference in the strength of the East African Coast Current is most marked in Latitude 6° N. to 8° N., Longitude from the coast to 52° E., the mean drift being 47.2 miles per day in the third quarter as against 17.0 miles per day in the second quarter. It is regretted that two errors have been made in the chart of mean arrows for August to October, published in the September, 1930 MARINE OBSERVER, and it is requested that these be corrected. An erratum will be published in the last number of the year. In Latitude 6° N. to 8° N., Longitude 52° E. to 56° E., the mean set should be S. 63° E., not north-westerly as shown. In Latitude 4° N. to 6° N., Longitude 52° E. to 56° E. the mean set should be S. 38° E., not south-westerly as shown. The mean drifts and the number of observations are correct. There is thus no evidence in the charts, for either the second or the third quarter, of the completion of DUNDAS TAYLOR'S whirl, referred to in the second article of this series. The mean flow of current in this region during the S.W. Monsoon is south-easterly.

The Counter-Equatorial Current.—As stated above, we may take the northern limit of this current, on the direct tracks to Perim, to be Latitude 2° N. The southern limit is Latitude 4° S. in the second quarter, there being a well-defined belt of easterly current extending over 6° of Latitude. In the third quarter the Counter-Equatorial Current extends in definite form only to the Equator. South of the Equator the sets are variable and mostly weak. The Counter-Equatorial Current is markedly stronger in the second quarter, the greatest mean drift being 31.6 miles per day, E., in Latitude 0° to 2° S., Longitude 60° E. to 64° E. The greatest mean drift in the second quarter is 21.5 miles per day, Latitude 0° to 2° N., Longitude 64° E. to 68° E.

On the Colombo track it is not possible to define the boundary between the Monsoon and the Counter-Equatorial Current. The strongest mean drift in the neighbourhood of the Equator is 21.7 miles per day, E.N.E., based on only three observations, in Latitude 0° to 2° S., Longitude 80° E. to 84° E., in the third quarter.

Maximum Drifts.—The strongest actual current observed in the Gulf of Aden during the period 1910 to 1928 was that experienced by S.S. *Kurmark* on July 18th, 1921, in Latitude $12^{\circ} 42'$ N., Longitude $45^{\circ} 39'$ E., N. 75° E., at the rate of 71 miles per day. The strongest current observed north of Sokotra was that experienced by S.S. *Baron Ogilvy* on September 19th, 1910, in Latitude $13^{\circ} 01'$ N., Longitude $55^{\circ} 19'$ E., N. 84° E., 87 miles per day. Over the rest of the tracks the strongest currents were those observed to the south of Sokotra, and these were given in the second article of this series.

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
"A SELECTED SHIPS."

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Note.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39'' N. Long. 114° 15' 19'' E.	VPS.		125 kc/s. (2400 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory.	Weather only, preferably No. 6 Supplementary Groups.	No control— all British "A Selected Ships" within area should report in accordance with Schedule.
South Pacific.									

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
"B SELECTED SHIPS."

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTH.	Radio Horta	Weather only, up to 7 groups, preferably No. 3 Supplementary Groups.	

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
"B SELECTED SHIPS."

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Indian Ocean.	Calcutta.	Lat. 22° 33' 31" N. Long. 88° 20' 16" E.	VWC.	Weather.	Weather only up to 6 groups, No. 6 Supplementary Groups preferred.	
	Rangoon.	Lat. 16° 45' 57" N. Long. 96° 11' 51" E.	VTR.			
	Madras.	Lat. 12° 59' 17" N. Long. 80° 10' 56" E.	VWM.			
	Bombay.	Lat. 19° 04' 55" N. Long. 72° 49' 54" E.	VWB.			
	Karachi.	Lat. 24° 51' 05" N. Long. 67° 02' 32" E.	VWK.			
	Matara.	Lat. 6° 01' 07" N. Long. 80° 35' 39" E.	GZP.			
	Mauritius.	Lat. 20° 23' S. Long. 57° 35' E.	VRS.	Observatory Mauritius.	Weather 4 universal groups and first of No. 6 Supplementary Groups.	
North Pacific and China Sea.	Cape d'Aguiar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 19" E.	VPS.	Royal Observatory.	Weather only, preferably No. 6 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50' 36" S. Long. 174° 46' 08" E.	ZLD.*	Weather Wellington.	Weather only, up to 7 groups.	Apia, Rarotonga and Chatham Island relay to New Zealand. Rarotonga keeps watch 6.30 to 13.30 G.M.T. Chatham Island 4.30 to 12.30 G.M.T. Remainder cover schedule. Reports desired through nearest station when "B Selected Ships" are within 1,000 miles of New Zealand.
	Wellington.	Lat. 41° 16' 26" S. Long. 174° 01' 00" E.	ZLW.*			
	Awarua.	Lat. 46° 30' 27" S. Long. 168° 22' 21" E.	ZLB.*			
	Chatham Island.	Lat. 43° 57' 02" S. Long. 176° 31' 04" W.	ZLC.*			
	Rarotonga.	Lat. 21° 11' 54" S. Long. 159° 48' 51" W.	ZKR.*			
	Apia.	Lat. 13° 15' 17" S. Long. 170° 49' 42" W.	ZMA.*			

* The New Zealand Meteorological Office desires B "Selected Ships" to make their reports to these stations.

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.

SOUTH-WEST AFRICA, UNION OF SOUTH AFRICA,
AND PORTUGUESE EAST AFRICA.

(Spark and C.W. Issues.)

REPORTS of weather conditions at 0630 G.M.T. at South African ports are broadcast daily by Coast W/T Stations, mostly in Code.*

Details of Reports.

1. Transmitting station... **Walvis Bay** (Latitude 22° 58' S.; Longitude 14° 30' E., approx.).

Call signal ... **ZSV.**
Messages directed to ... **CQ.**
Wave length ... 630 m. I.C.W.

Times of transmission:

0850 G.M.T. (observations at following stations at 0630 G.M.T.).*
1230 G.M.T. (forecast for coast in plain language).**
1955 G.M.T. (forecast for coast in plain language).**

2. Observation stations, 0850 report:

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
ZSC	Capetown ...	33° 56'	18° 29'
ZST	Port Nolloth ...	29° 14'	16° 51'
ZSV	Walvis Bay ...	22° 58'	14° 30'
CRU	Mossamedes ...	15° 12'	12° 09'
CRR	Loanda ...	8° 49'	13° 13'

1. Transmitting station... **Capetown** (Latitude 34° 09' S.; Longitude 18° 19' E., approx.).

Call signal ... **ZSC.**
Messages directed to ... **CQ.**
Wave length ... 625 m. I.C.W.

Times of transmission:—

0830 G.M.T. (observations at following stations at 0630 G.M.T.).*
1220 G.M.T. (forecasts for coasts in plain language).**

2. Observation stations, 0830 report:—

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
ZSA	East London ...	33° 02'	27° 55'
ZSQ	Port Elizabeth ...	33° 59'	25° 37'
ZSM	Mossel Bay ...	34° 11'	22° 09'
ZSC	Capetown ...	33° 56'	18° 29'
ZST	Port Nolloth ...	29° 14'	16° 51'
ZSV	Walvis Bay ...	22° 58'	14° 30'

1. Transmitting station... **Port Elizabeth** (Latitude 33° 57' S.; Longitude 25° 35' E. approx.).

Call signal ... **ZSQ.**
Messages directed to ... **CQ.**
Wave length ... 600 m. spk.

Times of transmission:—

0820 G.M.T. (observations at following stations at 0630 G.M.T.).*
1250 G.M.T. (forecast for coasts in plain language).**

2. Observation stations, 0820 report:—

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
ZSD	Durban ...	29° 52'	31° 03'
ZSA	East London ...	33° 02'	27° 55'
ZSQ	Port Elizabeth ...	33° 59'	25° 37'
ZSM	Mossel Bay ...	34° 11'	22° 09'
ZSC	Capetown ...	33° 56'	18° 29'

1. Transmitting station... **Durban** (Latitude 29° 56' S.; Longitude 30° 59' E. approx.).

Call signal ... **ZSD.**
Messages directed to ... **CQ.**
Wave length ... 625 m. I.C.W.

Times of transmission:—

0810 G.M.T. (observations at following stations at 0630 G.M.T.).*
1205 G.M.T. (forecast for coasts in plain language).**

2. Observation stations, 0810 report:—

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
CQA	Beira ...	19° 50'	34° 51'
CQE	Lourenço Marques ...	25° 58'	32° 36'
ZSD	Durban ...	29° 52'	31° 03'
ZSA	East London ...	33° 02'	27° 55'
ZSQ	Port Elizabeth ...	33° 59'	25° 37'

1. Transmitting station... **Lourenço Marques**, (Latitude 25° 58' S.; Longitude 32° 36' E. approx.).

Call signal ... **CQE.**
Messages directed to ... **CQ.**
Wave length ... 600 m. spk.

Time of transmission:—

0800 G.M.T. (observations at following stations at 0630 G.M.T.).*

2. Observation stations, 0800 report:—

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
ZSA	East London ...	33° 02'	27° 55'
ZSD	Durban ...	29° 52'	31° 03'
CQE	Lourenço Marques ...	25° 58'	32° 36'
CQA	Beira ...	19° 50'	34° 51'
CQF	Mozambique ...	15° 02'	40° 45'

1. Transmitting station... **Mozambique** (Latitude 15° 02' S.; Longitude 40° 45' E. approx.).

Call signal ... **CQF.**
Messages directed to ... **CQ.**
Wave length ... 600 m. spk.

Time of transmission:—

0900 G.M.T. (observations at following stations at 0630 G.M.T.).*

2. Observation stations 0900 report:—

Indicator Letters.	Station.	Position (approx.)	
		Lat. S.	Long. E.
CQF	Mozambique ...	15° 02'	40° 45'
CQA	Beira ...	19° 50'	34° 51'
CQE	Lourenço Marques ...	25° 58'	32° 36'

* 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.

** Sundays and holidays excepted.

Madagascar.

Spark Issues.

THE following W/T Stations broadcast, *en clair*, information concerning weather in Madagascar and a weather forecast for the day on 600 metres (spark) in each case:—

W/T Station.	Call Sign.	Position. Lat. Long.	Times of Transmission.
Majunga ...	FIO	15° 43' S. 46° 20' E.	0900 G.M.T.
Diégo Suarez ...	FIL	12° 15' S. 49° 23' E.	0830 „
Tamatave ...	FIS	18° 08' S. 49° 26' E.	0800 „

These stations also transmit weather reports in code* taken at 0400 G.M.T. at the undermentioned stations:—

W/T Station.	Call Sign.	Time of Transmission.	Observation Stations.	Positions (approx.)	
				Lat. S.	Long. E.
Majunga ...	FIO	0500 G.M.T.	Helleville (Nossi Bé)	13 24	48 17
			Zaudzi ...	12 47	45 16
			Diégo Suarez ...	12 15	49 23
			Majunga ...	15 43	46 20
Diégo Suarez ...	FIL	0430 „	Helleville (Nossi Bé)	13 24	48 17
			Diégo Suarez ...	12 15	49 23
Tamatave ...	FIS	0415 „	St. Mary ...	17 00	49 54
			Tamatave ...	18 09	49 26

Ships can obtain on request any weather information in the possession of the above stations.

WIRELESS STORM WARNINGS.

Madagascar.

(Spark Issues.)

CYCLONE warnings are broadcast when necessary by the following stations on a wave length of 600 metres (spark), in each case:—

Zaudzi (Mayotta I.): Latitude 12° 47' S., Longitude 45° 16' E., Call Sign **FIM**.

Majunga: Latitude 15° 43' S., Longitude 46° 20' E., Call Sign **FIO**.

Diégo Suarez: Latitude 12° 15' S., Longitude 49° 23' E., Call Sign **FIL**.

Tamatave: Latitude 18° 08' S., Longitude 49° 26' E., Call Sign **FIS**.

The warning, originating from the observatory at Antananarivo, will be broadcast at every even hour during the probable passage of the cyclone when within the range of the W/T stations, by Majunga W/T station in the case of a cyclone affecting the Mozambique Channel, and alternately by Diégo Suarez and Tamatave W/T stations in the case of a cyclone affecting the area north-east and east of Madagascar.

The warning will be preceded by the Safety Signal **TTT** (— — —) repeated ten times at short intervals on full power. The warning will be broadcast one minute after the Safety Signal, and will be repeated three times at intervals of ten minutes.

If the Safety Signal *only* is broadcast it will indicate, in the absence of precise information, that there is reason to expect the passage of a cyclone.

During the whole period of this service Diégo Suarez and Tamatave W/T stations will remain permanently on watch.

* 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.

Mauritius.

Spark Issues.

Mauritius W/T station, call sign **VRS**, broadcasts, during the cyclone season (1st November to 15th May), on a wavelength of 600 metres spark, at irregular intervals, or on request, to all ships when it is known that a cyclone is in existence, the latest weather information *immediately* this information is received at the W/T station from Mauritius Observatory. The message is transmitted *en clair* in English giving as far as is known the position of the cyclone, with the direction and rate of its movement, also the weather conditions at Mauritius.

Requests from ships for further information will be forwarded at once to the Observatory.

Continuous watch will be kept at the W/T station.

III. WIRELESS TIME SIGNALS.

Union of South Africa.

I.C.W. Issue.

TIME signals actuated automatically from the Royal Observatory at the Cape by direct land line are broadcast by **Cape Town W/T station**, call sign **ZSC**, Latitude 34° 09' S., Longitude 18° 19' E. (approx.), on a wavelength of 625 metres (I.C.W.).

The time signals are broadcast according to the New International System of W/T time signals and the procedure is as follows:—

G.M.T.

h. m. s.	h. m. s.	
20 56 05 to	20 56 50	— — — repeated 5 times at 10 second intervals.
57 00 „	57 50	— • • — repeated 10 times at 5 second intervals.
57 55 „	58 00	{ 55 56 57 58 59 60 • • • • • Time Signal.
58 08 „	58 10	— •
58 18 „	58 20	— •
58 28 „	58 30	— •
58 38 „	58 40	— •
58 48 „	58 50	— •
58 55 „	59 00	{ 55 56 57 58 59 60 • • • • • Time Signal.
59 06 „	59 10	— — •
59 16 „	59 20	— — •
59 26 „	59 30	— — •
59 36 „	59 40	— — •
59 46 „	59 50	— — •
20 59 55 „	21 00 00	{ 55 56 57 58 59 60 • • • • • Time Signal.

Portuguese East Africa.

Spark and C.W. Issues.

DELAGOA BAY.—LOURENÇO MARQUES. W/T time signals are transmitted automatically by means of the pendulum clock at Campos Rodrigues Observatory.

The transmission of the signals is made simultaneously by **Ponta Vermelha W/T station**, Lat., 25° 58' 05" S., Long., 32° 35' 39" E., call sign **CQE**, wave length 600 metres (spk.) and **Polana W/T station**, Lat., 25° 57' 40" S., Long., 32° 35' 59" E., call sign **CRAP** wave length 2,400 metres, C.W., and the new International system of W/T time signals is used.

The transmitting times are:—

G.M.T.							
	h.	m.	s.	h.	m.	s.	
From	7	57	00	to	8	00	00
„	18	57	00	„	19	00	00

The procedure as regards each series of signals is as follows:—

G.M.T.			Signal.					
h.	m.	s.	h.	m.	s.			
7	57	00	to	7	57	50	Pre-venção. Sinais feitos à mão (Prepare. Time signal coming).	
57	55	„	58	00	00	55 56 57 58 59 60	Time signal.	
58	08	„	58	10	00	•••••		
58	18	„	58	20	00	•••••		
58	28	„	58	30	00	•••••		
58	38	„	58	40	00	•••••		
58	48	„	58	50	00	•••••		
58	55	„	59	00	00	55 56 57 58 59 60	Time signal.	
59	06	„	59	10	00	•••••		
59	16	„	59	20	00	•••••		
59	26	„	59	30	00	•••••		
59	36	„	59	40	00	•••••		
59	46	„	59	50	00	•••••		
7	59	55	to	8	00	00	55 56 57 58 59 60	Time signal.

Note.—The error of the Observatory clock is stated never to exceed a few hundredths of a second.

IV.—VISUAL STORM WARNINGS.

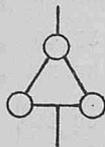
Mozambique.

STORM signals are displayed at Sebastian fort on receipt of information by cable from Mojanda in Madagascar. They consist of warning signals which are as follows:—

By day.



By night.



The lights displayed in the night signal are *white*.

The cone is hoisted at the Northern yardarm and the lights on the same mast.

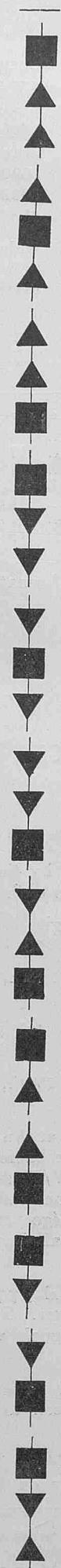
Madagascar.

SIGNALS indicating the localities threatened by a cyclone are exhibited at the following ports: Tamatave, Andovoranto, Vatomandri, Mahanoro Manajari, Farafangana, Fort Dauphin, Tuléar, Ambohibé, Morondava, Maintirano, Namela, Majunga, Analalava, Nossi Bé, Diégo Suarez, Vohemar, Maroantsetra, Zaudzi, and St. Mary.

The signals, which are made from a flagstaff by a black cylinder and black cones, are as follows:—

Signal.

Locality threatened.



Between Diégo and Antálaha.

Between Antálaha and St. Mary.

Between St. Mary and Vatomandri.

Between Vatomandri and Mananjari.

Between Mananjari and Farafangana.

Between Farafangana and Fort Dauphin.

Between Diego and Nossi Bé.

Between Nossi Bé and Majunga.

Between Majunga and Maintirano.

Between Maintirano and Morondava.

Between Morondava and Tuléar.

Between Tuléar and Fort Dauphin.

Reunion Island.

CYCLONE signals are displayed at Port des Galets, St. Denis, St. Paul, and St. Pierre signal stations, and also on the Vigie flagstaff, St. Denis, to indicate the probable approach and general track of cyclones in the vicinity of Reunion. The signals are to be taken as a general guide only, for the assistance of mariners as to the best way of avoiding cyclones.

The symbols employed (*black*) and their meanings are as follows:—

Signal.	By Day.	Meaning.
		Cyclone expected.
		Cyclone approaching from the north-eastward.
		Cyclone appears likely to pass at a <i>considerable</i> distance northward of the island.
		Cyclone appears likely to pass a <i>short</i> distance northward of the island.
		Cyclone appears likely to pass southward of the island, travelling from north-eastward to south-westward.
		Cyclone appears likely to pass southward of the island, travelling from north-westward to south-eastward.
		Cyclone appears likely to pass westward of the island, travelling from northward to southward.
		Cyclone appears likely to pass eastward of the island.
		Cyclone, which had already passed in a northerly direction, appears to have recurved, and is again approaching the island, travelling from N.W. to S.E.
		Barometer rising ; all danger over.

Mauritius.

Storm Signals.

DURING the cyclone season, from 1st November to 15th May, annually, a storm signal is hoisted daily, between 1 p.m. and 2 p.m., at the Port office at Port Louis, to indicate the weather conditions prevailing in the *vicinity* of Mauritius. The storm signal consists of four International Code flags and a cone.

- The upper flag refers to the quadrant from east to north.
- The second " " " " north to west.
- The third " " " " west to south.
- The fourth " " " " south to east.

(The flags are placed vertically.)

When the signal is headed by a ball the information refers to the area within a circle with a radius of 300 miles.

When the answering pennant is hoisted below the fourth flag it indicates that no information has been received, and that the signal refers to the previous day.

Signification of Flags.

- A. There are no indications of disturbed weather.
- B. Weather is unsettled, but there are no indications of a cyclonic storm.
- C. Weather is unsettled, and may lead to the formation of a cyclonic storm.
- D. There are indications that a cyclonic storm is forming.
- E. There is distinct evidence of the existence of a cyclonic storm.
- F. The disturbed weather is apparently due to an extra tropical storm to the southward, " Southerly buster."
- G. The weather is clearing, but the sea may still be heavy.
- H. The cyclonic storm is moving south-westward.
- I. The cyclonic storm is moving southward.
- J. The cyclonic storm is moving south-eastward.
- K. The cyclonic storm is moving westward, northward of Mauritius.
- L. The cyclonic storm is moving eastward, southward of Mauritius.
- M. Strong trades which may be followed by cyclonic storm in next few days.
- N. Heavy swell may be encountered, indications of cyclonic storm beyond 300 mile limit.
- O. Heavy swell may be encountered, indications of cyclonic storm beyond 300 mile limit travelling on S.W. track.
- P. Heavy swell may be encountered, indications of cyclonic storm beyond 300 mile limit travelling on S. track.
- Q. Heavy swell may be encountered, indications of cyclonic storm beyond 300 mile limit travelling on S.E. track.
- Z. No information available.

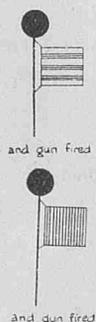
Local Storm Signals.

When bad weather is approaching and precautions are not immediately necessary in the harbour, the following International Storm signals are made to vessels in the harbour and roadstead from the flagstaff of the Port office, Port Louis, at the head of the harbour.

Signal.	Signification : Gale probably commencing at
	North-West.
	South-West.
	North-East.
	South-East.

When bad weather is approaching and precautions are necessary in the harbour, the following cyclone signals are made to vessels in the harbour and roadstead from the flagstaff of the Port office, Port Louis, at the head of the harbour.

Signal.



By Day.

Meaning.

Send down top-gallant yards and prepare for bad weather. The masters of all ships and vessels in this port are required immediately to repair on board their respective vessels, and half the crew should be kept on board; vessels at the Light Buoy ought to proceed to sea.

Vessels in the port are to strike lower yards and topmasts.

Vessels are required to answer the signals by hoisting their national ensign at the main.

Signal.



By Night.

Meaning.

Vessels at the Light Buoy to proceed to sea forthwith, and vessels in the port to make every preparation for bad weather.



Special Notices Regarding Personnel.

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

Captain J. N. Griffiths.

Captain J. N. GRIFFITHS, Commander of the Canadian Pacific S.S. *Montclare* has retired after an active service career of 40 years afloat.

Captain GRIFFITHS commenced his sea career as an apprentice in the sailing ship *Holt Hill* of Liverpool in 1889 and had the misfortune to suffer shipwreck on his first voyage. He joined the Canadian Pacific service in 1903 as third officer of the *Lake Erie* and obtained his first command in 1914 when he was appointed Master of the *Montroyal*. Since then he has commanded several well-known units of the Canadian Pacific Fleet, including the *Mortfort*, *Marglen*, *Melita* and *Minnedosa*.

He was a member of our Corps of Voluntary Marine Observers since 1917.

Captain W. S. Shelford.

Captain SHELFORD of R.M.S. *Oronsay* has retired. He joined the Training Ship *Worcester* at the early age of twelve in 1881 and went to sea on New Year's Day 1885 as an apprentice in the new four-masted Barque *Earl of Chatham*, which ship was lost off Holyhead upon her second voyage, he then went in the *Earl of Beaconsfield* and she was lost off Hull—completing his time in the *Boadicea*; upon passing for second mate he served as third mate of S.S. *Elmina*.

He then went to S.S. *Cragside* and was wrecked off Cape Hatteras, passed for master at the age of twenty-four and joined the Orient Steam Navigation Company's service in February, 1893.

Captain SHELFORD's first command was S.S. *Cuzco* at the age of thirty-one in March, 1900.

He has commanded the following ships, *Ormuz*, *Orontes*, *Omrah* (torpedoed and sunk, May 12th, 1918, when carrying troops in the Mediterranean), *Orsova*, *Orviato*, *Ormonde*, *Orama* and *Oronsay*.

Captain SHELFORD's record as a member of the Voluntary Corps of Marine Observers dates back to 1897 when he was second officer of S.S. *Lusitania*, since when he has taken part in the contribution of no less than 59 Meteorological Logs and the ships under his command have appeared in the list of Excellent Awards on several occasions.

The Marine Division join the Corps of Voluntary Marine Observers in wishing these officers health and happiness in their retirement.

Captain E. W. Barnes.

Captain E. W. BARNES of S.S. *Umvolosi* has retired from active service afloat on account of health.

Born in 1877 he served his time in the Barque *Nairshire* and was second mate of the Barque *Craigista* and completed his seetime for master in S.S. *Sandend*.

Upon obtaining his master's certificate he joined the City Line, but transferred to the service of Messrs. Bullard King & Co.'s Natal Line in 1909.

Throughout the war he was Chief Officer of S.S. *Umona* carrying munitions to the White Sea. He was appointed to command of S.S. *Umkuzi* in 1921 and commanded also *Umfuli*, *Umtali* and *Umvolosi*.

Captain BARNES was a member of the Corps of Voluntary Marine Observers from 1924.

He has laid down his moorings in Hampshire and the Corps of Voluntary Marine Observers will join the Marine Division in wishing him recovery of health and much happiness in his retirement.

Obituary.

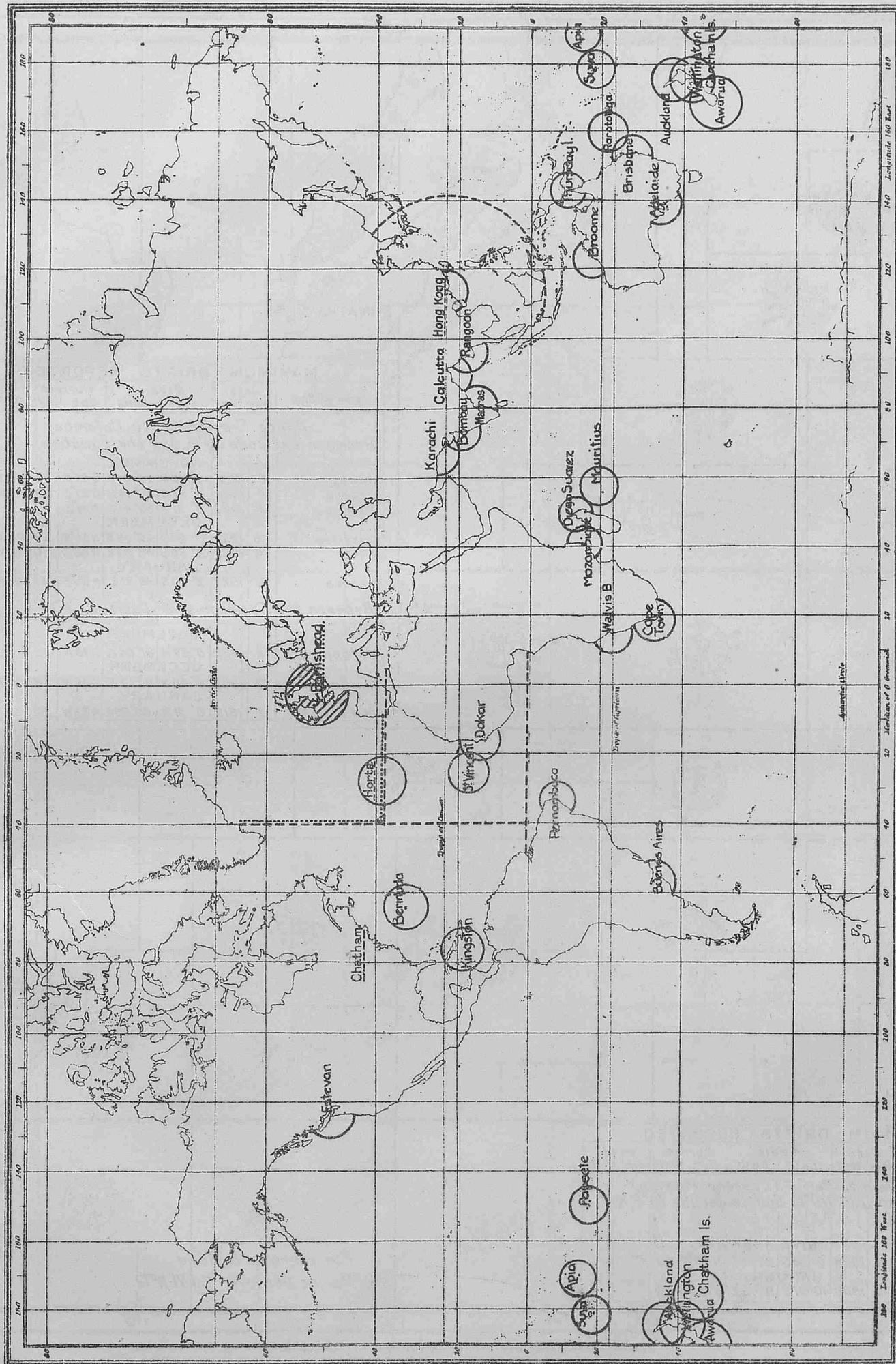
On the night of August 20th during a heavy storm, the yacht *Islander* was wrecked and lost with all hands on the rocks in Lantivet Bay, close to Fowey on the Cornish coast. The following deaths are noted with deep regret:—

The Rt. Hon. H. D. KING, C.B., C.B.E., D.S.O., V.D., R.N.V.R., M.P. for South Paddington; Captain R. C. GLAZEBROOK, R.D., R.N.R.; Surgeon-Captain A. R. BRAILEY, M.B., F.R.C.S., M.C., V.D., K.H.S., R.N.V.R.; Commander S. SEARLE, O.B.E., V.D., R.N.V.R.; Captain LUCAS, skipper of the yacht and WALTER LUCAS, yacht-hand.

Captain GLAZEBROOK was a retired commander of the Orient Line and had during his active service career afloat been a regular member of our Corps of Voluntary Marine Observers.

Chart XII— SHIPS' WIRELESS WEATHER SIGNALS.

Stations for Reception of Routine Wireless Weather Reports from "Selected Ships."



The dotted line indicates the area in which British "A Selected Ships" report under control to Portishead. The small shaded circle indicates the area from which reports are prohibited to Portishead.



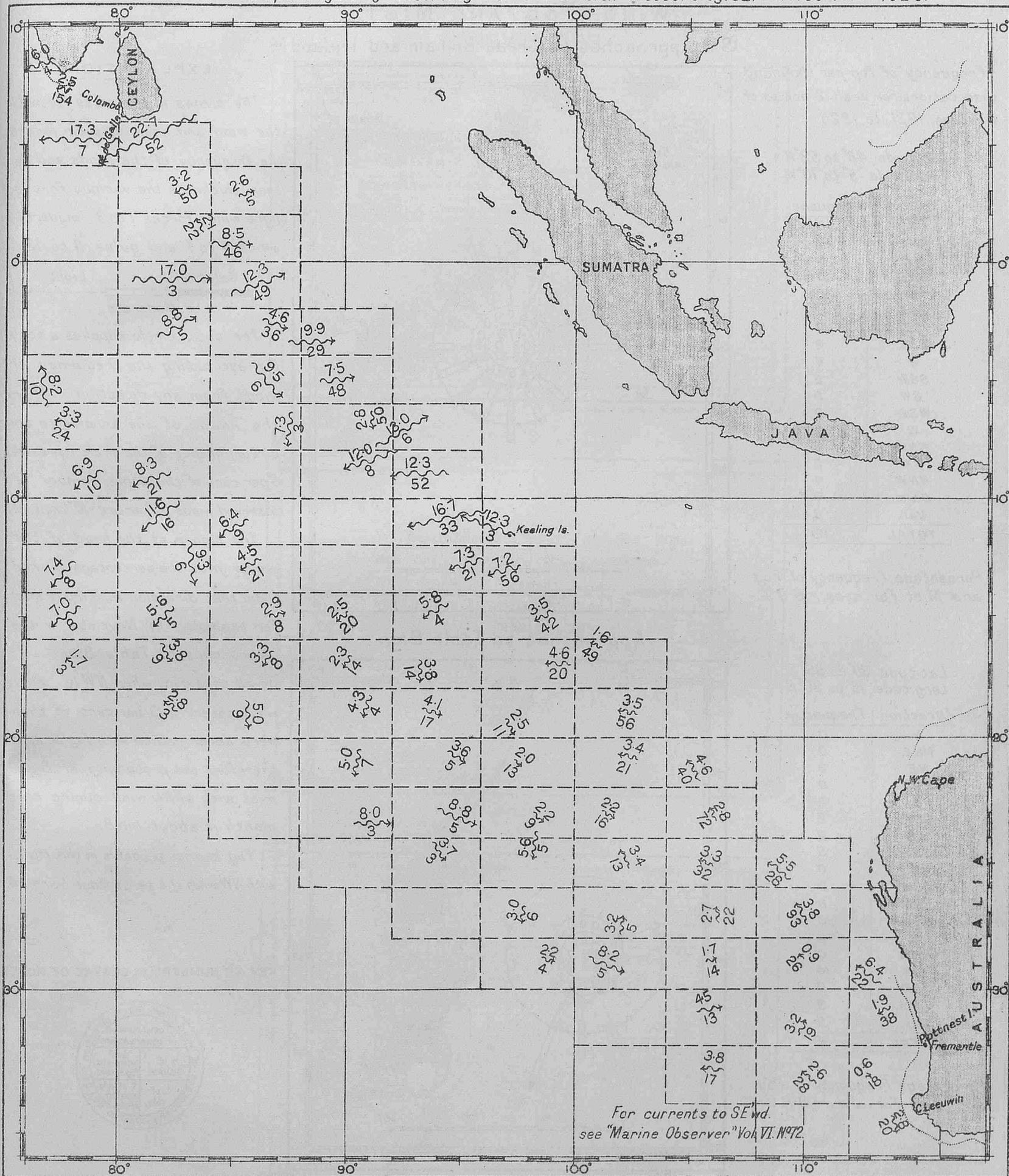
A pecked line indicates the reporting area round stations in other countries to which British "A Selected Ships" should report. The names of such stations being also underlined with a pecked line.



The full-line circles indicate the areas round islands and coast stations which could receive spark "Selected Ships" reports to C.Q.

NOVEMBER, DECEMBER AND JANUARY.

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



For currents to SE wd.
see "Marine Observer" Vol. VI. No. 72.

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.

NOVEMBER, WIND, FOG AND MIST.

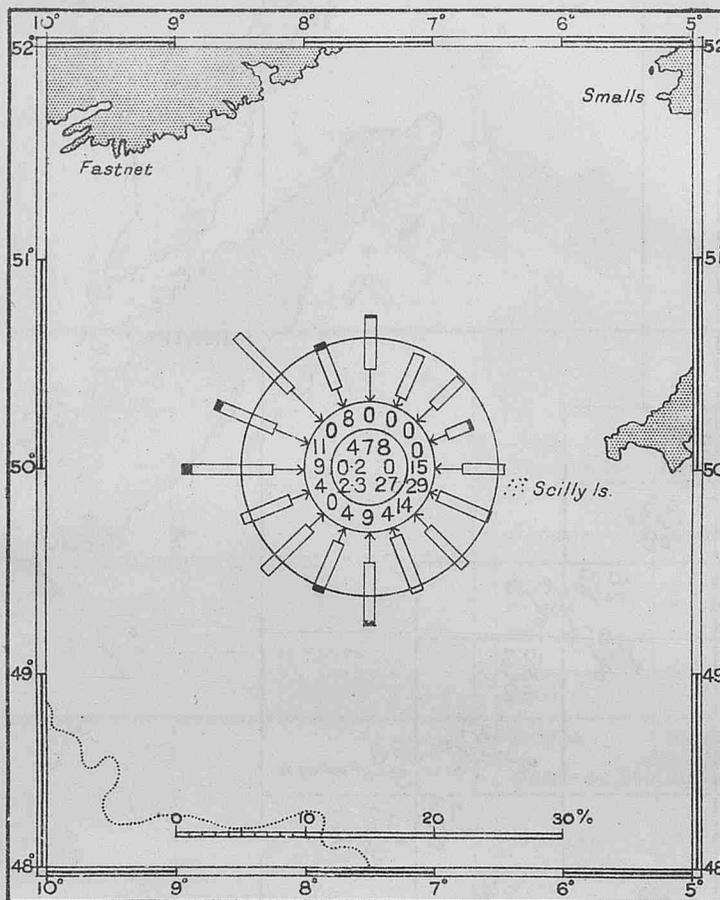
S.W. Approaches to Great Britain and Ireland

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.

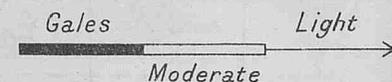
Direction.	Frequency.
N	0
NNE	0
NE	0
ENE	0
E	8
ESE	15
SE	8
SSE	2
S	6
SSW	2
SW	0
WSW	2
W	8
WNW	8
NW	0
NNW	4
Cal'm	0
Var.	6
TOTAL	69

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 November in the Approaches to Table Bay.

on all occasions when NW'y winds were observed 13 per cent of them were accompanied with fog or mist, therefore the probability of fog or mist with a NW'y wind during this month is about 1 in 8.

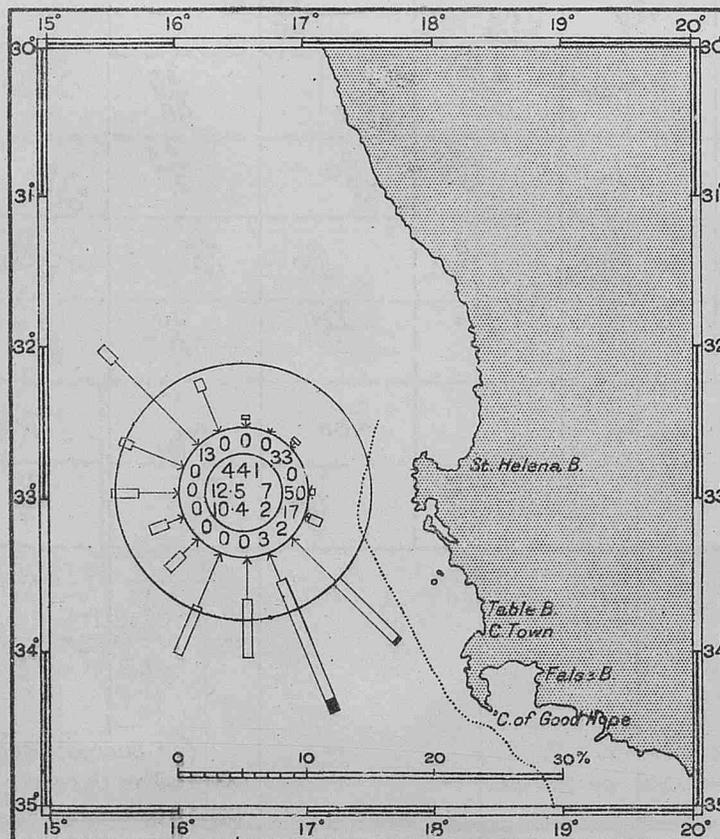
Fog is most probable in this month with NW winds the percentage being 1.4.

Approaches to Table Bay.

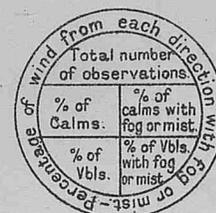
Latitude 30° to 35° S.
Longitude 15° to 20° E.

Direction.	Frequency.
N	0
NNE	0
NE	2
ENE	0
E	2
ESE	2
SE	2
SSE	5
S	0
SSW	0
SW	0
WSW	0
W	0
WNW	0
NW	14
NNW	0
Cal'm	9
Var.	2
TOTAL	38

Percentage Frequency of Fog and Mist for area = 3.8%.



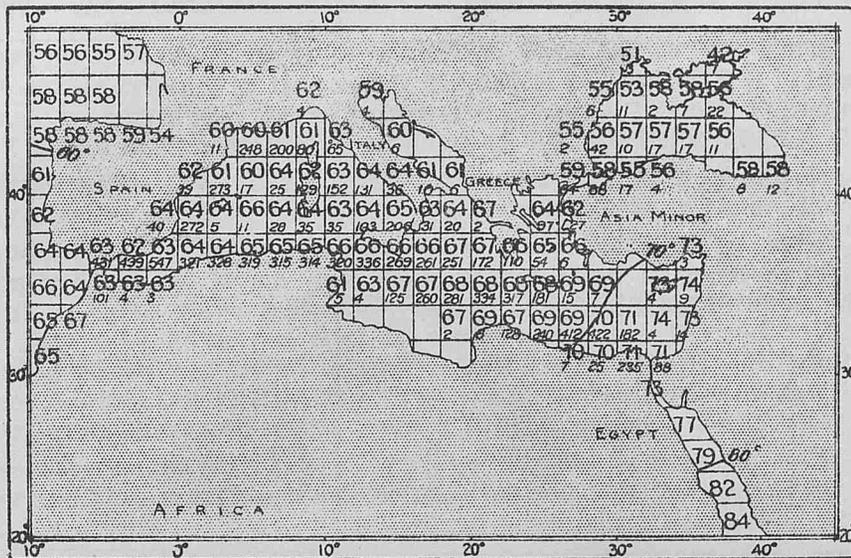
KEY TO NUMBERS IN CENTRE OF ROSES.



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

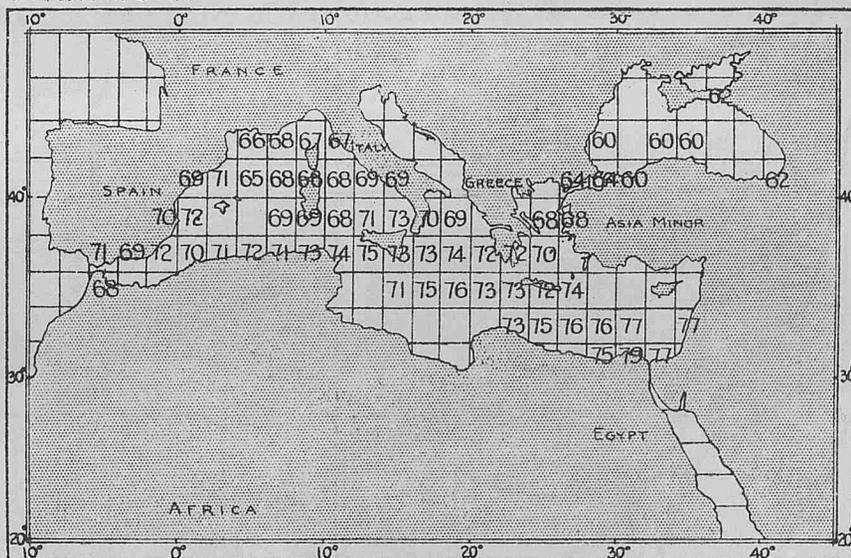
MEDITERRANEAN SEA SEA SURFACE TEMPERATURES

MEAN.
NOVEMBER,

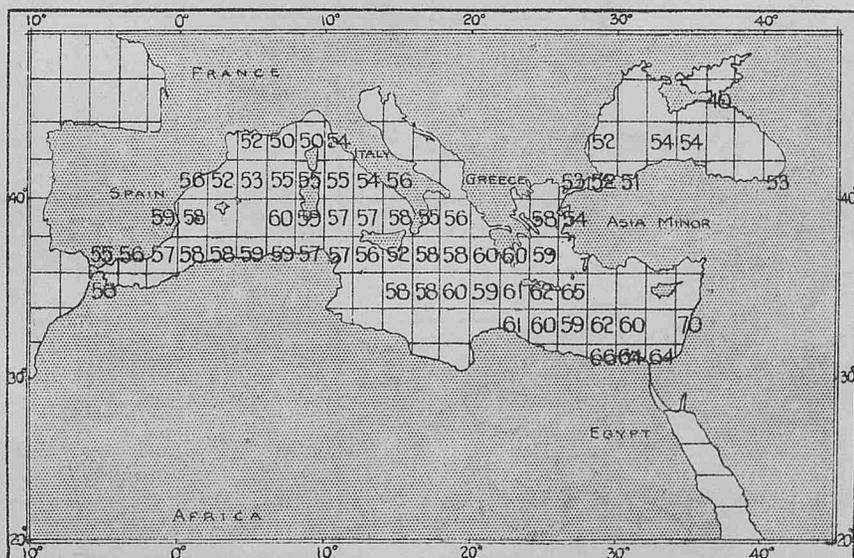


Small figure gives number of observations.

MAXIMUM.



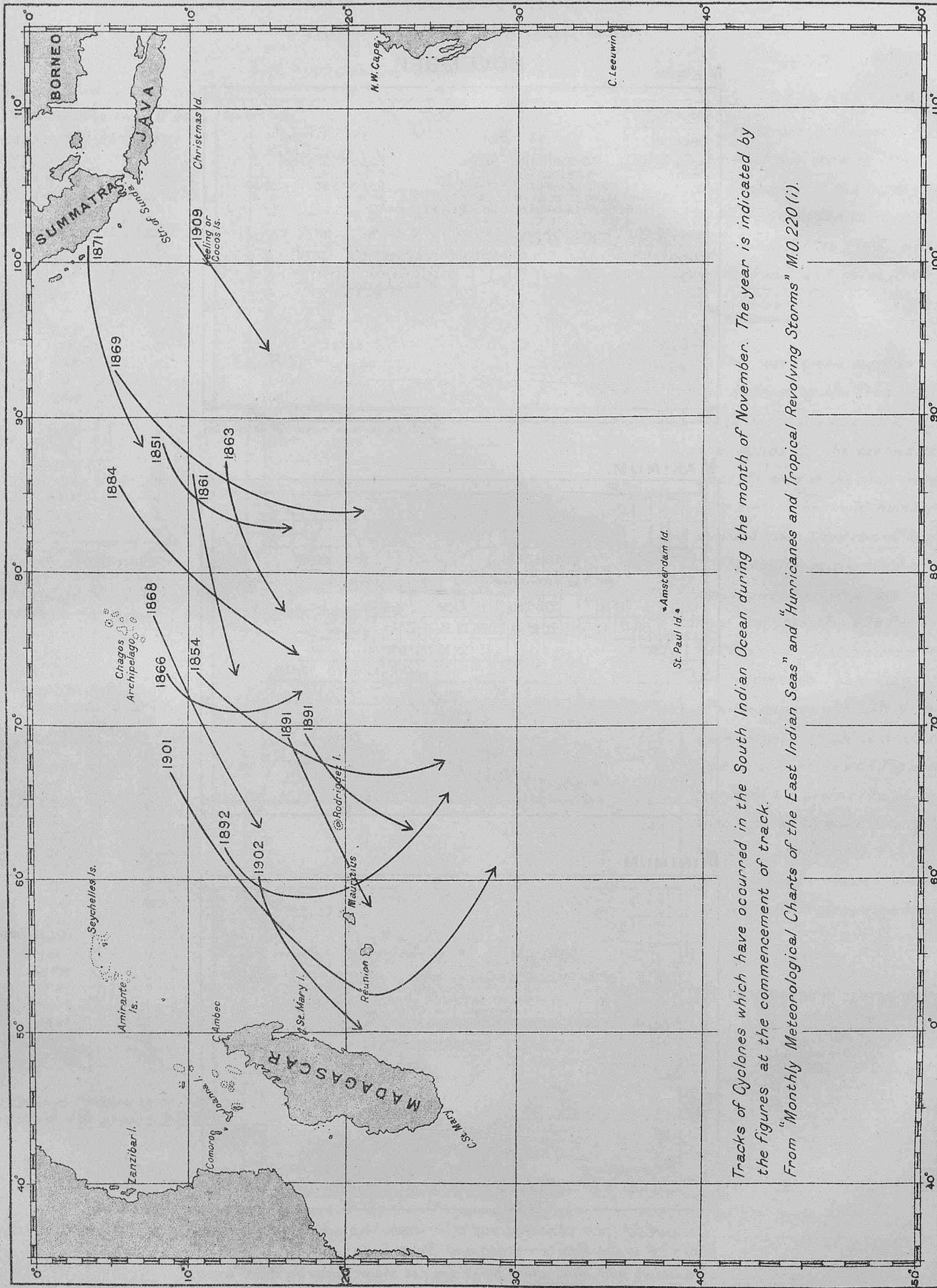
MINIMUM.



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.

SOUTH INDIAN OCEAN CYCLONES.



Tracks of Cyclones which have occurred in the South Indian Ocean during the month of November. The year is indicated by the figures at the commencement of track.

From "Monthly Meteorological Charts of the East Indian Seas" and "Hurricanes and Tropical Revolving Storms" M.O. 220 (r).

NOTICES.

RECOMMENDED ROUTES FOR STEAM AND MOTOR VESSELS DURING THE S.W. MONSOON FROM THE EAST TO PERIM.

Upon completion of the charting of currents on the tracks from Cape Leeuwin to Perim and from Fremantle to Perim via Columbo (which cover most of this ground) in this year's MARINE OBSERVER it is intended to re-examine the above and to see what modifications may be desirable. These routes are given in "Ocean Passages for the World" published by the Admiralty and on pages 127 to 129 and accompanying charts of Volume VI, MARINE OBSERVER.

Since the matter was investigated in 1920 and reported upon on the back of the June, 1921, (No. 182), East Indian Seas Meteorological Chart many masters of ships trading to the east have sent in their views.

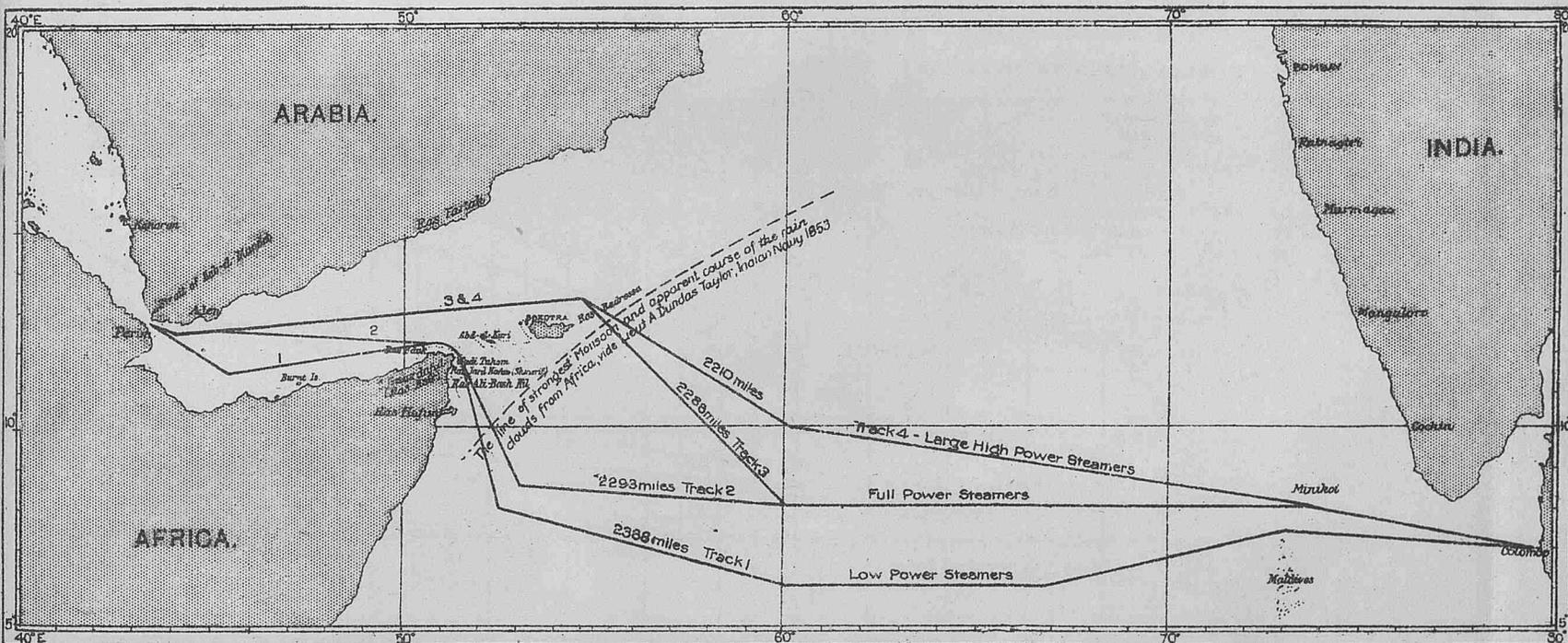
Recently the Master Attendant at Colombo has suggested modifications in these recommended tracks for the S.W. Monsoon season from Colombo to Perim, based upon the views of some 70 masters of ships calling at Colombo. All those who have previously sent in their views and who, owing to further experience, may wish to modify them, and masters of ships trading to the East who have not sent in their views are invited to do so as soon as possible. The Commanders of Regular Observing Ships are asked to enter their remarks upon this subject in the space provided for additional remarks in the Meteorological Log or Record. Commanders of ships not on the list of Regular Observing Ships should send in their remarks by letter addressed to the Marine Superintendent, Meteorological Office, London.

It will greatly assist if these suggestions are made as brief and concise as possible consistent with clearness. By using the chart hereunder and showing the modifications desired in red ink, Commanders may usefully illustrate their suggestions.

Suggestions as to the routes during the S.W. Monsoon season from Singapore, Sumatra and Java to Perim as well as from Colombo are desired from the masters of every class of ship from great high speed liners to low powered small steam and motor vessels. In each case the size, speed and description of ship should be given.

Information as to the benefit and reliability of Direction Finding Wireless in the vicinity of Cape Guardafui will be of great assistance.

CHART IV. STEAM TRACKS RECOMMENDED—COLOMBO TO PERIM, SOUTH-WEST MONSOON.



Tracks 1 and 2 should only be adopted by Navigators who are accustomed frequently to fix the position by stellar observations: and the precautions given in the "Gulf of Aden and Red Sea Pilot" should be carefully observed when making the land and rounding Cape Guardafui.

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 CHART.

WESTERN NORTH ATLANTIC.

LETTERS OF TRANSATLANTIC TRACKS INDICATE.

- (C) From 1st September to 31st March, 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. Eastbound, steer from position 25 miles S. of Cape Race.
- (a) 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 POSITION OF ICE.

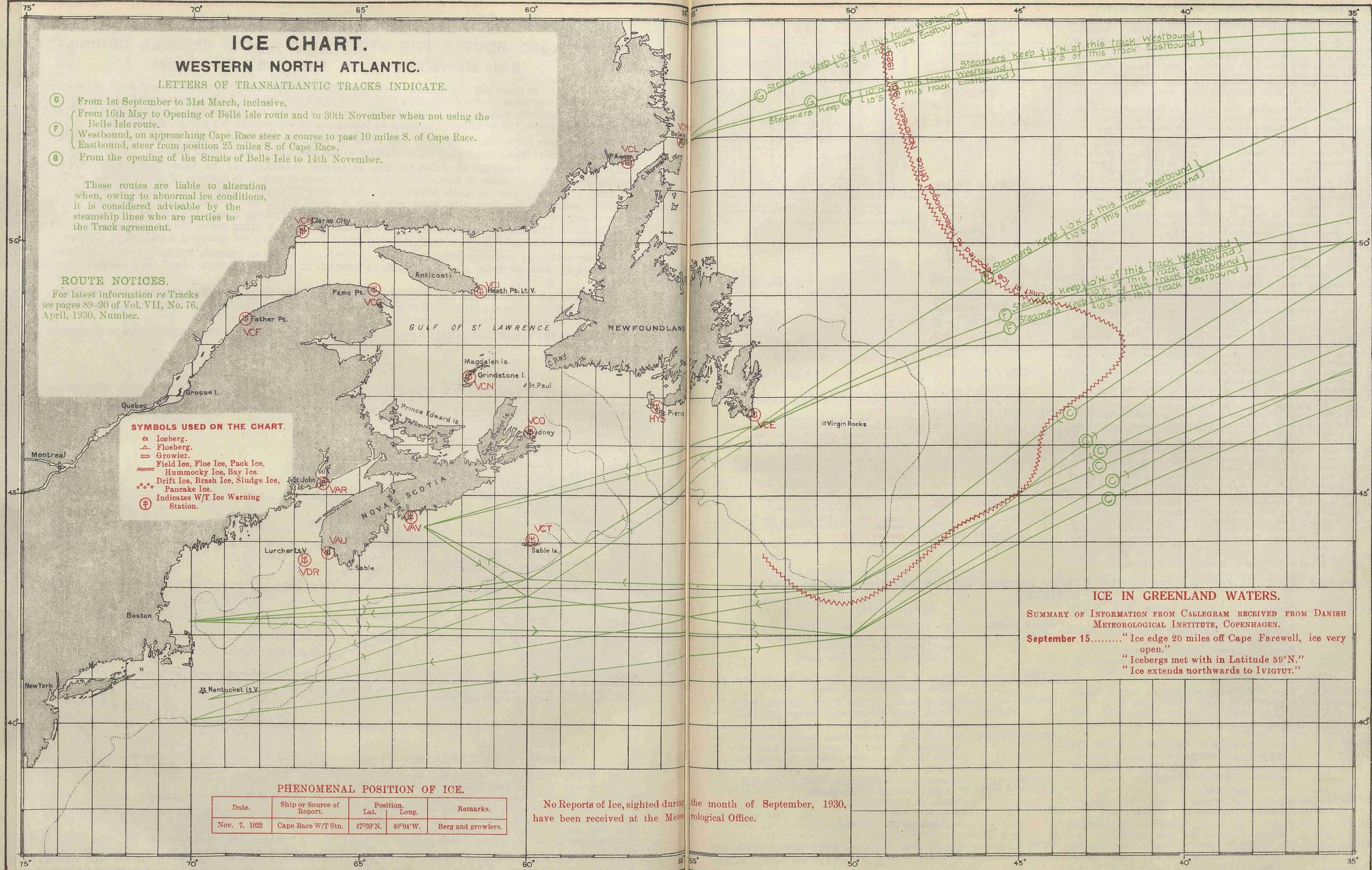
Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
Nov. 7, 1922	Cape Race W/T Stn.	47°38'N.	40°04'W.	Berg and growlers.

No Reports of Ice, sighted during the month of September, 1930, have been received at the Meteorological Office.

ICE IN GREENLAND WATERS.

SUMMARY OF INFORMATION FROM CABLEGRAM RECEIVED FROM DANISH METEOROLOGICAL INSTITUTE, COPENHAGEN.

September 15..... "Ice edge 20 miles off Cape Farewell, ice very open."
 "Icebergs met with in Latitude 59°N."
 "Ice extends northwards to IVIGTUT."



CO-OPERATION OF SHIPOWNERS, MASTERS AND MATES.

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 2s. 6d.

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.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
NORTH SEA.			
5.9.30	6 or 7 miles off Harwich.		Submerged object.
13.9.30	52° 51'N.	6°20'E.	Black conical buoy, with iron flag, about 8 to 10 ft. high.
18.9.30	North Goodwin Lightship bearing 252 deg. 8 to 9 miles.		Square-terned water-logged ship's boat with white bottom and black topsides with white band below gunwhale and white painted fall-block with cut fall in bow-ring.
ENGLISH CHANNEL.			
3.9.30	164 deg. 2.2 miles from S. Foreland Light House.		Large baulk of timber awash.
7.9.30	5 miles N.W. of Creach Point.		Red conical buoy.
11.9.30	49°58'N.	1°47'W.	Spherical buoy adrift.
IRISH SEA.			
18.9.30	7 m. W. by S. of Corsewall Light, Ayrshire.		Submerged timber.
BAY OF BISCAY.			
8.9.30	44°05'N.	8°—'W.	Submerged wreck, dangerous to navigation.
NORTH ATLANTIC.			
5.9.30	39°25'N.	73°53'W.	Log about 35 ft. long and 3 ft. in diameter, with one end projecting about 2 ft. out of water.
6.9.30	35°47'N.	33°21'W.	Bell buoy.
7.9.30	41°13'N.	11°07'W.	Red conical buoy marked 2 above FP, dangerous to navigation.
7.9.30	34°47'N.	67°21'W.	Red gas buoy with light burning.
8.9.30	29°22'N.	61°28'W.	Large buoy about 10 ft. in diameter and showing 4 ft. out of water.
9.9.30	48°31'N.	5°11'W.	Conical buoy, dangerous to navigation.
9.9.30	12°21'N.	78°28'W.	Large tree trunk about 50 ft. long, 2½ ft. in diameter, with roots showing about 6 ft. out of water.
9.9.30	39°38'N.	39°45'W.	Large black buoy with light and a rope on top, apparently newly painted.
12.9.30	18°30'N.	74°28'W.	Heavy tree trunk about 30 ft. long.
20.9.30	46°45'N.	6°40'W.	Derelict steamer <i>Theodoros Bulgaris</i> ; dangerous to navigation.
21.9.30	47°15'N.	6°35'W.	Derelict fishing smack; dangerous to navigation.
NORTH PACIFIC.			
2.9.30	30°50'N.	121°57'W.	Log about 45 ft. long and 2 ft. in diameter, half submerged.
4.9.30	37°49'N.	123°01'W.	Log about 60 ft. long.

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 3959. Telegraphic
Address: Meteorite, Liverpool).

Agents.

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

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

CLYDE 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).

Agents (contd.).

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