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THE MARINE OBSERVER.

JUNE, 1932.

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WORK OF THE YEAR.

April 1st, 1931, to March 31st, 1932.

THE financial year is closing with a combination of happy circumstances for our country, though it has been one of sacrifice and anxiety for most, and for many, acute distress.

British shipping and seamen have suffered much. The number of officers and men of the Merchant Navy thrown out of employment is said to have been as many as 42,000 and probably there has not been such distress amongst merchant seamen, due to depressed trade, since 1827, the year the Destitute Sailors' Fund was established. Notwithstanding this the Corps of Voluntary Marine Observers have continued to improve the service of Marine Meteorology.

Mr. WALTER RUNCIMAN, President of the Board of Trade, a ship-owner and son of a master mariner, than whom there is no one in a better position to judge of the future possibilities for shipping, told the North of England Shipowners association recently:—

"My personal opinion is that the depression will lift, and prosperity will come creeping along. You will not see it, and

still think you are in the depression; but all at once you will realise that someone has got in ahead of you. Look out for that. I have gone through many depressions, and see that happen, and I anticipate that the same thing will occur very soon, perhaps not this year, but we will see the shadow of it this year. Next year there will be better trade, and we will be able to employ all our ships now laid up, and I hope none of you will be tempted to go on building what the world does not want."

During the year we have been effecting economies, and in British Marine Meteorology also, a combination of circumstances has resulted in a step towards the achievement of the original purpose of The Work being taken, which has long been our aim but which force of circumstances prevented.

Since the establishment in the middle of the nineteenth century of organized voluntary marine meteorological work, there has been over-collection of observations from the sea. This has not only

resulted in a false impression being created amongst many seamen that the observations returned in writing were being utilized so that they would be contributing to general knowledge of mankind and to improvements in navigation, but the vast mass of data collected was becoming more and more unwieldy, through not being prepared for digestion as it was received. By the end of the Great War collection of observations had practically ceased. When we re-started and re-organized the work, it was with three main intentions:—

(1) To collect observations and to prepare them as they were received so that we might complete the charting of the seas and keep information up to date.

(2) To promote the practical application of marine meteorology to navigation by means of Wireless Communication.

(3) To prepare and digest observations collected before the Great War, which remained as received in logs, from those parts of the seas which had not been adequately charted and which mechanical aids not available before the war, made possible.

All three were each dependent one upon the other if (2) was to have lasting success.

The work of (2), promoting the practical application of Marine Meteorology by means of W/T, soon commenced to occupy so much of our time that even the limited number of observations collected in Meteorological Logs since the war could not be all dealt with as received, and we had not been able to commence the preparation of observations collected before the war at all.

The passing of the Merchant Shipping Safety and Load Line Conventions Act which will lead to ratification of the International Convention for Safety of Life at Sea, through which each maritime country party to it undertakes to encourage the collection of meteorological data by ships at sea, and to arrange for their examination, dissemination and exchange in the manner most suitable for the purpose of aiding navigation, renders unnecessary the return in writing of routine observations by British ships to Foreign institutions, or by Foreign ships to the British Meteorological Office. It makes possible the limitation of British observing ships to a number sufficient only for the collection of such meteorological data as are still necessary, and for maintaining the Selected Ship routine Wireless Weather Telegraphy Service.

The great improvement in the work at sea which marine observers have effected during late years, the number of ships laid up, and the urgent need for national economy, all make desirable a reduction in the numbers of the British observing fleet.

Before the financial crisis was made public in August last, the then President of the Board of Trade had appointed an Economy Committee on Wireless Navigational and Gale Warnings, and the reduction of the observing fleet had been commenced. He also having received representations as to the provision of meteorological ocean charts and information to aid navigation of merchant shipping, from the Honourable Company of Master Mariners, the Meteorological Committee, to whom the matter was referred, have had the whole question re-examined. A scheme which has long been in existence in the Marine Division for preparing sufficient observations collected in Meteorological Logs since 1855 to complete the charting of all oceans has been crystallized. With the observing fleet reduced by one quarter, collection of data has been reduced considerably so that less clerical work is involved on that side and more is being done in *extracting* data. The system of charting the currents in THE MARINE OBSERVER, and from these section charts producing atlases, continues. At the end of two years progress will be reviewed and if the financial position justifies it is intended to take the necessary steps to procure additional temporary clerks to complete extraction within a reasonable period, after which the permanent staff of the Marine Division will be in a position to make the necessary computations and complete the survey of the oceans.

Other changes are under consideration which it is hoped will also ease the position and help towards extracting data. Thus the Marine Division will be better able to render useful service, less clerical work will be involved at sea, the Corps of Voluntary Marine Observers may continue by the Selected Ship Service to directly

aid navigation generally, and the original purpose of the work may be fulfilled in a decade.

Thus, there are not only signs of reviving trade and prosperity but the prospects for making full use of all the fine work done by the British Voluntary Corps of Marine Observers in keeping Meteorological Logs since 1855 have this year become brighter than at any time.

Collection of Data during Year. Meteorological Log (4 hourly) kept with complete official instrumental equipment, kept by from 97 to 65 ships.

Of a total of 221 received:—

90 classed Excellent.
131 classed Very Good.
0 classed Good.
0 Not classed.

221 Total.

These classifications include the Form 138, Wireless Weather Register, in the case of "Selected Ships"; and take into account recorded evidence of the practical application of the work to the navigation of the ship.

The classifications are made by comparison so that the standard of "Excellent," which is limited to 40 per cent. of all logs received, is set by the corps of voluntary marine observers themselves.

This standard this year is as high as it has ever been and the Meteorological Log remains the backbone of the work.

Ships' Meteorological Record Form 911. Two to four sets of synchronized observations daily according to number of watch keeping officers carried, kept by from 380 to 306 ships.

Of a total of 2,660 of these forms received, they were classed as follows:—

Excellent	...	...	...	...	...	824
Very Good	...	...	...	...	...	1,813
Good	...	...	...	...	...	3
Not classed	...	...	...	...	...	20
Total	...	...	...	...	...	2,660

The same system of classification as for logs is used, the wireless register Form 138 being included, and consideration being given to evidence of practical application of the work.

This classification obtained in competition among Form ships is of a higher standard this year than before, a number of observing ships, which formerly kept the Meteorological Log and whose officers are particularly good observers, having changed over from keeping the Meteorological Log to these Forms.

Cadets' Meteorological Logs, Lighthouse Registers, Coast Guard and Light Vessel Returns, Ice Reports, Form 912 and Miscellaneous Contributions.

The valuable work of training future marine observers by the officers' training ships *Conway* and *Worcester* and the Nautical College, Pangbourne has continued, all Cadet Meteorological logs returned being "Excellent."

Seven West India and Falkland Island Lighthouse stations have continued the return of routine observations.

The system of obtaining sea temperature observations round the British coasts has been overhauled, and the number of shore stations returning Form 914 has been reduced, it being intended to obtain as far as possible the necessary information from the observations recorded by light vessels and ships under way.

Ten cross channel steamers have made reports of observed conditions at mid channel throughout the year.

The return of ice reports on form 912 has been continued by observing ships sighting ice.

Information recorded in the Remarks Books of His Majesty's ships, including the set and drift of current experienced, has been received from the Hydrographer of the Navy.

The use made of the Data collected.

In view of what is stated at the commencement of this report regarding the over collection of observations, it is necessary to repeat briefly, with emphasis, the functions of the meteorological log and record, considering the numbers of these collected as indicated above.

The main purpose of the meteorological log is for the collection of a very high standard of complete observations recorded six times daily according to local time and at the relief of the watch, for the purpose of making a comprehensive climatic survey of the oceans, and for surveying the currents.

The main purpose of the Ships Meteorological Record of Synchronised Observations, Form 911, is to regulate observation so that the routine wireless weather intelligence communicated by ships at sea, particularly by "Selected Ships," may be accurate, reliable and suitable for the purpose of aiding navigation, and serving the general purposes of synoptic meteorology.

Collection is not the primary function of these forms, but a permanent collection of useful recorded data is made thereby, including observations of set and drift of current.

The Selected Ship's Register for Coded Wireless Meteorological Reports, Form 138, is for the purpose of checking, coding and communication; and it provides a valuable means of verifying the information reported by wireless, and of sending it to the International Meteorological Organisation or other State services co-operating in that Organisation, without duplication of clerical work in "Selected Ships" and in the Marine Division.

During the year the investigation and charting of the Agulhas Current, East African Coast Current, and the currents in the western portion of the Indian Ocean as far east as Longitude 56° E., has been completed, including the calculation of the monthly mean sets and drifts of these great ocean streams.

No more useful work of investigation has been accomplished since the present system of charting the currents was commenced with the establishment of THE MARINE OBSERVER in 1924.

The investigation and charting of the currents in the Arabian Sea, Bay of Bengal, etc. is proceeding.

The post-war system of extraction of observations from meteorological logs by the Hollerith machine, which had fallen heavily in arrears due to clerks being diverted from this work through pressure of work in connection with wireless and weather, etc., has been maintained since September, 1931, when more clerks were provided.

During the whole year no less than 79 per cent. of meteorological logs received, have been extracted, being the highest percentage attained since the system was commenced in 1921.

Marsden Chart No. I shows the distribution of observations extracted during the last twelve months and Marsden Chart No. II gives the distribution and number of observations extracted since re-organisation on 1st April, 1920. The table below gives particulars of data extracted since the Hollerith system was used.

	1931-32.	1930-31.	1929-30.	1928-29.	1927-28.	1926-27.	1925-26.	1924-25.	1923-24.	1922-23.	June 1921-1922.
Percentage of logs received reaching the required standard completely extracted and phenomena indexed.	79	17	14	37	60	64	64	55	66	73	59
Number of complete sets of observations extracted and punched on cards, with currents entered in data books and phenomena indexed.	70,718	19,185	17,987	43,117	73,745	78,180	75,852	65,060	74,749	97,533	63,731
Current observations from 1910 extracted and entered in data books.	8,609	7,980	10,913	2,626	3,496	8,242	8,210	5,746	4,259	1,826	—

For the purpose of checking the whole system of observation, extraction, and computation, and to provide navigation with some useful meteorological information, observations of wind, fog, mist and weather in the two five degree squares to the north-east and south-west of the Panama Canal were compiled by the Hollerith system, and are being published in this year's MARINE OBSERVER. Similarly, a wind rose is being published for the five degree square to the south-west of the Great Sole Banks in the Eastern North Atlantic.

Copies of synchronised weather observations recorded by observing ships in different parts of the world have been supplied for the purpose of investigation and litigation regarding damage or loss of ships and cargoes.

5,175 reports received direct from chosen British "A Selected Ships" in the Eastern North Atlantic and North Sea, through Portishead, were used by the Forecast Division for the construction of the Daily Weather Map and making weather forecasts.

A large number of reports from British "A Selected Ships" in the Western North Atlantic were received through the American stations detailed in THE MARINE OBSERVER by the United States Weather Bureau, and have been acknowledged by the Chief of that Bureau, as will be referred to later.

It is evident from the daily weather maps published by other countries that observations reported by British "A Selected Ships" addressed to the various meteorological centres, and by "B Selected Ships" addressed to C.Q., have been received or intercepted, and used for central weather forecasting in all the seven seas.

The weather charts and other documents received, as well as verbal information, all go to prove that the observations reported by British "Selected Ships" in all parts of the world are being used by ships at sea in aid of navigation.

Copies of observations of earthquake shocks returned by British ships were supplied to the International Bureau of Vulcanology.

Observations punched on Hollerith cards for all months of 1930 in certain squares in the Atlantic, Pacific and Indian Oceans were supplied to the Dutch Meteorological Office for the purpose of International publication.

Means of observations of Barometer and Air Temperature for each month of the year 1927 at Cape Pembroke, Falkland Islands, and Watling Island, West Indies, were calculated and supplied to the Division for Climate, for International publication.

1,838 sets of synchronized observations recorded in British observing ships in the Northern Hemisphere for the month of March, 1931, were specially copied by hand, and sent to the Deutsche Seewarte, Hamburg, for the construction of weather charts for the International Meteorological Organization.

The Service of British "Selected Ships"

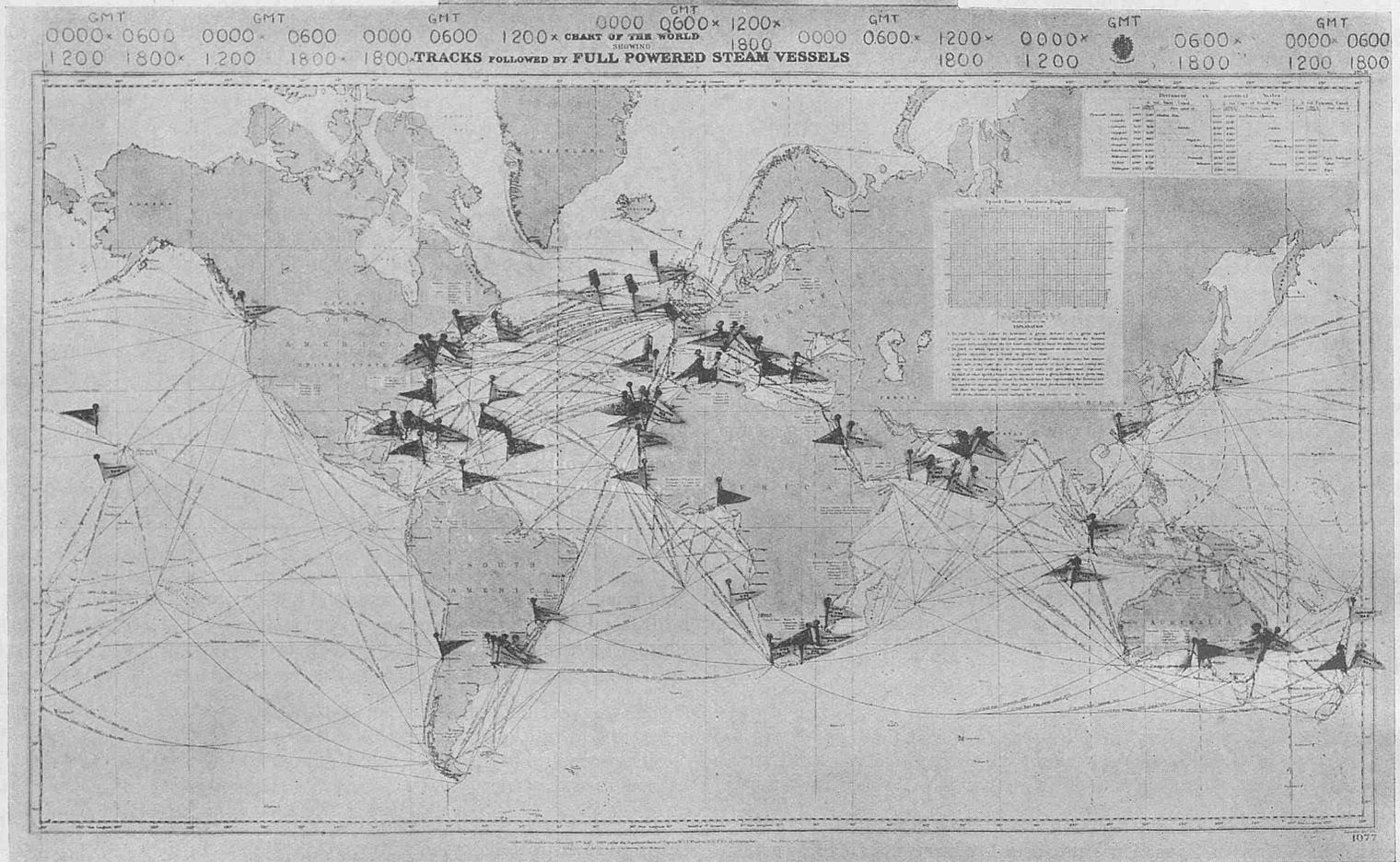
The British complement of "Selected Ships" was reduced from 312 to 306 to accord with our proportion of the world's tonnage on September 2nd, 1931.

Throughout the year, except for a few days in July and August, when there was one ship short, the complement of British "Selected Ships" has been maintained in service. At present, of 306 British "Selected Ships" 114 are "A Selected Ships."

The voluntary duty of "Selected Ships" is to make and record observations at specified times daily in all parts of the world when at sea, and clear of narrow waters. For "A Selected Ships" to report by wireless in accordance with schedule, through stations specified in THE MARINE OBSERVER, to specified addresses; and where there are not such specified stations, to "all ships"; these reports from "A Selected Ships" being made always so that ships at sea may intercept them.

For "B Selected Ships" to report by wireless in accordance with schedule to "all ships," stations within range intercepting the reports if desired for the use of meteorological centres.

Throughout the year, this service has been maintained in a highly satisfactory manner.

Estimated Noon Positions of A Selected Ships on Friday, 11th March 1932.

It would be impossible for such a service to function without some deviations from the desired procedure, and consequent failure on occasion of reported information to reach the desired destinations in the desired time.

Generally the registers indicate that commanders, officers and wireless operators of British "Selected Ships" carry out with exemplary care the scheme of observation and communication. In those parts of the world where stations detailed in *THE MARINE OBSERVER* carry out their part correctly, the service of wireless weather reports received ashore is satisfactory, and ships at sea also obtain the benefit from the reports made by British "Selected Ships," though the code report is not so readily generally used as was the standard form plain language report in use prior to May 1st, 1930.

The chief of the United States Weather Bureau wrote in November that weather reports received from British ships have been characterized by their excellence and promptness.

To analyse exactly from the times entered in the registers the communication in all parts of the world, would entail too much work to justify the results. We have examined all as they were received and here are the summarized results for the Eastern North Atlantic, the most congested region in the world, and therefore worked by the control system through Portishead.

The average number of chosen "A Selected Ships" indicated by roll call each day throughout the year was 6.3, of which an average of 5.5 reported.

During the year a total of 5,175 reports were received by Weather, London, that is an average of 14.1 reports per day.

Of these, 3,417 were 0600 and 1200 G.M.T. observations, of which 3,104 were received in accordance with schedule, only 313 being late.

The remaining 1,758 reports containing 0000 and 1800 G.M.T. observations were reported in accordance with instruction, not by a definite schedule, but as circumstances would permit.

The depressed state of trade during the year, and particularly the Trans-North Atlantic passenger trade, has made it difficult to main-

tain a sufficient service of "A Selected Ships" in the North Atlantic, where usually there are ample "A Selected Ships" to maintain an adequate service at all times.

Chart III shows the position of all British "Selected Ships" at sea on June 1st, 1931, showing some slight improvement in distribution as compared with the same day last year. The large proportion of British "Selected Ships" in the Eastern North Atlantic north of Latitude 38° N. is constant, hence the need for specially regulating the service by roll call through Portishead. Above is a photograph of a position chart for March 11th, 1932. Upon it, the flags indicate the estimated position of "A Selected Ships" at sea in all parts of the world at noon and in ports abroad. "B Selected Ships" are not indicated on this chart.

We are steadily improving the world-wide distribution of Selected Ships. The chart for June 1st, 1931, referred to shows British ships only, and on one day in the year.

When other maritime nations party to the Convention for Safety of Life at Sea publish a similar chart, even for one day in the year only (the same day), it may be possible to effect a better distribution of the 1,000 Selected Ships of all nations.

There is congestion in certain regions, in others not sufficient Selected Ships to maintain a service. In these regions where there are not sufficient Selected Ships British ships not detailed as "Selected Ships" are asked to report as necessary to C.Q. or stations indicated in *THE MARINE OBSERVER* in accordance with the schedule laid down for British "Selected Ships."

By their example in using the schedule for communication, which is designed so that the S.O.S. periods may be properly observed, observation and coding properly carried out without undue haste, and so that all ships may receive the information, British "Selected Ships" are establishing a system which may become so general as to do away with the inconvenience to Merchant Shipping which has been occasioned in the past by the diverse methods of the different services all inviting help from shipping and seamen.

Port Meteorological Offices and Merchant Navy Agencies.

Following the establishment of the Port Meteorological Office in London last year it became possible to adopt a better procedure, which was not possible when observing ships in the Port of London were dealt with directly from the Marine Division; and consequently the Port Meteorological Offices and Agencies are now able to give more effective service.

The Port Officers and Agents being informed weekly of departures from desired procedure in the work at sea, have given valuable assistance to the Marine Division and corps of voluntary marine observers direct, and indirectly to the whole merchant navy and meteorological service, by giving personal instruction to the commanders, observing officers, and W/T operators, which is far more suitable and effective than correspondence.

The improvement in voluntary marine meteorological work in the British merchant navy, and better organization following the 1929 Conference for Safety of Life at Sea, has made it possible to concentrate all agency work abroad upon Sydney and Hong Kong.

Consequently the Vancouver Agency was closed on December 31st, 1931, and our thanks are due to Mr. T. S. H. SHEARMAN who was sole agent at Vancouver throughout the existence of that agency, which came into being in 1921.

The Fremantle Agency was established in 1922 in order that observations should be collected, to make good the deficiencies in the East Indian Seas Chart to the Northwest of Australia, by means of the co-operation of British ships stationed on the Fremantle to Singapore and Fremantle to Port Darwin runs.

Captain J. J. AIREY has carried out his work to such good effect that sufficient meteorological logs have now been returned from this region, and arrangements have consequently been made to close the Fremantle Agency as soon as he has relieved the M.L. ships for which he has been responsible.

We thank Captain AIREY for his help, and the understanding which he has shown of the personnel, who have thereby given their best in voluntary service.

Following the death of Captain C. LINDBERGH, whose obituary notice appeared in the March, 1932, number of THE MARINE OBSERVER, Captain R. G. BLAYNEY, late of the Oriental Navigation Company, and Nautical Assessor to the Commonwealth Marine Court, was appointed Joint Agent with Commander G. D. WILLIAMS, D.S.O., R.D., R.N.R., at Sydney.

Acknowledgment, Appreciation and Awards.

Month by month as written returns are made they are acknowledged in the fleet list in THE MARINE OBSERVER. We now wish to thank one and all concerned for the work done in British voluntary observing ships during the year.

Firstly the commanders, officers, and wireless operators for their voluntary work done at sea; they have contributed most by far. Secondly, shipowners and marine wireless companies who have extended facilities for the work to be done, and marine superintendents for their interest and encouragement to the officers of the fleets which they supervise.

The work done is mainly in the national interest, it renders service to the whole merchant navy, the British Meteorological Office and all that it serves, ships of other nations, and the meteorological services of the world.

In May, 1928, seeing the voluntary work being done by British seamen in British ships in all parts of the world for foreign meteorological services as well as for our own, and the multiplicity of written returns, we commenced taking steps to obtain the agreement by which arrangements for routine voluntary meteorological service are to be made with ships only in the meteorological service of the country in which they are registered.

During the year the results of this agreement have commenced to make themselves felt, and the services rendered by British ships have been more widespread, with decreasing wasted effort and duplication.

The Chief of the United States Weather Bureau wrote last November as follows to the Director of the British Meteorological Office:—

“Regarding our desire to make some acknowledgment to the officers and radio-operators of British Selected Ships concerning their co-operation in the transmission of weather reports to this office.

“The end of the year is approaching and I would appreciate very much your conveying to the masters, officers and radio-operators of British Ships, our thanks and appreciation for their fine service this year, and our best wishes for their happiness and prosperity during the new year.

“Weather reports received from British ships have been characterized by excellence and promptness, and they have been of great value to the U.S. Weather Bureau.”

The liberality of the United States in connection with meteorological services rendered at sea is proverbial amongst the seamen of all nations; and it is characteristic of the United States Weather Bureau to convey their thanks to British seamen through the appropriate national channel.

The Meteorological Committee’s “Excellent” awards are made to the Captains and principal observing officers of meteorological log keeping and “Selected Ships,” in recognition of very fine work. A list of those who have gained “Excellent” awards for this year’s work is appended.

This year the award in all cases will be a specially bound volume of THE MARINE OBSERVER in blue leather with gilt lettering.

London,

April 1st, 1932.

MARINE SUPERINTENDENT.

LIST OF CAPTAINS AND PRINCIPAL OBSERVING OFFICERS TO WHOM THE METEOROLOGICAL COMMITTEE HAVE MADE “EXCELLENT” AWARDS.

Captain.	Principal Observing Officer.	Ship.
ADCOCK, F. ..	{ HARRIS, W. T. } { EDGE, G. ... }	<i>Nestor.</i>
ALLIN, C. H. C. ...	CRONE, J. K. ...	<i>Moldavia.</i>
ASLIN, E. P. C. ...	WILSON, A. D. ...	<i>Piako.</i>
AXFORD, R. G. ...	HILL, L. A....	<i>Kashmir.</i>
BACH, L. C. Lieut. Commr. R.N.R., R.D.	VIGURS, R. C. ...	<i>Jamaica</i> <i>Merchant.</i>
BARLOW, F. P. ...	DANIEL, G. H. ...	<i>Stephen.</i>
BARNETT, H. ...	HILL, H. ...	<i>Rangitiki.</i>
BEECHING, P. H. ...	JONES, D. A. ...	<i>Nuddea.</i>
BEIGHTON, J. N. ...	HOPKINS, L. J. ...	<i>Ferndale.</i>
BIGGS, J. H., Commr., R.N.R., R.D.	MOULTON, C. H. ...	<i>Narkunda.</i>
BOSTOCK, O. ...	DAVIES, K. H. ...	<i>Musician.</i>
BROWN, J. F., Spring. ...	BILLINGHAM, J. ...	<i>Aorangi.</i>
BURNS, R. ...	MACRAE, J. ...	<i>Eldonpark.</i>
BURTON DAVIES, J.	{ DEVITT, T. M. } { TIMBERLAKE, W. H. }	<i>Hertford.</i>
CAMERON, E. P., Capt., R.N.R., R.D.	{ BILGER, E. V. } { MACKAY, E. M. }	<i>Oronsay.</i>
CAREY, W. M., Commr., R. N.	ARDLEY, R. A. B. ...	<i>R.R.S. Discovery II.</i>
CARTWRIGHT, C. W., D.S.C.	TUCKER, R. E. ...	<i>Comorin.</i>
CHRISTIE, D. ...	MEYER, C. A. ...	<i>Tairoa.</i>
CLARET, F. H., O.B.E., Commr., R.N.R.	PENGELLY, E. ...	<i>Minnewaska.</i>
CLARKE, E., Commr., R.N.R., R.D.	GAMMON, B. A. ...	<i>Arlanza.</i>
CLIFTON-MOGG, W. P., Lieut.-Commr., R.N.R.	HARVEY, G. A. ...	<i>Tainui.</i>
COLEBORN, E. ...	—	<i>Tilawa.</i>
COMPTON, R. W. ...	SHERWELL, H. N. ...	<i>Baronesa.</i>
COOPER, C. P., O.B.E., Capt., R.N.R., R.D.	{ MORRIS, M. G. } { SPARKS, G. B. }	<i>Kalyan.</i>
CRAWFORD, R. ...	BILLINGHAM, J. ...	<i>Aorangi.</i>
DENE, R. C. ...	MARKS, D. S. ...	<i>Kashmir.</i>
DENNE, G. ...	—	<i>Malda.</i>
DRAPER, J. M. ...	HUTCHINGS, W. M. M.	<i>Appam.</i>
DURHAM, R. S., D.S.C. ...	MUNDAY, P. A. ...	<i>Port Hunter.</i>

Captain.	Principal Observing Officer.	Ship.	Captain.	Principal Observing Officer.	Ship.
EGERTON, J. J. ...	MORRICE, G. ...	<i>Recorder.</i>	MILLER, A. C. ...	EVANS, H. E. ...	<i>Kenya.</i>
ELFORD, H. C. ...	TILLOTT, A. J. ...	<i>Pakeha.</i>	MOLYNEUX, P. L. ...	TROTTER, J. ...	<i>Limerick.</i>
ELFORD, W. J. ...	GOULD, J. ...	<i>Titan.</i>	MORGAN, D. R. ...	PATTISON, G. ...	<i>La Paz.</i>
ELLIS, F., D.S.C. ...	BURCH, J. ...	<i>El Argentino.</i>	MORTON, A. J. ...	RICHARDSON, R. M. ...	<i>Mooltan.</i>
EVENS, E. H. ...	WOODALL, J. O. ...	<i>Berwickshire.</i>	MORTON BETTS, W. ...	CLARKE, G. L. ...	<i>Arundel Castle.</i>
FOXWORTHY, A. W. ...	HANDLEY, R. F. ...	<i>Newfoundland.</i>	MOWAT, I. ...	DEWAR, G. ...	<i>Architect.</i>
FREER, A. Capt., R.N.R., R.D.	—	<i>Duchess of Richmond.</i>	MULCAHY, J. J. ...	SLADE, S. S. ...	<i>Matheran.</i>
FRIEND, A. B. ...	LONGHEED, E. J. ...	<i>Princesa.</i>	NEEDHAM, R. ...	PORTER, J. L. ...	<i>Port Victor.</i>
FURLONG, G. H. S., Capt., R.N.R., R.D.	—	<i>Ranpura.</i>	NEWMAN, G. W. A. ...	WHITE, C. G. ...	<i>Pacific Enterprise.</i>
FURNEAUX, S. J. ...	WILSON, J. E. ...	<i>Nova Scotia.</i>	O'CONNOR, T. ...	CORLETT, W. H. ...	<i>Custodian.</i>
GATES, T. F., C.B.E. ...	MCCARTNEY, H. E. D. ...	<i>Minnetonka.</i>	O'NEILL, J. ...	HUGHES, W. H. ...	<i>Scotia.</i>
GIBB, A. W. P. ...	MCMILLAN, P. ...	<i>Buteshire.</i>	OWEN, G. Lieut., Commr., R.N.R., R.D.	THORNE, R. ...	<i>Empire Star.</i>
GIBBINGS, W. ...	BROWN, D. C. ...	<i>Inanda.</i>	PARTRIDGE, H. ...	HARVEY, M. F. ...	<i>Barpeta.</i>
GILCHRIST, J. W. ...	ASCROFT, W. ...	<i>Modasa.</i>	PENTON, P. M. ...	SNOWLING, T. ...	<i>British Lantern.</i>
GOODRICK, H. P. ...	HALE, E. ...	<i>Upwey Grange.</i>	PILCHER, C. R. ...	EDGECOMBE, C. ...	<i>Somerset.</i>
GORDON, H. R. ...	BRADBURY, A. ...	<i>Matakana.</i>	RAMSAY, N. ...	ALLEN, E. ...	<i>Cerinthus.</i>
GRAYSTON, E. T., D.S.C., Commr. R.N.R., R.D.	ALLEN, J. G. ...	<i>Tairoa.</i>	REILLY, H. E. ...	CLEMENT, J. F. ...	<i>Westmoreland.</i>
GREEN, F. V. ...	THOWLESS, W. ...	<i>Matiana.</i>	REILLY, J. V. ...	GRACE, H. F. C. ...	<i>Nardana.</i>
GRIFFITHS, W. ...	BUNN, L. A. ...	<i>Denis.</i>	REYNOLDS, W. H. B. ...	MACFADYEN, R. D. ...	<i>Pancras.</i>
GULSTON, H. S. ...	HANCHETT, A. W. ...	<i>Carnarvonshire.</i>	RHODES, H. R. ...	SAYERS, L. A. ...	<i>Mongolia.</i>
HAMILTON, F. S. ...	SPENCER, S. W. ...	<i>Tongariro.</i>	RICHARDS, J. ...	TEE, H. ...	<i>Astronomer.</i>
HAMMOND, W. J. ...	BALDWIN, G. D. ...	<i>Cerinthus.</i>	RICHARDSON, T. ...	BAKER, W. P. ...	<i>Mandator.</i>
HANNA, R. G. ...	ALLEN, E. ...	<i>Macharda.</i>	ROBINSON, F. W. ...	MADDEN, F. C. ...	<i>Ruapahu.</i>
HANNAM, F. S. ...	JACKSON, G. A. ...	<i>Almanzora.</i>	ROBINSON, R. H. ...	PHILLIPS, H. I. ...	<i>Opawa.</i>
HARLEY, G. J. ...	MARTIN, E. W. ...	<i>Talma.</i>	ROCHE, C. B. ...	WILLIAMSON, H. P. ...	<i>Highland Chieftain.</i>
HARRIS, W. L. ...	VINCENT, M. H. ...	<i>Jeypore.</i>	ROME, W. B. ...	PRESLAND, W. J. ...	<i>Peshawar.</i>
HARTMAN, W. H. ...	EDWARDS, A. G. ...	<i>Tamaroa.</i>	RUSSELL, W. TURNER. ...	HUNTER, J. A. ...	<i>Tuscania.</i>
HENDERSON, F. M. ...	BULL, L. R. ...	<i>Elysia.</i>	SCUTT, W. ...	NOBLE, J. ...	<i>Almeda Star.</i>
HERSCHEL, R. F. ...	BEVERIDGE, W. A. ...	<i>Logician.</i>	SHARP, W. ...	METCALF, H. ...	<i>Australia.</i>
HIGGS, W. G. ...	WINSTANLEY, T. ...	<i>Port Hunter.</i>	SHEEPWASH, J. S. ...	LIDSTONE, E. H. ...	<i>Barrabool.</i>
HILL, T. V. ...	STOCKLEY, E. L. ...	<i>Port Gisborne.</i>	SHOOTER, J. C. ...	MOSEY, F. N. ...	<i>Accra.</i>
HOLLAND, E. ...	MUNDAY, P. A. ...	<i>Niagara.</i>	SIGGERS, O. ...	ELLIS, R. B. ...	<i>Chitral.</i>
HOLMAN, W. G. ...	SKAILES, L. J. ...	<i>Rangitane.</i>	SMILES, R. ...	FORBES, T. D. ...	<i>Marquesa.</i>
HUFF, G. T. ...	MENLOVE, D. A. ...	<i>Clan Mac Nair.</i>	SMITH, H. ELLIOTT, Lieut.-Commr., R.N.R., R.D.	WETHERALL, J. ...	<i>Baradine.</i>
HUNTER, J. L. B. ...	BROWN, A. ...	<i>Desna.</i>	STRINGER, C. B. L. ...	ROCHE, C. B. ...	<i>Kwangchow.</i>
INGS, W. J. ...	PETHERBRIDGE, F. H. ...	<i>Rangitata.</i>	STUART, R. N., V.C., D.S.O., Commr., R.N.R., R.D.	HUNTER, J. A. ...	<i>Duchess of York.</i>
JACK, H. M. ...	CHADWICK, D. H. ...	<i>Glenamoy.</i>	TAYLOR, R. J. ...	FINCH, B. C. ...	<i>British Dominion.</i>
JOHNSON, J. W. ...	LAYCOCK, F. ...	<i>Rajputana.</i>	THOMAS, R. ...	PARSONS, D. ...	<i>Avelona Star.</i>
JONES, W. C. H., Commr., R.N.R., R.D.	ASPINALL, G. ...	<i>Maimoa.</i>	THOMSON, S. ...	JONES, J. E. ...	<i>Arracan.</i>
KENWORTHY, V. ...	SAINSBURY, E. ...	<i>Hilary.</i>	THORNTON, E. J., Capt., R.N.R., R.D.	JOHNSON, F. N. ...	<i>Vicroy of India.</i>
KERSHAW, W. A. R. ...	PICKERSGILL, D. ...	<i>Stephen.</i>	THURSTON, H. P. ...	DAVIDSON, G. ...	<i>Herminius.</i>
KITE, E. ...	RASHLEY, R. ...	<i>Karamca.</i>	TOFT, J. T. ...	NOALL, W. R. B. ...	<i>Accra.</i>
KITSON, A. G. ...	WHAYMAN, J. ...	<i>Mataroa.</i>	TOTEN, A. T. ...	SHUTE, M. F. ...	<i>Monowai.</i>
LAIRD, J. ...	CAMPBELL, P. ...	<i>Lautaro.</i>	TRINICK, F. ...	COLLINS, A. G. ...	<i>Tactician.</i>
LAMB, C. B. ...	HILL, H. A. ...	<i>Margha.</i>	UPTON, H. L., D.S.C., Commr., R.N.R., R.D.	ELLIS, R. B. ...	<i>Northumberland.</i>
LEBRECHT, H. A. ...	LLOYD, JONES, I. ...	<i>Turakina.</i>	VINCENT, E. S. Commr., R.N.R., R.D.	EHLERT, L. B. ...	<i>Dunbar Castle.</i>
LEBROCQ, C. ...	WATKINS, H. ...	<i>Rotorua.</i>	WALSH, W. ...	MONOWAI, L. B. ...	<i>Royal Star.</i>
LEGG, A. W. ...	WILLIAMS, E. G. ...	<i>Asturias.</i>	WEBB, C. ...	DAVIDSON, G. ...	<i>La Rosarina.</i>
LETTINGTON, A. E. ...	FULCHER, L. W. ...	<i>Arundel Castle.</i>	WESTROPP, T. G. ...	NOALL, W. R. B. ...	<i>Buteshire.</i>
LING, J. T. ...	WHITTLE, H. G. ...	<i>Coronado.</i>	WHITHAM, F. ...	SHUTE, M. F. ...	<i>Malancha.</i>
LYALL, A. B. ...	CLARKE, G. L. ...	<i>Surrey.</i>	WILDE, H. J. ...	COLLINS, A. G. ...	<i>Remuera.</i>
MCBRYDE, A. ...	BINKS, G. ...	<i>Planter.</i>	WILLIAMS, R. ...	ELLIS, R. B. ...	<i>Cambridge.</i>
MCINTOSH, A. ...	LOCK, F. C. ...	<i>Clan Mackellar.</i>	WILLIAMS, R. ...	EHLERT, L. B. ...	<i>Port Adelaide.</i>
MCKELLAR, A. W., Capt., R.N.R., R.D.	MACKILLICAN, H. H. ...	<i>Karmala.</i>	WILSON, R. F. ...	SIMMONS, E. P. ...	<i>Elpenor.</i>
MCMANARA, T. ...	EUSTANCE, W. S. ...	<i>Tainui.</i>	WINDSOR, G. R. ...	PHILLIPS, H. I. ...	<i>Governor.</i>
MACDONALD, D. ...	HOWARD, A. V. ...	<i>Rangitane.</i>	WORTHINGTON, B. ...	ROGERS, A. E. ...	<i>Director.</i>
MALTYBY, T. L. ...	STORRS, A. H. G. ...	<i>El Uruguayo.</i>	WRIGHT, C. S., Commr., R.N.R., R.D.	HAND, R. H. ...	<i>Kidderpore.</i>
MAPLES, S. H. ...	HARVEY, G. A. ...	<i>Makura.</i>	WRIGHT, J. A. ...	USHER, A. H. ...	<i>Madura.</i>
MEEK, A. J. ...	BROWN, A. ...	<i>Cumberland.</i>	USHER, A. H. ...	COCKS, P. R. ...	<i>Nebraska.</i>
MELLING, C. F. ...	LEGGETT, S. R. ...	<i>Ruahine.</i>	USHER, A. H. ...	LAWRENCE, P. G. ...	<i>Malwa.</i>
	WARREN, R. L. ...	<i>Manela.</i>	USHER, A. H. ...	STRATTA, D. J. ...	<i>Avila Star.</i>
	ROBERTSON, T. M. ...	<i>Dramatist.</i>	USHER, A. H. ...	WARREN, R. L. ...	<i>Ruahine.</i>
	SOILLY, W. F. ...	<i>Tantabus.</i>			

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.

HUMBOLDT CURRENT.

West Coast of South America.

THE following is an extract from the Meteorological log of R.R.S. *William Scoresby*, Lieutenant-Commander J. J. C. IRVING, R.N. Survey Humboldt Current. Observer, Mr. W. A. ELLISON.

During the whole period of time, May 28th to July 30th, 1931, that the R.R.S. *William Scoresby* has been surveying the Humboldt Current, a period of 3 months, the weather has been continually cloudy, without exception.

It seems to be a well-established fact that the Humboldt Current has a direct influence upon the climates of Chile and Peru, and, from observations taken during the time the R.R.S. *William Scoresby* has been engaged on the Hydrographic Survey of the Current, the observer is of the opinion that the cloudy weather was due to the cold water of the current.

The Humboldt Current does not appear South of Valparaiso, and this seems to dispute the accepted view that the Humboldt Current has its origin in the Antarctic; the observer thinks that a more practical theory is that it is caused by the general upwelling of the water on the coast, due to the always prevailing S.E. and S.W. winds. This water forms a current which gradually increases in force, to a maximum of 25 miles per day off Peru, where its greatest width is found. It finally disappears *underneath* the warmer water off Cabo Blanco, where the warmer waters of "El Niño" first appear.

It is interesting to note that during the year 1925 "El Niño", the warm current, passed *inside* the Humboldt Current, and the whole climate of the Peruvian Coast was affected, with nearly disastrous consequences. The climate became tropical, with continuous torrential rain, which caused great damage to property.

On May 15th, 1931, leaving Corral, to the noon position of Latitude $39^{\circ} 14' S.$, Longitude $73^{\circ} 36' W.$, a strong set off shore was experienced.

On May 16th there was a strong tidal set off shore at Lavapie Point (Latitude $37^{\circ} 09' S.$, Longitude $73^{\circ} 35' W.$) and Santa Maria Island (Latitude $36^{\circ} 58' S.$, Longitude $73^{\circ} 32' W.$).

On June 9th a strong set off shore was experienced in the vicinity of Punta Tetas (Latitude $23^{\circ} 31' S.$, Longitude $70^{\circ} 39' W.$).

On June 19th to the northward of Iquique, from Latitude $19^{\circ} S.$ to $18^{\circ} S.$, Longitude $71^{\circ} W.$ approximately, a very strong set off shore was found. Between Callao and Punta Paita (Latitude $5^{\circ} 05' S.$, Longitude $81^{\circ} 08' W.$) the general set of the current appears to be to the north-westward, between 0.6 and 1.6 knots.

NOTE.—The region of the Humboldt Current is not covered by any of THE MARINE OBSERVER Current Charts so far published. The Admiralty Current Charts however give indications of a seasonal variation of this current. In the South Pacific Ocean, as in other oceans, there is a seasonal shift of the Trade Wind area, which moves northward during the southern winter. The Admiralty Current Charts show a corresponding shift in the southern part of the Humboldt Current. In the southern summer the current is experienced at least as far south as Latitude $40^{\circ} S.$, while in the southern winter, in which season the *William Scoresby* was surveying, the current is not met with much south of Valparaiso, except at a considerable distance from the coast.

The Humboldt Current appears to be subject to considerable changes, apart from seasonal variation, and it is believed locally to have "swinging movements" towards or away from the coast. Occasionally the current is reversed near the coast, setting southward, but the reason for this change is not known nor can the change be predicted. The southerly set is sometimes, but not always, associated with northerly winds.

It is possible that the strong flow of the warm southerly El Niño current in February and March, 1925, was connected with a seaward shift of the Humboldt Current. In that year the warm current was experienced as far south as Callao (See MARINE OBSERVER, Vol. III, 1926, pages 23 and 40).

The water of the Humboldt Current was formerly supposed to be derived from that of the Southern Ocean Drift but it is probable that there is an upwelling of cold water from the depths of the ocean, due to the blowing of the Trade Wind over the coast, as in the case of its counterpart in the South Atlantic, the Benguela Current.

CURRENTS EXPERIENCED ON THE TRACK FROM BALBOA TO SUVA, FIJI.

THE following is an extract from the Meteorological Log of M.V. *Port Dunedin*, Captain W. S. MASON, D.S.C., London to New Zealand via Panama and Fiji. Observer, Mr. C. A. HODSON, 3rd Officer. June, 1931.

"From the Panama Canal entrance to Morro Puercos Light House, no current was experienced, but from there to Latitude $3\frac{1}{2}^{\circ} N.$, Longitude $96^{\circ} W.$ the current set to the Eastward at slightly over one knot; this was very noticeable on our passing close to the northward of Cocos Island. A westerly current was then experienced until our arrival at Suva, this set being especially strong just North and South of the Equator. The total distance made was 6,340 miles, the engine distance being only 6,344 miles, giving us .06 per cent. of slip in a run of nearly 21 days. Our track took us close to the southward of Ua Pou (Marquesas Is.) and Keppel Is. then direct to Wailangilala Light House.

"As will be seen from the above remarks it more than pays a vessel to take the Northerly track on a passage from the Panama canal to either Brisbane or Sydney, especially as very fine weather is to be expected. A few voyages previously we made an excellent run from Balboa to Sydney by Mercator's sailing from Cape Mala to Motu One I. and thence Great Circle to Sydney; the 170 miles additional distance was much more than compensated for by the favourable current and fine weather experienced on that track."

STEAMSHIP TRACK, PERSIAN GULF TO CAPE OF GOOD HOPE.

THE following is an extract from the Meteorological Record of S.S. *British Dominion*, Captain R. J. TAYLOR, Abadan to Swansea, via Cape of Good Hope.

"We sailed from Abadan, June 24th, 1931, and when off Ras al Hadd, Latitude $23\frac{1}{2}^{\circ} N.$, Longitude $59\frac{3}{4}^{\circ} E.$ we continued on same S.E. course to Longitude $60^{\circ} E.$ I had then decided to run my Latitude down on Longitude $60^{\circ} E.$ steering due south true. This would enable us to cross Monsoon track much quicker and have less adverse current. The weather experienced from Latitude $16^{\circ} N.$, Longitude $60^{\circ} E.$, to $10^{\circ} N.$ was strong to moderate breeze, gale at times, force 6-7, heavy swell, somewhat confused from S.S.W. to S.W. by W. and rough sea. Visibility good and practically no current. Thence from $10^{\circ} N.$ to $8^{\circ} N.$ strong to fresh wind, force 6-5, heavy swell, S.W. by W. and rough sea, these gradually decreasing to force 4-3 in Latitude $6\frac{1}{2}^{\circ} N.$ At this position Latitude $6\frac{1}{2}^{\circ} N.$, Longitude $60^{\circ} E.$ course was then altered, direct for Comoro Island. From Latitude $8^{\circ} S.$ to Latitude $10\frac{1}{2}^{\circ} S.$ strong West set was experienced of $1\frac{1}{2}$ knots per hour. From Comoro Island, course was set to pass 20 miles off salient points, African Coast—and closing to 8 miles off Durban, keeping this distance round the coast to off

Algoa Bay and thence to 10 miles off Cape Agulhas. I may say the above named track through the Monsoon area, increased our distance by 150 miles. But I consider this the best route even for ships—say 10 knots speed, bound to Mombasa or Mozambique."

STEAMSHIP ROUTE, COLOMBO AND THE FAR EAST TO PERIM DURING THE S.W. MONSOON.

THE following is an extract from the Meteorological Record of S.S. *Mandasor*, Captain T. RICHARDSON, Calcutta to Suez via Colombo. Observer, Mr. F. C. MADDEN, 2nd Officer.

"That there is definite advantage to be gained by keeping well south when choosing the southern route has been very much in evidence during three voyages of the S.S. *Mandasor* from Colombo to Suez for the years 1929, 1930, and 1931 month of June.

The voyage of 1931 which had the benefit of the experience gained in the two former years was particularly successful as we practically maintained our speed throughout the passage apart from adverse current. This we attribute to the selection of positions to alter course after arriving at the fifty-sixth meridian in Latitude 6° N., so that with increase in wind and sea course may be altered more to the northward and so speed maintained.

We have found it advantageous to arrive at a position in Latitude 6° 40' N., Longitude 53° 00' E. before hauling up for Ras Hafun, this ensures passing west of the position in Latitude 8° 00' N., Longitude 52° 30' E., and nears the western limit of the E.S.E'y set.

Ras Hafun makes a good landfall by day. It was visible sixteen miles 28th June, but it is not to be recommended by night, the light is poor and with the varying effect of the E.N.E'y current vessels making allowance for set might even find themselves to the westward. After passing a position in Latitude 9° 09' N., Longitude 51° 51' E., the E.N.E'y set was observed to decrease considerably.

The following was the route followed. Left Colombo 20th June, 1931, and steered for forty miles South of Minikoi, and then to Latitude 6° 00' N., Longitude 60° 00' E. Steered west true to the fifty-sixth meridian and then altered course for Latitude 6° 40' N., Longitude 53° 00' E. Current between these two latter positions E.S.E. 1½ kt. We then hauled up and arrived at Latitude 9° 09' N., Longitude 51° 51' E., noon 28th June, current experienced east 2 kt. Sighted Ras Hafun at 5.00 p.m. distant sixteen miles. From Ras Hafun bearing west six miles to C. Guardafui there was a slight set off the land and after passing the west bearing of the Light experienced a strong E.S.E'y Current 2½ kt. as far as Ras Alula. The high land of Ras Jard Hafun and the light were visible seventeen miles (moonlight).

Comparing the years 1930-31, there was a very definite advantage in keeping sixty miles further south in Latitude 6° 00' N.

We had the strongest Monsoon for about seventeen hours from Latitude 6° 40' N., Longitude 53° 00' E. to Latitude 9° 09' N., Longitude 51° 51' E., after which although the wind increased to a moderate gale the sea and swell decreased as the land was approached. From this it would appear there is a distinct advantage, if possible, in making Ras Hafun, as it is probable vessels making for Guardafui would encounter a heavy swell and a high sea for a longer period.

We were always able to obtain fairly reliable sun and star sights."

UNUSUAL CURRENT.

East Australian Coast.

THE following is an extract from the Meteorological Log of S.S. *Nardana*, Captain J. V. REILLY, Newcastle N.S.W. to Brisbane. Observer, Mr. L. D. MACFADYEN, 2nd Officer.

The unusual current shown below was experienced during the vessel's passage from Newcastle N.S.W. to Brisbane, and except between the two positions mentioned below the current elsewhere was negligible. The times recorded are Standard (G.M.T. + 10 hours).

From Tacking Point 295° 6½ miles (Latitude 31° 31' S., Longitude 153° 05' E.), at 10.40 p.m., 19th June, 1931, to South Solitary Islands 349° 20 miles (Latitude 30° 31' S., Longitude 153° 21' E.), at 4.00 a.m., 20th June, 1931.

Set 028°. Drift 5 miles.

NOTE.—In the Australia Pilot Vol. III it is stated that the southerly current along the New South Wales Coast extends from 20 to 60 miles from the land, with a rate varying from half a knot to 3 knots. The greatest strength is found at about the 100-fathom line, near which in Latitude 31° S., it has been known to have a rate of about 4½ knots.

Between this current and the coast, particularly in the bights, there is commonly a counter-current setting northward with a rate of from a quarter to one knot. To be free of the main current and to obtain the benefit of this counter-current ships bound northward keep within about 2 miles of the land.

The course of the *Nardana* lay along the 100 fathom line at a distance of from 10 to 18 miles from the coast. The counter-current was therefore experienced unusually far from the coast particularly as her observation was made in Latitude 31° S., where, as stated above, the southerly current is usually strongest.

PHOSPHORESCENCE.

Persian Gulf.

THE following report from H.M.S. *Folkestone*, Commander G. D. YATES, R.N. Observer, Lieutenant M. D. DEWAR, R.N., has been received from the Hydrographer of the Navy.

The luminosity of the sea was met with at 0115 on the 10th of June, 1931, in the Persian Gulf. The ship was on a course 208°, speed 8½ knots, and took 19 minutes to pass through the luminous area. Distance travelled in this time 2.7 miles. The ship was 21 miles from the nearest land and Jezirat Taub Light, distant 23 miles, was visible throughout the time the phenomenon lasted.

At 0055 a narrow band of white light, sharply defined against the sky, appeared on the horizon ahead. This became more diffused as the ship approached and by 0115 the ship was in the midst of the luminosity which apparently stretched to the horizon on all sides. Later, the phosphorescent light thinned ahead and the horizon appeared beyond it. The ship then quickly passed out of the luminosity through a narrow belt of ordinary phosphorescence on the water and by 0134 was in clear water. Looking back no band of light of any kind was to be seen. The surface of the sea, during the phenomenon, was covered in irregular luminous patches of two distinct kinds. The first were streaky and seemed to consist of a mass of bright stars having rather the appearance of "Peacock's Eyes." These patches gave out more light than the others which looked like roundish blobs of white mist similar to the patch of light thrown on water by a spot light. Each patch "flashed" about twice a second and gave a weird kaleidoscopic effect of advancing irregular waves. This phenomenon appeared to be very similar to that experienced on February 17th, 1912, and described by Captain H. BRADLEY in the West Coast of India Pilot, pages 56 and 57.

The conditions prevailing at the time were as follows:—

Wind, South by West, force 2. Barometer 1003.5 mb.

Weather, Blue Sky.

Sea, Slight (Scale 20). Temperatures, Dry 88° F., Wet 87° F.

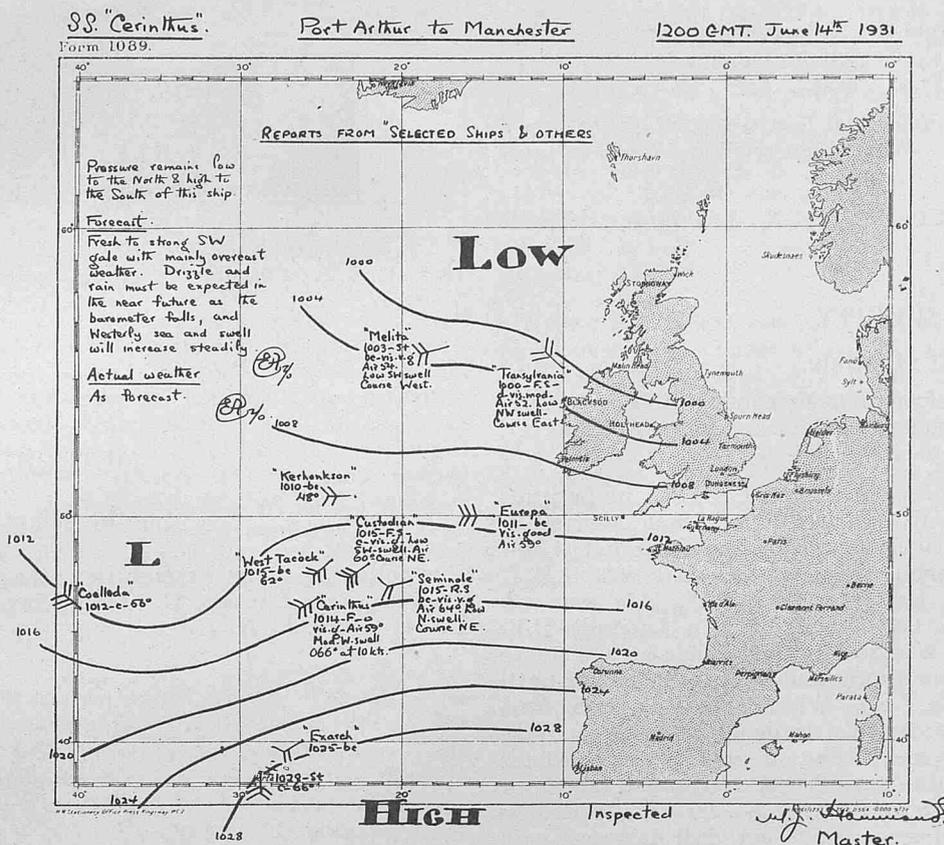
Depth, About 53 fthms. Sea, 85° F.

Position of ship, Latitude 26° 12' N. Longitude 55° 43' E. (approx.).

WEATHER CHART MADE AT SEA.

Eastern North Atlantic.

Weather Chart made at sea on board S.S. *Cerinthus*, Captain W. J. HAMMOND, Port Arthur to Manchester, by Mr. E. ALLEN, 2nd Officer.



DISCOLOURED WATER.

West Coast of Africa.

THE following is an extract from the Meteorological Record of M.V. *Adda*, Captain J. H. LAWSON Liverpool to Lagos. Observer, Mr. F. C. LANGTON, 4th Officer.

"June 15th, 1931, at 6.30 a.m., a peculiar discoloration of water was observed whilst approaching Cape Three Points. An easterly current of 2.3 knots had been experienced since noon on the previous day with light S.E.'ly winds and fine weather. At 0615 I noticed a distinct line of foam about 2 miles ahead of ship extending from horizon to horizon in approximately a N. and S. direction. The water to the westward of it was deep blue in colour, whilst to eastward was dark brown and of a flat oily appearance; on passing through the line it was noticeable that it was practically straight and had no visible breaks. Cape Three Points was sighted at 7 a.m. and as subsequent bearings showed the current had ceased I presumed that the phenomenon was due to the strong easterly set meeting a counter-current round the Cape.

Position of ship, Latitude 4° 38' N., Longitude 2° 15' W. Course, 86°, speed 13½ knots."

SANDSTORM.

Red Sea.

THE following is an extract from the Meteorological Record of S.S. *Clan Macnaughton*, Captain R. M. ROBERTSON, Suez to Colombo. Observer, Mr. J. W. CHARLES, 2nd Officer.

"On June 19th, 1931, at 11.0 a.m. A.T.S. (0825 G.M.T.) ship ran into heavy sandstorm, which had been observed on the Southern

and Western horizons from about 9.0 a.m. Visibility rapidly decreased, and at 2.0 p.m. was about one mile. The upperworks and gear and the freshly-oiled decks soon became thickly coated with a fine yellow-brown dust; one's eyes and nose became sore, and grit could be felt between one's teeth. The sun, almost overhead in a cloudless sky, threw a bluish light, similar to that of a powerful arc-lamp noticeably tinting light-coloured paint work, etc.; the sea in the ship's wash was a most brilliant blue. (At this time, quite a number of locusts and dragon flies were seen hovering about the ship.) The wind was N.W. by N., force 4—just sufficient to carry the smoke ahead of the ship, steering 13 knots. A weather report was made at 2.35 p.m. (1200 G.M.T.), and a request to ships in the vicinity to report. One vessel, 45 miles astern, reported visibility 6; no other ships apparently in the storm. Two ships, 50 and 65 miles ahead, both reported visibility 8. By 5.40 p.m. the visibility had decreased to barely half a mile, and speed was reduced—ships up to 35 miles ahead now reported visibility 1 mile; thus the storm was apparently moving slowly ahead of the ship. At 8.0 p.m. two ships were passed very close, relative bearings being taken by D.F. It was noticed that the apparent visibility was always considerably more than the actual, when it could be checked by visible objects. At 8.32 p.m. the visibility was increasing, and full speed was resumed, and at 10 p.m. the visibility was 5 miles, remaining at such throughout the night, with the wind West, force 3. On June 20th at 7.45 a.m. (0347 G.M.T.) passed Jebel Teir, which was visible about 5 miles, Centre Peak Is. the same. At 0600 G.M.T. a ship in approximately our position of 1200 G.M.T. yesterday reported visibility 9. When making Abu Ail Passage High Island suddenly became visible at 5 miles distance, the guano on the Northern side showing up first; but Abu Ail Island could only just be seen through the glasses at 4 miles distance, the sea breaking on the cliffs and the White Light House showing up first. At 1200 G.M.T. a ship 80 miles astern reported dust haze visibility 7. The wind remained steady at N.N.W., force 3, from 8.0 a.m., and after leaving the

Hamish Islands visibility rapidly increased; Perim Island Lt. being picked up at 9.45 p.m. at full range. Position of ship at commencement of sandstorm, Latitude $19^{\circ} 12' N.$, Longitude, $39^{\circ} 14' E.$ "

MIGRATORY LOCUSTS.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.V. *Upwey Grange*, Captain H. P. GOODRICK, London to River Plate. Observer, Mr. A. BRADBURY, First Officer.

"On June 14th a.m. large numbers of locusts settled on the vessel. The nearest land to windward was C. Blanco, West Africa, distance 250 miles. Wind N. to N.E., force 4 to 5.

Ship's position at noon, Latitude $17^{\circ} 38' N.$, Longitude $21^{\circ} 10' W.$

VISIBILITY.

Gulf of Maine.

THE following is an extract from the Meteorological Log of S.S. *Nova Scotia*, Captain S. J. FURNEAUX, Halifax to Boston. Observer, Mr. J. E. WILSON.

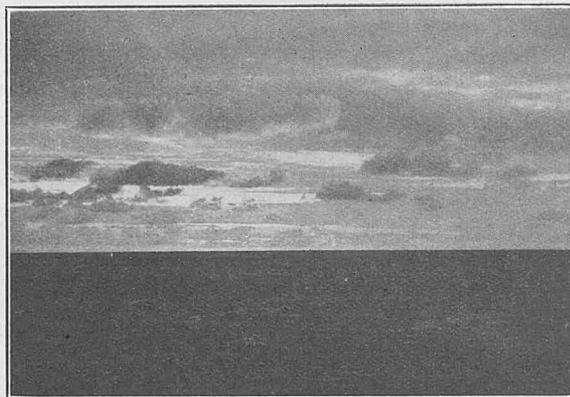
June 4th, 1931, at 0258 G.M.T. (11 p.m. 3rd A.T.S.) in Latitude $42^{\circ} 58' N.$, Longitude $67^{\circ} 28' W.$ Yarmouth light was observed at a distance of 77 miles. It was thought to be impossible but it was in sight continuously and flashing consistently until 0429 G.M.T. in Latitude D.R. $43^{\circ} 02' N.$, Longitude $66^{\circ} 57' W.$ (0.31 a.m. 4th A.T.S.). At 0350 G.M.T. (11.52 3rd A.T.S.) in Latitude D.R. $43^{\circ} 01' N.$, Longitude $67^{\circ} 09' W.$ Seal Is. Lt. visible at a distance of 55 miles under similar circumstances and continued in sight until 0440 G.M.T. (0.42 a.m. 4th A.T.S.). Wireless bearing from Yarmouth and Latitude by Pole star left no doubt as to these lights whilst a compass bearing (by Az. Mirror, of Seal Is.) clinched the matter. Weather at time—Calm—smooth sea. Midnight (at ship). Barometer 1012.2 mb. Temperature Wet 50° —Dry 53° . Cloudless sky. Yarmouth light was not seen again—but Seal Is. was again visible at 0512 G.M.T. (1.14 a.m. at ship) and was not lost sight of any more. There did not seem to be any distortion at all.

COLOURATION OF SKY.

Off Lerwick.

THE following is an extract from the Meteorological Record of S.S. *Explorer*, Captain J. ALLAN, Fishery Research, North Sea.

"June 10th, 1930, at 0100 G.M.T., Wind East, force 3, cumulus cloud, amount 2, travelling slowly westward. 2.00 a.m. sky to Eastward clear of cloud except for a few small patches of cumulus. Mottled and vivid red colour began to appear N. 30° E. from ship, 30° above horizon and developed into a band of red colour 20° broad, which spread slowly to horizon and upwards to about 80° , small fragments of fracto-nimbus (post boys) travelled across red sky from South eastward, speed 3; 2.40 a.m. sun rose a deep red colour, the red colour spread to about 50° on either side of sun. 2.55 a.m. red colour began to fade and metallic colour appeared, then varied from shades of light grey, through variations of blue to touches of green with yellow fringes. 3.0 a.m. sky had assumed normal appearance. Lower clouds, stratus and strato-cumulus, amount 7, speed 4 to 5 with detached cumulus travelling rapidly from South eastward. Wind East, force 4.

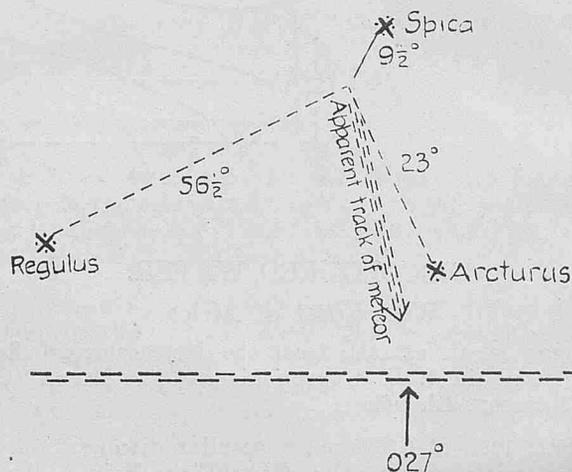


The photograph of the sky to the Eastward was taken about 0255 G.M.T. Position of ship Latitude $60^{\circ} 56' N.$, Longitude $1^{\circ} 06' W.$ "

METEOR.

South Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Empire Star*, Captain G. OWEN, San Sebastian Bay to Santos. Observer, Mr. P. H. HUNT.



June 4th, 1931, 7 p.m. observed very brilliant meteor. It was judged to be a little larger than Venus and brighter. The impression given to observer was a flash, appearing to be on the fore topmast and slowly moving down in a slight curve, leaving a short bright and wide trail of light behind, finally disappearing right over the bow. The duration of flight was about 3 seconds and both the meteor and its trail were brilliant and whitish except at the moment of their disappearance. The meteor disappeared quickly (seemingly merged in its trail) and the trail about one second later, after having turned a yellowish-orange colour, leaving dark yellow sparks in its place, these in their turn quickly disappearing. There was no cloud in the near vicinity. Position of ship, Latitude $44^{\circ} 28' S.$, Longitude $56^{\circ} 22' W.$

NOTES ON THE HISTORY AND DEVELOPMENT OF THE LAW OF STORMS.

Part II.—Seventeenth to Mid-Nineteenth Century.

THE invention of the barometer and thermometer in the early part of the seventeenth century, by the Italians GALILEO and TORRICELLI, and their use at sea, commenced a new era in storm investigation, and during the seventeenth and eighteenth centuries writings upon Storms, their causes and effects, became numerous; various theories, such as the effect of lunar, volcanic or magnetic influence being advanced to explain them.

With the great strides made in shipping, a vast amount of information of storm experiences was being obtained from navigators, thus providing material for professors and others interested, upon which to evolve reasons and laws; and as navigation extended so naturally there grew up quite a large quantity of literature relative to Storms.

In 1698, Captain LANGFORD called attention to the similarity between tropical storms and whirlwinds. He also indicated the wind circulations, and the hurricane seasons. In 1750, the American philosopher BENJAMIN FRANKLIN wrote papers upon the causes of whirlwinds, and afforded an obscure hint of the progression of storms. He also made many experiments with oil upon stormy waters. Sir GILBERT BLANE, a medical man of that period when at Barbadoes in 1780, observed that the winds of a hurricane blew from every point of the compass in quick succession—"a circumstance which distinguishes the hurricane from all other gales within the Tropics." He also gave an elementary example of a ship sailing round the centre or core of a storm.

It was not, however, until the nineteenth century that there was any proper investigation into the physical character of Storms, nor any real generalization of facts. From about 1800 onwards every storm of unusual violence had its historian, either English, French, German or American. The prognostics of hurricanes and their seasons were eventually described with considerable accuracy, also their progression in particular directions was noted, and the great and rapid oscillations of the barometer had come to be a matter of frequent and special remark. Speculations upon the cause and physical character of Storms were at this time as conflicting as numerous, an electrical explanation being then most in favour.

With rapidly increasing shipping activity, marine disasters due to ignorance regarding storm-sailing became a serious problem, and many lives and ships were unfortunately sacrificed during this period, as the few following instances chosen will serve to show.

In 1696, a storm caused the loss of 200 colliers and other coasting craft in the North Sea. DANIEL DEFOE in describing the great storm of November, 1703, said that thirteen ships of Admiral BEAUMONT'S fleet were lost in the English Channel, and twelve hundred seamen perished. During a hurricane which laid waste several of the Islands of the West Indies in 1780, many British warships went ashore at St. Lucia, and between forty and fifty French transports foundered, taking with them not less than four thousand soldiers.

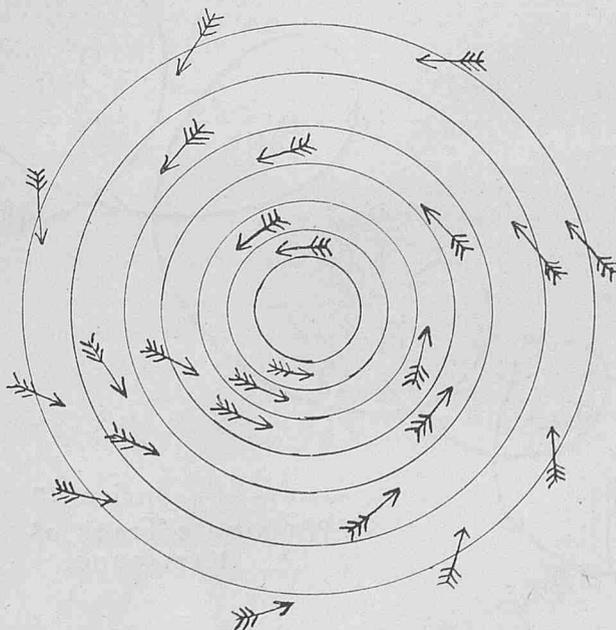
Upon the 16th September, 1782, one of the greatest marine disasters upon record occurred as the result of a storm. A large convoy of Naval and Merchant Ships, amounting to ninety-three sail, in about Lat. 42° N., Long. 48° W., encountered a storm, which increased rapidly from the E.S.E. The fleet fully prepared for bad weather hove to, but unfortunately on the Starboard (which was of course the wrong) tack, for early on the next day all the ships were caught aback by a shift of wind of terrific violence, to N.N.W. Five of the six Naval ships foundered and a large proportion of the Merchantmen were lost. Upwards of three thousand seamen perished, in addition to the great loss of ships, and all directly on account of lack of knowledge regarding Storm Sailing. These and similar catastrophes of the period on a smaller scale only go to show how vitally necessary it was for a Law of Storms to be evolved, in order that lives and property at sea might be reasonably safeguarded.

Colonel JAMES CAPPER, of the Hon. East India Company's Service, in 1801 published his "Observations on Winds and Monsoons." He indicated the probable size, localities and seasons of hurricanes at Mauritius and the West Indies; and considered that these Storms were proved positively to be whirlwinds. He made some significant remarks of a practical application of his investigations, and wrote:—"It would not perhaps be a matter of great difficulty to ascertain the situation of a ship in a whirlwind by observing the strength and changes of the wind. If the changes are sudden and the wind violent, in all probability the ship must be near the centre or vortex of the whirlwind; whereas if the wind blows a great length of time from the same point, and the changes are gradual, it may be reasonably supposed the ship is near the extremity of it."

HORSBURGH, whose famous Directory was so well known and used by Seamen of the older school, in 1805 published a work in which he gave a long account of the Ty-foongs in the China Sea; he spoke of their "rotary" motion, described the veering of the wind according to their direction, noted the characteristics of their approach, and advised the navigator how to manoeuvre when overtaken in such storms. Other writers about this time also insisted upon the whirling nature of tropical storms.

In 1806, Rear-Admiral Sir FRANCIS BEAUFORT introduced his well-known scale of wind force, the numbers having reference to a man-of-war of his period; thus materially assisting in the classification of wind forces.

From 1821 to 1831, William C. REDFIELD, a naval architect in the United States, carried out a close investigation of numerous simultaneous observations of storms extending over a wide area. To do this he procured extracts from the log-books of ships, and obtained whatever information he could of the passage along the coast of hurricanes. This mass of data must have been a source of much thought and speculation to him, but eventually he plotted on a large scale chart the wind directions observed at given positions at the same hour on the same day—in fact, a series of nearly simultaneous observations. Close study of these wind arrows for a given time convinced him that the mass of air constituting a hurricane had a rotatory movement around a central calm. He marked a piece of transparent paper with concentric circles, and found that the



Concentric circles with plotted wind arrows on transparent paper, as used by Redfield.

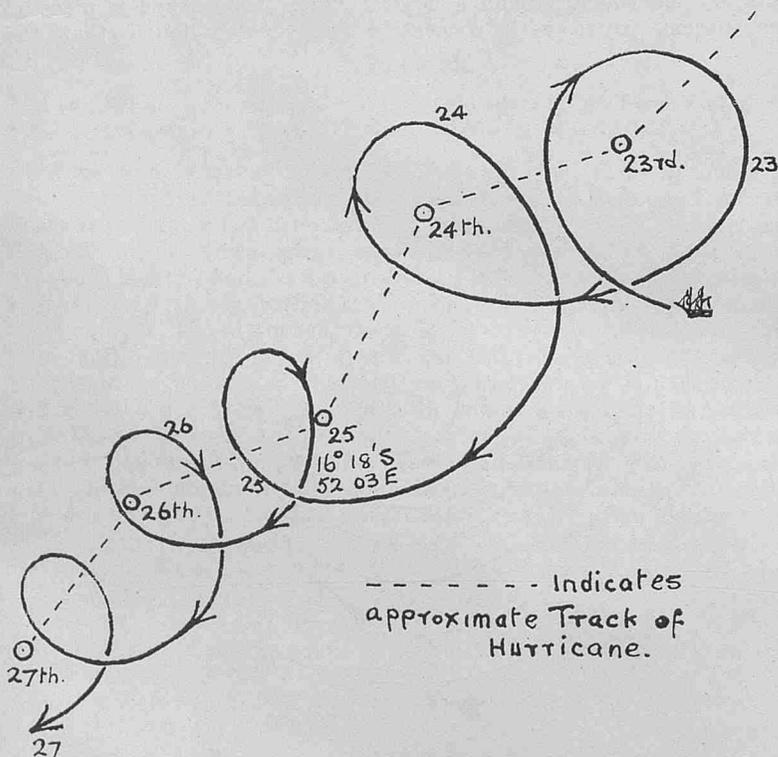
majority of the wind arrows were closely coincident with these circles. The experiment similarly tried at another position for the following day, and so on for successive days at different positions, showed also that the storm-field was not stationary, but that it moved bodily forward. Trial after trial gave him the same result and in 1831 REDFIELD announced that the winds constituting a hurricane blew around a common centre, while the storm itself had a progressive motion; and this discovery helped considerably in the foundation of the "Law of Storms."

During the course of REDFIELD'S investigation there was however another at work at the same time and in the same direction. Professor HEINRICH W. DOVE of Berlin, in an article on Barometric Minima, published in 1828, had come to the conclusion that hurricanes, accompanied by great depression of the barometer, were vast whirlwinds, with, in the Northern Hemisphere, the mass of air rotating in a direction opposite to that of the hands of a watch. On this basis he claimed priority in discovering the Law of Storms.

From a practical point of view, however, REDFIELD was undoubtedly first in the field. On the other hand, to DOVE belongs the merit of having been the first to expound and elucidate the rotatory theory, on the principle that it is the simple and necessary consequence of the Earth's rotation; this he fully developed in his later important work "The Law of Storms," published in 1861, and dedicated to Rear-Admiral ROBERT FITZROY, the first leader of the British Meteorological Office.

As Governor of the Bermudas, Colonel W. REID was well placed for personal observation and investigation, as the Islands lie in the track of hurricanes. He not only confirmed REDFIELD'S views—"that these storms in the Northern Hemisphere are vast whirlwinds with a progressive motion, revolving by a fixed law"—but, by collecting information concerning Mauritius hurricanes, he proved that they revolved in opposite ways on opposite sides of the Equator, thus, also corroborating what REDFIELD had already announced as probable. A number of really practical rules in storm-sailing are due to REID, and in his work he never lost sight of the useful application of the subject to navigation. His first important work, "An Attempt to develop the Laws of Storms by means of Facts," was published in 1838, followed in 1849 by "The Progress of the Development of the Laws of Storms."

An interesting happening which gave impetus to the circular theory of tropical storms was the celebrated case of the brig *Charles Heddle*,



Track of brig "Charles Heddle,"
23rd to 27th February, 1845,
as deduced by Henry Piddington.

which left Mauritius towards the end of February, 1845. After clearing the island, a northerly course was steered, and towards evening of the day of sailing she encountered a gale which eventually proved to be the verge of a hurricane advancing from the N.E.-ward. Her log does not clearly state whether she put her helm up in order "to run out of the hurricane," but for five successive days she was apparently scudding right before the wind, and PIDDINGTON who translated her log (kept in French) deduced the remarkable track as shown in the figure. During 120 hours, when scudding, the brig made five complete circuits of the compass—the 1st in 31 hours, the 2nd in 35 hours, the 3rd in 21 hours, the 4th in 17 hours, and the 5th in 16 hours, after which the weather became fine and Captain decided to return to Mauritius as his ship had sustained much damage.

Another observer and writer must not be omitted. ALEXANDER THOM, Surgeon, when stationed with his regiment at Mauritius, gathered the materials for "An Inquiry into the Nature and Course of Storms in the Indian Ocean South of the Equator," which was published in 1845. THOM was in agreement in the main with the work of REDFIELD and REID, and especially in the practical rules laid down by the latter.

Captain HENRY PIDDINGTON, some time Commander of a Ship in the East India and China trade, and subsequently Curator of a museum in Calcutta, commenced in 1838 the study of the storms of the Bay of Bengal and the Arabian Sea. During a period of 15 years he compiled some 40 memoirs, and in 1848 published "The Sailor's Horn-Book for the Law of Storms in all parts of the World."

PIDDINGTON was a most careful observer and was indefatigable when he got hold of a log-book or set of observations that would illustrate the law of storms. He pointed out that the wind round the centre of a storm must have an inclination inwards, and that the air moved in consequence in spirals towards the centre. To get rid of ambiguity and to use the same word to express the same thing in all cases he introduced the expressive term "Cyclone" (a Greek word which signifies, amongst other things, the coil of a snake) to cover circular storms through the whole range of the local names, gale, storm, hurricane, typhoon, etc.

Much useful information may still be obtained from PIDDINGTON'S Horn-Book, and the transparent Horn cards which he included with each copy of his book, and explained the use of by many examples, are still used in modernized form by present day practical navigators. He roughly determined the average tracks of storms over several oceans, and laid down practical rules for storm sailing, stressing that ships should choose the coming-up tack. He also demonstrated that a single storm may split into two, or more, distinct storms, and conversely; that storms display a tendency to follow one another in quick succession; that storm waves and storm sea-surface currents should be guarded against and allowed for in the reckoning.

As an example of early benefit following the publication of the Sailor's Horn-Book, and of the topical interest of the period, the following letter to a correspondent is given, being copied from the Illustrated London News:—

H.M.S. *Vernon*, Hong-Kong,

July 22nd, 1848.

"We were delayed a few hours on our way to this place, strange as the notion may seem to you, in order to allow a Typhoon to pass. It appears that from the investigations of Col. REID and some other patient and diligent observers of atmospherical phenomena, a 'Horn-book of Storms' for the Indian and China Seas has been published, whereby it is clearly shown and especially to nautical men, that among the many things unseen by which we are surrounded, high winds are subjected to fixed laws affecting their motion and duration, and directed in their courses by the same unerring hand which regulates in wisdom the more visible things of creation!

"On the 19th inst. at about midnight a swell of unusual height met the ship whilst running in her proper course NNE; and we likewise observed a heavy bank of clouds lining the eastern horizon, whence, also, the swell proceeded.

“ At eight a.m. of the 20th, the swell had greatly increased, the before-mentioned banks of clouds had closed around us, the wind being unsteady in force as well as in direction, and the barometer oscillating. With these and other indications in the heavens, well known to the practised eye as the precursors of an approaching tempest, we cautiously opened the mysterious ‘ Horn-book of Storms ’ to learn from its pages the means by which, if haply, we might avoid the impending danger.

“ At 11 a.m. the squalls were violent, and the rain descended in torrents. We therefore close-reefed topsails, and altered course, following the direction of the ‘ Book of Storms.’

“ When therefore we referred to the ‘ Book of Storms ’ we ascertained by one of the tables that as our wind was now NW, the centre of the Typhoon must bear NE of us. If we had now stood on in the same course (NNE), it is evident that we should have gone headlong into the centre of the Typhoon. Accordingly we altered course (i.e. to Eastward).

“ The book goes on to direct that we notice which way the wind changes; and as in our case it gradually passed round to the westward it showed that the Typhoon was then to the north of us. It was during this changing of the wind, that the oldest seaman on board felt that we were within the direct influence of the tempest, such being the motion of the ship.

“ Having thus ran under the stern of the Typhoon (if I may use the expression), we stood on till the wind became SW, at which time, six p.m., the hurricane bore NW of us, and we knew that we had passed to the eastward of it. Orders were therefore given to resume our proper course, which was done accordingly. Thus within the last 24 hours we escaped from a most unpleasant companion, which if we had adhered to old prejudices, would have bore us on to the NW, and might have engulfed us in a watery grave!

“ I will end my remarks by observing, that on the day above-named a Typhoon passed over this island, and that an Indiaman, then about 160 miles to the eastward of us, was dismasted. So that the most inveterate sceptics on board the *Vernon*—and they are not a few—having thus had conviction forced upon their minds are now the loudest applauders of the ‘ Theory of Storms ’.”

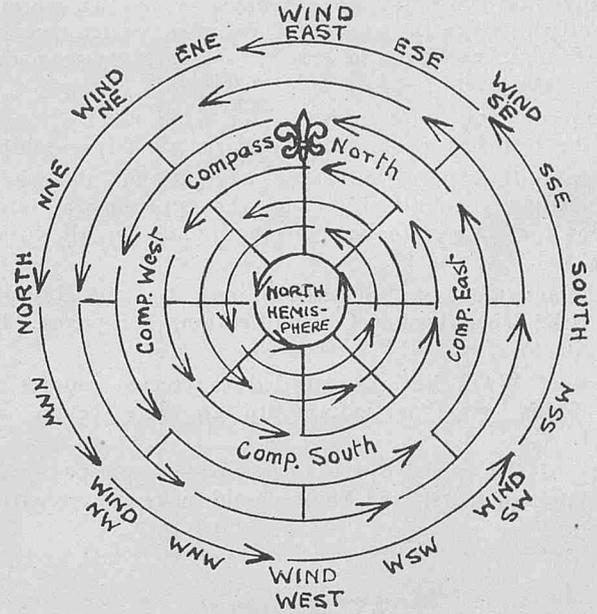


Diagram of Piddington's original transparent Horn Card (actual size).

SOUTHERN ICE REPORTS.
 During the Year 1931.
 June.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1931	13	55° 44' S.	91° 50' W.	Small berg	Approximately 25 feet high, 200 feet long	S.S. <i>Pekeha</i> .

Reports of Ice previous to June, 1931, will be found in *The Marine Observer*, Vol. VI, No. 66, p. 134.

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

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, pages 28 and 29, Vol. IX, No. 97.

For full particulars of "Selected Ships" Routine Meteorological Reports with Schedule for Communication, see pages 13 to 16, Vol. IX, No. 97.

See List of W/T Stations detailed to receive reports from **A Selected Ships** with particulars up to date below, also on Chart VII.

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 15, Vol. IX, No. 97 (January, 1932, MARINE OBSERVER).

B Selected Ships broadcast their report to C.Q. on 600 m. spark, and these may be intercepted by the stations ringed in on Chart VII. In making these reports to C.Q. "B Selected Ships" should make special endeavour to ensure that the report is received at these shore stations. With a view to assisting Meteorological Services who have provided information and to ensuring that routine reports from all "Selected Ships" within range of certain coast stations may be received by those services a list of stations specially detailed to receive reports from "B Selected Ships" is also given on pages 122 and 123. The procedure given on pages 13 to 16, Vol. IX, No. 97, should be adhered to as far as possible.

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, in accordance with the agreed upon International plan for all parts of the World, following the International Convention for Safety of Life at Sea, 1929.

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

Request for Information.

THE ATTENTION OF METEOROLOGICAL SERVICES IS INVITED TO THE INVITATION GIVEN ON PAGE 13 OF VOL. IX, NO. 97, JANUARY MARINE OBSERVER.

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.	Notes.				
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.								
North Atlantic and North Sea.	Portishead.	Lat. 51° 28' 41" N. Long. 2° 47' 30" W.	GKU.	149 kc/s. (2013 metres).	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. and North of Latitude 38° N., but not within 300 miles of station. (see Chart VII.)	Weather London	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	Control system. "Selected Ships" chosen to report in given order notified by station daily at 2230, 0330, and 1030 G.M.T. Roll call thus—Weather begins—Call signs of chosen "Selected Ships"—Weather ends.				
	Chatham Mass., Sayville N.Y. or West Palm Beach.	Lat. 41° 42' N. Long. 70° 00' W. Lat. 40° 45' N. Long. 73° 06' W. Lat. 26° 42' N. Long. 80° 02' W.	WCC. WSL. WMR.	142.9 kc/s. (2098 metres).		North Atlantic West of Longitude 40° W.	Observer Washington.	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	No control. All British "A Selected Ships" within area to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.				
	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTH.							125 kc/s. (2400 metres).	North Atlantic South of Latitude 38° N. and East of Longitude 40° W.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	No control—all British "A Selected Ships" within area should report in accordance with Schedule.

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.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
Mediterranean and Red Sea.									
South Atlantic.									
Indian Ocean.	Bombay.	Lat. 19° 04' 55" N. Long. 72° 49' 54" E.	VWB	—	143 kc/s. (2100 metres).	Arabian Sea N. of line C. Comorin to Ras Fartak.	Weather.	Weather only. No. 6 Supplementary groups.	All British "A Selected Ships" are requested, when convenient, to report 000 G.M.T. observations commencing at 0018 G.M.T. in addition to schedule times.
	Madras.	Lat. 12° 59' 17" N. Long. 80° 10' 56" E.	VWM	—	143 kc/s. (2100 metres).	Bay of Bengal N. of line C. Comorin to Achin Head.	Weather.	Weather only. No. 6 Supplementary groups.	All British "A Selected Ships" are requested, when convenient, to report 1200 G.M.T. observations commencing at 1218 G.M.T. in addition to schedule times.
	Colombo.	Lat. 6° 55' 14" N. Long. 79° 52' 46" E.	VPB	130 kc/s. (2300 metres).	143 kc/s. (2100 metres).	Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1500 miles.	Obs.	Weather only. No. 6 Supplementary groups preferred.	No control—all British "A Selected Ships" within area should report in accordance with Schedule.
	Mombasa.	Lat. 4° 03' 11" S. Long. 39° 39' 51" E.	VPQ	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 26° S. when westward of the Colombo area.	Weather Nairobi.	Weather only. No. 6 Supplementary groups.	No control—all British "A Selected Ships" within area should report 0600 G.M.T. observations.
	Perth.	Lat. 32° 01' 51" S. Long. 115° 49' 31" E.	VIP	—	125 kc/s. (2400 metres).	Indian Ocean and Southern Ocean between Long. 105° and 135° E.; but not within 100 miles of station.	Weather.	Weather only. No. 6 Supplementary groups.	No control—all British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart I, p. 15, Vol. IX, No. 97 (January).
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" 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.	Sydney.	Lat. 33° 46' 00" S. Long. 151° 03' 09" E.	VIS	—	125 kc/s. (2400 metres).	S. Pacific, Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of station.	Weather.	Weather only. No. 6 Supplementary groups.	No control—all British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart I, p. 15, Vol. IX, No. 97 (January).

WIRELESS STATIONS DETAILED TO INTERCEPT 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.				
South Atlantic.	Salinas	Lat. 0° 35' 00" S. Long. 47° 18' 45" W.	PPL.	Meteoro Rio.	Weather only, including supplementary groups.				
	S. Luiz	Lat. 2° 31' 48" S. Long. 44° 16' 51" W.	PXM.						
	Fortaleza	Lat. 3° 46' 21" S. Long. 38° 32' 26" W.	PPC.						
	Natal	Lat. 5° 46' 41" S. Long. 35° 18' 24" W.	PXN.						
	F. Noronha	Lat. 3° 50' 24" S. Long. 32° 24' 48" W.	PXF.						
	Olinda	Lat. 8° 00' 35" S. Long. 34° 51' 00" W.	PPO.						
	Amaralina	Lat. 13° 00' 12" S. Long. 38° 30' 45" W.	PPA.						
	Abrolhos	Lat. 17° 57' 30" S. Long. 38° 41' 05" W.	PXH.						
	Victoria	Lat. 20° 10' 00" S. Long. 40° 17' 46" W.	PPT.						
	Rio	Lat. 22° 53' 42" S. Long. 43° 13' 24" W.	PPR.						
	Santos	Lat. 23° 56' 27" S. Long. 46° 19' 28" W.	PPS.						
	Florianopolis.	Lat. 27° 36' 00" S. Long. 48° 30' 18" W.	PPF.						
	Junçao	Lat. 32° 04' 00" S. Long. 52° 07' 00" W.	PPJ.						
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.						
	Mombasa.	Lat. 4° 03' 11" S. Long. 39° 39' 51" E.	VPQ.				Weather Nairobi.		
	Dar-es-Salaam.	Lat. 6° 50' 38" S. Long. 39° 17' 24" E.	ZBZ.					Weather Nairobi.	
	Mauritius.	Lat. 20° 23' S. Long. 57° 35' E.	VRS.				Observatory Mauritius.	Weather 4 universal groups and first of No. 6 Supplementary Groups.	
	Geraldton.	Lat. 28° 47' 15" S. Long. 114° 36' 24" E.	VIN.				Weather.	Weather only, including No. 6 Supplementary Groups.	
	Perth.	Lat. 32° 01' 51" S. Long. 115° 49' 31" E.	VIP.						
	Esperance.	Lat. 33° 52' 40" S. Long. 121° 53' 34" E.	VIE.						

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

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" 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.	
	Wellington.	Lat. 41° 16' 26" S. Long. 174° 45' 55" 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.			
	Thursday I.	Lat. 10° 35' 14" S. Long. 142° 12' 43" E.	VII	Weather	Weather only, including No. 6 Supplementary Groups.	
	Townsville	Lat. 19° 16' 09" S. Long. 146° 49' 47" E.	VIT			
	Brisbane	Lat. 27° 25' 34" S. Long. 153° 07' 19" E.	VIB			
	Sydney	Lat. 33° 46' 00" S. Long. 151° 03' 09" E.	VIS			
	Melbourne	Lat. 37° 46' 56" S. Long. 144° 52' 09" E.	VIM			
	Adelaide	Lat. 34° 51' 14" S. Long. 138° 31' 55" E.	VIA			

III.—WIRELESS TIME SIGNALS.

INDIA and CEYLON.

C.W. and I.C.W. Issues.

Station.	Call Sign.	Wave length, metres.	G.M.T. of Time Signal.	System.
Calcutta. Lat. 22° 33' 31" N. Long. 88° 20' 16" E.	VWC	2,000 C.W.	0827-0830	} See FIGURE 1.
			1627-1630	
Colombo. Lat. 6° 55' 14" N. Long. 79° 52' 46" E.	VPB	2,300 C.W. 600 I.C.W.	0557-0600	} See FIGURE 1.
			1657-1700	



Figure 1.

NOTE.—*Calcutta*.—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, the words “ Ordinary time signals,” and the signal “ Wait ” (— — — — —); all sent by hand.

(2) Signals automatically controlled from Alipore Observatory.

(3) Time Signal accurate to within 0.5 sec.

(4) Should there be any inaccuracy, the Time Signal will be followed by the “ erase ” signal and the words “ signal failed.”

Colombo.—(1) Preliminary signals sent two minutes before transmission of Time Signal proper, CQ de VPB (repeated 3 times) “ Time Signal, Wait ” (— — — — —).

(2) Actual time signals automatically controlled from Colombo Observatory (Lat. 6° 54' 18" N., Long. 79° 52' 10" E.), the remaining signals being sent by hand.

Special Notices Regarding Personnel.

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

Captain H. A. Le Brecht.

Captain HENRY ASHTON LE BRECHT, commander of the R.M.M.V. *Asturias* and Commodore of the Royal Mail Steam Packet Fleet, has recently retired from active service afloat.

An old *Conway* boy, Captain LE BRECHT entered the Royal Mail Steam Packet Service as 5th Officer in February, 1898, and obtained his first command in 1913, when he was appointed to the S.S. *Caron*. Since then he has commanded the following past and present ships of the Company's Fleet—*Balantia*, *St. Margaret of Scotland*, *Barima*, *Carnarvonshire*, *Araguaya*, *Sirus*, *Oropesa*, *Orbita*, *Orca*, *Arcadian*, *Orduna*, *Arlanza*, *Andes* and *Asturias*.

Captain LE BRECHT was awarded a silver medal and certificate by the Greek Government in 1920, when in command of the *Carnarvonshire* he rescued 15 of the crew of the Greek steamer *Aghia Parashevi*.

He has been a keen member of the Corps of Voluntary Marine Observers since 1921 and in March, 1923, at a meeting of representatives of that Corps held in the Board Room of the Royal Mail Steam Packet Company's Offices at Southampton, gave great assistance in formulating the world wide system of Selected Ship Service now in operation aboard British “ Selected Ships.”

Marine Observers join with the Marine Division in wishing Captain LE BRECHT long life and happiness in his retirement.

Captain A. W. V. Trant, O.B.E.

Captain A. W. V. TRANT who recently relinquished command of the R.M.S. *Westernland* has retired from active service afloat.

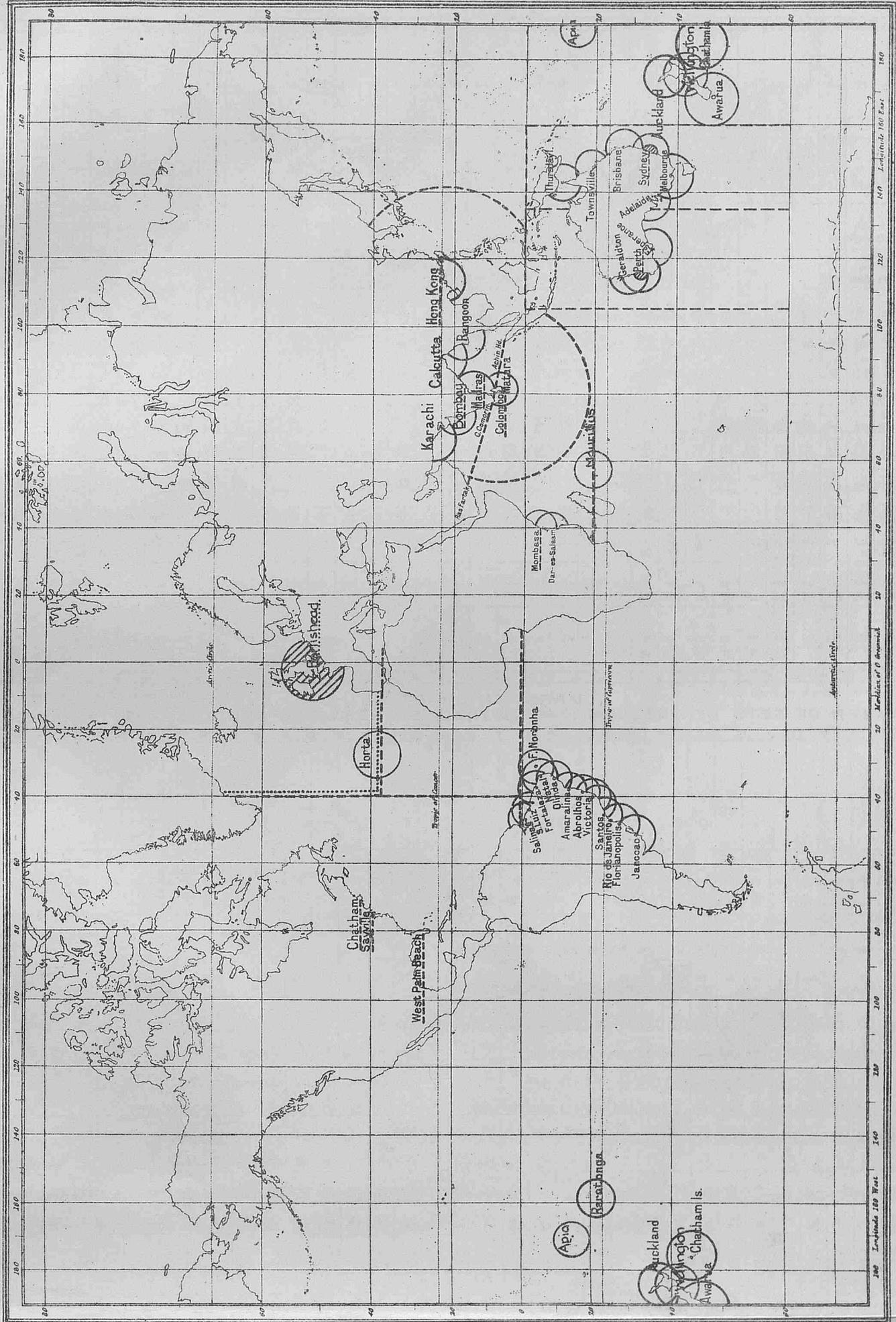
After serving for some years in sail he joined the Leyland Line as a junior officer in 1880, in which line his father had been commodore captain for many years. Rising through the different grades he was appointed to command in 1893 his first ship being the *Lisbon*. Since then he has commanded several of the finest ships in the Company's fleet, including *Devonian*, *Winifredian*, *Regina*, *Pennland*, *Lapland*, *Belgenland* and *Westernland*.

Captain TRANT was awarded the O.B.E., for his services during the war as superintendent of the Admiralty Mercantile Movements Division.

An old member of our corps, Marine Observers join with the Marine Division in wishing Captain TRANT long life and happiness in his retirement.

Chart VII.— SHIPS' WIRELESS WEATHER SIGNALS.

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



The full circles indicate the areas round islands and coast stations which are detailed to intercept "B" Selected Ships' reports made to G.Q. on 600 metres.

The small shaded areas round stations detailed to receive reports from "A" Selected Ships" indicate where these ships should not report on account of congestion.

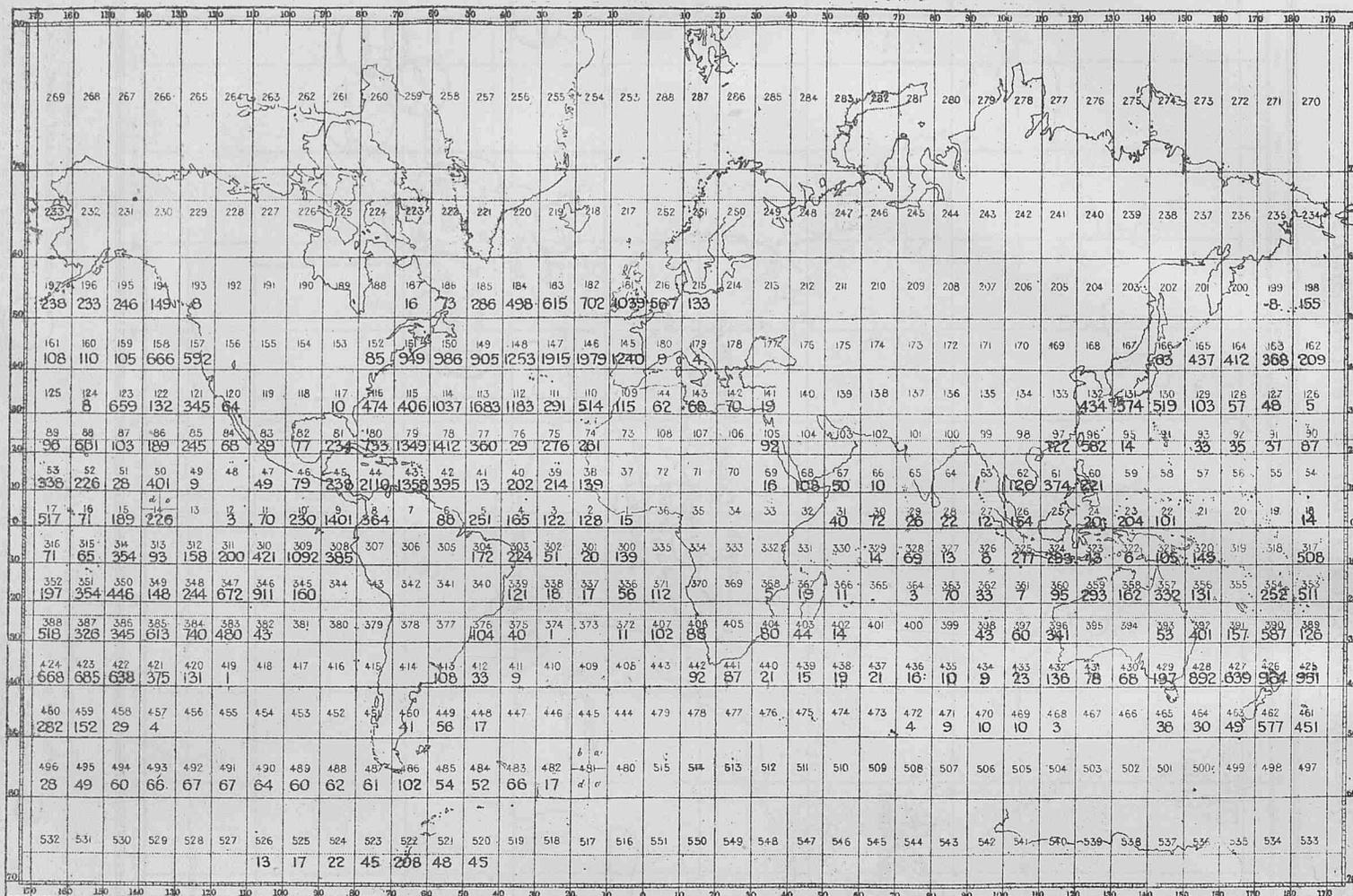
A pecked line indicates the reporting area round stations in other countries to which British "A" Selected Ships" should report. The names of such stations being underlined with a pecked line.

The dotted line indicates the area in which British "A" Selected Ships" report under control to Portishead.

WORK OF THE YEAR.

MARSDEN CHART I.

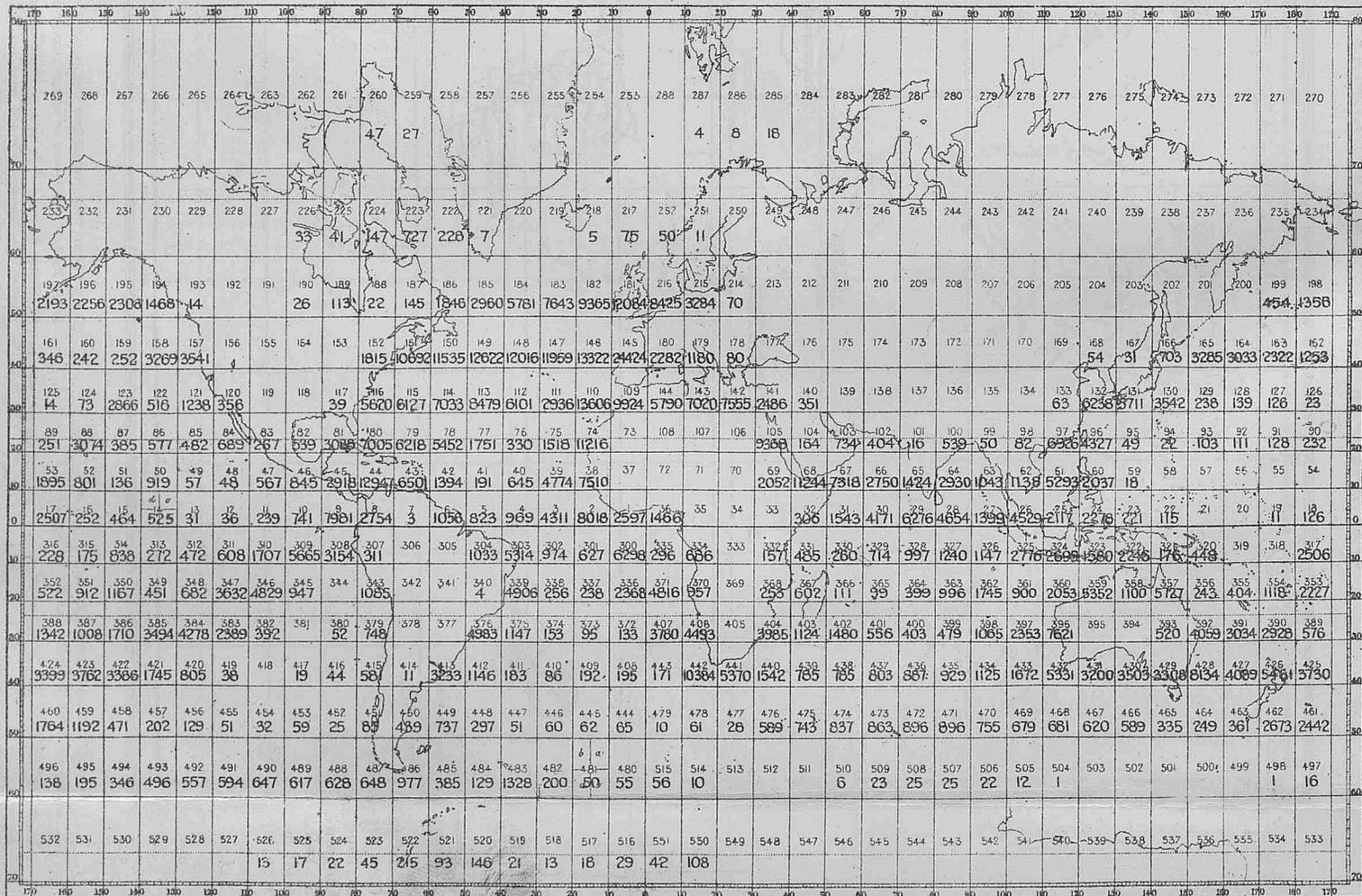
SHOWING NUMBER OF SETS OF OBSERVATIONS EXTRACTED BETWEEN APRIL 1st. 1931 & MARCH 31st. 1932.



MARSDEN CHART II.

Total observations 70,718

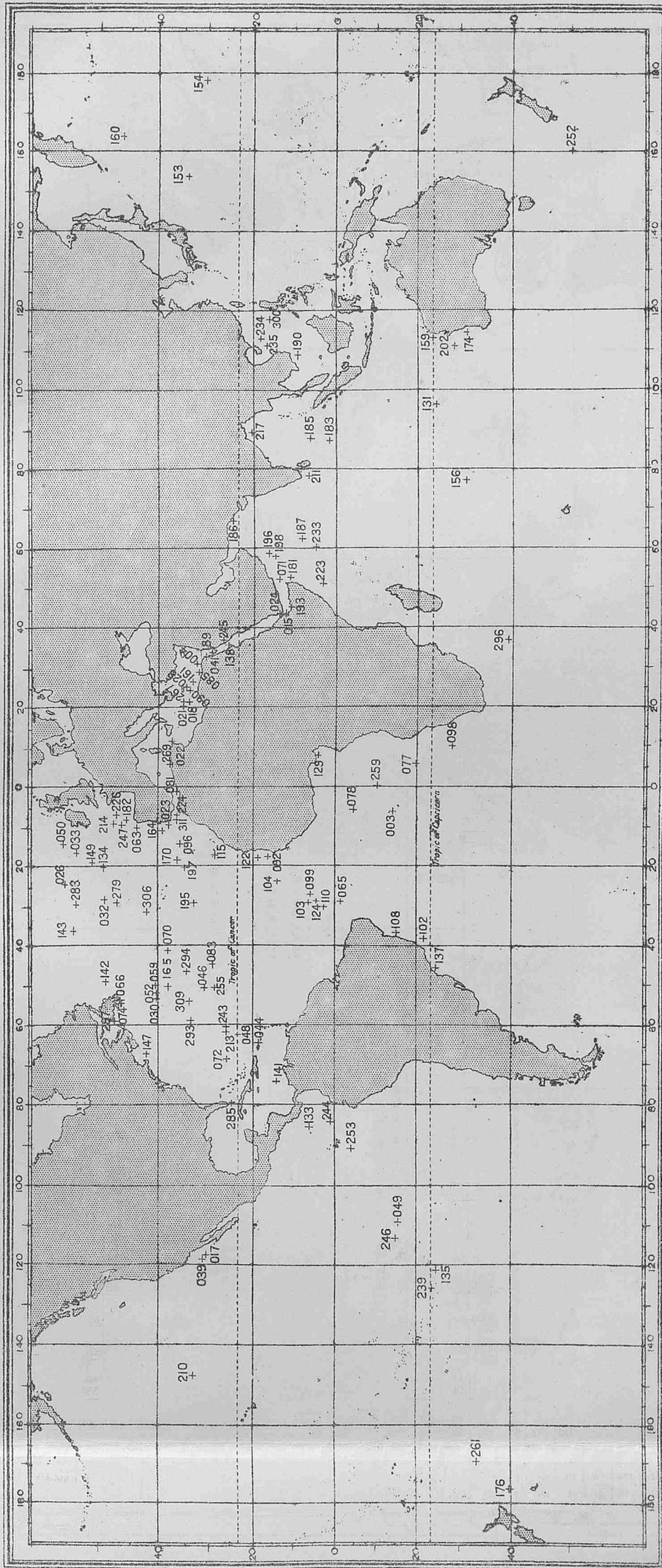
SHOWING NUMBER OF SETS OF OBSERVATIONS EXTRACTED BETWEEN APRIL 1st. 1920 & MARCH 31st. 1932.



Total observations (New Code) extracted Jan 1st 1920 - December 31st 1929 670362
 Total observations (New Code) extracted Jan 1st 1930 - Mar 31st 1932 92939
 Grand total since April 1st 1920 763321

WORK OF THE YEAR.
CHART III.

CHART OF THE WORLD SHOWING POSITION OF BRITISH SELECTED SHIPS AT SEA ON JUNE 1ST, 1931.

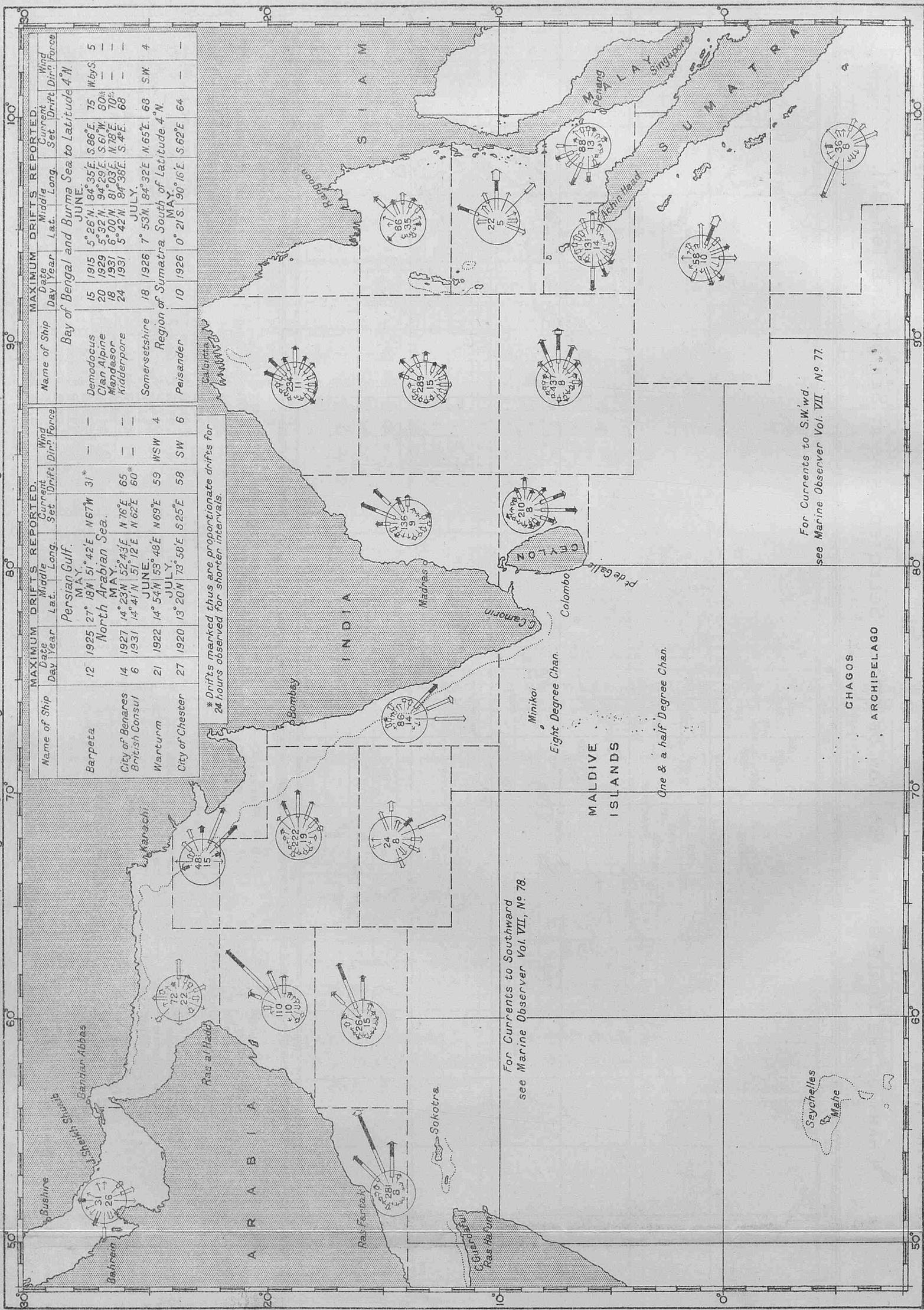


- | | | | | |
|------------------------------|------------------------|-----------------------|----------------------|------------------------------|
| 003B Clan Malcolm | 110B El Uruguayo | 159B Gascoyne | 197A Mantua | 247B Recorder |
| 004B Clan MacNair | 115A Arandora Star | 160B Ixion | 198B Contractor | 252B Devon |
| 015B Mahsud | 122A Accra | 161B Titan | 202A Narkunda | 253B Hertford |
| 017B Colonial | 124A Avila Star | 164A Mooltan | 210B Niagara | 255B Middlesex |
| 018B Makalla | 129A Appam | 165B Tantalus M.V. | 211B Shropshire M.V. | 259B Surrey |
| 021B Masula | 131B Port Darwin | 170A Orama | 213B Barpeta | 261B Huntingdon |
| 022B Manipur | 133B Port Dunedin M.V. | 176B Pakeha | 214B Counsellor | 267B Novara |
| 023B Matheran | 134A Lapland | 181B Barrabool | 217B Karapara | 269B British Consul |
| 024B Matra | 135B Port Hunter | 182A Highland Brigade | 223B Matiana | 279B Pacific Exporter |
| 026A Cameronia | 137B Port Nicholson | 183A Bendigo | 224B Modasa | 283A Minnedosa |
| 028A Mandala | 138B Port Pirie | 185A Comorin | 226A Mulbera | 285B Custodian |
| 030A Franconia | 141B Mahia | 186B Kidderpore | 233B Berwickshire | 287A Melita |
| 032A Mauretania | 142A Duchess of Atholl | 187B Jeypore | 234B Talma | 293B Ariguani |
| 033A Scythia | 143A Duchesse of York | 189B Kalyan | 235B Tilawa | 294B Barranca |
| 039B Planter | 147A Lacomia | 190B Kashgar | 239B Remuera | 296B Arracan |
| 041B Karamea M.V. | 149A Montclare | 193B Lahore | 243B Opawa | 300B St. Albans |
| 044A Mataroa | 153A Empress of Japan | 195A Maloja | 244B Tongariro | 306B Reina del Pacifico M.V. |
| 046A Tamaroa | 154A Empress of Canada | 196A Malwa | 245B Turakina | 309A Orbita |
| 048B Mahana | 156B Ascutun | | 246B Ruahine | 311B British Dominion |
| 049B Coptic M.V. | | | | |
| 050A Adriatic | | | | |
| 052A Codric | | | | |
| 059A Belgenland | | | | |
| 063B Rancher | | | | |
| 065A Asturias M.V. | | | | |
| 066A Empress of Australia | | | | |
| 070A Bayano | | | | |
| 071A Ravalpindi | | | | |
| 072B Jamaica Planter | | | | |
| 074B Forsdale | | | | |
| 077A Edinburgh Castle | | | | |
| 078B Magician | | | | |
| 081B Tairua | | | | |
| 083B Lautaro M.V. | | | | |
| 085B Governor | | | | |
| 090B Eldonpark | | | | |
| 092A Carnarvon Castle | | | | |
| 096A Windsor Castle | | | | |
| 098A Dunbar Castle M.V. | | | | |
| 099A Highland Monarch M.V. | | | | |
| 102B Duquesa | | | | |
| 103A Andalucia Star | | | | |
| 104B Marquesa | | | | |
| 108B Elstree Grange | | | | |
| 110B El Uruguayo | | | | |
| 115A Arandora Star | | | | |
| 122A Accra | | | | |
| 124A Avila Star | | | | |
| 129A Appam | | | | |
| 131B Port Darwin | | | | |
| 133B Port Dunedin M.V. | | | | |
| 134A Lapland | | | | |
| 135B Port Hunter | | | | |
| 137B Port Nicholson | | | | |
| 138B Port Pirie | | | | |
| 141B Mahia | | | | |
| 142A Duchess of Atholl | | | | |
| 143A Duchesse of York | | | | |
| 147A Lacomia | | | | |
| 149A Montclare | | | | |
| 153A Empress of Japan | | | | |
| 154A Empress of Canada | | | | |
| 156B Ascutun | | | | |
| 159B Gascoyne | | | | |
| 160B Ixion | | | | |
| 161B Titan | | | | |
| 164A Mooltan | | | | |
| 165B Tantalus M.V. | | | | |
| 170A Orama | | | | |
| 176B Pakeha | | | | |
| 181B Barrabool | | | | |
| 182A Highland Brigade | | | | |
| 183A Bendigo | | | | |
| 185A Comorin | | | | |
| 186B Kidderpore | | | | |
| 187B Jeypore | | | | |
| 189B Kalyan | | | | |
| 190B Kashgar | | | | |
| 193B Lahore | | | | |
| 195A Maloja | | | | |
| 196A Malwa | | | | |
| 197A Mantua | | | | |
| 198B Contractor | | | | |
| 202A Narkunda | | | | |
| 210B Niagara | | | | |
| 211B Shropshire M.V. | | | | |
| 213B Barpeta | | | | |
| 214B Counsellor | | | | |
| 217B Karapara | | | | |
| 223B Matiana | | | | |
| 224B Modasa | | | | |
| 226A Mulbera | | | | |
| 233B Berwickshire | | | | |
| 234B Talma | | | | |
| 235B Tilawa | | | | |
| 239B Remuera | | | | |
| 243B Opawa | | | | |
| 244B Tongariro | | | | |
| 245B Turakina | | | | |
| 246B Ruahine | | | | |
| 247B Recorder | | | | |
| 252B Devon | | | | |
| 253B Hertford | | | | |
| 255B Middlesex | | | | |
| 259B Surrey | | | | |
| 261B Huntingdon | | | | |
| 267B Novara | | | | |
| 269B British Consul | | | | |
| 279B Pacific Exporter | | | | |
| 283A Minnedosa | | | | |
| 285B Custodian | | | | |
| 287A Melita | | | | |
| 293B Ariguani | | | | |
| 294B Barranca | | | | |
| 296B Arracan | | | | |
| 300B St. Albans | | | | |
| 306B Reina del Pacifico M.V. | | | | |
| 309A Orbita | | | | |
| 311B British Dominion | | | | |

120 ships out of 312 in favourable positions to report with about 192 in port or narrow waters. This is typical and represents a fair average day. 38 per cent. in position to report.

CURRENTS ON THE TRADE ROUTES IN THE PERSIAN GULF, NORTHERN PORTION OF THE ARABIAN SEA, BAY OF BENGAL, AND IN THE REGION OF SUMATRA.

MAY JUNE, and JULY.
 Observations of ships regularly observing for the British Meteorological Office, 1910-1931.



MAXIMUM DRIFTS REPORTED.			
Name of Ship	Date	Middle Lat. Long.	Wind Current Set Drift Force
Barpeta	12 1925	27° 18' N, 51° 42' E	N 67° W 31'
City of Benares	14 1927	14° 23' N, 52° 43' E	N 76° E 65'
British Consul	6 1931	14° 41' N, 51° 12' E	N 62° E 60'
Wantunm	21 1922	14° 54' N, 65° 48' E	N 69° E 59'
City of Chester	27 1920	13° 20' N, 75° 58' E	S 25° E 58'

MAXIMUM DRIFTS REPORTED.			
Name of Ship	Date	Middle Lat. Long.	Wind Current Set Drift Force
Bay of Bengal and Burma Sea to Latitude 4° N.			
Demodocus	15 1915	5° 26' N, 84° 35' E	S 86° E 75'
Clan Alpine	20 1929	5° 32' N, 94° 29' E	S 61° W 80 1/2'
Mandator	18 1931	6° 00' N, 81° 03' E	N 78° E 70'
Kidderpore	24 1931	5° 42' N, 84° 38' E	S 4° E 68'
JULY.			
Somersetshire	18 1928	7° 53' N, 84° 32' E	N 65° E 68'
Region of Sumatra South of Latitude 4° N.			
Peisander	10 1926	0° 21' S, 90° 16' E	S 62° E 64'

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.

For Currents to Southward see Marine Observer Vol. VII, No. 78.

For Currents to S.W.wd. see Marine Observer Vol. VII, No. 77.

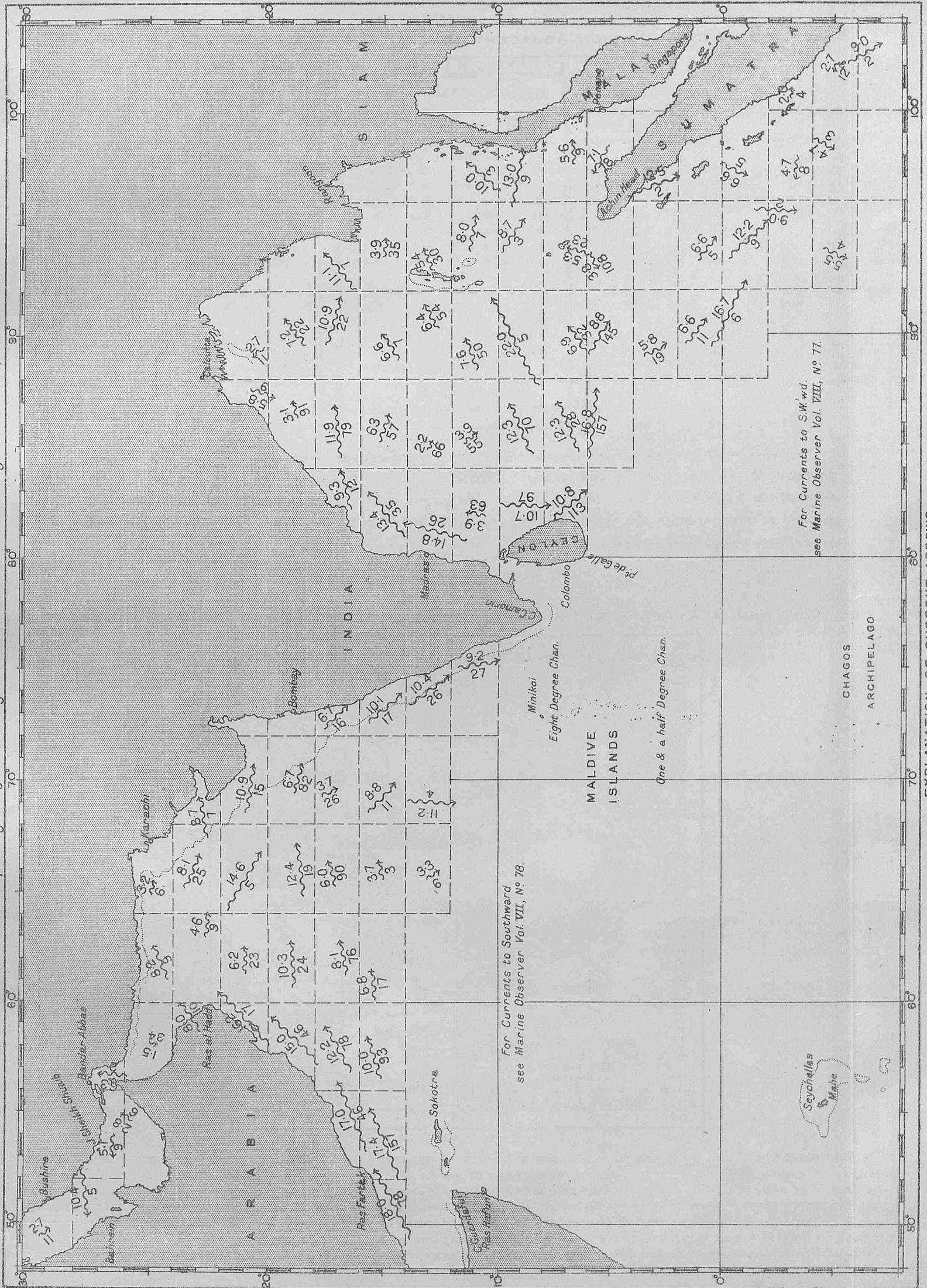
EXPLANATION OF CURRENT ROSES.

The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength, Distance from tail of arrow to circle represents 5%. Scale 1:100000. The upper figure in centre of rose gives total number of observations, the lower figure the percentage frequency of currents less than 6 miles per day.

CURRENTS ON THE TRADE ROUTES IN THE PERSIAN GULF, NORTHERN PORTION OF THE ARABIAN SEA, BAY OF BENGAL, AND IN THE REGION OF SUMATRA.

MAY JUNE, and JULY,

Observations of ships regularly observing for the British Meteorological Office, 1910-1931.



For Currents to S.W. wd. see Marine Observer Vol. VIII, No. 77.

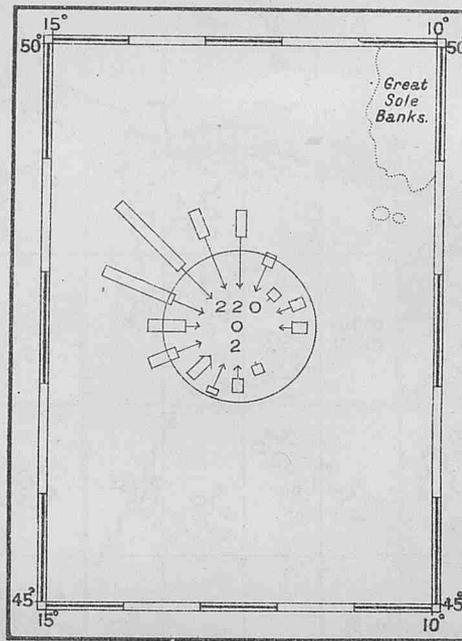
For Currents to Southward see Marine Observer Vol. VII, No. 78.

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.

JUNE.

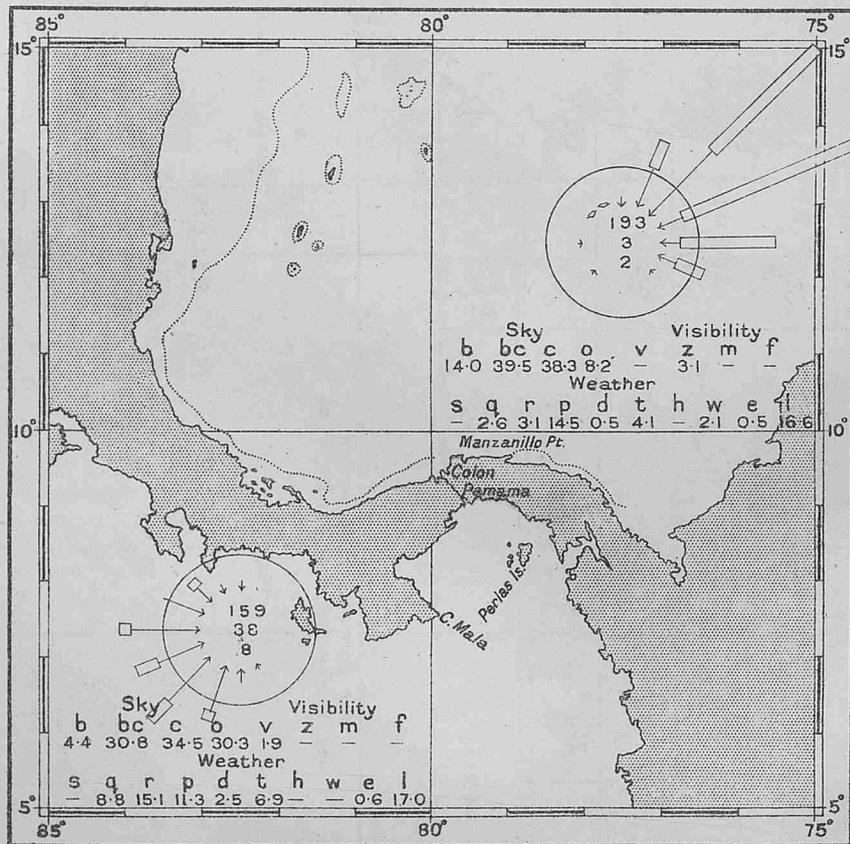
WIND FOR THE OCEAN REGION ADJACENT TO THE S.W. APPROACHES TO GREAT BRITAIN.



EXPLANATION.

The wind rose is drawn from observations within the 5° square. Arrows fly with the wind, length represents frequency, thickness strength. Distance from head of arrow to circle represents 5%. Scale:— 10% 20% The upper figure in the centre of the rose gives total number of observations; the middle figure, the percentage frequency of calms; the lower figure the percentage frequency of variable winds.

WIND, FOG, MIST AND WEATHER FOR THE OCEAN REGIONS TO THE N.E. AND S.W. OF THE PANAMA CANAL.



EXPLANATION.

The wind roses are drawn from Sea observations within the 5° squares. Arrows fly with the wind, length represents frequency, thickness strength. Distance from head of arrow to circle represents 5%. Scale:— 10% 20% The upper figure in the centre of the rose gives total number of observations, The middle figure the percentage frequency of calms, and the lower figure the percentage frequency of variable winds. The percentage frequency of types of weather are shown in the lower half of each 5 square by the figures beneath each of the letters of the Beaufort weather notation. For example in the 5° square Latitude 10 to 15° N, Longitude 75 to 80° W, b was logged 14 times in every 100 observations while z was logged 3 times.

Compiled from observations of British Ships received since the adoption of the Hollerith system of extraction covering the years 1921 - 1930.

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

Captains and Officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officer or Agent, a list of whom, with addresses, is given below.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for certain "Selected Ships" to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Arrangements are also made for a limited number of ships to keep meteorological logs in certain trades for the purpose of completing the meteorological survey of the oceans.

Ships performing these voluntary duties are known as Observing Ships; the whole as the Voluntary Observing Fleet; and the commanders and officers of these ships as the Corps of Voluntary Marine Observers.

At present the observing fleet is limited to a number not exceeding 366 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

The observing fleet list indicating which are "Selected Ships," with the names of commanders, officers, and other particulars, is published in THE MARINE OBSERVER and kept up to date monthly.

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 is supplied to all observing ships, and may also be obtained from H.M. Stationery Office, direct, or through any bookseller, price 2s. 6d.

THE MARINE OBSERVER is sent monthly to the captain of every observing ship, for the information and guidance of his observing officers, and in the case of "Selected Ships," the wireless operators also. The Captains of observing ships are also supplied on request with charts, and atlases, according to trade, if available, as meteorological equipment.

Ships keeping the Meteorological Log, Form 915, are lent a complete set of official tested instruments.

"Selected Ships," other than meteorological log keeping ships, keep the Ships' Meteorological Record, Form 911. All "Selected Ships" also keep the Ships' Wireless Weather Register, Form 138.

No observing ship is detailed as a "Selected Ship" unless she has on board a reliable mercurial barometer.

Official tested instruments are lent to "Selected Ships" when necessary.

The commanders of observing ships keeping the meteorological log are requested to return it (accompanied by Form 138 in the case of "Selected Ships") through the appropriate Port Meteorological Officer or Agent at intervals of not more than five months.

Commanders of observing ships keeping Forms 911 are requested to return them (accompanied by Form 138 in the case of "Selected Ships") by post direct to the Meteorological Office, London, at the end of each voyage, or at intervals of not more than two months.

These forms have the address and "On His Majesty's Service" printed upon them, and should be folded for posting accordingly.

The Port Meteorological Officers and Merchant Navy Agents inspect official instruments in Meteorological log ships half-yearly, and in "Selected Ships" quarterly, when possible; and they will replace defective gear. These officers will also check the accuracy of barometers in observing ships, but marine observers should themselves frequently check by comparison.

The work of the British observing fleet, that of the observing fleets of other nations party to the Convention for Safety of Life at Sea, together with Weather Shipping Bulletins and Gale and Hurricane Warnings conforming to the International Convention for Safety of Life at Sea, provide the necessary information for shipping. Thus a world wide service for all shipping, at the minimum cost to national funds, is provided. Shipowners are asked to facilitate this voluntary work which is done by the commanders and officers of their ships.

Shipowners will greatly assist by facilitating the forwarding of postal matter from the Air Ministry addressed to the Captains of ships.

Ships which are not regular observing ships are advised to procure the DECODE for use with the International Code for Wireless Weather Messages from Ships, M.O. Pubn. 329, which can be obtained from H.M. Stationery Office, price 3d. This gives a description of the system of communication of "Selected Ships," as well as the DECODE.

For guidance in the practical use of wireless weather intelligence, WIRELESS AND WEATHER AN AID TO NAVIGATION may be obtained from H.M. Stationery Office, through any bookseller, price 5s.

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.	Agents (contd.).
THAMES	Lieut. Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (Telephone No.: Albert Docks 2659. Telegraphic Address: Barometric Aldock, London).	FREMANTLE W. Australia. ... Captain J. J. AIREY, Deputy Director of Navigation, Customs House. (Telephone No.: B 1391).
MERSEY	Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool).	HONG KONG, China. Lieut. Commander G. B. R. RUDYERD-HELPMAN, R.N., Superintendent, Admiralty Chart and Chronometer Depot, H.M. Dockyard. (Telephone No.: 108 Dockyard).
		HUMBER Captain A. M. BROWN, Ellerman Wilson Line Office, Hull. (Telephone No.: Central 2180).
		SOUTHAMPTON
	Agents.	
BELFAST	Captain J. MCINTYRE, Harbour Master, Harbour Office. (Telephone No.: Belfast 4090).	
BRISTOL CHANNEL	Captain T. JOHNSTON, Technical College, Cathays Park, Cardiff. (Telephone No.: Cardiff 6813).	SYDNEY, New South Wales. Commander G. D. WILLIAMS, D.S.O., R.D., R.N.R., Deputy Director of Navigation. Captain R. G. BLAYNEY. Customs House. (Telephone No.: B6421).
CLYDE	Mr. ROBERT CLEARY, Master Mariner, The Clutha Stevedoring Co., Ltd., Princes Dock, Glasgow. (Telephone No.: 513 Ibrox).	
FORTH	Captains C. G. BONNER, V.C., D.S.C., and D. AITCHISON, Leith Salvage and Towage Co., Ltd., 2, Commercial Street, Leith.	TYNE Captain J. J. MCEWAN, Marine School, South Shields.

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 11th April to 30th June, inclusive.
- (F) From 16th May to Opening of Belle Isle route and to 30th November when not using the Belle Isle route. Westbound, on approaching Cape Race steer a course to pass 10 miles S. of Cape Race. Eastbound, steer from position 25 miles S. of Cape Race.
- (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 80 and 81 of Vol. IX, No. 100, April, 1932, 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/I Ice Warning Station.

PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position. Lat. Long.	Remarks.
June 25, 1886	Brig Blanch ...	48°40' N. 15°22' W.	Large berg.
" 5, 1907	S.S. Kingswell ...	32°37' N. 61°25' W.	Several bergs.
" —, 1907	Bque. Silverstream... Fastnet.	80 miles W. of	Berg.
" 11, 1912	S.S. Valetta ...	37°30' N. 74°21' W.	3 pieces of ice.
" 7, 1913	S.S. Holby ...	39°35' N. 64°50' W.	Berg, 10 ft. high.
" 27, 1915	S.S. Stella ...	36°28' N. 57°15' W.	Small piece.
" 30, 1921	U.S. Navy Dept. ...	33°20' N. 49°18' W.	Berg, 10 ft. high.
" 18, 1924	S.S. West Irmo ...	33°03' N. 63°30' W.	Growler.
" 25, 1926	S.S. Paxtergate ...	30°20' N. 62°32' W.	Large piece, about 80 ft. long and 15 ft. wide, showing about 3 ft. above water.

Reports of Ice sighted between which have been received by the by the Symbols plotted in the indicating the day of the month.

ICE IN GREENLAND WATERS.

INFORMATION RECEIVED BY CABLEGRAM FROM DANISH METEOROLOGICAL INSTITUTE, COPENHAGEN.

- April 1st....."Off Julianehaab—ice edge consists of open ice with bergs inside extending to 20 miles off shore with no open water between. Edge extends northward beyond visibility."
- April 2nd....."Free of ice 40 miles off Cape Farewell."
- April 18th....."Between Cape Farewell and Arsuk—about 50 bergs sighted, but no 'Storis'."
- April 19th....."Off Frederikshaab, ship turned eight miles off shore. Between Frederikshaab and Cape Farewell, ship passed principally through lanes of open 'Storis', but occasionally had to penetrate belts of minor resistance. No open water between ice edge and shore. Edge consists of open ice with bergs inside."

LATEST ICE REPORT FROM CANADA.

The following cablegram, dated 11th April, 1932, was received from the Canadian Signal Service, Quebec:—

"Montreal to Quebec, heavy close packed ice inshore; eastward to Murray Bay, light open ice inshore; eastward to east end of Anticosti Island, no ice in sight. Magdalen Islands, Cabot Strait and Northumberland Strait, heavy open ice everywhere and heavy close packed ice at some points. Belle Isle Strait, heavy close packed ice everywhere."

NOTICES.

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.

DESPATCH OF INFORMATION

REQUIRED IMMEDIATELY FOR THE CONDUCT OF THE WORK AT SEA.

Shipowners, Marine Superintendents and all concerned in the despatch of mails to Ships abroad are asked to kindly facilitate the despatch and delivery of postal matter received at their offices from the Meteorological Office and Air Ministry Publication Depot to their Ships abroad.

This matter addressed to the Commanders of Ships contains information which is required for the Conduct of Marine Meteorological Work at Sea and is most effective if received by the Commanders at the earliest possible date.

Much of the information referred to is published in the Marine Observer and is of a seasonal nature. This journal also contains advice to Regular Observing Ships which enables them to perform voluntary service by Wireless Communication for the benefit of all shipping.

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.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
NORTH SEA.			
10.4.32	½ m. N.E. Shipwash Lt. V.		Heavy wooden pontoon, 12 ft. square, dangerous to navigation.
IRISH SEA.			
11.4.32	1½ m. S.S.W. Bar Lt. V.		Light spar apparently attached to submerged wreckage.
ENGLISH CHANNEL.			
10.4.32	3 m. S. Beachy Hd.		Piece of wood, 7 metres long, dangerous to navigation.
NORTH ATLANTIC.			
2.4.32	3 m. S.W. Barrels Lt. V.		Several baulks of timber about 20 ft. long and 12 in. in diameter, dangerous to navigation.
3.4.32	10 m. 218° (true) Barnegat Lt. V.		About 15 logs, and pieces of wreckage.
3.4.32	36°48'N. 72°28'W.		Log about 30 ft. long.
3.4.32	43°05'N. 57°10'W.		Black spar about 1 ft. in diameter projecting vertically about 4 ft. out of water.
3.4.32	35°09'N. 69°05'W.		Part of bottom of wooden vessel about 100 ft. long, 40 ft. wide, and showing about 4 ft out of water. The keel and the turn of the bilge were visible.
4.4.32	27°57'N. 80°12'W.		Large tree trunk over 3½ ft. in diameter floating vertically in the water, and at times awash.
5.4.32	38°56'N. 71°03'W.		Wreckage consisting of a part of a vessel's deck about 40 ft. long by 20 ft. wide.
6.4.32	40°26'N. 72°33'W.		Spar about 15 ft. long and 2 ft. in diameter.
7.4.32	40°35'N. 66°09'W.		Red cylindrical buoy.
8.4.32	42°44'N. 66°35'W.		Can buoy marked 4 B.C. W.P. 12½
9.4.32	31°03'N. 64°28'W.		Wreckage projecting about 10 ft. out of water.
10.4.32	47°35'N. 7°03'W.		Empty dory No. 13 named Rouzic, St. Pierre.
11.4.32	33°12'N. 78°18'W.		Waterlogged row-boat.
11.4.32	24°51'N. 80°19'W.		Partly submerged tree trunk, about 25 ft. long.
11.4.32	41°04'N. 64°23'W.		Whistle buoy with whistle operating.
12.4.32	about 1 m. N.E. Scotland Lt. V.		Nun buoy adrift.
19.4.32	41°53'N. 9°27'W.		Two lifeboats, abandoned with salvage material. Dangerous to navigation.
19.4.32	45°58'N. 7°03'W.		A floating object.
20.4.32	45°18'N. 8°04'W.		Wreckage of rudder, dangerous to navigation.
22.4.32	44°53'N. 8°40'W.		Large buoy drifting south-eastwards, dangerous to navigation.
MEDITERRANEAN.			
15.4.32	40°38'N. 18°20'E.		Floating derelict, danger to navigation.
GULF OF MEXICO.			
4.4.32	14 m. 202° (true) Heald Bank Lt. V.		Small dory painted red with a black border around the gunwale.
5.4.32	24°55'N. 84°20'W.		Tree trunk about 20 ft. long and 5 ft. in diameter.
9.4.32	28°—N. 91°01'W.		Spar floating vertically and apparently attached to submerged wreckage.
9.4.32	27°30'N. 95°30'W.		Tree trunk about 30 ft. long and 1½ ft. in diameter, with roots.
12.4.32	28°36'N. 92°56'W.		Large tree trunk.
NORTH PACIFIC.			
1.4.32	41°—N. 124°35'W.		Large tree trunk about 60 ft. long, 2 ft. in diameter, with conspicuous roots.

LIST OF VOLUNTARY OBSERVING SHIPS

i

FLEET LIST.

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

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

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

Only in special cases will individual letters be sent.

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

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

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

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

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

Explanation of Abbreviations.

Unless otherwise stated, vessels on the following list are s.s.—M.V. indicates Motor Vessel; S.T. = Steam Trawler.

M.L. = Equipped with tested Instruments lent by the Meteorological Office for keeping Meteorological Logs.

W.T. = Equipped wholly or partly with tested Instruments lent by the Meteorological Office for reporting in code by W/T in the International Selected Ship system.

No. = No Meteorological Office instrumental equipment on board.

M = Ship's barometer *mercurial*.

A = Ship's barometer *aneroid*.

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

To indicate the nature of the wireless apparatus of Selected Ships—

†† preceding ship's name indicates fitted for long range continuous wave transmission and reception.

*† = Short range transmission and long range continuous wave reception.

** = Short range transmission and reception.

The numbers preceding the names of ships are for identification purposes, when observations are re-transmitted in synoptic messages by wireless or cable, and are not intended for use at sea.

Selected Ships.

Those ships in this list which have a number and symbols indicating W/T apparatus before their names are "Selected Ships" invited to make by W/T, reports of observations taken at arranged G.M. Times to "All Ships."

Name of Vessel	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 15.4.32.	Date Received.
122 †† <i>Acera</i> , M.V.	Shooter, J. C.	R. B. Ellis	W.T.-M.	Elder-Dempster	Forms 911 & 138 10.2.32 to 20.3.32	23.3.32
155 *† <i>Achilles</i>	Cosker, W.	C. Broad, J. Simpson	W.T.	A. Holt	Form 915 5.9.31 to 19.1.32	23.1.32
055 *† <i>Actor</i>	Whyte, D. L.	G. Penston, E. Pearce, P. Harrow.	No. M.	Harrison	Forms 911 & 138 27.11.31 to 31.1.32	19.2.32
123 †† <i>Adda</i> , M.V.	Lawson, J. H.	J. Boyd, F. C. Langton	W.T.-M.	Elder Dempster	" " 25.2.32 to 2.4.32	7.4.32
050 †† <i>Adriatic</i>	Freeman, C. P., R.D., Commr., R.N.R.	T. Holmes, G. Dray, A. Cherry.	W.T.	White Star	" " 29.2.32 to 20.3.32	22.3.32
090 *† <i>Aeneas</i>	Wallace, W. K.	W. Williams, R. A. Hanney, P. Dunsire.	"	A. Holt	" " 7.1.32 to 26.3.32	30.3.32
166 *† <i>Agamemnon</i>	Beswick, W., D.S.C., Commr., R.N.R.	W. K. Hole, W. G. Harrison, O. Thomas.	"	"	" " 22.1.32 to 15.3.32	11.4.32
127 *† <i>Albion Star</i>	Hall, J. B.	T. Gilchrist	No. M.	Blue Star	Form 911 8.7.31 to 29.10.31	25.11.31
080 †† <i>Alcantara</i> , M.V.	Clarke, E., R.D., Commr., R.N.R.	W. W. Dovell, T. Davies, R. Smith.	W.T.	R.M.S.P.	Forms 911 & 135 24.1.32 to 4.3.32	12.3.32
178 *† <i>Alipore</i>	Lyndon, E. P., R.D., Lt.-Commr., R.N.R.	J. P. McArthur	No. M.	P. & O.	" " 5.2.32 to 25.2.32	14.3.32
175 †† <i>Almanzora</i>	Shillitoe, B., R.D. Commr., R.N.R.	E. W. Martin, F. J. Brett, T. G. Scott.	W.T.	R.M.S.P.	Form 911 22.1.32 to 8.3.32	9.3.32
012 †† <i>Almeda Star</i>	Turner Russell, W.	H. Metcalf, E. Russell, C. L. Williams.	No. M.	Blue Star	Forms 911 & 138 11.1.32 to 24.2.32	1.3.32
<i>Alynbank</i>	Robertson, J.	A. Hunter	" A.	A. Weir & Co.	Form 911 14.1.32 to 20.1.32	25.2.32
103 †† <i>Andalucia Star</i>	Vernon, R.	W. Cumming, P. Clarke, J. A. Coldwell.	" M.	Blue Star	Forms 911 & 138 22.2.32 to 4.4.32	7.4.32
079 *† <i>Antiochus</i>	Dougall, W. T.	C. F. Lock	W.T.	A. Holt	Form 911 15.2.32 to 14.3.32	17.3.32
209 †† <i>Aorangi</i> , M.V.	Spring-Brown, J. F.	E. Anderson, D. H. Richards, J. S. Madden.	M.L.	Canadian-	" 915 23.7.31 to 5.11.31	7.1.32
120 †† <i>Apapa</i> , M.V.	Beith, A.	V. H. Thomas	W.T.-M.	Elder Dempster	Forms 911 & 138 14.1.32 to 18.2.32	22.2.32
029 †† <i>Appam</i>	Draper, J. M.	W. M. M. Hutchings, O. Owens, L. Collings.	W. T.	"	" " 27.1.32 to 8.3.32	10.3.32
017 †† <i>Aquitania</i>	Irving, R. B., O.B.E., R.D., A.D.C., Capt., R.N.R.	G. F. Jeffries, S. Payne, G. V. Locke.	"	Cunard	" " 28.1.32 to 10.2.32	15.2.32
115 †† <i>Arandora Star</i>	Moulton, E. W.	H. F. Partridge, F. Graham R. T. Holes.	No. M.	Blue Star	" " 24.1.32 to 8.3.32	11.3.32
<i>Architect</i>	Mowat, I.	G. Dewar	" M.	Harrison	Form 911 14.12.31 to 21.3.32	5.4.32
293 *† <i>Ariguani</i>	Scudamore, J. H. H., D.S.C., R.D., Commr., R.N.R.	B. E. Druce, A. F. Moss, J. S. Bell.	W.T.	Elders & Fyffes	Form 915 7.9.31 to 28.1.32	9.2.32
144 †† <i>Arlanza</i>	Hull, G. F.	B. A. Gammon, H. V. Todd, J. S. Wrake.	"	R.M.S.P.	Forms 911 & 138 14.2.32 to 28.3.32	30.3.32
091 †† <i>Armada Castle</i>	Harvey, H. B.	W. Pace, A. H. Parry C. L. Lloyd.	"	Union Castle	" " 18.1.32 to 6.3.32	8.3.32
296 *† <i>Arracan</i>	Thomson, S.	G. Davidson	"	P. Henderson	Form 911 13.12.31 to 31.1.32	29.3.32
<i>Arundel</i>	Shaw, B.	E. Hill	C.C.	Southern Rly.	Telegraphic Report 21.3.32	21.3.32
095 †† <i>Arundel Castle</i>	Stuart, C. E., R.D., Capt., R.N.R.	G. L. Clarke	W.T.	Union Castle	Form 911 24.1.32 to 12.3.32	19.3.32

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Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 15.4.32.	Date Received.
280 *† <i>Astronomer</i> ...	Richards, J. ...	W. P. Baker, R. Williams, E. B. Stephens.	No. M.	Harrison ...	Forms 911 & 138 7.12.31 to 2.3.32	14.3.32
065 †† <i>Asturias M.V.</i> ...	LeBrecht, H. A. ...	H. G. Whittle, S. J. Hill, T. W. Stevens.	W.T.	R.M.S.P. Co. ...	" " 9.1.32 to 22.2.32	24.2.32
281 *† <i>Auditor</i> ...	Owen, W. T. ...	L. Richardson ...	No. M.	Harrison ...	" " 2.8.30 to 29.9.31...	14.10.31
212 *† <i>Australia</i> ...	Scutt, W. ...	H. Falkiner, E. H. Lidstone, L. Smith.	" M.	British India ...	Form 915 5.9.31 to 19.1.32	3.2.32
124 †† <i>Avila Star</i> ...	Thomas, R. J. ...	F. N. Johnson, R. C. Freaker, E. Potts.	" M.	Blue Star ...	Forms 911 & 138 31.1.32 to 16.3.32	29.3.32
068 †† <i>Balmoral Castle</i> ...	Barron, A. ...	J. O. Lloyd, A. G. C. Price, G. F. Oakley	W.T.	Union Castle ...	Form 911 20.2.32 to 10.4.32	12.4.32
179 *† <i>Balranald</i> ...	Short, C. E. ...	J. A. Stewart, H. P. Mallet, J. B. Child.	No. M.	P. & O. Branch ...	Forms 911 & 138 13.2.32 to 28.2.32	29.3.32
051 †† <i>Baltic</i> ...	Hume, R. ...	S. Boden, G. Law, N. E. Banke.	W.T.	White Star ...	" " 14.3.32 to 3.4.32	6.4.32
248 *† <i>Banffshire</i> ...	Page, W. J. ...	A. Banks ...	No. M.	Turnbull Martin ...	" " 16.12.31 to 19.1.32	22.2.32
180 *† <i>Baradine</i> ...	Elliot Smith, H. ...	G. L. Farnfield ...	" M.	P. & O. Branch ...	Form 911 25.11.31 to 20.2.32	25.2.32
037 *† <i>Baronesa</i> ...	Compton, R. W. ...	H. N. Sherwell, F. W. Kent, J. G. Freeman.	" M.	Houlder ...	Forms 911 & 138 16.11.31 to 15.1.32	20.1.32
213 *† <i>Barpeta</i> ...	Partridge, H. ...	D. Clundison, J. Pool, R. C. H. Davies.	" M.	British India ...	" " 10.2.32 to 9.3.32	29.3.32
181 *† <i>Barrabool</i> ...	Sheepwash, J. S. ...	W. Elvy, D. Swabey, C. Holmes.	" M.	P. & O. Branch ...	" " 3.1.32 to 9.4.32	12.4.32
070 †† <i>Bayano</i> ...	Legge, A. W. ...	T. Leach, A. Sandham, R. Walker.	W.T.	Elders & Fyffes ...	Form 911 2.2.32 to 25.2.32	15.3.32
<i>Beaverburn</i> ...	{ McCombie, G. F. ...	L. L. Thornton, W. J. P. Roberts, W. E. Halberd.	M.L.	Canadian Pacific ...	Form 915 1.11.31 to 7.3.32	10.3.32
059 †† <i>Belgenland</i> ...	{ Landy, E. ...	F. Good, J. Mackie, J. R. Loe.	W.T.	Red Star ...	Forms 911 & 138 3.11.31 to 21.11.31	24.11.31
183 †† <i>Bendigo</i> ...	Wyatt, F. N. ...	H. Morgan, R. S. Frost, G. C. Forrest.	No. M.	P. & O. Branch ...	" " 5.3.32 to 25.3.32	14.4.32
<i>Bengora Head</i> ...	Kane, G. ...	C. J. Rea ...	" A.	Ulster S.S. Co. ...	Form 911 20.3.32 to 24.3.32	29.3.32
237 †† <i>Berengaria</i> ...	Britten, E. T., R.D., Commr., R.N.R.	J. A. Croasdaile, D.M. Maclean, E. A. Divers.	W.T.	Cunard ...	Forms 911 & 138 25.2.32 to 10.3.32	18.3.32
145 *† <i>Berwickshire</i> ...	Evens, E. H. ...	E. Coulthart, J. O. Woodall, R. Frankish.	"	Turnbull Martin ...	" " 22.10.31 to 22.1.32	28.1.32
057 †† <i>Britannic M.V.</i> ...	Summers, F. F. R.D., Commr., R.N.R.	G. N. Jones, A. J. Fisher, O. V. Lucas.	W.T.	White Star ...	" " 2.4.32 to 7.4.32	11.4.32
269 *† <i>British Admiral</i> ...	Putt, R. O. ...	H. J. Wene, W. Barnsfield ...	No. M.	British Tankers ...	" " 20.2.32 to 3.4.32	15.4.32
249 *† <i>Buteshire</i> ...	Westropp, T. G. ...	P. McMillan, S. W. Brown, F. C. Doyle.	W.T.	Turnbull Martin ...	Form 915 " 22.6.31 to 7.2.32	10.3.32
031 †† <i>Caledonia</i> ...	Collie, A. ...	R. Blake, J. Green, R. Macfee	W.T.	Anchor... ...	Forms 911 & 138 13.12.31 to 22.12.31	4.1.32
139 †† <i>California</i> ...	Smart, R. W. ...	D. Morrison, A. C. Johnston, J. F. Adams.	"	" ...	" " 22.6.31 to 6.12.31	10.12.31
<i>Cambria</i> ...	Copland, C. P. ...	O. W. Ll. Jones ...	C.C.	L.M. & S. Rly... ...	Telegraphic Report 15.4.32	15.4.32
190 *† <i>Cambridge</i> ...	Williams, R. ...	T. Farrar ...	M.L.	Federal ...	Form 911 17.7.31 to 10.11.31	23.11.31
266 †† <i>Cameronia</i> ...	Gemmill, W. ...	D. Blair, G. S. Sinclair, D. Bone.	W.T.	Anchor ...	Forms 911 & 138 28.2.32 to 20.3.32	23.3.32
295 †† <i>Camito</i> ...	Jack, D. A. ...	A. Kissack, G. Binks, R. King.	"	Elders & Fyffes ...	" " 2.3.32 to 1.4.32	4.4.32
<i>Cape of Good Hope</i> ...	Jacobson, T. A. ...	W. R. Carling ...	No. A.	Lyle S.S. Co. ...	Form 911 16.12.31 to 7.2.32	27.2.32
282 †† <i>Carinthia</i> ...	Townley, J. C., R.D., Capt., R.N.R.	J. Chapman, A. B. Fasting, G. S. Hutchinson.	W.T.	Cunard ...	Forms 911 & 138 12.10.31 to 17.10.31	3.11.31
092 †† <i>Carnarvon Castle M.V.</i> ...	Morton Betts, W. ...	G. F. Pettitt, E. Clancy ...	"	Union Castle ...	" " 25.12.31 to 13.2.32	16.2.32
273 *† <i>Carnarvonshire</i> ...	Gulston, H. S. ...	S. W. Spencer ...	No. M.	Glen ...	" " 23.12.31 to 22.1.32	29.2.32
184 †† <i>Cathay</i> ...	Daziell Riven, J. ...	A. J. McHatlie ...	" M.	P. & O ...	" " 28.11.31 to 28.1.32	1.2.32
<i>Cavina</i> ...	Forrester, W. T. ...	B. R. Coe ...	" A.	Elders & Fyffes ...	Form 911 8.3.32 to 11.4.32	15.4.32
157 *† <i>Centaur M.V.</i> ...	Ward Hughes, J. ...	B. L. Brind, D. R. Bannerman, F. Widdows.	M.L.	A. Holt & Co. ...	Form 915 28.1.31 to 16.11.31	28.12.31
056 †† <i>Ceramic</i> ...	Jackson, W. H. ...	E. E. Burt, H. R. Hawkins.	W.T.	White Star ...	Forms 911 & 138 12.2.32 to 26.2.32	4.4.32
<i>Cerintus M.V.</i> ...	Ramsay, N. ...	E. Allen, C. L. Seaman, G. B. Williams.	M.L.	Hadley Shipping ...	Form 915 19.10.31 to 5.2.32	9.2.32
191 *† <i>Changunola</i> ...	Bostock, R. J. ...	O. H. Pulman ...	No. A.	Elders & Fyffes ...	Form 911 12.10.31 to 23.10.31	27.10.31
<i>Chindwin</i> ...	Hughes, E. ...	J. A. Wilson ...	W.T.	Henderson ...	" " 19.12.31 to 2.3.32	15.3.32
<i>Chinese Prince</i> ...	Uncles, H. ...	" ...	M.L.	Furness Withy ...	" " ...	...
<i>Chitripo</i> ...	Carden, H. ...	W. Hannah ...	No. A.	Elders & Fyffes ...	" " 26.1.32 to 27.2.32	5.3.32
192 †† <i>Chitral</i> ...	Siggers, O. ...	T. D. Forbes, S. N. Gerrans, W. S. Jolliffe	" M.	P. & O. ...	Forms 911 & 138 2.1.32 to 2.3.32	4.3.32
265 *† <i>City of Baroda</i> ...	Bremner, D. M. ...	H. G. Williams, E. Bonfield, R. W. Leese.	W.T.	Ellerman ...	Form 915 22.11.31 to 29.1.32	8.2.32
<i>City of Cambridge</i> ...	Ewing, W. ...	H. H. Asher ...	No. A.	" ...	Form 911 5.12.31 to 12.1.32	25.1.32
061 †† <i>City of Exeter</i> ...	Nichol, L. ...	H. Burns, J. Fyfe, W. V. Mighton.	W.T.	" ...	Forms 911 & 138 30.10.31 to 1.1.32	9.1.32
274 *† <i>City of Harvard</i> ...	MacMillan, J. ...	E. Brook-Williams ...	"	" ...	Form 911 3.3.32 to 13.3.32	4.4.32
089 *† <i>City of Hereford</i> ...	Ricketts, R. J. ...	F. Tibbetts, J. H. T. Vizer ...	No. M.	" ...	Forms 911 & 138 16.2.32 to 4.3.32	29.3.32
301 †† <i>City of Nagpur</i> ...	McNiel, N. ...	J. W. Wotherspoon, J. Campbell, W. Kerr.	W.T.	" ...	" " 27.9.31 to 18.10.31	21.12.31
300 †† <i>City of Paris</i> ...	McMillan, J. ...	J. Cook, E. A. Davidson, W. Charlton.	"	" ...	" " 11.10.31 to 1.11.31	4.1.32
271 *† <i>City of Roubaix</i> ...	Radcliffe, A. V., R.D., Lt.-Commr., R.N.R.	J. S. Stevenson, A. N. G. Jones.	No. M.	" ...	" " 18.2.32 to 5.3.32	29.3.32
272 *† <i>City of Singapore</i> ...	Kendall, J. W. ...	F. Wrigley, C. C. Collard ...	" M.	" ...	" " 12.8.31 to 22.11.31	19.12.31
035 *† <i>City of Sydney</i> ...	Mason, E. ...	C. H. S. Wills, C. S. Humphries, H. G. Griffith.	" M.	" ...	" " 10.12.31 to 4.2.32	8.2.32
027 *† <i>Clan Keith</i> ...	Waterhouse, J. ...	W. N. Tudman, A. H. Black, D. W. Gibbons.	W.T.	Clan ...	" " 21.1.32 to 15.2.32	18.2.32
<i>Clan Macalister</i> ...	Stenson, F. J., A.D.C., R.D., Capt., R.N.R.	J. L. Jones ...	" A.	" ...	Form 911 21.2.32 to 11.3.32	5.4.32
<i>Clan Macbeth</i> ...	Giles, H. J., R.D., R.N.R.	I. Cape Scott, L. W. Gibbons.	No. A.	" ...	" " 29.11.31 to 22.12.31	30.12.31
287 *† <i>Clan Macfarlane</i> ...	Redford, L. F., Lt.-Commr., R.N.R.	W. H. Simpson ...	W.T.	" ...	" " 15.11.31 to 12.3.32	7.4.32
<i>Clan Macindoe</i> ...	Scott-Smith, H. E. G., O.B.E., R.D., Lt.-Commr., R.N.R.	J. C. Dunphy ...	No. A.	" ...	" " 25.1.32 to 24.2.32	12.3.32

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 15.4.32.	Date Received.
33 *† <i>Clan Mackellar</i> ...	Lyall, A. B. ...	A. V. Howard, G. S. Bullock, E. E. Arthur.	W.T.	Clan ...	Forms 911 & 138 10.11.31 to 26.1.32	16.2.32
001 *† <i>Clan Macphee</i> ...	Gibb, A. W. P. ...	R. G. Bagnall ...	"	" ...	Form 911 15.2.32 to 8.3.32	11.4.32
004 *† <i>Clan MacNair</i> ...	Holman, W. G. ...	F. H. Petheridge A. Woodrow, J. F. Voight.	"	" ...	Forms 911 & 138 22.11.31 to 15.2.32	17.2.32
002 *† <i>Clan Macwhirter</i> ...	O'Bryne, C. E. ...	M. J. Lewis, H. Whitehead, C. Rodger.	"	" ...	Form 915 11.6.31 to 30.10.31	7.11.31
003 *† <i>Clan Malcolm</i> ...	George, L. S. ...	A. Lynch, M. Banks, N. N. Birtley.	"	" ...	" 25.3.32 to 5.4.32	14.4.32
283 *† <i>Clan Morrison</i> ...	Porterfield, W. M., Lt-Commr., R.N.R.	H. W. Peletier, W. Leck, A. G. Beynon.	"	" ...	Form 911 16.3.32 to 5.4.32	9.4.32
<i>Clan Sinclair</i> ...	Cater, H. ...	D. Mc Allister ...	No. A.	" ...	" 8.12.31 to 20.2.32	15.3.32
<i>Colonial</i> ...	Harrendon, W. E. ...	W. Moore, A. P. Brown, A. Smart.	" M.	Harrison ...	" 14.2.32 to 17.3.32	23.3.32
298 *† <i>Comedian</i> ...	Cadogan, A. ...	F. M. Eales ...	" M.	" ...	Forms 911 & 138 9.2.32 to 28.2.32	21.3.32
185 †† <i>Comorin</i> ...	Cartright, C. W., D.S.C.	R. E. Tucker, E. G. North, Y. Sinclair.	" M.	P. & O. ...	Form 911 16.12.31 to 18.2.32	22.2.32
198 *† <i>Contractor</i> ...	Owen, W. J. ...	W. G. Neill, L. Siddon, R. Myles	" M.	Harrison ...	Forms 911 & 138 16.12.31 to 15.2.32	22.2.32
049 *† <i>Coptic, M.V.</i> ...	Williams, G. ...	J. G. James, P. Saville, W. Burt.	W.T.	Shaw, Savill & Albion	" " 25.1.32 to 23.2.32	11.4.32
100 *† <i>Cornwall</i> ...	Reilly, H. E. ...	H. Hopkins, C. Saul, R. S. Miller.	M.L.	Federal ...	Form 915 16.8.31 to 12.12.31	27.1.32
006 †† <i>Coronado</i> ...	Thorburn, R. A., R.D., Commr., R.N.R.	H. Holmes, T. G. Roberts, A. Magill.	W.T.	Elders & Fyffes ...	Forms 911 & 138 17.2.32 to 18.3.32	21.3.32
214 *† <i>Counsellor</i> ...	Jackson, J. ...	G. C. Heaton, J. Davidson, J. L. Curle.	No. M.	Harrison ...	" " 6.12.31 to 7.3.32	19.3.32
036 *† <i>Cumberland</i> ...	Maltby, T. L. ...	S. R. Leggett, J. Brooke Smith, F. R. F. Wilson.	M.L.	Federal ...	Form 915 18.10.31 to 20.2.32	1.3.32
285 *† <i>Custodian</i> ...	O'Connor, T. ...	W. H. Corlett, J. L. Williams, J. Glen.	No. M.	Harrison ...	Forms 911 & 138 4.12.31 to 5.2.32	19.3.32
302 †† <i>Darro Denis</i> ...	Matthews, G. P. ... Griffiths, W. ...	F. Jury ... A. W. Hanchett, J. H. Stoker, S. Pollock.	W.T.-M. M.L.	R.M.S.P. Co. ... Booth ...	Forms 911 & 138 18.1.32 to 10.3.32 Form 915 14.11.31 to 21.1.32	14.3.32 26.1.32
304 †† <i>Deseado</i> ...	Buret, J. F. C. ...	L. T. Peterson, H. Lang ...	W.T.-M.	R.M.S.P. Co. ...	Forms 911 & 138 15.2.32 to 8.4.32	19.4.32
117 †† <i>Desna</i> ...	Schlanbusch, O. V. ...	W. Lowe, L. T. Peterson ...	"	" ...	" " 7.12.31 to 28.1.32	2.2.32
252 *† <i>Devon</i> ...	Clarke, P. B. ...	G. Chaplin, J. D. Marks, M. Willinott.	No. M.	Federal ...	" " 29.2.32 to 8.3.32	19.3.32
<i>Dieppe</i> ...	Lidbetter, W. ...	E. A. Biles ...	C.C.	Southern Railway ...	Telegraphic Report 2.4.32	2.4.32
284 *† <i>Director</i> ...	Worthington, B. ...	M. G. O'Brien, A. E. Rogers, H. W. Jones.	No. M.	Harrison ...	Forms 911 & 138 15.9.31 to 30.11.31	15.12.31
138 *† <i>Discovery II, R.R.S</i>	Carey, W. M., Commr., R.N.	R. A. B. Ardley, A. L. Nelson, L. C. Hill.	M.L.	Falkland Is. Govt. ...	Form 915 5.1.32 to 4.3.32	7.4.32
136 *† <i>Dorie Star</i> ...	Mills, D. H. ...	L. Vernon, H. Butt, J. McLean	No. M.	Blue Star ...	Form 911 2.11.31 to 25.1.32	11.2.32
275 *† <i>Dramatist</i> ...	Meek, A. J. ...	G. H. Howard, I. W. Page, R. L. Bryde.	" M.	Harrison ...	Forms 911 & 138 4.2.32 to 17.3.32	21.3.32
142 †† <i>Duchess of Atholl</i> ...	McQueen, D. S. ...	P. A. Shergold, C. E. Duggen, E. Glennie.	W.T.-M.	Canadian Pacific ...	" " 28.2.32 to 18.3.32	22.3.32
152 †† <i>Duchess of Bedford</i>	Sibbons, H. ...	J. Roche, A. Antrobus, F. Stell.	"	" " ...	" " 29.11.31 to 18.12.31	24.12.31
151 †† <i>Duchess of Richmond</i>	Freer, A., R.D., Capt., R.N.R.	J. B. Saunders, G. S. Hewson, E. N. Lloyd.	"	" " ...	" " 24.1.32 to 1.3.32	10.3.32
143 †† <i>Duchess of York</i> ...	Stuart, R. N., V.C., D.S.O., Commr., R.N.R.	D. Parsons, S. W. Keary ...	"	" " ...	" " 14.2.32 to 24.3.32	9.4.32
098 †† <i>Dunbar Castle, M.V</i>	Vincent, E. S., R.D., Commr., R.N.R.	J. Daziel, P. G. MacIver, H. A. Causton.	W.T.	Union Castle ...	" " 26.1.32 to 12.2.32	16.2.32
<i>Dunrobin</i> ...	Ramsay, J. D. ...	W. R. Holt, J. Y. Butt ...	No. A.	Glen & Co. ...	Form 911 12.11.31 to 2.1.32	14.1.32
052 *† <i>Dunster Grange</i> ...	Meek, G. F. ...	J. Allerton, E. G. Raynor, D. Murray.	" M.	Houlder ...	Forms 911 & 138 17.1.32 to 23.3.32	29.3.32
102 *† <i>Duquesa</i> ...	Frost, C. R. ...	R. Rushton, C. W. Denman, F. D. Jones.	" M.	Furness Withy ...	" " 30.11.31 to 28.1.32	2.2.32
15 *† <i>Durenda, M.V.</i> ...	Blencowe, J. ...	T. R. Jackson, G. H. Davies...	" M.	British India ...	" " 30.11.31 to 12.2.32	19.2.32
077 †† <i>Edinburgh Castle</i> ...	Gilbert, E. F. ...	L. H. Farrow ...	W.T.	Union Castle ...	Form 911 3.1.32 to 21.2.32	23.2.32
107 *† <i>El Argentino, M.V.</i>	Ellis, F., D.S.C.	W. Findlay, J. Burch, C. G. Adlard.	No. M.	Houlder ...	Forms 911 & 138 8.12.31 to 9.2.32	18.2.32
009 *† <i>Elmworth, M.V.</i> ...	Dick, J. ...	" ...	" M.	R. S. Dagleish ...	Form 911 22.1.32 to 1.2.32	27.2.32
158 *† <i>Elpenor</i> ...	Wilson, R. J. ...	J. Macfarlane, F. Vose, F. Scott.	W.T.	A. Holt ...	Form 915 23.8.31 to 3.1.32	11.1.32
108 *† <i>Elstree Grange</i> ...	Williams, W. E. ...	P. A. Hawkesworth ...	No. M.	Houlder ...	Form 911 4.2.32 to 15.2.32	17.3.32
190 *† <i>El Paraguayo</i> ...	Owen, R. ...	G. Fletcher, R. L. Aldridge...	" M.	" ...	Forms 911 & 135 13.12.31 to 5.2.32	12.2.32
110 *† <i>El Uruguayo</i> ...	McNamara, T. ...	F. E. Hailstone ...	" M.	" ...	" " 2.11.31 to 5.1.32	13.1.32
088 *† <i>Empire Star</i> ...	Owen, G., R.D., Lt-Commr., R.N.R.	R. Thorne, R. McKraith, P. H. Hunt.	M.L.	Blue Star ...	Form 915 31.8.31 to 3.1.32	30.1.32
006 †† <i>Empress of Australia</i>	Griffiths, E. ...	A. Tippet, A. H. Pigott, R. Newsom.	W.T.	Canadian Pacific ...	Forms 911 & 138 14.1.32 to 7.4.32	9.4.32
034 †† <i>Empress of Britain</i>	Latta, R. G. ...	J. R. Bubb, W. P. Phillips, J. H. Tudor.	"	" " ...	" " 15.2.32 to 20.3.32	4.4.32
154 †† <i>Empress of Canada</i>	Hailey, A. J., Lt-Commr., R.N.R., Douglas, L. D., Lieut-Commr., R.N.R.	G. O. Baugh, R. H. Foley, H. Kennedy, G. W. R. Graves.	M.L.	" " ...	Form 915 19.7.31 to 16.12.31	18.1.32
153 †† <i>Empress of Japan</i>	Robinson, S., C.B.E., R.D., Commr., R.N.R.	R. Goss, R. Walfenden, E. Newell.	"	" " ...	" 5.2.31 to 24.7.31	18.2.32
011 †† <i>Euripides</i> ...	Vaughan, P. R., D.S.C., R.D., Commr., R.N.R.	R. H. Shaw, D. Don, J. H. Campbell.	W.T.-M.	White Star ...	Forms 911 & 138 23.12.31 to 23.1.32	1.2.32
<i>Explorer</i> ...	Allan, J. ...	A. Stout ...	No. A	Scottish Fishery Brd.	Form 911 7.3.32 to 30.3.32	4.4.32

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 15.4.32.	Date Received.
067 *† <i>Ferndale</i>	Beighton, J. N.	L. J. Hopkins, H. C. Howie, D. W. Campbell.	No. M.	Aberdeen Common-wealth.	Forms 911 & 138 3.9.31 to 8.10.31	26.11.31
074 *† <i>Fordsdale</i>	Avern, J., Commr. R.N.R.	E. Hickling, F. Davies, M. Harrier.	" M.	" " "	" " 26.9.31 to 27.12.31	21.1.32
030 †† <i>Franconia</i>	Gibbons, G., R.D., Capt., R.N.R.	J. Ashcroft, C. Taylor, R. Pollitt.	W.T.	Cunard	Form 911 28.12.31 to 1.1.32 ...	15.1.32
159 *† <i>Fresno City</i>	Davies, D.	F. W. P. Davies	M.L.	Sir W. Reardon Smith and Sons Ltd.	" " " " " " " "	" " " " " " " "
125 *† <i>Glenamoy</i> , M.V. ...	Ings, W. J.	F. Laycock, L. Eccles, A. C. Radley.	W.T.	Glen Line	Form 915 22.6.31 to 27.10.31 ...	2.11.31
126 *† <i>Glengarry</i> , M.V. ...	Angier, J.	G. Morgan, I. G. Neill, S. W. Bell.	No. M.	" " " " " " " "	Forms 911 & 138 12.11.31 to 13.3.32	19.3.32
085 *† <i>Governor</i>	Windsor, G. R.	A. Watson, J. Stanhope ...	" M.	Harrison	" " 3.11.31 to 31.1.32	4.2.32
111 *† <i>Hardwicke Grange</i>	Fowler, W. H.	W. L. Baker, A. W. Seybold, W. E. Ellis.	" M.	Houlder	Forms 911 & 138 2.8.31 to 7.10.31	13.10.31
<i>Harmonides</i>	Elwell, F. R.	J. H. Kirkwood	" A.	R. P. Houston	Form 911 18.1.32 to 10.2.32 ...	18.3.32
262 ** <i>Hawaki</i> , M.V. {	Hender, W.	H. A. Brockett, J. Sadleir, E. R. Pate.	M.L.	Union S.S. Co., N.Z. ...	Form 915 2.8.31 to 19.1.32 ...	24.3.32
206 *† <i>Herminius</i>	Thurston, H. P.	E. Riccard, A. G. Collins, G. MacNab.	"	Shaw, Savill & Albion	" 22.11.31 to 14.3.32 ...	21.3.32
253 *† <i>Hertford</i>	Burton Davies, J.	P. Shakespeare, W. H. Timberlake, P. Block.	"	Federal	" 18.11.31 to 28.2.32 ...	5.3.32
<i>Hibernia</i>	Williams, E. R.	C. A. Marsh	C.C.	L.M. & S. Railway ...	Telegraphic Report 9.4.32	9.4.32
182 †† <i>Highland Brigade</i>	Lloyd, H.	W. Stephen, N. Hersee, C. Morgan.	No. M.	Nelson	Forms 911 & 138 25.12.31 to 16.2.32	23.2.32
116 †† <i>Highland Chieftain</i> , M.V.	Robinson, R. H.	W. J. Presland, L. Irving, J. E. Pink.	W.T.—M.	" " " " " " " "	" " 8.2.32 to 29.3.32	1.4.32
099 †† <i>Highland Monarch</i> , M.V.	Ashby Graves, F.	R. Polden	No. M.	" " " " " " " "	" " 25.1.32 to 16.3.32	24.3.32
250 †† <i>Highland Princess</i> , M.V.	Collings, D.	C. E. Leech, J. H. Fitton, T. W. Seabrook	W.T.—M.	" " " " " " " "	" " 25.2.32 to 10.4.32	14.4.32
075 *† <i>Hobson's Bay</i>	Roberts, T. V., R.D., Lt.-Commr., R.N.R.	F. L. Gross, C. Smith, C. Carroll.	No. M.	Aberdeen Common-wealth.	Form 915 9.7.31 to 11.10.31 ...	19.10.31
<i>Homeri</i>	" " " " " " " "	" " " " " " " "	W.T.	White Star	" " " " " " " "	" " " " " " " "
<i>Hubert</i>	Briscoe, W.	R. Parry, G. G. Westhorp, J. F. Maltby.	M.L.	Booth	" " 6.10.31 to 7.3.32 ...	16.3.32
261 *† <i>Huntingdon</i>	Field, H. G. B.	P. S. Calcutt, H. F. Wilkinson, M. T. D. Walter.	W.T.	Federal... ..	Forms 911 & 138 26.4.31 to 15.8.31	27.8.31
200 *† <i>Huntsman</i>	Russell, H.	J. Richardson	No. M.	Harrison	" " 15.12.31 to 25.2.32	29.3.32
289 *† <i>Inanda</i>	Gibbins, W. H.	D. C. Brown, R. L. Williams, T. W. Kent.	" M.	Harrison	Forms 911 & 138 31.1.32 to 14.3.32	29.3.32
<i>Ingoma</i>	Richardson, R.	D. D. Kerr	" M.	" " " " " " " "	Form 911 28.2.32 to 7.4.32 ...	12.4.32
160 *† <i>Ixion</i>	Stewart, J. A.	C. S. Pope, G. Collier, F. G. Brown.	M.L.	A. Holt	Form 915 11.4.30 to 9.9.31 ...	16.11.31
072 ** <i>Jamaica Planter</i> ...	P. D. Allen	G. R. Wortley	W.T.	Jamaica Direct Fruit	Forms 911 & 138 22.2.32 to 25.3.32	6.4.32
203 ** <i>Japanese Prince</i> ...	Hardcastle, E.	" " " " " " " "	M.L.	Prince	" " " " " " " "	" " " " " " " "
<i>Javanese Prince</i> , M.V.	Morrison, B.	W. A. Hall	No. A.	" " " " " " " "	Form 911 26.3.32 to 2.4.32 ...	15.4.32
187 *† <i>Jeypore</i>	Harris, W. L.	A. G. Edwards	" M.	P. & O.	Forms 911 & 138 7.2.32 to 12.3.32	29.3.32
188 †† <i>Kaisar-i-Hind</i>	Headlam, P. C., R.D., Commr. R.N.R.	J. D. Strike, H. M. Flint, L. Irons.	" M.	P. & O.	Forms 911 & 138 3.1.32 to 24.2.32	27.2.32
041 *† <i>Karamea</i> , M.V.	Kenworthy, V.	N. S. Milne, C. Sendall, P. Campbell.	M.L.	Shaw, Savill & Albion	Form 915 11.12.31 to 4.4.32 ...	7.4.32
217 *† <i>Karapara</i>	White, R. W.	L. G. Jones, J. H. Pratt, A. W. Clarke.	No. M.	British India... ..	Forms 911 & 138 13.2.32 to 7.3.32	29.3.32
114 *† <i>Kenya</i>	Miller, A. C.	H. Evans, P. Lusher, G. Spedding.	" M.	" " " " " " " "	" " 31.12.31 to 11.2.32	7.3.32
218 *† <i>Khandalla</i>	Eadie, J. D.	D. W. Dix, A. J. Woodcock	" M.	" " " " " " " "	" " 17.12.31 to 29.1.32	29.2.32
186 *† <i>Kidderpore</i>	Wright, C. S., R.D., Commr., R.N.R.	F. R. M. Greasley, G. B. Roche	" M.	P. & O.	" " 18.1.32 to 15.3.32	11.4.32
169 ** <i>Kwangechow</i>	Stringer, C. B. L.	B. C. Finch, F. H. Smith ...	M.L.	China Nav. Co.	Form 915 10.5.31 to 17.10.31 ...	13.1.32
147 †† <i>Laconia</i>	Hawkes, W. R. D., Capt. R.N.R.	J. D. Archer	W.T.	Cunard... ..	Forms 911 & 138 30.11.31 to 19.12.31	29.12.31
<i>Laguna</i> , M.V.	Dunn, R. E., O.B.E.	W. Billington	No. A.	Pacific S.N. Co.	Form 911 16.5.31 to 2.6.31 ...	5.6.31
193 *† <i>Lahore</i>	Hollow, J. H.	J. G. K. Gregory, F. Hull, S. R. Eva.	" M.	P. & O.	Forms 911 & 138 8.11.31 to 5.2.32	11.2.32
167 †† <i>Lancastria</i>	Dolphin, G. R., R.D., Commr., R.N.R.	J. S. Glendinning, J. C. Dawson, R. V. Youd.	W.T.	Cunard	Form 911 21.2.32 to 10.4.32 ...	12.4.32
082 *† <i>La Paz</i> , M.V.	Morgan, D. R.	G. Pattison	No. M.	Pacific S.N. Co.	Form 911 14.11.31 to 24.11.31 ...	11.2.32
134 †† <i>Lapland</i>	Harvey, H.	L. Williams, H. Patterson, R. M. Farmer.	W.T.	Red Star	Forms 911 & 138 19.10.31 to 24.10.31	10.11.31

THE MARINE OBSERVER

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed Received up to 15.4.32.	Date Received
148 †† <i>Montcalm</i>	Rothwell, A.	W. P. Haines, T. L. Gillette, A. Mackie.	W.T.-M.	Canadian Pacific ..	Forms 911 & 138 6.3.32 to 26.3.32	30.3.32
149 †† <i>Montclare</i>	Turnbull, J., C.B.E., R.D., Capt. R.N.R.	J. Shearer, J. Soames, A. Watt.	W.T.	" "	" " 13.3.32 to 1.4.32	4.4.32
150 †† <i>Montrose</i>	Dott, J. F.	R. Fegan, K. Hutchings, N. Duck.	W.T.-M.	" "	" " 21.2.32 to 4.4.32	6.4.32
164 †† <i>Mooltan</i>	Morton, A. J.	R. M. Richardson, J. L. Dunkley, A. D. Dennis.	No. M.	P. & O.	" " 19.9.31 to 23.12.31	2.1.32
226 †† <i>Mulbera</i>	Caffyn, F.	W. G. Donald	" M.	British India	" " 20.11.31 to 22.12.31	29.12.31
290 *† <i>Musician</i>	Bostock, O.	K. H. Davies, H. Philpott, S. H. Diamond.	" M.	Harrison	" " 7.12.31 to 29.2.32	3.3.32
073 *† <i>Nagara</i>	Womersley, H.	E. N. Giller, T. Fraser, G. Bonner.	" M.	R.M.S.P. Co.	Forms 911 & 138 30.8.31 to 21.10.31	26.10.31
201 †† <i>Naldera</i>	Harrison, R., D.S.O., R.D., Capt. R.N.R.	P. Tankin, S. H. Baldwin, J. Brown.	W.T.	P. & O.	" " 25.12.31 to 31.3.32	4.4.32
121 *† <i>Nankin</i>	Gordon, A. S.	F. R. Miller, J. M. Friend, F. G. Harvey.	M.L.	"	Form 915 2.10.31 to 29.12.31	18.2.32
286 *† <i>Natia</i>	Womersley, H.	F. Thacker, J. E. P. Matthews	No. M.	R.M.S.P.	Forms 911 & 138 20.12.31 to 10.2.32	15.2.32
227 *† <i>Nardana</i>	Reilly, J. V.	D. B. Latlin, A. Woodward, H. Grace.	" M.	British India	Form 915 1.11.31 to 17.3.32	23.3.32
118 *† <i>Narenta</i>	Miles, F. R.	R. N. Fletcher, F. B. Collinson M. W. Weeks.	" M.	R.M.S.P. Co.	Forms 911 & 138 18.1.32 to 6.4.32	9.4.32
202 †† <i>Narkunda</i>	Cadiz, F. G., D.S.C. ...	J. Travis, G. D. Copeland, J. C. Davies.	W.T.-M.	P. & O.	" " 4.1.32 to 17.3.32	18.3.32
305 *† <i>Nebraska</i>	Bridges, A. E.	H. Collinson, P. R. Cocks, R. S. Find.	No. M.	R.M.S.P. Co.	" " 2.10.31 to 24.12.31	1.1.32
162 *† <i>Nestor</i>	Adcock, F.	G. Edge, P. Elder, W. Pearse.	W.T.	A. Holt	Form 915 26.7.31 to 30.11.31	10.12.31
210 *† <i>Niagara</i>	Hill, T. V.	G. H. Kime, D. A. Menlove, L. P. Bourke.	M.L.	Canadian-Australasian	" " 20.8.31 to 4.12.31	3.2.32
256 *† <i>Norfolk</i>	Howell - Price, J., D.S.O., D.S.C.	K. M. L. Jones, G. D. Lyver, G. B. Mason.	"	Federal	" " 12.12.31 to 20.3.32	9.4.32
297 *† <i>Northumberland</i> ...	Upton, H. L., D.S.C., R.D., Commr., R.N.R.	H. Rogers, G. B. Cathie, H. I. Phillips.	No. M.	"	Forms 911 & 138 27.9.31 to 25.1.32	2.2.32
231 *† <i>Nuddea</i>	Ramsay, —	D. A. Jones, T. Houghkinson, B. Emmerson.	" M.	British India	" " 20.2.32 to 8.3.32...	29.3.32
294 †† <i>Olympic</i>	Binks, J. W., R.D., Lt.-Commr., R.N.R.	W. Delvin, O. N. Tugwell, G. Brooks.	W.T.	White Star	Forms 911 & 138 10.3.32 to 24.3.32	29.3.32
243 *† <i>Opawa</i> , M.V.	Robinson, F. W.	H. D. Horwood, H. P. Williamson, R. H. Chapman.	No. M.	New Zealand S.S. Co.	Form 915 30.11.31 to 23.3.32	13.4.32
170 †† <i>Orama</i>	Matheson, C. G., D.S.O., R.D., Capt. R.N.R.	R. W. Roberts, R. Galpin, C. H. Denton.	W.T.	Orient	Forms 911 & 138 26.10.31 to 26.1.32	3.2.32
086 †† <i>Orcoma</i>	Benson, E. W.	T. R. Scott, H. J. Jones, H. D. Dillon.	W.T.-M.	Pacific S.N. Co.	" " 2.8.31 to 30.9.31	7.10.31
087 †† <i>Orduna</i>	Galloway, M.	P. L. Hockey, F. W. Hockey, F. W. McKie.	"	" "	" " 22.12.31 to 26.2.32	3.3.32
258 *† <i>Oregon Star</i>	Lewis, G.	E. T. Blaxland	No. M.	Blue Star	" " 19.10.30 to 12.1.32	15.1.32
171 †† <i>Orford</i>	Owens, A. L., Commr., R.D., R.N.R.	C. B. Hubert, G. B. H. Jones, C. H. Denton.	" M.	Orient	Form 911 19.10.30 to 12.1.32	15.1.32
174 †† <i>Ormonde</i>	James, L. V., D.S.C.	T. L. Shurrock, N. Smith, C. Blake.	W.T.	"	Forms 911 & 138 9.11.31 to 9.2.32	17.2.32
172 †† <i>Cronsay</i>	Cameron, E. P., R.D., Commr., R.N.R.	R. B. Stannard, C. W. Pinckney O. C. Davies.	"	"	" " 5.12.31 to 8.3.32	15.3.32
173 †† <i>Orontes</i>	O'Sullivan, F. R.	J. M. Swanson, W. L. Mackay	No. M.	"	" " 4.1.32 to 5.4.32	11.4.32
105 †† <i>Orsova</i>	Thorne, G. G., R.D., Commr., R.N.R.	R. B. Stannard	W.T.	"	" " 16.8.31 to 17.11.31	26.11.31
156 †† <i>Otranto</i>	Staunton, H. G., C.B.E., R.D., Commr., R.N.R.	A. E. Coles, A. Addison, E. M. McKay.	W.T.-M.	Orient	" " 28.1.32 to 8.3.32	10.3.32
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<i>Pacific Shipper</i> , M.V.	Nuttall, E. L.	S. Porter	No. A.	" "	Form 911 16.6.31 to 16.9.31	21.9.31
<i>Pancras</i>	Reynolds, W.	W. H. Cross, L. A. Sayers, S. Adams.	M.L.	Booth	Form 915 26.7.31 to 9.3.32	15.3.32
<i>Paris</i>	Hill, A.	T. Mahoney	C.C.	Southern Rly.	Telegraphic Report. 15.4.32	15.4.32
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058 †† <i>Pennland</i>	Making, V. L.	C. H. Otterson, G. T. Boyle, J. Cross.	W.T.	Red Star	Forms 911 & 138 14.3.32 to 2.4.32	4.4.32
204 *† <i>Peshawur</i>	Roche, C. B.	P. Haworth, J. A. Hunter, A. Nicklen.	No. M.	P. & O.	Form 915 2.8.31 to 2.12.31	7.12.31
238 *† <i>Piako</i>	Aslin, E. P. C.	A. D. Wilson, A. W. Marshall, R. H. Carter.	"	New Zealand S.S. Co.	Forms 911 & 138 11.6.31 to 30.7.31	13.8.31
039 *† <i>Planter</i>	Ling, J. T.	W. S. Eustance, J. J. Devereux, W. H. Slaughter.	"	Harrison	" " 3.1.32 to 6.4.32	11.4.32
040 *† <i>Port Adelaide</i>	Williams, R.	F. W. Elger, D. F. Morgan, D. Chamberlain.	W.T.	Commonwealth & Dominion.	" " 27.9.31 to 18.1.32	26.1.32
255 *† <i>Port Alma</i>	Hayter, S. W.	G. Dean, E. Wheeler, J. Moate.	M.L.	" "	Form 915 11.7.31 to 4.12.31	9.12.31
128 *† <i>Port Auckland</i>	Robinson, C. A.	A. Brown	"	" "	" " 15.7.31 to 29.10.31	11.11.31
268 *† <i>Port Bowen</i>	Brown, A. H.	F. R. Gorman, T. L. Kidwell, T. Soames.	W.T.	" "	Forms 911 & 138 7.1.32 to 29.3.32	5.4.32
129 *† <i>Port Campbell</i>	Gregory, S. E. A.	J. C. Goddard, N. M. Muzzell, C. Midwinter.	"	" "	Form 915 1.8.31 to 29.11.31	14.12.31

LIST OF VOLUNTARY OBSERVING SHIPS

Name of Vessel.	Captain.	Observing Officers.	Meteoro-logical Equipment.	Line.	Last Log, Register, or Record Contributed. Received up to 15.4.32.	Date Received.
130 *† Port Caroline ...	Hearn, G. W. ...	E. W. R. Young, J. G. Thorn, R. E. Garner.	W.T.	Commonwealth and Dominion.	Form 915 5.11.31 to 26.3.32 ...	31.3.32
131 *† Port Darwin ...	Hudson, J. J. ...	R. D. Morgan, H. R. Hill, H. Duckling.	"	" " "	" 6.10.31 to 28.1.32 ...	20.2.32
132 ** Port Denison ...	Hall, G. S. ...	P. L. Holloway, E. Leavett, E. A. Rogerson.	"	" " "	" 4.11.31 to 3.3.32 ...	15.3.32
133 *† Port Dunedin, M.V.	Mason, W. S., D.S.C.	H. M. Post, C. A. Hodson, R. Betters.	M.L.	" " "	" 5.10.31 to 29.1.32 ...	2.2.32
010 *† Port Fremantle, M.V.	Gilling, W. ...	A. Naismith, G. F. Parnett, E. J. H. Gorley.	"	" " "	Form 915 21.11.31 to 12.3.32 ...	17.3.32
176 *† Port Gisborne, M.V.	Higgs, W. G. ...	R. B. Linklater, L. J. Skales, C. E. Midwinter.	"	" " "	" 19.12.31 to 23.3.32 ...	9.4.32
135 *† Port Hunter ...	Durham, R. S., D.S.C.	G. T. C. Harris, C. R. Townshend, P. A. Mundy.	"	" " "	" 6.9.31 to 27.12.31 ...	31.12.31
Port Wellington ...	Jones, C. N. ...	W. B. Hopkins ...	No. A.	" " "	Form 911 26.8.31 to 4.1.32 ...	11.1.32
106 *† Princessa ...	Friend, A. B. ...	F. Poulson, E. Loughheed, O. Sheard.	" M.	Houlder ...	Forms 911 & 138 29.2.32 to 17.3.32	21.3.32
163 *† Protesilaus ...	Rundle, G. G. ...	W. C. McGuigan ...	M.L.	A. Holt ...	Form 915 28.5.31 to 14.9.31 ...	23.10.31
205 †† Rajputana ...	Holland, R. ...	G. Aspinall, H. M. Askin, C. F. Wright.	" M.	P. & O. ...	Forms 911 & 138 11.10.31 to 6.1.32	15.1.32
063 *† Rancher ...	McCullum, J. ...	G. Harvey ...	" M.	Harrison ...	" " 26.10.31 to 14.1.32	19.1.32
228 †† Ranchi ...	Brooks, C., D.S.O., R.D., Commr., R.N.R.	T. A. Sargeant ...	" M.	P. & O. ...	" " 7.2.32 to 23.3.32	29.3.32
236 †† Rangitane M.V. ...	McKellar, A. W. R. D., Capt., R.N.R.	A. Brown, R. C. Aldridge, C. J. P. Guille.	W.T.-M.	New Zealand S.S. Co.	" " 20.11.31 to 3.3.32	9.3.32
257 †† Rangitata M.V. ...	Hunter, J. L. B. ...	J. Oxnard, D. Chadwick, S. Leggett.	"	" " "	Forms 911 & 138 24.10.31 to 3.2.32	11.2.32
240 †† Rangitiki M.V. ...	Barnett, H. ...	H. Hill, L. F. Malcouronne, J. V. Halliday.	"	" " "	" " 30.8.31 to 9.12.31	14.12.31
207 †† Ranpura ...	Furlong, G. H. S., R.D., Capt. R.N.R.	F. Ferguson, R. A. Perry, H. Toon.	No. M.	P. & O. ...	" " 20.12.31 to 10.2.32	19.2.32
071 †† Rawalpindi ...	Stringer, O. B. E., R.D., Commr., R.N.R.	H. G. M. Perry, D. E. C. Otter, W. R. Stockglen.	W.T.-M.	" " "	" " 1.11.31 to 3.2.32	8.2.32
247 *† Recorder ...	Egerton, J. J. ...	A. S. Milne, H. C. Blyth, W. Weatherall.	No. M.	Harrison ...	" " 20.10.31 to 8.12.31	11.12.31
306 *† Reina del Pacifico, M.V.	Roberts, E. ...	W. A. Hearle, R. Bridson, J. K. Campbell.	" M.	Pacific S.N. Co. ...	" " 24.1.32 to 28.3.32	4.4.32
239 *† Remuera ...	Wilde, H. J. ...	F. Cooke, A. J. Angell, J. R. Vincent.	M.L.	New Zealand S.S. Co.	Form 915 19.12.31 to 4.4.32 ...	9.4.32
Rhexenor ...	Stout, G. L. ...	J. S. Parry ...	No. A.	A. Holt ...	Form 911 14.9.31 to 6.12.31 ...	18.1.32
Rhodesian Trans- port.	Bowen, A. C. ...	H. S. Butler ...	" A.	Houlder Bros. ...	" " 5.4.31 to 5.7.31 ...	30.7.31
189 *† Rother ...	Woodhead, T. H. ...	H. Robinson, H. L. Marshall	W.T.	Goole Steam Shipping	Form 911 & 138 20.2.32 to 10.4.32	12.4.32
241 *† Rotorua ...	Lamb, C. B. ...	W. Glasbrow, L. W. Fulcher, W. Branch.	M.L.	New Zealand S.S. Co.	Form 915 31.10.31 to 19.2.32 ...	25.2.32
062 *† Royal Star ...	Walsh, W. ...	A. F. Day, J. Higgin, J. W. McHugh.	No. M.	Blue Star ...	" " 24.12.31 to 16.3.32 ...	23.3.32
246 *† Ruahine ...	Kinnell, G. ...	A. Hocken, R. Warren, L. Mercer.	W.T.	New Zealand S.S. Co.	Forms 911 & 138 26.9.31 to 31.12.31	11.1.32
St. Helier ...	Pitman, R. ...	A. C. Ricketts ...	C.C.	G.W. Railway ...	Telegraphic Report 14.4.32 ...	14.4.32
St. Julien ...	Richardson, L. ...	A. E. Ricketts, H. D. Freeman.	"	" " "	" " 27.2.32 ...	27.2.32
St. Minver, S.T. ...	Hatton, A. ...	" " " " " "	No. A.	Bunch Steam Fish- ing Co.	Form 911 27.2.32 to 28.3.32 ...	31.3.32
St. Patrick ...	" " " " " "	F. E. Martin ...	C.C.	G. W. Railway ...	Telegraphic Report 15.9.31 ...	15.9.31
038 †† Samaria ...	Malin, R. G., Lt- Commr., R.N.R.	F. G. Watts, J. A. Myles, H. Hudson.	W.T.	Cunard ...	Forms 911 & 138 18.1.32 to 23.1.32	25.2.32
291 *† Scholar ...	Peterkin, A. G. ...	R. J. Mackinnon, W. A. Pemberton.	No. M.	Harrison ...	" " 15.1.32 to 29.3.32	9.9.32
Scotia ...	O'Neill, J. ...	W. H. Hughes ...	C.C.	L.M. & S. Railway ...	Telegraphic Report 20.2.32 ...	20.2.32
033 †† Scythia ...	Oram, B. B., R.D., Commr., R.N.R.	W. H. Stewart, A. Bridge- water, H. L. Fryse.	W.T.	Cunard ...	Forms 911 & 138 24.1.32 to 10.4.32	12.4.32
211 *† Shropshire, M.V. ...	English, G. L. ...	A. D. Quayle, R. Cumming, D. Hetherington	"	Bibby ...	" " 1.11.31 to 7.1.32	14.1.32
Silksworth ...	Blacklock, G. ...	W. S. Allen ...	No. A.	R. S. Dalgleish ...	Form 911 4.12.31 to 19.1.32 ...	19.2.32
230 *† Somerset ...	Pilcher, C. R. ...	C. Edgecombe, H. M. Knight, H. V. G. Hastings.	M.L.	Federal ...	" " 16.8.31 to 14.11.31 ...	19.11.31
277 *† Spero ...	Montgomery, H. ...	H. W. Vickers, A. Kirk ...	"	Ellerman Wilson ...	Form 915 10.10.31 to 5.3.32 ...	15.3.32
Stephen ...	Barlow, E. P. ...	C. G. Powell, G. H. Daniels	"	Booth ...	" " 26.6.31 to 30.10.31 ...	27.11.31
270 †† Strathaird ...	Townsend, W. P. ...	R. H. Hand ...	W.T.-M.	P. & O. ...	" " " " " "	"
259 *† Surrey ...	Lettington, A. E. ...	R. Rees, D. J. Murray, H. H. Mackillican.	W.T.	Federal ...	Form 915 15.11.31 to 31.3.32 ...	12.4.32
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Tacoma City ...	Paul, H. ...	H. Small ...	" A.	Reardon Smith ...	Form 911 7.8.31 to 25.11.31 ...	1.12.31
229 *† Taactican ...	Trinick, F., O.B.E. ...	E. P. Simmons ...	" M.	Harrison ...	" " 19.7.31 to 7.10.31 ...	10.10.31
045 †† Tainui ...	McIntosh, A. ...	G. A. Harvey, J. Worrall, D. Pickersgill.	M.L.	Shaw, Savill & Albion	Form 915 5.12.31 to 20.3.32 ...	30.3.32
081 *† Tairoa ...	Grayston, E. T., D.S.C., R.D., R.N.R.	G. L. Almond, W. Thowless, L. B. Miller.	"	" " "	" " 30.10.31 to 24.2.32 ...	3.3.32
234 *† Talma ...	Harley, G. J. ...	M. H. Vincent, R. Potter, R. H. Weatherseed.	W.T.-M.	British India ...	Forms 911 & 138 17.5.31 to 21.9.31	12.10.31
046 †† Tamaroa ...	Hartman, W. H. ...	L. R. Bull, R. R. Roseman, F. Lutyen.	"	Shaw, Savill & Albion	" " 11.9.31 to 17.12.31	24.12.31
264 ** Tanda ...	Pilcher, E. T., Lt- Commr., R.N.R.	B. W. Dun, F. O. Colvin, R. Milne.	M.L.	E. & A. S.S. Co. ...	Form 915 3.9.31 to 30.11.31 ...	12.2.32
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047 *† Taranaki, M.V. ...	Wood, C., D.S.C. ...	R. Bitmead, S. P. Wallis, A. M. Whiteford.	M.L.	Shaw, Savill & Albion	Form 915 29.8.31 to 15.12.31 ...	28.12.31
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048 †† Themistocles ...	Young, A. D. ...	H. Morgan, F. C. Muggle- ston, A. S. Marshall.	W.T.-M.	Aberdeen Common- wealth.	Forms 911 & 138 6.12.31 to 3.3.32	6.4.32
007 *† Thistleglen ...	Whitfield, G. A., O.B.E.	S. B. Davis, H. B. Meek, G. L. Hetherington.	No. M.	Allan Black & Co. ...	Form 915 15.10.31 to 11.1.32 ...	19.1.32

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