

VOL. XIII, No. 123.

THE MARINE OBSERVER

JULY 1936.

TABLE OF PRINCIPAL CONTENTS

	PAGE.		PAGE.
Work of the Year, April 1st, 1935, to March 31st, 1936, including List of Captains and Principal Observing Officers to whom the Meteorological Committee have made Excellent Awards ...	78	Wireless Weather Signals :— <i>contd.</i>	
Marine Observer's Log :—		South and East Coasts of Africa, including the Red Sea coasts of Asia, Islands of Indian Ocean, Australia, New Zealand and Islands of the South Pacific ...	109
July, August and September ...	84	Personnel :—	
Commander J. H. SCUDAMORE, D.S.C., R.D., R.N.R. ...	94	Captain W. M. Jermyn ...	} Retirements ... 118
Dead Reckoning, by Commander C. H. WILLIAMS, R.N.R. ...	96	Captain E. J. Thornton, R.D., R.N.R. ...	
Scintillation, by E. W. BARLOW, B.Sc. ...	101	Commander R. H. Buck, R.D., R.N.R. ...	} Obituary 118
Weather in the N. Atlantic, October 1st to 3rd, 1934, by Commander J. HENNESSY, R.D., R.N.R. ...	102	Vice-Admiral Sir Robert Mansell, K.C.V.O., C.B. ...	
Southern Ice Reports :—		Lithographic illustrations after page 118 :—	
July, August and September ...	104	Ships' Wireless Weather Signals, Chart of the World.	
Wireless Weather Signals :—		Marsden Charts No. I and II, showing number of sets of observations extracted between April 1st, 1920, and March 31st, 1936, and recovery of arrears of extraction of observations from logs received prior to 1920 for North Atlantic and Pacific Oceans.	
Wireless Stations Detailed to received Routine Coded Weather Reports from "A Selected Ships" ...	105	Chart III.—Chart of the World, showing positions of British Selected Ships at Sea on June 1st, 1935.	
Wireless Stations Detailed to intercept Routine Coded Weather Reports from "B Selected Ships" ...	107	Currents in the South Pacific :—	
		May, June and July.	
		Ice chart of the Southern Hemisphere :—	
		July, August and September.	

WORK OF THE YEAR

April 1st, 1935, to March 31st, 1936.

WE thank the British Corps of Voluntary Marine Observers and all at sea who have contributed to The Work.

It has been our custom in the past to conclude this yearly report with our thanks and acknowledgment; but as it appears this acknowledgment has escaped the eye of some, these words of thanks are made prominent where they are less likely to be overlooked by those, if there be such, who are not sufficiently interested to read all the working details which follow.

THE MARINE OBSERVER, and particularly the fleet list and "Work of the Year," are our means of acknowledging the voluntary service of the merchant navy; and if there should be any who have contributed to the success of this year's work, in such a way as would lead them to think that they should have received letters, we ask them to accept our thanks, for the work has grown to such an extent that it is not possible to send letters of acknowledgment except in very special circumstances.

Our thanks, that is not only the thanks of the Marine Division and the Merchant Navy, but the whole meteorological service and all who stand to gain from improved knowledge of the climates of the oceans, are due to the Honourable Company of Master Mariners for their representations to the President of the Board of Trade, and to the Secretary of the Air Ministry.

As a result, the Marine Division is to be temporarily strengthened with additional assistants to overcome the arrears of data extraction from meteorological logs contributed since 1855 by the British voluntary corps of marine observers, particularly for the Pacific and North Atlantic Oceans; so that uniform meteorological charts of the oceans may be published, and the information derived through the long years of observation by the Royal and Merchant Navies be more effectively utilized for ocean pilotage, and also aid aviation and the science of meteorology.

Those who will spare the time to read right through this report, will be able to realize the immensity of the work done voluntarily at sea; and will be able to appreciate our wish to make known the gratitude we feel for all who have helped us in our work of guiding the service of marine meteorology along seamanlike lines to the advantage of all concerned.

Collection of Data during Year.

Meteorological Log (4-hourly) kept with complete official instrumental equipment, kept by an average number of 39 ships.

Of a total of 102 received :

41 classed Excellent,
61 classed Very Good,
0 classed Good,
0 not classed.

Total 102

The method of classification given in the 1934 report remains the same.

Ships' Meteorological Record Form 911. Two to four sets of synchronized observations daily according to number of watch keeping officers carried, kept by an average number of 308 ships.

Of a total of 2,429 of these forms received, they were classed as follows :

766 Excellent,
1,661 Very Good,
2 Good,
0 Not classed.

Total 2,429

The system of classification is unchanged.

Cadets' Meteorological Logs, Lighthouse Registers, Coast Guard and Light Vessel Returns, Ice Reports, Sea Water Samples 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."

The lighthouse stations at Watling Island, West Indies, and at Cape Pembroke, Falkland Islands, have continued to return routine observations.

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 work of collecting water samples and observations of sea surface temperatures in the North Atlantic has been continued in five ships for the Fisheries Laboratory at Lowestoft.

The Use made of the Data collected.

The charting of currents of the South Pacific in THE MARINE OBSERVER has been commenced, and a new Atlas of currents of the Indian Ocean has been completed and will be published shortly.

Information of fog and mist in the English Channel, and a comparison of the severity of the weather in the North Atlantic during recent winters, have been published in THE MARINE OBSERVER.

Courts of Enquiry into the cause of foundering of British ships have been supplied with information of weather observed at sea.

Work done in the Marine Division towards the Use of Data collected.

TABLE I at the end of this report indicates the number of sets of observations extracted from logs during the past 15 years.

During the past year fewer observations have been extracted than during the previous year, 1934-1935; but in the circumstances the number of observations extracted is good.

MARSDEN'S CHART No. I gives the distribution and number of observations collected and extracted since reorganization on April 1st, 1920.

MARSDEN'S CHART No. II shows the distribution of sets of observations collected before 1920 which have been punched on cards in the Marine Division, since January 2nd, 1933.

Enquiries.

More information has been provided of weather at sea during the past year to the Board of Trade for the purpose of investigation into marine casualties than ever before, so far as our records show, no less than 352 man-hours' time having been spent upon this work.

On the other hand, the work in connection with enquiries from interested parties in damage to ships or cargoes, etc., the provision of information for which a charge is made, has been less than usual, only 36 man-hours being spent during the year. This work has been lightened by a greater use of published information.

The Supply of Unpublished Observations to the Meteorological Services of the British Empire and Foreign Countries.

By means of the registers of British Selected ships, written records of observations in code have been supplied for the purpose of weather investigation, as follows :

To South Africa (and to neighbouring meteorological services) for the year 1934-35, in the region South of the Equator, and mainly between the meridians of 30° W. and 80° E.	6,263
To Australia (and to neighbouring meteorological services) for the year 1934-35, in the region South of the Equator, and mainly between the meridians of 80° E. and 70° W.	9,972
To Canada (and neighbouring meteorological services) for the years 1930-31 to 1934-35, in the region North of the Equator, mainly between the meridians of 160° E. and Panama, i.e., the greater part of the North Pacific	8,786
To India (and neighbouring meteorological services) for the years 1930-31 to 1934-35, in the region North of the Equator, mainly between the meridians of 30° E. and 160° E.	82,519
Total sets of synchronized weather observations made by British ships sent to other countries	107,540

The Service of British Selected Ships.

The number of British Selected Ships was reduced from 287 to 285 on July 30th, 1935, to accord with our proportion of the world's tonnage.

Throughout the year, not only was the full complement of British Selected Ships maintained in service, but the best world-wide distribution possible has been maintained with the most suitable ships of the British Merchant Navy for this voluntary service.

To illustrate this a chart showing the position of all British Selected Ships at sea on Saturday, June 1st, 1935, which is typical of the Saturday distribution throughout the year, is given at the end of this number.

The registers indicate how highly satisfactorily the commanders, officers and wireless operators of British Selected Ships carry out this service; and TABLE II at the end of this report shows the number of reports made in different regions by Selected Ships during the month of October, 1935.

With regard to the Eastern North Atlantic, where there is great congestion of wireless traffic, a roll call is used. During the past year the average number of ships on the roll call to report to Weather London through G.K.U. was 7·7, of which an average of 6·3 reported.

TABLE III gives the number of observations received by Weather London reported by wireless telegraphy through Portishead Radio from British "A" Selected Ships in the Eastern North Atlantic and North Sea, for each month throughout the year.

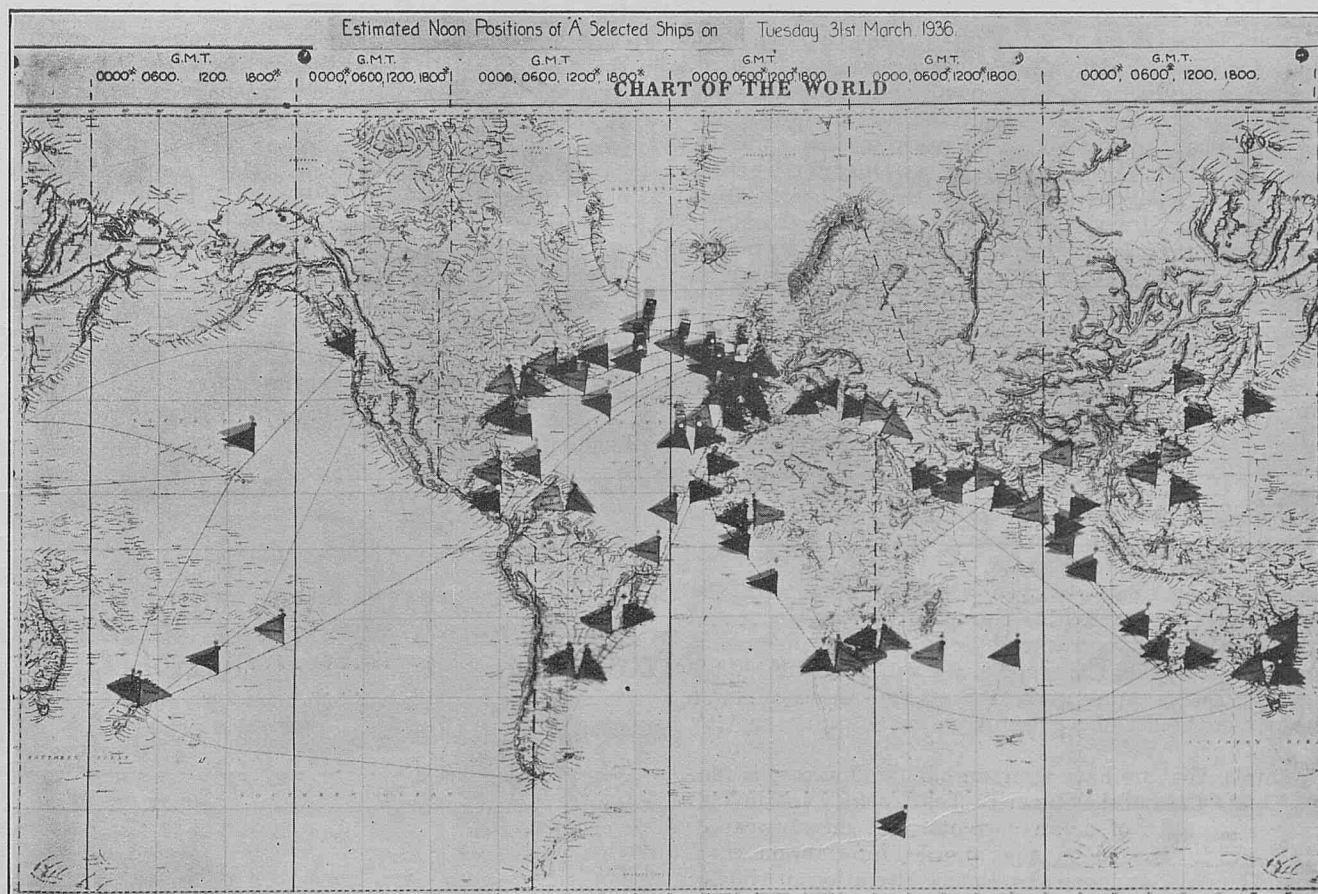
Of this total, 6,278, which is an average of 17·2 reports per day, 3,905 were observations made at 0600 and 1200 G.M.T. and 3,845 of these were reported according to schedule, only 60 being late.

The remaining 2,373 reports were of observations made at 0000 and 1800 G.M.T., and these were transmitted as circumstances would permit, but generally at similar relative intervals following S.O.S. periods of silence.

Weather Reports from Ships in Home Waters.

This service, which was extended towards the end of the previous financial year, has been worked well, the volume of information being nearly doubled, and covering a wider field.

TABLE IV indicates the number of weather reports received from British Cross Channel Steam Packets during each month of the past year.



A photograph of the daily position chart worked in the Marine Division is given above, showing the estimated positions of "A" Selected Ships at sea and in ports abroad on Tuesday, March 31st, 1936. "B" Selected Ships are not indicated on this chart. At present the total number of "A" Selected Ships is 112.

w 14661

Weather Forecasting at Sea and the General Application of the Work at Sea.

So much is said in the daily press about weather forecasting and the interest it gives to those ashore, particularly during holidays; and

G 2

forecasting ashore is so dependent upon reports from ships at sea, that there is no need to dwell in this report upon the benefits which come from the work of marine observers in this connection.

There is always a tendency to take good work for granted; and indeed, where volunteers in ships at sea are out of sight of so many ashore, who stand to profit most by this work, it is not often fully recognized what good use can be made, and is being made in navigation, of the work for which marine observers are mainly responsible.

The work of charting and investigating the currents of recent years has not only tended towards greater exactness in navigation, steering, and logging of speed through the water; but the study which shipmasters have given to the subject of ocean currents has also been a means of enhancing information made available for ocean pilotage. The effect is probably more real than apparent.

In the Cross Channel Steam Packet services, the masters have made a long study of the tidal streams, and the effects produced upon them by different winds. Some of these officers have now given us the benefit of their observation and study, and their remarks are being published for the benefit of navigators who are less familiar with Home Waters.

Weather forecasting by use of weather charts is becoming more general at sea, and it is undoubtedly contributing to the steady improvement in safe navigation and economical use of power for propulsion, to say nothing of convenience to daily life at sea.

We see a great deal of evidence of this, and it is very difficult to pick out from so many examples the best to illustrate these practical advantages.

The Port Meteorological Officers have taken a great deal of trouble in not only giving officers guidance, but also in trying to assess the merits of their work.

During the year, there have been examples which I have seen and examined personally, and found to be so good that I think it only fair to mention these in this report, for these officers in their work stand out even from the Meteorological Committee's list of Excellent Awards.

Mr. H. B. WALKER, Third Officer of M.V. *Port Gisborne*, Captain W. G. HIGGS, has a gift for cartography, which he has made good use of. His forecasts appear generally to be very sound, and Captain HIGGS, who is one of the pioneers of this modernized work, applies the information to very good advantage. The work in this ship has been greatly assisted by Mr. H. SMITH, Wireless Operator, so that Mr. WALKER has been able to draw many weather charts from observations received direct from ships, without the delay of waiting for the relay by shore stations of synoptic messages. This practice of receiving the information direct is one which we particularly wish to encourage.

Mr. H. P. WILLIAMSON, Third Officer of R.M.S. *Rangitata*, Captain E. HOLLAND, draws remarkably good weather charts with great regularity, making great use of collective synoptic messages; and his forecasts are generally consistent with the information available.

Mr. C. J. CORDRAN, Third Officer of M.V. *Orari*, Captain J. G. ALMOND, has made very useful weather charts, mainly from ships' observations received direct by Mr. W. FORDHAM, a Wireless Operator, who appears to give great assistance to the Captain and navigating officers; and these forecasts appear to be very sound. Indeed, the work in *Orari* is particularly well balanced.

These, of course, are regular observing ships who have all the assistance we can give them, and it is regular observing ships, and particularly Selected Ships, who are the guide to the whole Merchant Navy in this work at sea. That the scope of the work is greater, there is no doubt; and it is becoming evident that the officers of more ships, which are not in the list of regular observing ships, are making good use of the service.

Of all such examples that we have seen, an outstanding case is that of Mr. E. ALLEN, Chief Officer of the Steam Tanker *Cepolis*, Captain J. F. ALLEN, who makes a study of ocean currents, and draws weather charts daily. In the China Seas he has thus afforded information which has led to the avoidance of typhoons by timely alteration of course; and economical steaming by fine weather forecasts fulfilled.

Another officer whose ship is not in the Fleet List is Mr. G. H. PICKERING, Second Officer of S.S. *Garth Castle*, Captain W. S. COLBOURNE, O.B.E., R.N.R., who is doing very fine work to aid the navigation of his ship. For years he has regularly made weather charts, and has made a special study of weather off the South African coasts, which we know from some little experience is particularly

interesting, and which occupied both Captain HENRY TOYNBEE and Captain CAMPBELL HEPWORTH for years.

Port Meteorological Officers and Merchant Navy Agents.

Weekly the Port Meteorological Officers and Merchant Navy Agents are advised of any points which the meteorological logs, records and registers of observing ships reveal that the officers concerned may benefit by their guidance; and by this means the corps of voluntary marine observers have gained, and the work of the observing fleet has been steadily improved.

To visit all observing ships effectively, even once in three months, is no easy matter for these gentlemen; and it would greatly help them, at any rate in the inspection of the Meteorological Office instruments which they are required to make for quarterly report, if the instruments could be kept, when in port, in a place in the chart house known to all the ships' officers and relieving officers, so that during leave of absence of the principal observing officer, all the instruments could be seen at one visit by the Port Meteorological Officer or Agent.

On July 3rd, 1935, Captain W. HENDERSON was appointed Merchant Navy Agent for the Clyde, vice Mr. R. CLEARY.

On September 20th, 1935, Lieutenant Commander M. V. KEOGH, R.N., was appointed Agent at Hong Kong, vice Lieutenant Commander E. H. C. BRANSON, R.N., when he relieved the latter officer in charge of the Admiralty Chart Depot.

In March, 1936, Captain N. G. ROSKRUGE was appointed Agent at Sydney, N.S.W., vice Commander G. D. WILLIAMS, D.S.O., R.N.R., he having relieved the latter officer as Deputy Director of Navigation.

Captain E. HALL was appointed Agent for the Bristol Channel on March 23rd, 1936, vice Captain T. JOHNSTON, of the Cardiff Technical College.

Acknowledgment.

The written returns made—Logs, Records, Registers and Reports—by each observing ship have been acknowledged quarter by quarter in the Fleet List with the publication of each number of THE MARINE OBSERVER. These written returns mean a tremendous amount of work at sea. They provide us with the information which is necessary for research, for charting the oceans, and afford us a means of guiding the work of observation at sea. They are the outward and visible signs of the effort which is being made by British seamen to gather knowledge of the atmosphere and the sea.

We thank most heartily all who have contributed to this work.

In recognition of specially fine work the Meteorological Committee are making awards to the Commanders and Principal Observing Officers of a large number of ships whose work has been classed excellent for not less than a certain period during the past year. Their names are given in the list which follows.

MARINE SUPERINTENDENT.

London, April 1st, 1936.

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

Captain.	Principal Observing Officer.	Ship.
ALMOND, J. G.	CORDRAN, C. J.	<i>Orari</i> .
ANDREWS, C. M.	MILLER, L. B.	<i>Karamea</i> .
ASHWORTH, F.	DAWSON, H. S.	<i>Dorset</i> .
ATTHILL, L.	READE, E. P.	<i>British Enterprise</i> .
BARRON, A.	FISHER, J. D. B.	<i>Windsor Castle</i> .
BEECHING, P. H.	—	<i>Dalgoma</i> .
BEVAN, W. H.	ILRAITH, R. M.	<i>Sultan Star</i> .
BIGGS, J. H., Commr., R.N.R., R.D.	CUTLER, R. J. H.	<i>Narkunda</i> .
BISSET, J. G. P., Commr., R.N.R., R.D.	POLLITT, E. J. R.	<i>Ascania</i> .
BLACKMAN, A. H.	TILBY, J. G. W.	<i>Dunbar Castle</i> .
BOOTHBY, C. R. U., Lieut., R.N.R.	CLIFTON, E. E.	<i>R.R.S. William Scoresby</i> .

Captain.	Principal Observing Officer.	Ship.	Captain.	Principal Observing Officer.	Ship.
BRITTEN, Sir E. T., Commr., R.N.R., R.D.	LOCKE, J. V. ...	<i>Berengaria.</i>	LAMB, C. B. ...	CARTER, R. H. ...	<i>Rotorua.</i>
BROOME, W. ...	ROBINSON, J. W. ...	<i>Comeric.</i>	LARGE, R. J., M.B.E. ...	BREUILLY, H. ...	<i>Isle of Sark.</i>
BROWNING, J. B., Commr., R.N.R., R.D.	LAPAGE, J. C. ...	<i>Maloja.</i>	LAWSON, J. H. ...	EVANS, C. V. ...	<i>Apapa.</i>
BURET, T. J. C., D.S.C. ...	DAVIES, T. ...	<i>Almanzora.</i>	LE BROCCQ, C. ...	—	<i>Balmoral Castle.</i>
BURTON, E. A. ...	THOMAS, N. A. ...	<i>Cumberland.</i>	LINDON, J. G. ...	TWITE, J. F. ...	<i>Malda.</i>
BURTON DAVIES, J. ...	WILLMOTT, M. ...	<i>Hertford.</i>	LYNDON, E. P., Lieut.-Commr., R.N.R., R.D.	FITZMARSHALL, H. ...	<i>Mooltan.</i>
BUSK WOOD, W. G., Commr., R.N.R., R.D.	ROBERTS, F. W. S. ...	<i>Montcalm.</i>	MCINTOSH, A. ...	MACFARREN, E. B. ...	<i>Mataroa.</i>
CAMERON, H. ...	THOMSON, H. T. ...	<i>Northern Coast.</i>	McKELLAR, A. W., Capt., R.N.R., R.D.	MERCER, L. ...	<i>Rangitane.</i>
CARTER, E. A. J.W., Capt., R.N.R., R.D.	HALLIDAY, A. C. ...	<i>Ranpura.</i>	MCNISH, R. L. H. ...	BLOCK, P. A. ...	<i>Norfolk.</i>
CARTWRIGHT, C. W., D.S.C. ...	HAND, R. H. ...	<i>Comorin.</i>	MACDONALD, D. ...	RICHARDS, D. H. ...	<i>Makura.</i>
CARTWRIGHT, H. ...	BAILLIE, W. G. ...	<i>City of Dieppe.</i>	MALTBY, T. L. ...	CONDON, E. V. ...	
CHAPLIN, J. K., Capt., R.N.R., R.D.	COPELAND, G. D. ...	<i>Alipore.</i>	MARTIN, W. ...	THOMAS, N. A. ...	<i>Cumberland.</i>
CLAYTON, R. G., D.S.C., Capt., R.N.R., R.D.	SEATON, N. F. ...	<i>Highland Monarch.</i>	MATHESON, C. G., D.S.O., Commadore, R.N.R., R.D.	McKENZIE, A. J. ...	<i>Niagara.</i>
COATES, E. M. ...	TEE, H. ...	<i>Corfu.</i>	MOORE, H. A., Capt., R.N.R., R.D.	PINCKNEY, C. W. C. ...	<i>Oronsay.</i>
COLLIE, A. ...	—	<i>Caledonia.</i>	MORGAN, A. O., Commr., R.N.R., R.D.	PHILLIPS, W. P. ...	<i>Duchess of Richmond.</i>
COMPTON, J. E. ...	HOPKINS, W. B. ...	<i>Port Chalmers.</i>	MUNTON, C. ...	CHALMERS, W. J. ...	<i>Armada Castle.</i>
COMPTON, R. W. ...	FAULKNER, J. R. ...	<i>Baronesa.</i>	NELSON, A. L., Lieut., R.N.R. ...	MACIVER, P. G. ...	<i>Arundel Castle.</i>
CORNISH, N. P. ...	FALCONER, G. B. ...	<i>Matra.</i>	NELSON, J. ...	SMITH, E. W. ...	<i>Paris.</i>
COTCHING, W. A. ...	WARDLE, T. M. ...		OSWALD, S. ...	HILL, L. C. ...	<i>R.R.S. Discovery II.</i>
COYLE, W. B., Commr., R.N.R., R.D.	BALDWIN, S. H. ...	<i>Rajputana.</i>	OWEN, R. ...	WALLACE, J. ...	<i>Ixion.</i>
CURRIE, S. ...	SINCLAIR, I. M. ...		OWENS, A. L., Capt., R.N.R., R.D.	BURT, W. G. ...	<i>Tairoa.</i>
DAVIES, E. ...	STEWART, J. ...	<i>Duchess of York.</i>	PARFITT, E. P. ...	POWELL, H. S. ...	<i>El Paraguay.</i>
DAWSON, W. ...	FRENCH, L. St. J. ...	<i>Comliebank.</i>	PARFITT, L. ...	SARGENT, P. ...	<i>Orford.</i>
DENE, R. C. ...	SARE, W. ...	<i>Mahia.</i>	PARRY, G. R., Commr., R.N.R., R.D.	HOPKINS, T. ...	<i>Peshawur.</i>
DRAPER, M. G., Commr., R.N.R., R.D.	EDMEADS, L. H. ...	<i>Tamaroa.</i>	PEEL, R. V., Commadore, R.N.R., R.D.	MORRIS, M. G. ...	<i>Baradine.</i>
DURHAM, R. S. ...	TUCKER, J. F. C. ...	<i>Rawalpindi.</i>	PITMAN, R. ...	OATRIDGE, E. J. ...	<i>Duchess of Bedford.</i>
EDKIN, E., O.B.E., Capt., R.N.R., R.D.	THOMPSON, H. N. ...	<i>Kaisar-i-Hind.</i>	PUGH, R. ...	L'ANSON, A. C. ...	<i>Aquitania.</i>
EGERTON, J. J. ...	RING, L. E. E. ...	<i>Port Hunter.</i>	QUIRK, W. ...	CARTWRIGHT, C. ...	<i>St. Helier.</i>
ELFORD, H. C. ...	SHAW, R. H. ...	<i>Lancastria.</i>	RAVEN, F. C. ...	—	<i>Montrose.</i>
ELLIS, R. B. ...	LLOYD, J. R. ...	<i>Recorder.</i>	REDFORD, L. F., Lieut.-Commr., R.N.R.	DARBY, F. ...	<i>Eastern Coast.</i>
ENRIGHT, W. J., Commr., R.N.R., R.D.	CRESSWELL, G. F. ...	<i>Ceramic.</i>	REILLY, H. E., Lieut.-Commr., R.N.R.	OWEN, E. ...	
EVENS, E. H. ...	KING, A. F. ...	<i>Birchbank.</i>	RHODES, H. R. ...	IRWIN, J. ...	<i>Duke of Rothesay.</i>
FIELD, H. G. B. ...	GORMAN, F. R. ...	<i>Port Fremantle.</i>	RIDYARD, A., O.B.E. ...	SUTTON, D. F. ...	<i>Clan Macdougall.</i>
FRENCH, F. E., Capt., R.N.R., R.D.	ROBERTSON, J. C. ...	<i>Berwickshire.</i>	ROBINSON, F. W. ...	MACKILLICAN, H. ...	<i>Northumberland.</i>
FRIEND, A. B. ...	MOBBS, E. G. G. ...	<i>Stirlingshire.</i>	ROCHE, C. B. ...	SPURLING, E. J. ...	<i>Mongolia.</i>
FROST, C. R. ...	CATHIE, C. B. ...	<i>Huntingdon.</i>	ROSS, J. ...	ECKFORD, R. ...	<i>Orduna.</i>
FULCHER, H. D. ...	HILL, L. A. ...	<i>Corfu.</i>	ROTHWELL, A. ...	DAWSON, H. S. ...	<i>Opawa.</i>
GIBBINGS, W. ...	SHEARD, O. S. ...	<i>Princesa.</i>	RUNDLE, G. G. ...	BROWN, A. ...	<i>Remuera.</i>
GILLIES, D. ...	MURRAY, D. ...	<i>Duquesa.</i>	SAPSORTH, C. H. ...	FARNFIELD, G. L. ...	<i>Cathay.</i>
GOW, A. F. ...	JOHNSTON, T. ...	<i>Matheran.</i>	SAUNDERS, W. J. ...	JONES, E. L. ...	
GRANT PYVES, W. A. ...	BROMLEY, J. E. ...	<i>Inanda.</i>	SAXTON, C. ...	CAMPBELL, J. K. ...	<i>Reina del Pacifico.</i>
GRAY, W. ...	LINFIELD, G. ...	<i>Alynbank.</i>	SCHLANBUSCH, O. V. ...	—	<i>Empress of Australia.</i>
GRAYSTON, E. T., D.S.C., Commr., R.N.R., R.D.	LAMBTON, D. N. ...	<i>Advastus.</i>	SHEEPWASH, J. S. ...	TOWILL, G. E. ...	<i>Rhexenor.</i>
GREGORY, S. E. A. ...	—	<i>Mulbera.</i>	SHILLITOE, B., Commr., R.N.R., R.D.	—	<i>Montclare.</i>
GRIFFITH, W. T. ...	PICKERSGILL, D. ...	<i>City of Roubaix.</i>	SMILES, R. ...	HARRIES, M. ...	<i>Taranaki.</i>
HALL, A. H. ...	MILBURN, T. B. ...	<i>Pakeha.</i>	SMITH, H. E., Lieut.-Commr., R.N.R., R.D.	GERRARD, A. A. ...	<i>Aidan.</i>
HANNAN, E. F., Commr., R.N.R., R.D.	LLOYD WILLIAMS, N. ...	<i>Port Denison.</i>	SMITH, W. D. C. ...	MORTON, M. J. ...	<i>Arlanza.</i>
HARDCASTLE, E. ...	McKILLOP, R. ...	<i>Scotia.</i>	SPRING BROWN, J. F. ...	STRIKE, J. D. ...	<i>Barrabool.</i>
HARRISON, R., D.S.O., Capt., R.N.R., R.D.	WATSON, D. G. D. ...	<i>Duchess of Atholl.</i>	STONE, B. M. ...	BONNER, G. D. ...	<i>Alcantara.</i>
HARTLEY, J. W. ...	HEADON, S. A. ...	<i>Naldara.</i>	STRINGER, R. H., O.B.E., Commr., R.N.R., R.D.	FEINT, F. F. ...	<i>Marquesa.</i>
HATTON, A., Skipper ...	MAYNE, C. H. ...	<i>Malayan Prince.</i>	STUART, R. N., V.C., D.S.O., Capt., R.N.R., R.D.	LANGTON, J. C. ...	<i>Chitral.</i>
HAWKES, W. A., C.B.E., A.D.C., Capt., R.N.R., R.D.	McHATTIE, A. J. ...	<i>Strathnaver.</i>	THOMAS, B. D. ...	MORRIS, M. G. ...	<i>Baradine.</i>
HIGGS, W. G. ...	KAVANAGH, G. T. ...	<i>Strathaird.</i>	THORNE, G. G., Capt., R.N.R., R.D.	BOURKE, L. P. ...	<i>Aorangi.</i>
HILL, T. V. ...	WALKER, H. B. ...	<i>S.T. St. Keverne.</i>	THORNTON, E. J., Capt., R.N.R., R.D.	WRIGHT, R. ...	<i>Amsterdam.</i>
HOLLAND, E. ...	McKENZIE, A. J. ...	<i>Britannic.</i>	TOWNLEY, J. C., Capt., R.N.R., R.D.	WATKINS, T. C. B. ...	<i>Rawalpindi.</i>
HOWARD, H. C. ...	HILL, H. ...	<i>Port Gisborne.</i>	TOWNSHEND, W. P., Capt., R.N.R., R.D.	—	<i>Empress of Britain.</i>
HUBBARD, R. L. F., Capt., R.N.R., R.D.	SCOTT, R. M. ...	<i>Niagara.</i>	TRINICK, F., O.B.E. ...	CONOLLY, T. ...	<i>Clydebank.</i>
HUDSON, J. J. ...	MACKIE, J. H. A. ...	<i>Remuera.</i>	UPTON, H. L., D.S.C., Capt., R.N.R., R.D.	RYAN, R. J. ...	<i>Fresno City.</i>
HUNTER, J. L. B. ...	HOWLETT, R. S. ...	<i>Almeda Star.</i>	WEST, W. F. ...	SLY, L. T. ...	<i>Ormonde.</i>
IRVINE, W. ...	MANLEY, F. K. ...	<i>Orsova.</i>	WEST, W. G. ...	ROSE, E. R. ...	<i>Viceroy of India.</i>
IRVING, R. B., O.B.E., Capt., R.N.R., R.D.	GORLEY, G. J. H. ...	<i>Port Darwin.</i>	WHITE, C. D. ...	WALKER, J. H. ...	<i>Georgie.</i>
JACK, H. M. ...	WILLIAMSON, H. P. ...	<i>Rangitata.</i>	WHYTE, D. L. ...	HAND, R. H. ...	<i>Strathaird.</i>
JAMES, L. V., D.S.C. ...	HEADON, S. A. ...	<i>Malayan Prince.</i>	WILLIAMS, H. ...	MORETON, A. ...	<i>Tactician.</i>
KEMP, E. R. ...	EVANS, J. P. V. ...	<i>Majestic.</i>	WILSON, G. ...	BRANCH, W. J. V. ...	<i>Durham.</i>
KINNELL, G. ...	ASPINALL, G. ...	<i>Carthage.</i>	WILSON, G. F. ...	CROSSCOMBE, H. R. ...	<i>Clan Mactaggart.</i>
KIPPINS, T., D.S.C. ...	GRANDAGE, G. R. ...	<i>Otranto.</i>	WILSON, J. A. ...	HOWE, H. C. ...	<i>Maimoa.</i>
KIRKWOOD, J. H. ...	COEN, R. ...	<i>Westmoreland.</i>	WOODHEAD, T. H. ...	CLARKE, W. J. ...	<i>Nardana.</i>
LAIDLAW, H. M. S., Commr., R.N.R.	WILSON, F. R. F. ...	<i>Ruahine.</i>	WYATT, F. N. ...	—	<i>Contractor.</i>
LAIRD, C. A. I. ...	MOATE, J. S. ...	<i>Port Hobart.</i>	—	SWABEY, D. C. ...	<i>Balranald.</i>
LAIRD, J. ...	BAXTER, E. ...	<i>Orbita.</i>	—	TALLACK, M.B.M. ...	<i>New Zealand Star.</i>
	COLES, E. C. St. A. ...	<i>Rosaura, R.Y.S.</i>	—	RAYNOR, E. G. ...	<i>Dunster Grange.</i>
	MACMILLAN, P. ...	<i>Buteshire.</i>	—	CRAWFORD, J. M. A. ...	<i>Yoma.</i>
	VINCENT, J. ...	<i>Turakina.</i>	—	RICHARDSON, H. V. ...	<i>Dearne.</i>
			—	RIGDEN, H. T. ...	<i>Bendigo.</i>
			—	BILLINGTON, W. ...	<i>Worcestershire.</i>
			—	CHRISTIAN, J. S. G. ...	<i>Moldavia.</i>
			—	ROBERTSON, R. L. ...	<i>Transylvania.</i>

TABLE I.—The Number of Sets of Observations Extracted from Meteorological Logs during each Year from 1921.

	1935-36.	1934-35.	1933-34.	1932-33.	1931-32.	1930-31.	1929-30.	1928-29.	1927-28.	1926-27.	1925-26.	1924-25.	1923-24.	1922-23.	June, 1921-22.
Number of complete sets of observations extracted and punched on cards with currents entered in data books and phenomena indexed.	16,843	48,194	41,932	58,747	70,718	19,185	17,987	43,117	73,745	78,180	75,852	65,000	74,749	97,533	63,731
Arrears of previous years recovered during 1932-35.	—	—	9,546	—	—	28,497	6,826	—	—	3,702	1,212	—	—	—	—
Number of part-sets of observations in the Pacific and N. Atlantic previous to 1920 extracted and punched in one operation and phenomena indexed since January 1st, 1933.	120,477	126,217	82,602	17,798	—	—	—	—	—	—	—	—	—	—	—
Current observations from the year 1910 extracted from meteorological logs and Forms 911 and entered in data books.	2,817	4,821	4,850	6,118	8,609	7,980	10,913	2,626	3,496	8,242	8,210	5,746	4,259	1,826	—

TABLE II.—Particulars of Communication by British Selected Ships in Different Parts of the World during October, 1935.

Region and W/T Station detailed to receive or intercept Selected Ships' reports.	31 days period.	No. of selected ships in region.	No. of reports desirable by schedule.	No. of reports made according to schedule		Percentage of possible number of reports to be made, desired by schedule.	No. of additional reports of observations recorded at International observation times.	No. of reports received at station.	No. of ships receiving reports.
				To Station.	To C.Q.				
South Atlantic ... Slangkop, Z.S.C. (2100m. C.W.)	Oct. 1st to 31st, 1935.	13 "A"	159	72	35	67	—	Not known.	Not known.
South Atlantic ... Lat. 30° S. to 40° S. Long. 10° E. to 20° E. (600m.)	Oct. 1st to 31st, 1935.	10 "B"	21	—	21	100	—	—	Not known.
Southern Indian Ocean ... Perth, V.I.P. (2100m. C.W.)	Oct. 1st to 31st, 1935.	10 "A"	80	49	20	86	—	Not known.	Not known.
Southern Ocean ... Lat. 30° S. to 50° S. Long. 70° E. to 80° E. (600m.)	Oct. 1st to 31st, 1935.	6 "B"	16	—	14	88	—	—	Not known.
South Pacific ... Lat. 30° S. to 50° S. Long. 170° W. to 180° W. Wellington, Z.L.W. Auckland, Z.L.D. (600m.)	Oct. 1st to 31st, 1935.	5 "B"	12	2 to Z.L.W. 1 to Z.L.D.	6	75	—	—	Not known.
Indian Ocean ... Colombo, V.P.B. (2100m. C.W.)	Oct. 1st to 31st, 1935.	17 "A"	162	86	50	84	2	Not known.	Not known.
Arabian Sea ... Lat. 10° N. to 20° N. Long. 50° E. to 60° E. (600m.)	Oct. 1st to 31st, 1935.	41 "B"	145	—	137	94	—	—	Not known.
Mediterranean Sea and Red Sea. Long. 0° to Long. 43° 30' E. (2100m. C.W.)	Oct. 1st to 31st, 1935.	31 "A"	272	—	225	83	30	—	Not known.
Eastern North Atlantic, north of Lat. 38° N. worked by Roll Call. Portishead, G.K.U. (2100m. C.W.)	Oct. 1st to 31st, 1935.	On Roll Call 250 "A"	500	322	—	64	217	539 All reports registered by ships as sent received by Weather London.	Not known.

April, 1935.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1936.	Feb.	March.	The Year.
472	548	542	606	585	572	551	558	448	462	455	479	6,278

April, 1935.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1936.	Feb.	March.	The Year.
142	125	128	150	152	144	138	139	128	139	126	139	1,650

	At 31st March.										
	1936.	1935.	1934.	1933.	1932.	1931.	1930.	1929.	1928.	1927.	1926.
No. of M.L. Ships	41	49	50	49	65	101	120	123	123	122	124
No. of Form 911 Ships	312	298	304	300	307	386	355	364	373	369	366
No. of Stationary Training Ships and Light-houses.	5	5	5	10	10	10	10	10	10	10	10
Total No. of Observing Ships	358	352	359	359	382	497	485	497	506	501	500
No. of Form 911 Ships with whole or part Meteorological Office instrumental equipment. } S. C.C.	200 17	190 17	183 9	169 10	126 10	93 10	31 10	31 10	32 10	29 10	31 10
No. of Selected Ships	285	287	292	299	306	312	290	289	268	—	—
No. of ships with Instruments on Board : returns overdue	0	0	0	0	0	1	0	0	0	0	0
No. of Coast Stations and Light Vessels equipped with instruments for Form 914.	18	18	18	18	18	30	31	31	32	32	34
No. of Barometer errors ascertained or checked.	1143	1196	1169	1190	1353	1357	1192	1362	1398	1426	1560
Meteorological Logs	102	119	122	126	221	285	286	275	279	274	264
Ships' Meteorological Records (Forms 911)...	2429	2377	2352	2169	2660	2686	2375	2290	2261	2095	2091
Forms 914 (Coast Observations)	215	215	216	216	353	363	372	371	383	367	406
No. of Wireless Weather Reports addressed to Weather London received through Portishead.	6278	5595	5443	5064	5175	5206†	—	—	—	—	—
Lighthouse Registers	4	4	13	9	17	8	18	10	12	10	15
Home Waters Telegraphic Reports	1650	854	838	972	875	720	701	751	773	674	767
Cadets Meteorological Log	10	9	9	7	11	8	9	9	7	10	9
DATA EXTRACTION.											
Logs collected since 1920 extracted... ..	40	137	131	191	175	50	41	100	166	174	170
Logs collected before 1920 extracted ...	295	309	441	97	—	—	—	—	—	—	—

† 11 months.

The Marine Observer's Log



July, August and September.

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

WIND EFFECT ON TIDAL STREAMS.

Harwich to Hook of Holland Route.

BY CAPTAIN B. M. STONE, S.S. "AMSTERDAM."

DURING the last fifteen years in command in the Harwich and Hook service I have noticed the effect of the wind on tidal streams in this particular neighbourhood. A strong wind from the N.E. to E.N.E. will cause the current to be strong and the flood at Dover will make up two hours earlier on the coast of Holland than is usual.

Also the ebb tide will be easy except in that region to the west of Outer Gabbard, where it will be strong at latter part of ebb, apparently due to the waters kept back at sea finding an outlet between the Banks of Gabbard and Shipwash.

Again, with the wind about S.W. the ebb at Dover will be strong and will make away on the coast of Holland one hour early with a strong gale.

There is no hard and fast rule better than keeping a very observant eye open in unsettled weather.

Newhaven and Dieppe Cross-Channel Route.

BY CAPTAIN W. LIDBETTER, S.S. "BRIGHTON."

HAVING had extensive experience in navigating between Newhaven and Dieppe I may say that the tidal currents in the English Channel are very considerably affected by winds.

This, of course, is as expected, but I find that the tides are sometimes affected by the direction of wind before we in this district get the wind from that particular direction.

Through this I am often able to foretell an early change of wind direction.

With fresh to strong winds from an easterly direction the ebb or west-going tide gains an additional strength of one mile per hour.

With strong westerly winds and a flood tide, i.e., east-going tide, not quite so much. I have no doubt that the Straits of Dover are responsible for the additional strength of the west-going tide.

On this service one is able to obtain frequent bearings, the first ten miles from port, and therefore can estimate the amount of drift, but as this varies so much it is not safe for me to state any definite strength.

BY CAPTAIN B. SHAW, S.S. "WORTHING."

THE most important consideration on Cross-Channel Services is the tide, which can be, and is, considerably affected by winds, especially during a long spell of easterly or westerly wind.

In foggy weather it is most important to be able to judge fairly accurately what influence the tide will exert on the crossing, having regard to the various speeds used according to the visibility, for unless a good fetch is made, considerable and valuable time can be lost in having to make up against a strong running tide in order to take up a proper position for entering between the piers, with a strong tide running across them.

Any long spell of westerly or easterly winds has a marked influence on the strength and run of the tides, tending to cut the tide, turn it earlier, or prolong its run after the normal time.

When the weather is clear, we can get a very good idea of the strength of the tide by watching the ship off, after leaving harbour, for a distance of 5 to 10 miles, by noting land marks in the daytime, and leading lights at night, and frequently have to make slight alterations to the course first set, and it is by studying these apparently small details in fine, clear weather, when it is all plane sailing, that gives one confidence in their course and reckoning in foggy weather, which often occurs from harbour to harbour.

The tide most anomalous is the ebb or west-going tide, one is never quite sure how strong it is or what influences it will exert on a given course, and is often underestimated. During easterly winds the ebb tide begins to run sooner and continues to run long after its normal time of slackening, a thing which does not occur to nearly the same extent with westerly winds.

After or during a long spell of easterly winds, the east-going or flood tide does not appear to exert any influence until almost the time of half flood; this is most pronounced, for at this time, when one would expect the flood to be running quite strong, the tide is neutral.

I have also noticed a marked discoloration of the water at this period, the water being a light brown, almost mud colour in patches, and I can only attribute this to the meeting of the east-going and west-going streams, and it is not until almost 3 hours after low water, or half-flood, that the east-going stream is able or strong enough to overcome the west-going stream, the two streams then driving upwards to the surface, and causing the discoloration of the water. This is most noticeable within 18 miles of the English coast.

As regards barometer movements taken locally, there is not much to work on, but in these days we are fortunate in having "The Weather Shipping Bulletin," sent out from Rugby at 9.10 and 21.33 each day, and by making one's own weather charts are able to know the direction of and probable change of winds in the North Sea and Western Channel and the influence they are likely to have on the tides.

Weymouth—Guernsey Route.

BY CAPTAIN R. PITMAN, S.S. "ST. HELIER."

BEFORE dealing with the question of wind effect on the tidal currents in the Channel, it is first necessary to have some definite material to work on, therefore I shall endeavour to explain my own experiences which I have obtained from years of study on Channel tides, with the valuable assistance of wireless direction-finding beacons, the Casquets in particular. I have been able to form a table of approximate tidal rates compared with the various heights at Dover H.W. These rates I have used during my nine years in command, and can vouch with absolute confidence that they are sufficiently accurate for safe navigation, despite the fact that they vary considerably from the rates given on the chart; using the heights of H.W. Dover as given below the rates have been found thus, when not affected by easterly winds.

<i>Height H.W. Dover.</i>	<i>Approximate Rate of Tide in Channel.</i>
13 feet	.5 knots
14 "	1.0 "
15 "	1.5 "
16 "	2.0 "
17 "	2.5 "
18 "	3.0 "
19 "	3.5 "
20 "	4.0 "

To make the Channel course good from Portland Bill to Casquets, or vice versa, with a full east or west 20-foot Dover tide, and this Ship steaming 18 knots, as much as 10 and 11 miles drift allowance is necessary. This may sound fantastic, but nevertheless it is just fact. The direction of the tidal current in the Channel is very accurate and only deviates in the vicinity of the Casquets, although it changes its direction every hour from H.W. Dover through west, south and east back to H.W. Dover; the rates given in the table above can be used when approaching the Channel Islands except in narrow channels, where naturally the rate increases considerably.

When navigating the Channel with easterly wind, irrespective of strength, it is advisable to pay particular attention to east-going current, for with small tides such as 13 feet and 14 feet Dover, the east-going current is almost non-existent, with the result for a considerable period of the 6 hours east-going current there is almost slack water, before the west-going current commences, which appears to take place sooner than normally.

Easterly winds are not so susceptible to the spring tides, but nevertheless it can be noticed that from one and a half hours before H.W. Dover the east-going current is practically exhausted, and by H.W. Dover the west-going current is running with appreciable strength. The rate always appears to be accelerated when the current is running in this direction.

The westerly winds have little effect on the tides and can be considered quite reliable in their actions except on occasions when the east-going current makes a little earlier, but as a general rule this is not considered worth troubling over. In my experience the reason for this lack of effect is due to the tidal directions from the Irish Channel across to Ushant.

The particulars given herein are not to be taken as hard-and-fast rules, they are just a guide to those navigating the Channel with less knowledge of the Tidal Rates and Wind effect, than I, who have had nineteen years Cross-Channel experience.

Holyhead—Kingstown Route.

BY CAPTAIN W. T. GRIFFITH, S.S. "SCOTIA."

STRONG winds have a definite effect on tides in the Irish Sea and St. George's Channel.

On this service the time on passage between South Stack Lighthouse

and the Kish Light Vessel is very regular, rarely varying more than 2 minutes.

Thus we are afforded a good opportunity to observe accurately the set of the tidal currents at all the various tides ranging from Neap to Spring.

With strong Southerly and S.S.W. winds the flood or N.N.E. going stream is greatly accelerated and appears to run at full strength almost up to the turn. Under these conditions I always allow an additional correction for set (as apart from leeway) with the confidence of long experience, and invariably find it is necessary.

It is not uncommon to encounter a set equal to a 30-foot Spring Tide, when the Predicted Tide is only a 24- or 25-foot Tide; and on arrival, the level of high water in the dock corroborates the unusual set experienced.

I have observed that after a big boost, the tides do not become normal for 2 or 3 days, even though the weather has moderated and the wind shifted, so that when more flood is met with than was expected, the following Ebb Tide will also be stronger than normal.

Strong Northerly and N.E. winds appear to accelerate the ebb or S.S.W. going stream and to check the flood, but I would say that the effect of the Northerly's on the ebb is not quite as marked as the Southerly's on the flood; at least, not on this route.

Perhaps an interesting point to mention while discussing effect of wind on tide is that when dry-docking at Holyhead and waiting for the required depth on sill, I have noticed that the water rises much sooner with Southerly or S.S.W. winds (about three-quarters of an hour) than it does with N. or N.E.'ly winds.

I make these remarks after 29 years' experience on this route and I think they can be taken as fairly accurate.

BY CAPTAIN J. R. BULMER, S.S. "HIBERNIA."

THROUGH a knowledge gained from a long experience of conditions in the Irish Sea, I find that there is one fact worthy of mention, although perhaps it is obvious enough to mariners, namely the effect of N.E. and E. winds (strong) on the tide. If this wind prevails long, it retards the flood and accelerates or strengthens the ebb, and the reverse holds good when S.W. gales prevail, namely, the flood tide being accelerated and the ebb retarded, especially in the Eastern half of the Irish Sea near Holyhead; the remarks in the sailing directions on the tide races near the N. and S. Stacks should be regarded carefully by mariners, as these races have a marked effect and increase the roughness of the sea in strong adverse winds and their vicinity should be given a wide berth.

Speaking generally, the tides in this part of the Irish Sea are normal, but of course are liable, as in other places, to be upset and rendered abnormal through sudden changes of strong winds. When approaching Carlingford Lough from Holyhead the tide flow is felt very little in the western half of the Irish Sea until close to the Lough.

When approaching Dublin Bay from the eastward during foggy weather accompanied by S.W.'ly wind, it may be an advantage to note that the Bay is invariably clear; this does not hold good when wind is from any other direction.

Heysham—Belfast Route.

BY CAPTAIN F. C. RAVEN, S.S. "DUKE OF LANCASTER."

THE tidal currents in Morecambe Bay are affected by strong S.W. to W'ly winds which may be blowing in the St. George's Channel or in the Irish Sea between Holyhead and the Isle of Man. These strong winds or gales are sometimes indicated east of Morecambe Bay Light Ship by a swell not caused by the local wind prevailing at the time.

The flood tide is considerably accelerated: its rate of flow is increased up to one and a half knots and the rise in height up to 5 feet above the normal shown on Chart No. 1826. At Wyre Light the H.W. is reached some 30 minutes before the indicated time of H.W. and continues to flow 15 to 20 minutes after the time of H.W., with a corresponding increase in the height during westerly gales.

The ebb tide is retarded by these winds to a lesser degree, but should a strong S.W. or W'ly wind decrease about H.W., the ebb will be stronger than usual and the water will fall during spring tides at over one inch per minute during the second, third and fourth hours of the ebb.

N.E. and E'ly winds also affect the tidal currents by accelerating the ebb tide out of the Bay, causing the low water to arrive some

30 minutes before the time indicated in the tide tables and the height is decreased some 3 feet below the ordinary level.

The flood tide is retarded and the height of the tide is as much as 3 to 4 feet below the normal height during N.E. and E'ly gales. Briefly the times of H.W., low water and slack water are very much affected by wind, also the rise and fall of the tide is increased or decreased according to the strength and direction of the wind.

Strangers navigating east of Morecambe Bay Light Ship should certainly give consideration to the effect of the wind prevailing at the time on the tidal current. During W'ly gales a very dangerous, confused sea is set up during the ebb in the vicinity of Lune Light Boat.

Off the N.E. coast of the Isle of Man strong S'ly wind accelerates the ebb tide which flows to the north-west past Bahama Bank Buoy and retards the flood. N'ly winds have the reverse effect, though this effect is only noticeable from the Buoy to the 9-fathom patch S.E. of the Buoy. The ebb tide between Bahama Bank and the Isle of Man is considerably accelerated during strong S.E'ly winds. The rate of flow is sometimes increased about one knot, but gets stronger as the Point of Ayre is approached. Between the Point and Whitestone Bank the increase is about 2 knots. Heavy swirls and eddies are caused off the Point where the ebb north of Whitestone Bank meets the accelerated ebb running between the Point and Whitestone Bank.

Between the Point of Ayre and the Mull of Galloway the flood tide is accelerated by W'ly winds and retarded by E'ly winds. Strong S.W. winds caused the flood to set in a more easterly direction; this is very noticeable when within 5 miles of the Isle of Man.

During W'ly gales it is advisable to give the Mull of Galloway an offing of at least five miles during the ebb tide, as a dangerous confused sea is set up. It is the practice of Cross-Channel Steamers to steer more to the southward when such conditions prevail to avoid damage to superstructure as the sea does not run true.

Between the Mull and the Irish Coast, S. and S.W. winds accelerate the ebb during gales as much as 2 knots, and retard the flood tide about one knot. N'ly winds accelerate the flood and retard the ebb tides during gales about $\frac{1}{2}$ to 1 knot.

Off the Copeland Light the ebb tide is S.E. with S'ly wind. During the flood tide a confused sea is set up in the vicinity of this light during S.E. gales.

The flood and ebb in and out of Belfast Lough is slightly affected by W'ly and E'ly winds. E'ly winds have the most effect on the flood tide causing an increased rate of flow and about 2 feet increase in height at the Pile Light. During N.E. and E'ly gales the ebb tide is sometimes cut nearly a half and the water only falls about half its normal height.

I have been on this Service 17 years in about ten different ships, and I have given careful consideration to the possibility of confusing the effect of leeway with that of tidal set for the Cross-Channel type of ship, length 360 feet, beam 52 feet, draught 14 feet, speed 21 knots; with superstructure 30 odd feet above the water line, and I consider it is not the best type of ship to make these observations in. These observations are as true and exact as it is possible to obtain under the circumstances, and I use this knowledge in the safe navigation of my ship over the 125 miles of my passage.

I make no claim as a writer; therefore, I have endeavoured to be as brief as possible. I hope you will find my observations of some use.

BY CAPTAIN J. W. RICHMOND, S.S. "DUKE OF ARGYLL."

THE tidal currents in the North part of Irish sea, experienced on the above route, are considerably affected by weather conditions taking place in the whole of the Western area. I have noticed an increase in force of tide when strong winds or gales are reported on the South and West of Ireland, although at the time fine weather is prevailing in the area of the above route.

The flood stream running in a S.S.E. direction between Mew Isle and the Mull of Galloway is increased in strength by strong West to N.W. winds, southerly winds not having much effect between these points.

From Mull of Galloway to Morecambe Bay the increase in force of the flood stream, which runs in an easterly direction, is affected by strong winds from South through West to N.W. I have had several

experiences, on these occasions, of the flood commencing and gathering force half an hour before time of L.W. and flowing fairly strong to as much as half an hour after time of H.W. This often happens before the approach of Southerly, S.W. and N.W. gales and continues for a considerable time after a moderation of weather.

N.E. and Easterly winds greatly increase the ebb stream, particularly around the area of Fleetwood, Walney and Morecambe Bay Ship, also the area from Point of Ayre, I.O.M., to about six miles West and N.W. of it.

I consider the strongest current to be the ebb or West-going stream, the Easterly winds having the effect of increasing the force to a greater extent than the Westerly winds have on the flood tide.

JAN MAYEN, SPITZBERGEN AND ICE EDGE.

THE following notes and photographs are contributed by S.S. *Arandora Star*, Captain E. W. MOULTON, Observing Officer, Mr. L. S. HASSELL, Third Officer.

July 27th, 1935, at 1830 G.M.T., steering 038°, sighted Jan Mayen Island. 1920 G.M.T. rounded Cape South, distant 2 miles, and proceeded along coast towards Egg Bluff, where 1 mile east of that point is situated the Wireless and Meteorological Station. The Wireless Station had been previously notified and the inhabitants, consisting of three Norwegians, were awaiting our arrival. The ship was stopped off the Wireless Station, about 2 miles distant, and two men came out in an 18-foot rowing boat to collect a case of stores kindly given by the Captain and passengers, and mail was received from them for posting in Norway.

At 2131 G.M.T. ship resumed her course for Spitzbergen.

The coast of the south end of Jan Mayen Island is rocky and steep-to, rising to 2,753 feet in the centre, partly snow-clad with occasional mossy patches on the lower slopes.

The centre of the island is a comparatively low narrow strip of land joining the south and north parts, the north end having in its centre the completely snow-covered mountain of Beerenberg, 8,350 feet.

After first sighting the Island, fog patches cleared, giving place to Alto-Stratus and Cirro-Stratus clouds, and an excellent view was obtained of the Peak, also most of the Island, which is a very rare occurrence, as fog usually prevails.

This is believed to be the first time a Cruising Ship has ever established direct communication with the inhabitants of this island.

July 29th, 1935. Leaving Magdalena Bay on the N.W. coast of West Spitzbergen at 2010 G.M.T. the course was set north in Latitude 79° 37' N., Longitude 10° 40' E. for the Ice Edge.

After steaming for about half an hour, Stratus clouds became visible on the horizon, very heavy and white with some parts reaching down to the sea, being very fibrous and resembling a curtain waving in the breeze, presumably ice blink.

On getting closer to these clouds their formation was seen to produce light detached fog banks. To the N.E. the sky was still clear and visibility generally very good except for these few detached fog banks.

In addition to the ice blink already described, some detached clouds, Cirrus, were seen to have a definite yellowish tint.

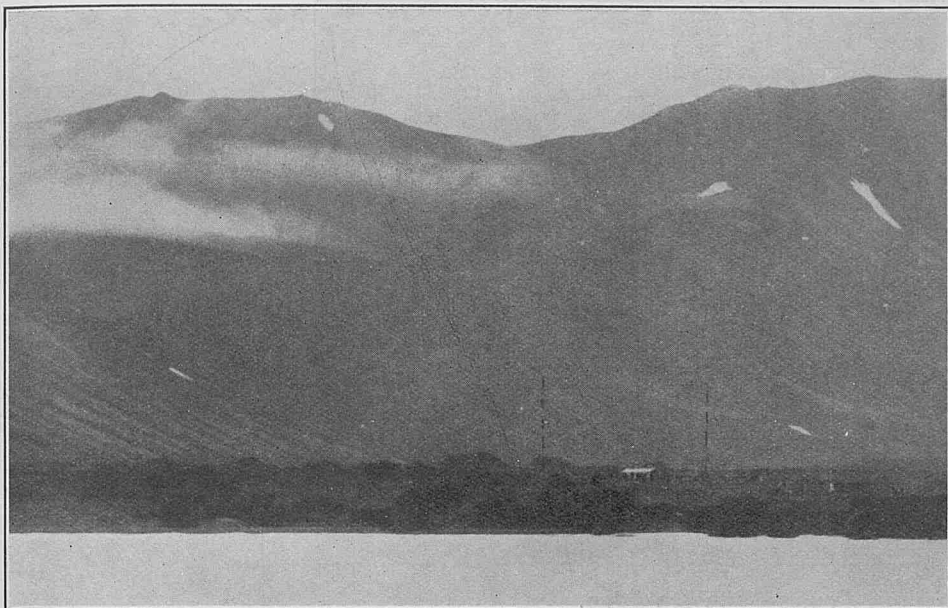
Ice was first seen at 2323 G.M.T. at a distance of about 4 miles, stretching from right ahead to about 4 points on the port bow, i.e., N. to N.W. The sea water temperature had been taken every half-hour but no change was noticed until within 1 mile of the ice, when it dropped from 41° to 33° F. The air temperature also dropped to 32° F.

The ship steamed to within half a mile of the ice and stopped.

The ice appeared to be a long peninsula pointing south, and composed of close pack-ice and field-ice with small hummocks about 10 to 15 feet high.

No loose ice was seen at a greater distance than half a mile from the main pack.

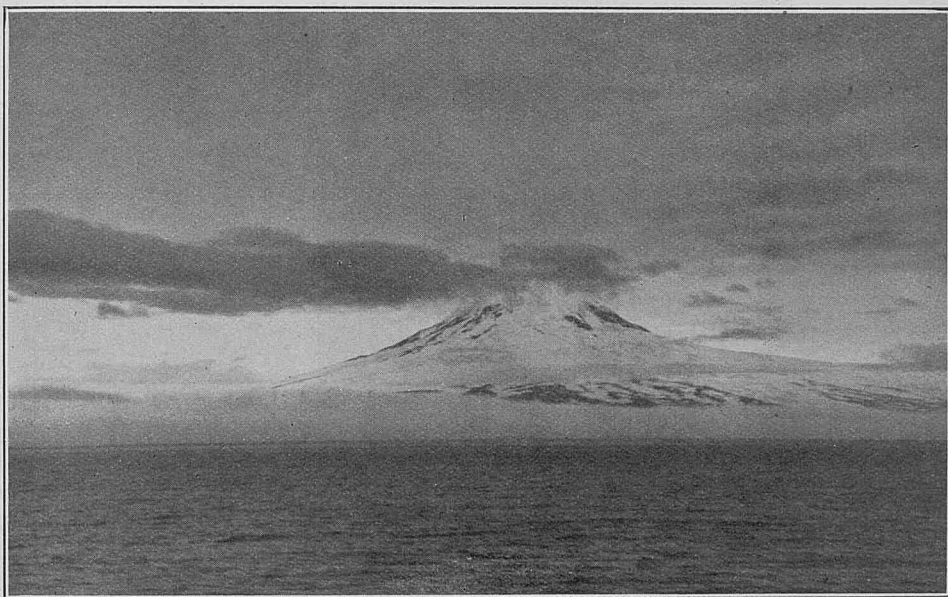
At midnight, ship's time, 2300 G.M.T., the ship was turned round and headed south for Ice Fjord, Spitzbergen. The farthest north steamed was Latitude 80° 12' N., Longitude 10° 07' E., the Sun's Altitude below Pole being approximately 9° 20' uncorrected at 2336 A.T.S. (2300 G.M.T.).



Jan Mayen Island—The Wireless Station.



Jan Mayen Island—Landing Stores.



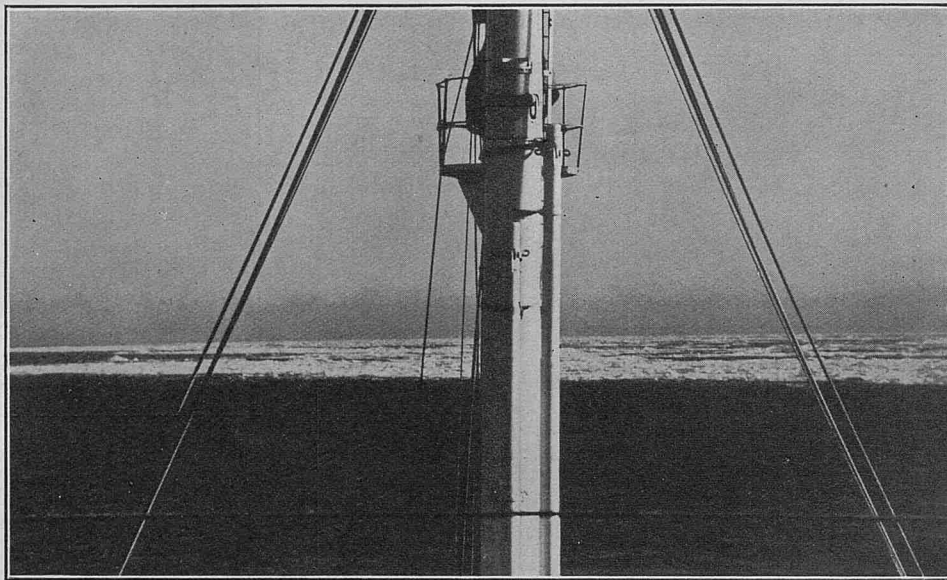
Jan Mayen Island—Beerenberg.



Spitzbergen Cruise—The Farthest North, Latitude $80^{\circ} 12' N.$,
Longitude $10^{\circ} 07' E.$



Spitzbergen Cruise—The Ice Edge.



Spitzbergen Cruise—The Ice Edge.

LOCUSTS AND BUTTERFLIES.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.V. *El Argentino*. Captain F. ELLIS, D.S.C. Montevideo to London. Observer, Mr. H. N. SHERWELL, Second Officer.

September 25th, 1935, a large number of locusts and butterflies settled on board at 4.0 a.m. and continued doing so during the next 24 hours; the direction of the wind during this period being N.N.E., force 3. The wind then veered to E. by N., so it would appear that the insects must have been blown about 150 miles out to sea from the African Coast in the vicinity of Cape Blanco and then south on the N.N.E. wind the remarkable distance of some 300 miles.

Position of ship, Latitude 16° 30' N., Longitude 22° 00' W.

CURRENT RIP.

North Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *City of Evansville*. Captain D. O. EVANS. Colombo to Aden. Observer, Mr. A. G. DANIELS, Third Officer.

July 10th, 1935, at 8.05 a.m. passed a very distinct fusion of two currents. Very rough confused sea of pyramidal form which had been visible for 3 miles in spite of a horizon marred by slight haze—a belt of broken water half a mile wide—running in a S.W. by S. to N.E. by N. direction and extending to the limit of the horizon, the sea having a “heaped up” appearance. Steering 288° the rudder was angled hard over to starboard to counteract the sheer to port. Ship's head

still sheered away and for 3 minutes steadied on 250°, when ship resumed her course and normal steering. Sea temperature 73°.

Position of ship, Latitude 7° 35' N., Longitude 55° 17' E.

PHOSPHORESCENCE.

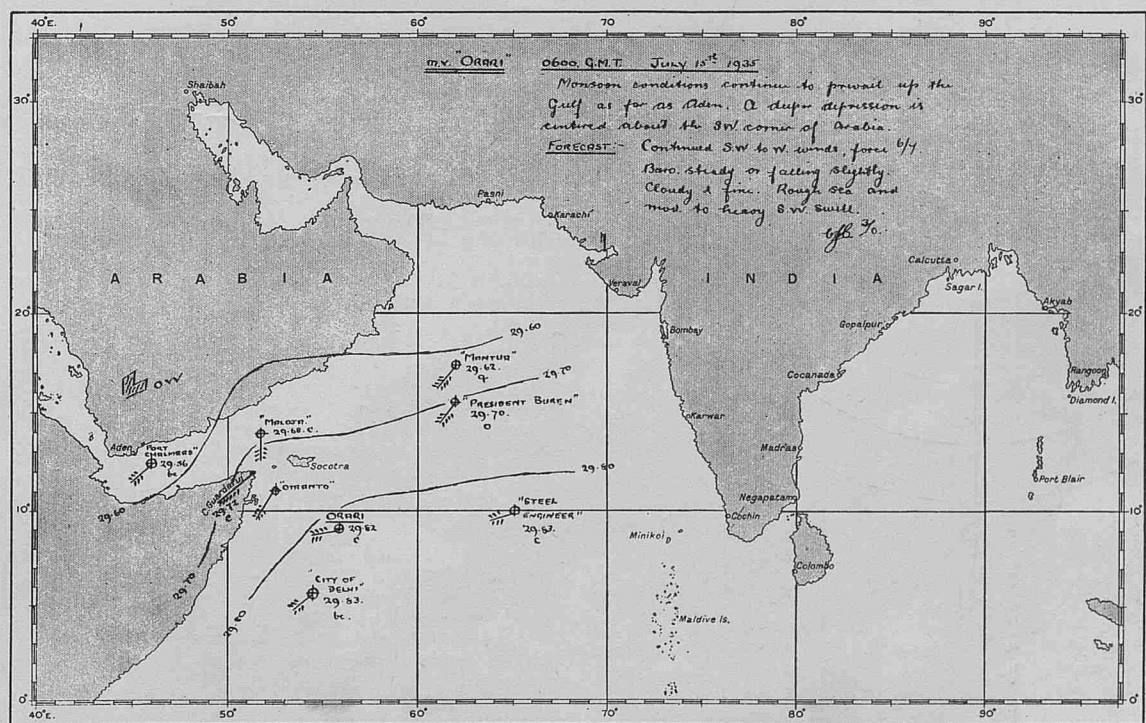
Bay of Bengal.

THE following is an extract from the Meteorological Record of S.S. *City of Evansville*. Captain D. O. EVANS. Calcutta to Colombo. Observer, Mr. A. G. DANIELS, Third Officer.

June 27th, 1935, at 9.30 p.m. strange phosphorescent effects were seen. Previously the sea had presented the usual appearance, though flecked with phosphorescence. At 9.0 p.m. seven bright lights were sighted ahead—distant probably 4 to 5 miles—each of these in turn lasted roughly 3 seconds and was eclipsed at 9.30 p.m. The first of these bright phosphorescent lights appeared close alongside the ship, under the starboard bow, as a circular patch 100 feet in diameter and as the ship passed over this patch it was as though a large ball, roughly 6 feet in diameter, of intensely bright light was travelling at speed from the depths to the surface. Arrived at the surface, the ball of intense light split up into small pieces which travelled to the outer edges of the circle, the whole being suffused with bright light. The phenomenon lasted between 2 and 3 seconds and was repeated five times close alongside the ship—steaming 11 knots—until 9.40 p.m. Several of these were seen in the distance also, but not after this time, when the sea resumed its normally phosphorescent appearance.

Position of ship, Latitude 10° 19' N., Longitude 83° 27' E.

M.V. *Orari*, Captain J. G. ALMOND. Observing Officer, Mr. C. J. CORDRAN, Third Officer.



EXPERIENCE IN TYPHOON, SHIP PASSING THROUGH CENTRE.

North Pacific Ocean.

THE following report, dated September 28th, 1935, by Captain T. HACKETT, of M.V. *Silvercypress* to his owners, Messrs. Stanley & John Thompson, is published by their courtesy.

I beg to report having encountered a severe typhoon, and enclose herewith extracts from Log, lists of damage ascertained, diagram of vessel's estimated track through typhoon, and chart showing the actual track of the storm, which I later received by wireless. You will observe from this last that only a magician could have estimated the position of his vessel with regard to the storm with any accuracy.

Owing to the erratic track taken by this storm, it was a matter of impossibility to judge exactly how the centre was travelling by single observations on board my ship. Receiving one wireless report from a vessel 240 miles to the S.S.W. of me, stating that he had a W.N.W. wind force 10, my own vessel having an E. by S. wind force 10, my vessel was obviously situated close to the line of progression on the right-hand side of the northern extremity of the storm, which apparently was travelling about N.W. You will observe the vast area covered by this storm, when two vessels 240 miles apart have a wind of force 10.

I immediately decided to run to the westward in an endeavour to cross ahead of it, on account of the possibility of its recurving to the eastward in this particular latitude. I had been hove to from 6.40 a.m. until 9.00 a.m., 24th instant, when I turned and ran with all speed west.

At 3.18 p.m., however, conditions were getting worse, and barometer still falling, and wind not changing in direction, which made it appear that the vessel was not changing her position with regard to the line of progression and that the centre was slowly overtaking the ship. There was a complete absence of wireless reports this day. I again decided to heave to, hoping the storm would pass ahead of the vessel. Conditions continued getting worse, with not the slightest change in the wind's direction.

It was now obvious that the storm centre was getting closer to the ship and, with the wind at E., our only hope was for the storm to recurve to the eastward and pass astern of the ship, putting us in the left-hand semicircle. I anxiously waited, closely watching for the slightest change in the wind's direction, mountainous seas now running.

At 10.00 p.m. there was still no change in the wind's direction, the barometer still falling, squalls becoming more frequent and violent. It was definitely certain that the vessel was still on the right-hand side of the line of progression and extremely close to same. It appeared then that remaining hove to was simply waiting for it, attempting to turn again and trying to cross the line of progression was just as dangerous, but had the redeeming feature of a least placing the ship in the least dangerous semicircle should the manœuvre be successful. The latter course I decided upon and the vessel was again turned and headed W. by N. at utmost speed; time 10.30 p.m.

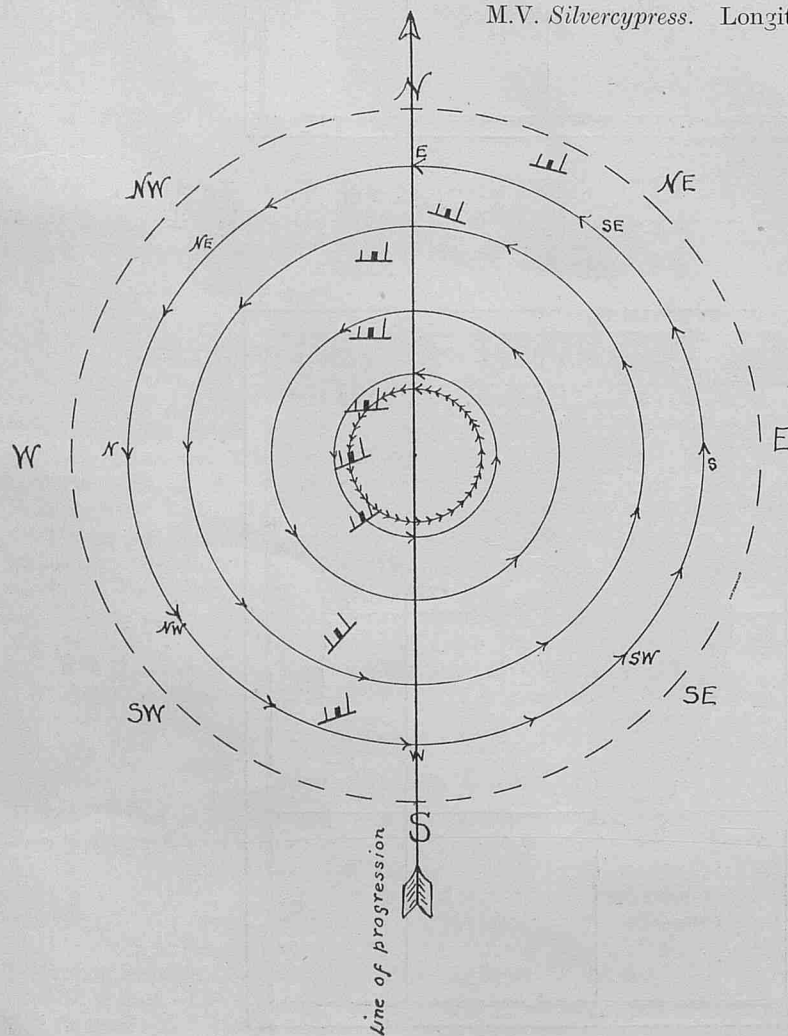
The barometer now fell more rapidly and I expected to have the lowest reading and the shift of wind to the northward of east at any moment, denoting I had crossed the storm's path and into the left-hand semicircle. It was 3.40 a.m., 25th instant, before the vessel crossed the path of the storm, the wind suddenly shifting to E.N.E.; but the barometer still fell and, though for the past four hours I had not thought conditions could possibly get worse, they now did.

The obvious solution again now was that we had got across the path all right, but that the whole storm field was travelling faster to the north than the ship was to the west, and the centre drawing up all the time. Engines were running around 100 revolutions, and vessel making good headway before the terrific seas. The wind quickly backed to N.E.; storm oil was used from both crew's waste pipes forward and a little occasionally pumped overboard from the engine-room.

At 5.30 a.m., however, the central area overtook the ship. Barometer now 28.30; the normal reading is 29.90. Engines were immediately rung slow.

Heaped-up, mountainous seas of unbelievable height, at times observed higher than the cross-trees, came from different directions. This, I admit, sounds unbelievable, but is quite authentic. Myself

M.V. *Silvercypress*. Longitude 144° 50' E., Latitude 25° N.



← 10.25 p.m. ...	Sept. 24th ...	Wind E. 10 ...	Bar. 29.28
← 3.00 a.m. ...	Sept. 25th ...	E. × S. 11/12 ...	Bar. 28.83
← 4.00 a.m. ...	,, ...	E.N.E. 11/12 ...	Bar. 28.61
← 5.00 a.m. ...	,, ...	N.E. 12 ...	Bar. 28.37
← 5.30 a.m. ...	,, ...	Var. 4 ...	Bar. 28.30
← 6.00 a.m. ...	,, ...	Var. 3/4 ...	Bar. 28.23
← 7.00 a.m. ...	,, ...	N.N.E. 12 ...	Bar. 28.26
← 8.00 a.m. ...	,, ...	N.W. 12 ...	Bar. 28.45
← 11.00 a.m. ...	,, ...	W. × S. 8/9 ...	Bar. 29.12

and the chief officer witnessed two such seas collide with each other astern of the ship, one directly from the north and one from south; a most interesting phenomenon. Nothing whatever could be done but leave the vessel to her own devices with engines at slow speed to prevent her getting sternway. The helm was not moved. Most of the water we shipped was simply broken water from the top of the huge seas, which simply dropped alongside the ship, throwing up large quantities of heavy spray.

All the starboard wooden awnings on flying bridge and captain's bridge, and wooden framework around the standard compass went overboard, the binnacle on the standard compass being damaged. Fortunately the chief officer and myself were standing on the port side at the time. Had one of these seas fallen on board the vessel, I am certain it would only have been a matter of minutes before she foundered.

Visibility was no more than a quarter of a mile, and there was no light until 45 minutes after day should have broken. Nothing in the observations of either the chief officer or myself confirm reports that have occasionally been received from vessels passing through the central area of such storms. We experienced neither the perfect visibility, the perfect calm, nor the perfect blue sky of such reports; and, as for the possibility of a vessel steaming with engines at full speed through such mountainous, turbulent, confused seas, these reports can only be considered as misleading. In our opinion, on the contrary, the odds on the centre winning are about 50 to 1.

The central area was left at 6.45 a.m., and within 15 minutes, the terrific force of N.N.E. wind had completely flattened down all seas coming from other directions. As per diagram and Log, vessel was manoeuvred out of storm field.

As far as can be ascertained, the only damage to the vessel is wood-work, with exception of deep tanks, which are leaking badly. Several cases of general cargo stove in and contents scattered. Survey will be called immediately upon arrival at Manila.

I hope the diagram and Log make the matter quite clear.

M.V. *Silvercypress*.

Voyage No. 14.

Extract from Chief Officer's Logbook.

Tuesday 24th September 1935.

Time.	Course.	Wind.	Bar.	Remarks.
1.00 a.m.	S. 62° W.	E.S.E. 6	29.69	3.30 a.m. a/c S. 56° W.
2.00 a.m.	S. 62° W.	E.S.E. 6	29.69	Rough sea, heavy S.S.E. swell,
3.00 a.m.	S. 62° W.	E.S.E. 6	—	vessel rolling and pitching
4.00 a.m.	S. 56° W.	E.S.E. 6	29.65	heavily, labouring. Cloudy and
				clear.
5.00 a.m.	S. 56° W.	E.S.E. 7	29.63	5.21 a.m. Stellar obsn. Lat.
6.00 a.m.	S. 56° W.	E.S.E. 8	29.63	25.29 N., Long. 147.45 E.
7.00 a.m.	Hove to	E.S.E. 8/9	29.62	Confused sea and swell, rolling
8.00 a.m.	Hove to	E.S.E. 9	29.62	violently, at 6.40 a.m. Vessel
				Hove to, engines at dead slow.
				Strong gale, very high confused
				sea and swell. Pitching vio-
				lently and shipping water over
				all.
9.00 a.m.	West	E.S.E. 9	29.62	9.5 a.m. a/c West 9.7 a.m. Full
10.00 a.m.	West	E. × S. 10	29.62	speed ahead.
11.00 a.m.	West	E. × S. 10	29.60	10.00 a.m. observed badly leaking
Noon	West	E. × S. 9	29.55	rivet in port after deep tank
				below waterline, unable to do
				anything with this.
				High confused sea and swell,
				cloudy and clear, rolling and
				labouring heavily.
				This forenoon all holds inspected,
				cargo and lashings round same
				found in order and extra pre-
				cautions taken where necessary.
1.00 p.m.	West	E. × S. 9	29.51	1.00 p.m. log streamed and set.
2.00 p.m.	West	E. × S. 9	29.48	3.8 p.m. Reduced to half
3.00 p.m.	West	E. 10	29.43	speed. 3.18 p.m. wind and sea
4.00 p.m.	Hove to	E. 10	29.36	increasing force 10, Vessel Hove
				to, engines on slow speed.
				Whole gale, mountainous sea and
				very high swell, vessel rolling,
				pitching and labouring with
				exceptional violence, shipping
				water, overcast and fierce squalls.

Lat. obs. 25° 16' N.
Long. obs. 146° 51' E.

Tuesday 24th September 1935—contd.

Time.	Course.	Wind.	Bar.	Remarks.
5.00 p.m.	Hove to	E. × S. 10/12	29.37	Whole gale reaching hurricane
6.00 p.m.	Hove to	E. × S. 12	29.37	
7.00 p.m.	Hove to	E. × S. 12	29.35	
8.00 p.m.	Hove to	E. × S. 11	29.33	
9.00 p.m.	Hove to	E. 9	29.29	10.25 p.m. vessel turned and
10.00 p.m.	Hove to	E. 10	29.25	
10.30 p.m.	N. 80° W.	E. 10	29.28	
11.00 p.m.	N. 80° W.	E. 10	29.27	
12.00 p.m.	N. 80° W.	E. × S. 9	29.19	10.30 p.m. set course N. 80° W.
				full speed ahead, log. 77.
				Similar weather and conditions,
				vessel pitching and rolling
				heavily, shipping heavy water
				fore and aft.

Wednesday 25th September 1935.

1.00 a.m.	N. 80° W.	E. × S. 10	29.10	3.40 a.m. wind backed to E.N.E.
2.00 a.m.	N. 80° W.	E. × S. 10	28.97	
3.00 a.m.	N. 80° W.	E. × S. 12	28.83	
4.00 a.m.	N. 80° W.	E.N.E. 12	28.61	
				vessel crossed line of progression.
				Fierce squalls and torrential
				rain throughout watch.
				Full hurricane, mountainous sea
				and high confused swell, vessel
				rolling, pitching, pounding and
				labouring with exceptional vio-
				lence, engines racing heavily,
				shipping heavy water over all.
				Engine revolutions 1,000.
5.00 a.m.	W. × S.	N.E. 12	28.37	5.15 a.m. commenced using storm
5.25 a.m.	W. × S.	Var. 3/4	28.30	
6.00 a.m.	W.S.W.	Var. 4	28.23	
7.00 a.m.	S.W. × W.	N.N.E. 12	28.26	
7.15 a.m.	S.W. × W.	N.N.W. 12	—	oil. 5.30 a.m. vessel entered
8.00 a.m.	S.W.	N.W. 12	28.45	
				central area, mountainous cross
				seas, several falling on board
				and carrying away starboard accom-
				modation ladder, star. side
				Capt's deck awning flying bridge
				awning star. side. Part of
				monkey island, all boat covers
				and damaging the standard
				compass and Morse lamp and
				port side flying bridge awning,
				any further damage to be
				ascertained later. 5.30 a.m.
				to 7.10 a.m. engines on slow.
				7.10 a.m. to 9.20 a.m. half-speed.
				Precipitous confused swell and
				sea, vessel labouring heavily and
				shipping water continuously fore
				and aft.
9.00 a.m.	S.W. × S.	N.W. × W. 10	28.73	9.20 a.m. Full speed.
10.00 a.m.	S.S.W.	W.N.W. 9	28.98	
11.00 a.m.	W.S.W.	W. × S. 9	29.12	
Noon	S. 62° W.	W. × S. 8	29.20	
				10.50 a.m. Half speed until noon.
				11.00 a.m. stopped using storm
				oil.
				11.20 a.m. set course S. 62° W.,
				weather moderating, speed 94
				revolutions. High sea and swell,
				overcast with frequent fierce
				squalls, pitching and labouring
				heavily, engines racing.

Lat. D.R. 24° 52' N.
Long. D.R. 144° 24' E.

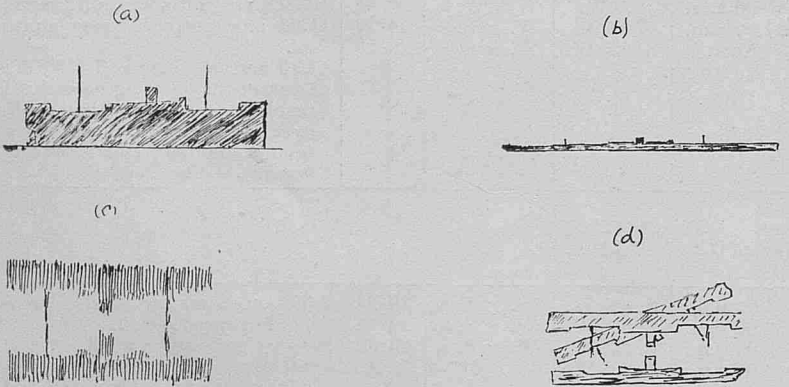
1.00 p.m.	S. 62° W.	W. × S. 8	29.27	2.59 p.m. wind and sea moderat-
2.00 p.m.	S. 62° W.	W. × S. 8	29.34	
3.00 p.m.	S. 62° W.	W. × S. 8	29.39	
4.00 p.m.	S. 62° W.	W. × S. 7/8	29.42	
				ing, full speed ahead.
				Heavy sea and swell, vessel
				pitching and rolling heavily,
				shipping water. Overcast and
				squally with bright intervals.
5.00 p.m.	S. 62° W.	W. × S.	—	Clocks retarded 30 mins.
6.00 p.m.	S. 62° W.	W. 6	—	
7.00 p.m.	S. 62° W.	W. 5	—	
8.00 p.m.	S. 62° W.	W. 4/5	29.59	
				6.55 p.m. stellar obsn. Lat. 24°
				21' N. Long. 143° 03' E.
				Moderate sea and swell, fine and
				cloudy, vessel pitching easily.
9.00 p.m.	S. 61° W.	W. 4	—	8.30 p.m. a/c S. 61° W.
10.00 p.m.	S. 61° W.	W. 4	—	
11.00 p.m.	S. 61° W.	W. 4	—	
12.00 p.m.	S. 61° W.	W.S.W. 4	29.63	
				Moderate sea, Heavy S.W. swell,
				fine and clear. Vessel pitching
				heavily.

Thursday 26th September 1935.

Time.	Course.	Wind.	Bar.	Remarks.
1.00 a.m.	S. 61° W.	W.S.W. 4	—	Moderate sea and swell, vessel rolling easily. Cloudy, fine and clear.
2.00 a.m.	S. 61° W.	W.S.W. 4	—	
3.00 a.m.	S. 61° W.	W.S.W. 4	—	
4.00 a.m.	S. 61° W.	W.S.W. 4	29·68	
5.00 a.m.	S. 61° W.	W.S.W. 4	—	5.25 a.m. star obsn. Lat. 22° 52½' N. Long. 140° 39' E. 7.00 a.m. a/c S. 62° W. Moderate sea and swell. Fine and clear.
6.00 a.m.	S. 61° W.	W.S.W. 4	—	
7.00 a.m.	S. 62° W.	W. × N. 4	—	
8.00 a.m.	S. 62° W.	W. × N. 4	29·75	
9.00 a.m.	S. 62° W.	W. × N. 4	—	Upon further inspection this morning additional damage was found as follows: Deep Tank Bulk-Heads badly leaking in several places, which are being caulked wherever possible by engineers. No. 1 and 5 Holds several cases general cargo stove in, broken, contents scattered, survey will be called prior to breaking bulk. Battery box emergency wireless set smashed, damage to batteries unknown. Potato locker smashed. Propeller notice washed overboard. Two plate glass tops passenger accommodation tables smashed, one plate glass top chief officer's room smashed. Slight sea, heavy W'y swell. Cloudy, fine and clear. Pitching easily.
10.00 a.m.	S. 62° W.	W. × N. 4	—	
11.00 a.m.	S. 62° W.	W. × N. 4	—	
Noon	S. 60° W.	W. 4	29·76	
Lat. obs.	22° 02' N.			
Long. obs.	139° 09' E.			
1.00 p.m.	S. 60° W.	W. 4	—	Noon a/c S. 60° W. Slight sea, moderate beam swell, vessel rolling easily. Cloudy and clear.
2.00 p.m.	S. 60° W.	N.W. 4	—	
3.00 p.m.	S. 60° W.	N.W. 4	—	
4.00 p.m.	S. 60° W.	N.N.W. 4	29·77	
5.00 p.m.	S. 60° W.	N.N.W. 4	—	8.00 p.m. a/c S. 58° W. Similar weather.
6.00 p.m.	S. 60° W.	N.N.W. 4	—	
7.00 p.m.	S. 60° W.	N.N.W. 4	—	
8.00 p.m.	S. 60° W.	N.N.W. 3/4	29·83	
9.00 p.m.	S. 58° W.	N.N.W.	—	10.00 p.m. a/c S. 57° W. Slight sea, Moderate N.W. swell. Cloudy, fine and clear.
10.00 p.m.	S. 57° W.	—	—	
11.00 p.m.	S. 57° W.	—	—	
12.00 p.m.	S. 57° W.	S.W. 3	29·86	

MIRAGE.
Portuguese Waters.

THE following is an extract from the Meteorological Record of S.S. *Tairoa*. Captain, S. OSWALD. Port Said to London. Observers, Mr. W. G. BURT, Third Officer, Mr. H. D. PIM, Fourth Officer.



August 5th, 1935, 9.15 a.m., at Ship, Ponta de Sagres Lighthouse, bearing 318°, distant 15 miles, in calm weather, the land was observed through a thin film of smoke from passing vessels. The cliffs to the eastward of Ponta de Sagres were noticed to be very much distorted, being enlarged to about twice their true height. Ships in the vicinity were also distorted in various ways, and mirages were observed in two cases, as illustrated. The sketches (a) and (b) are of the same vessel at intervals of about a quarter of an hour, as she was passing to the eastward well inshore of the observing vessel. The vessel shown at (c) was observed about 9.40 a.m. and that at (d) at about

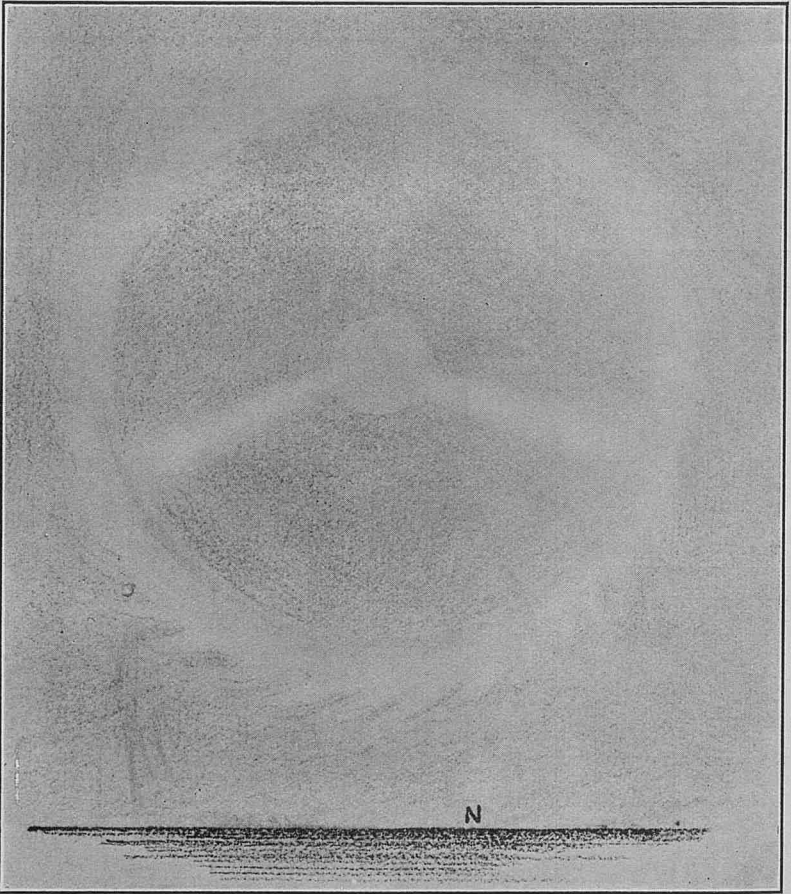
9.25 a.m. On approaching the vessels they regained their normal aspect at about 5 miles or so away. In addition, the sails of a small fisherman were seen, enlarged out of all recognition, at a distance of about 10 miles. By 1.0 a.m., at which time Ponta de Sagres lighthouse bore 332° distant 7·5 miles, all traces of distortion had completely gone.
NOTE.—The double inverted image with one of the images inclined at an angle to the other, shown in sketch (d) is an interesting and unusual observation.

ABNORMAL REFRACTION.
North Atlantic.

THE following is an extract from the Meteorological Log of S.S. *Deebank*. Commander J. K. BROOK, D.S.O., R.D., R.N.R. New York to Panama. Observer, Mr. A. CAMERON, Third Officer.
August 12th, 1935, 8.00 p.m. A.T.S. A peculiar distortion of lights was observed, which not only applied to celestial objects, but affected the ship's lights also. The moon appeared as if there were two moons, one behind the other but not quite in coincidence, the hindmost one being a little to the left and a little lower than the true moon. Some of the brighter stars were so distorted that there appeared to be two separate and distinct stars, the one below the other; the lower one being the distortion. The mainmast light also appeared distorted, having a crescent-shaped counterpart just below it. The clouds in the sky at the time of observation were a few cumulus, covering about one-tenth of the sky and scattered low down around the horizon; the rest of the sky was covered by a very thin haze, too light and filmy to be designated as cloud. The barometer reading was 1020·6 mb. and the wet and dry bulb thermometers registered 77° and 82° respectively. This phenomenon lasted about 20 minutes, from 7.50 to 8.0 p.m.
Position of ship, Latitude 25° 42' N., Longitude 74° 17' W.

LUNAR HALO.
South American Waters.

THE following is an extract from the Meteorological Record of M.V. *Lassell*, Captain R. A. KNIGHT. Montevideo to Santos. Observer, Mr. R. L. HAGLEY, First Officer.



September 13th, 1935, at 0320 hours, observed a large halo forming around the moon at its full. At 0330 hours a distinct spectrum appeared,

accompanied by two bars of light as radii within the halo. The outer perimeter of the halo was formed by fine cirrus clouds or nebula, giving the whole phenomenon the appearance of a Catherine wheel spinning anti-clockwise. That part of the halo in a S.W. direction was incomplete, and the upper half was not as wide as the lower, see sketch. Angular measurements were taken as follows: Radius $26\frac{1}{2}^\circ$, widest part of spectrum $\frac{3}{4}^\circ$.

The whole phenomenon faded completely at 0345 hours. Position of ship, Latitude $29^\circ 34' S.$, Longitude $48^\circ 56' W.$

METEOR.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Comeric*, Captain W. BROOME. Ocean Island to Fremantle. Observer, Mr. J. L. RYDER, Wireless Operator.

At 1311 G.M.T. on July 14th, 1935, a meteor was observed comparable in size and magnitude to the planet Jupiter. When first seen it bore N. $2^\circ W.$ in the vicinity of Vega and travelled N. by E. at an angle with the horizon of 45° , through the constellation of Lyra, disappearing near α Herculis. At the point of disappearance, the meteor appeared to explode, bursting into myriads of tiny stars, a detonation being plainly heard. No trail was left, the duration of flight was approximately 1.7 seconds, and the explosion was heard at the same time as the meteor was observed to burst. Weather fine and clear, with scarce fr.-cu. clouds.

Position of ship, Latitude $00^\circ 28' S.$, Longitude $151^\circ 24' E.$

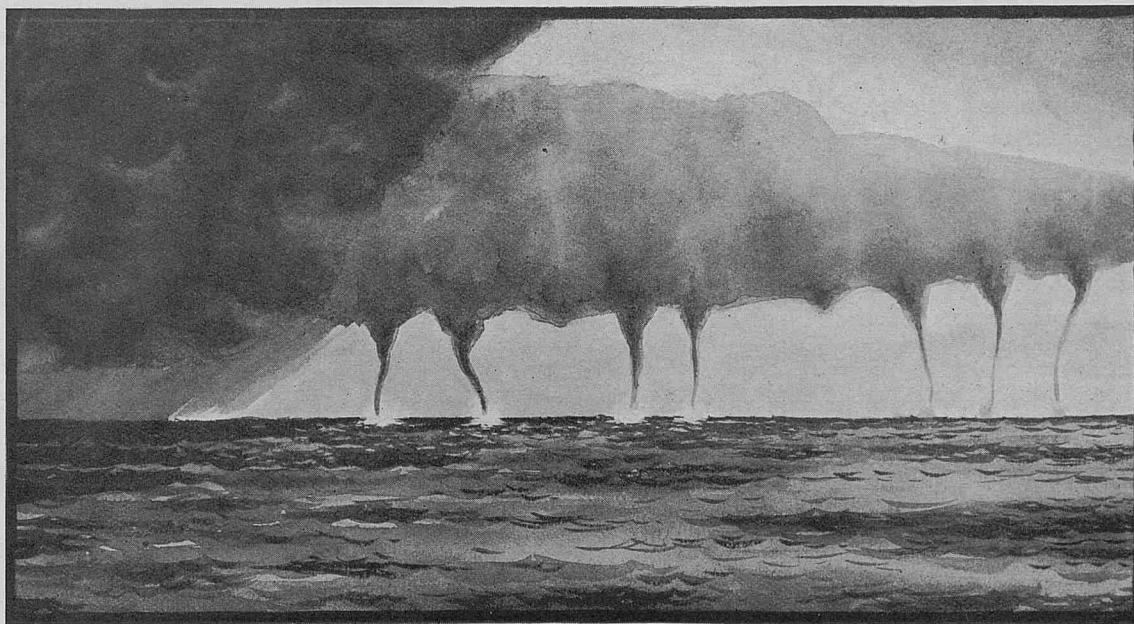
THUNDERSTORMS AND WATERSPOUTS.

Mediterranean Sea.

THE following is an extract from the Meteorological Record of S.S. *Carthage*, Captain H. M. JACK. Gibraltar to Marseilles. Observer, Mr. H. J. CHOLERTON, Second Officer.

September 12, 1935, Noon, position $38^\circ 25' N.$, $00^\circ 13' E.$, steering 038° , weather overcast with slight E'ly swell. During the afternoon watch wind remained steady from S.S.W., force 3, with rain and hail squalls and thunder and lightning. About 1630 continuous light rain or drizzle with heavy nimbus clouds gathering astern and to port. Minorca was then on our starboard hand. The wind by 1700 had veered to S.W., increasing in force to 5. The clouds and rain overtook us by 1740, spreading to the N. E'ward and very heavy rain was experienced, with no fewer than seven waterspouts of varying dimensions visible at the same time in the N.E., two or three quite close to the ship. Vivid forked and sheet lightning was accompanied by terrific detonations of thunder, causing the ship to vibrate. The sky preserved a threatening appearance, with, in places, a pale green tint which reflected a peculiar ghostly light.

The wind now veered fairly quickly through W., force 4, to N.W. and N., where it remained steady and for a while decreasing in force to 3. By 2000 it was round to N.E. 3 and gradually increased in force to 6 at midnight, finally backing to more northerly direction and after increasing to gale force at about 2 a.m. (13th), off C. San Sebastian, with rough N'ly sea, and moderate average length swell, steadily decreased in force. The wind's final direction before making the lee approaching Marseilles was N.E., force 4. It was presumed the ship had been fairly near the centre of a cyclonic formation.



COMMANDER J. H. SCUDAMORE, D.S.C., R.D., R.N.R.

BY A BROTHER OFFICER.

A STRICT disciplinarian, fair-minded and just, courageous and quick to act. Thus would I summarise the attributes of the late Commander J. H. SCUDAMORE, D.S.C., R.D., R.N.R., the news of whose death came as a sad shock to a wide circle of friends afloat and ashore, at home and abroad.

I knew him best in his professional capacity, and it would be difficult to find a more efficient and capable officer. The directorate and management were quick to appreciate his superior qualities—a fact which is reflected in his rapid promotion through the various phases to the Commodoreship of the Fyffes Line Fleet. In the discharge of his duties he was most exacting, and giving of his best he demanded a similar quota of service from those who served under him.

With his strict disciplinarianism, however, he blended a keen sense of justice, and such was the regard that he won, that his ship's personnel "followed" him as far as circumstances permitted.

Travellers using the Fyffe's Line services sought to voyage in his ship, his genial disposition and keen sense of humour appealing to young and old alike. Ships which he commanded have probably carried more prominent people than have travelled under any other Ship Master using the Port of Bristol.

His fondness for children was just another phase of his geniality, and among juvenile passengers he was immensely popular.

Animal and bird life also appealed strongly to Captain SCUDAMORE. His parrot was an almost inseparable companion aboard ship—was almost human in intelligence and conversation. It was not uncommon for the bird to volunteer to "do the honours" in the absence of its master and to suggest continued entertainment in his presence.

I have tried, inadequately, I fear, to deal with the personal side of Captain SCUDAMORE's life. Turning to the professional life, it is sad to relate the Commander's death suddenly at sea on Sunday, December 29th last, which terminated an association with Messrs. Elders & Fyffes extending over 30 years. His ship, R.M.S. *Ariguani*, was outward from Bristol (Avonmouth Docks) to Jamaica. His nautical career began in the *Conway* in 1890. Following his last term in 1892 he became an apprentice in the White Star Line Sailing Ship *California*.

On the completion of his apprenticeship he secured his Second Mate's Certificate and went into steam, serving Messrs. Rankin, Gilmour & Co. as third officer.

Later he transferred to Messrs. Forward Bros. and terminated his services with that firm as First Officer in 1901. In that year he sat for and secured his Master's Certificate.

Entering the service of Messrs. Elder Dempster & Co., he made several voyages in the steamers *Monteagle* and *Montreal* in the Canadian trade. He was serving in the latter ship when the Canadian Pacific Railway took over the Canadian service of Messrs. Elder Dempster & Co.

Early in 1904 Captain SCUDAMORE began his long service with Messrs. Elders & Fyffes, Ltd.—joining the *Miami* as Chief Officer. His sterling qualities were early recognised and duly appreciated by his appointment to the Command of the *Appomattox* well within a year of his entering the firm's employ. He has since commanded many of the Company's liners, passing through the various grades to the privilege of flying the Commodore's pennant.

Cool, calm and courageous in emergency when the urgency of the situation demanded. Thus he became the proud possessor of the Distinguished Service Cross.

The reward was the outcome of an encounter with a German submarine in the North Atlantic during the Great War. He was in command of the *Aracataca* when that vessel was attacked.

Captain SCUDAMORE exchanged fire with the submarine, at the same time skilfully manoeuvring his ship to such good purpose that he completely foiled his attacker, and brought his ship safely to Queenstown.

Later, as Lieutenant Commander, R.N.R., in command of H.M.S. *Camito* he was "mentioned in despatches" (*London Gazette*, April 18th, 1919) for services rendered whilst engaged in Ocean Escort. He retired from Naval service with the rank of Commander, R.N.R.

Commander SCUDAMORE's services to mercantile vessels in trouble have also received recognition. In November, 1932, when in command of the ship in which he "died in harness" encountered a hurricane in the Caribbean Sea, and received calls for assistance from the liner *Phemius*.

In spite of the severity of the weather he proceeded towards the position indicated in the distress call—poor visibility and the weather conditions, however, combined to thwart him, and he was unable to locate the *Phemius*.

In October, 1935, he went to the aid of the Dutch liner *Rotterdam*, which had gone ashore off Movant Carp, 65 miles S.E. of Jamaica. All the 456 passengers of the *Rotterdam* were transferred safely to the *Ariguani* and landed at Kingston.

Before leaving on his homeward voyage he received the cordial recognition of the United States Maritime Board for the promptitude and efficiency of the services rendered by the *Ariguani*.

His early association with the Honourable Company of Master Mariners is recorded by the inclusion of his name among the members of the Foundation Council. (He was also one of the first members of the Bristol Branch of the "Seven Seas Club," whose meetings he attended regularly when he was in port.)

His professional colleagues and a host of shore friends extend to Mrs. SCUDAMORE and her two daughters their heartfelt sympathy, the more sincere because they, too, have suffered a severe loss.

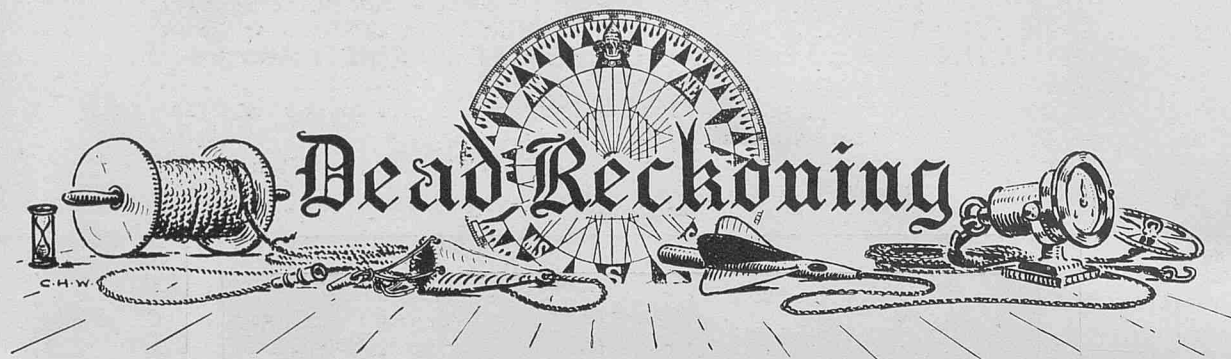
E. W. C.



By courtesy of "Bristol Evening Post."

COMMANDER J. H. SCUDAMORE, D.S.C., R.D., R.N.R.

Master of the *Ariguani*, 1926-1935.



BY COMMANDER C. H. WILLIAMS, R.N.R. (RETD.).

In the early days of ocean voyaging seamen depended on Dead Reckoning as almost their only means of keeping track of their ship's position.

For 300 years before the middle of the 18th century long ocean voyages were made without means of finding the Longitude once the ships were out of sight of land. (The Marine Chronometer was first used afloat in 1736, but did not come into general use until many years later, and the Lunar method of finding Longitude could not have been much used until after lunar distances were published in the Nautical Almanack in the year 1767.) Before these solutions of the problem were invented, navigators could only hope to avoid completely losing all idea of the Longitude by keeping as accurate an account as they were able of courses and distances, and by making what allowance they judged best for leeway, bad steering, etc.

With each day out of sight of land the Longitude became more and more in doubt. With even the most careful D.R. then possible, it was not unusual for a ship which had been out of sight of land for only a week to be *degrees* wrong in her Longitude.

At the end of long ocean passages of many weeks the Longitude was often hopelessly adrift, though the Latitude could be ascertained with reasonable accuracy by observations of the sun or stars.

The ships, up to the time of Captain Cook, were small and very lively, and the compasses carried were but crude affairs compared to modern ones. In the article on the "History and Development of Navigation" which appeared in the April, 1935, number of this journal, an early type of mariner's compass is mentioned on which the four cardinal points only were marked, "the rest of the divisions being reserved to the skill of the Pilots"!

From quite early times, speed was estimated by means of the log line and sand glass, and the leeway was judged by eye, as indeed it is right up to the present day. It has been stated that the inventor of the log and line was HUMPHREY COLE, of the Mint in the Tower, the maker of the instruments bought in 1576 for Captain FROBISHER's first and second voyages, but the probability is that some form of log was used much earlier. FIGAFETTA, in his account of MAGELLAN's great voyage (1519) wrote that "daily we made runs of fifty, sixty or seventy leguas at the catena (chain) or at the stern," which would appear to refer in a rather vague manner to some form of log for estimating speed.

Admiral SMYTH, in his "Sailor's Word Book," says "The log is at best a precarious way of computing. The inventor of it is not known. The mode before, and is now in native craft in the East Indies, is to throw a log or chip overboard at the fore channel-plate and to walk aft, keeping up with it until it passes the stern, thus estimating (and closely too, by practice) the rate of motion."

The rather primitive device of log ship or chip, marked line and sand glass was used, with very little improvement, until quite recent times, being common in deep water sailing ships up to the time of the Great War.

Considering the crude implements by which the data for the D.R.

(and so, in those early days, the Longitude) was obtained on the great voyages of discovery in the 15th and 16th centuries, the inaccuracies of the old charts should not surprise us.

The wonder is that they gave as true a picture as they did of the general shape of the continents. There was every incentive for the early navigators to keep good account of their ship's progress at all times, and thus a tradition of the careful "logging" of changes of course, speed, wind, leeway, etc., grew and became a firmly-established custom at sea, during several centuries of practical navigation.

Before the days of steam and motor ships the degree of accuracy of Dead Reckoning positions depended partly on the skill and judgment of the navigator, and partly on chance, because so many unknown or uncertain quantities could affect the result.

Primitive peoples devised various ways of keeping account of their position at sea. The Esquimaux of East Greenland used wooden models of islands and coastline, which were reasonably accurate. These no doubt helped them to keep their bearings during their hunting trips afloat.

FIGURE 1 is a photograph of a native sailing chart of the Marshall Islands, in the Pacific.

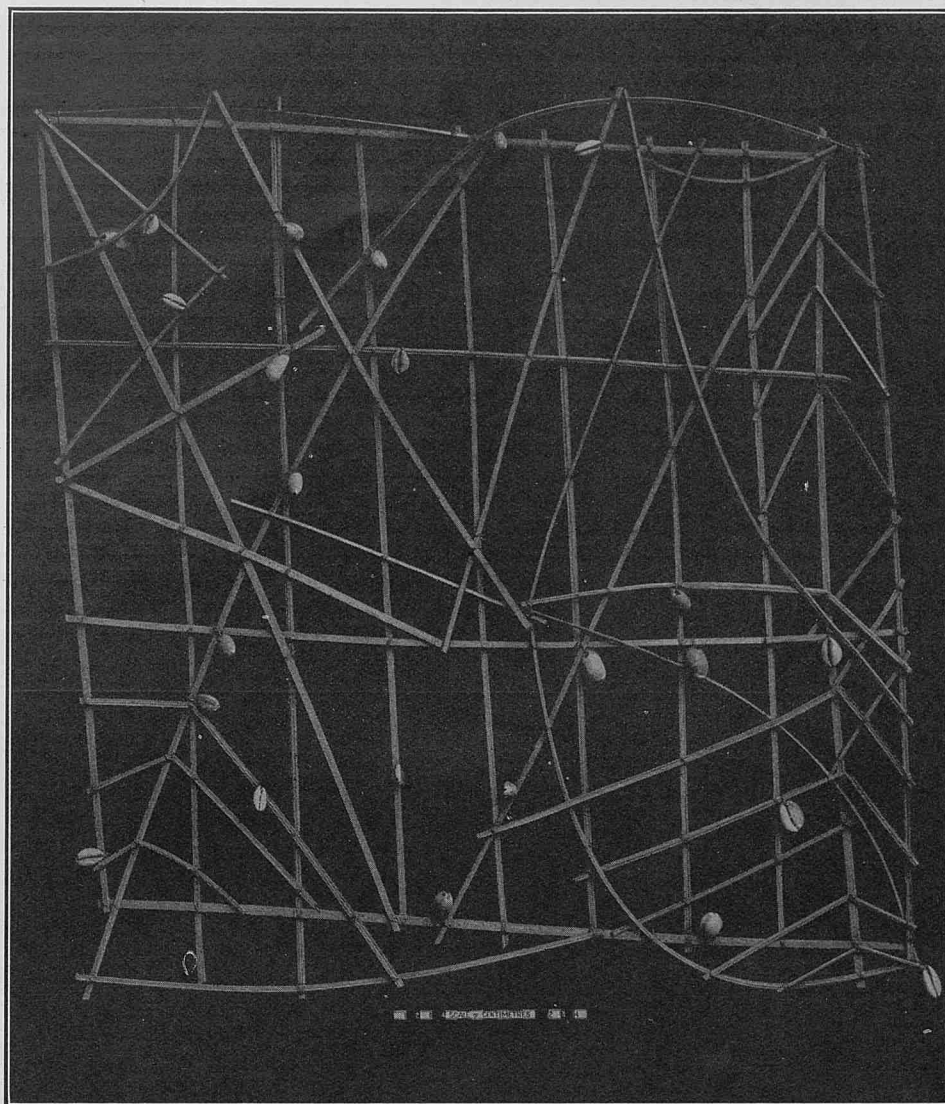
The natives of these islands are an active and intelligent race, and like many of the Pacific Islanders, were once skilful and fearless navigators. Their big canoes made ocean voyages of up to 600 miles. The charts are made of narrow strips of the centre ribs of palm leaves, lashed together, with shells to represent the various islands. The one shown in the photograph is about 2 ft. 6 in. square, and is what is known as a Rebbelib chart of the whole Marshall Island group. It shows a complicated arrangement of crossing swells and local currents. It is thought that the strips represent wave front of the swell caused by the prevailing wind, and the curved rods indicate swell checked by the islands, with rough sea where two curves intersect.

Some of the straight strips indicate the direction of other islands. These charts were used by the islanders up to the middle of the last century, but for how long before that is not known. There are about 30 islands in this group. Most of them are low atolls, not visible at a distance of more than 10 miles (probably less from a canoe), and many of the islands are over 100 miles apart. Passages of 200 miles out of sight of land must often have been made, and some sort of "Dead Reckoning" would be very necessary.

The term "Dead Reckoning" has been used for hundreds of years, and has become so common that few of us have ever thought to question its correctness, nor to consider its probable origin. Why "Dead" Reckoning? There is certainly nothing dead about it in the sense of being "dead sure" or a "dead certainty."

Some years ago the late MR. H. HARRIES, of the Marine Division of the Meteorological Office, when examining some old log books, came across what seems to be the true derivation of the term.

MR. HARRIES wrote: "Many words have completely lost their original meaning through the early writers being indifferent in their



(By courtesy of the Director of the Science Museum, London)

Figure 1.—Marshall Islands. Native Chart.

modes of spelling, or in the use of abbreviations. Perhaps one of the most remarkable of these posers is a word which is familiar to every English-speaking sailor in the Naval and Mercantile Marine services of the world, and is in perpetual use every day in the year. It has also been adopted by all British and American aviators as the word to use in navigating the aerial ocean overhead. Yet the word is a flat contradiction of what it is intended to mean, and of what was meant by the word used originally. In every ship's log, in all books of instruction, in works on navigation, and in innumerable other publications, we find a special point made of the Dead Reckoning on board ship. Why *Dead*? It has been for a century or more a stumbling block to investigators. One after another has attempted to arrive at some reasonable explanation of it, but has had to abandon the task as perfectly hopeless, for when they have marshalled all the facts at their disposal it is always found that the operations which the word covers are anything but *dead*. They are, in fact, very much alive!

Whether it be on board a becalmed sailing ship, on board a tramp steamer, on board a 25-knot liner, or on board a destroyer tearing through the sea at 36 knots, there is sleepless watch being kept by officers and men, the ship herself is never still, and in one form or another there is perpetual restless motion. Still more absurd and inapplicable is the word when it is used for the change of position of an aeroplane travelling at 100 or 150 m.p.h. In all this violent activity we can conceive of nothing in the nature of deathlike inactivity.

The original word.

Over one hundred years ago, in 1819, DOCTOR GREGORY, in his

w 14661

"Complete Dictionary of Arts and Sciences," wrote: "Dead Reckoning, in navigation, the calculation made of a ship's place by means of the compass and log; the first serving to point out the course she sails on, and the other the distance run. From these two things given, the skilful mariner, making proper allowances for the variation of the compass, leeway, currents, etc., is enabled without any observations of the sun or stars to ascertain the ship's place tolerably well." All dictionaries, and encyclopaedias published since then on both sides of the Atlantic have failed to get further than this, even those professing to give a full account of the origin of words. The late SIR JAMES A. H. MURRAY, in the Oxford Dictionary, failed to improve on GREGORY. He gave three quotations of the expression, respectively 1613, 1760 and 1840. He might have gone further back and quoted HAKLUYT, in 1580. But these quotations only proved the use of the wrong word.

The writers of text books on Navigation, with one exception, have adopted Dead Reckoning without question, there being no obvious explanation of the sense of the word *Dead*. RIDDLE alone, in his "Treatise on Navigation and Nautical Astronomy," carefully excluded the expression and made no allusion in the chapter on the method of keeping a Sea Journal. The present writer, (MR. H. HARRIES) having had a great deal to do with the logs of the Royal Navy, as far back as the middle of the seventeenth century, long ago discovered the real solution of the difficulty. It was not until nearly the close of the eighteenth century that printed log books were supplied by the Admiralty. Long before that, officers were compelled to keep a journal, the form of which was only gradually developed. Originally it was on loose sheets of small size, and the columns when introduced, had to be ruled by hand. The log of the *Dreadnought*, 1679, had 12 very narrow columns on one page. For want of space the column

for the latitude *deduced* from the reckoning, as RIDDLE has it, was headed *Ded./Lat.* This abbreviation *Ded* for deduced, has become corrupted into *Dead*, which has for generations served to exercise in vain the most learned savants on two continents to get at its real, and in the result perfectly simple, meaning. There is not a mariner who, on reading this explanation, will fail to realise that *deduce* is the only word which correctly expresses the method of obtaining his so-called *Dead Reckoning*. He deduces his position from the account he has kept, just as any tradesman deduces his profit or loss from his account.

There seems no reasonable doubt that MR. HARRIES' explanation is the correct one, and that the term should be *Deduced*, or *Ded. Reckoning*.

Compared with that of the days of sail, the D.R. in a modern steam or motor ship can be regarded as remarkably accurate. We now usually have a steady course and speed and greatly improved facilities for keeping account of them. The Mariners' Compass and the Patent Log have both reached a high state of efficiency, and other inventions to aid navigation have been produced.

A recent development has been the invention of the Master Magnetic Compass, which is adapted to operate any required number of repeater compasses. This, of course, ensures that the Standard Magnetic Compass course is always the same as the Steering Magnetic Compass Course.

A remarkable thing about this instrument is that the inventor has overcome the difficulty of making a sensitive magnetic compass needle control external apparatus.

Gyro Compasses are fitted in a considerable number of Merchant ships. These compasses indicate True North, are not affected by magnetism of the earth or the ship, and can have several repeaters run from them. They are particularly useful in high latitudes, where the horizontal directive force of the magnetic compass needle is lessened, and also on voyages in which the lines of equal magnetic variation are rapidly crossed.

In connection with the Gyro Compass there is another device which helps the navigator to keep an accurate reckoning. This is the Course Recorder.

It is worked electrically from the Master Gyro Compass and records on a printed chart the changes of direction of the ship's head, and the times they took place. This is obviously of great use when frequent alterations of course and speed may be necessary, such as when navigating in fog, amongst ice, or traffic.

There is also the Gyro Pilot, sometimes known as the "Iron Quartermaster." This device, also worked from the Gyro Compass, actually operates the steering gear and keeps the ship on her course. It can be adjusted to suit various weather conditions. An advantage that it possesses over the human Q.M., at least from the point of view of the officer of the watch, is that it does not get tired nor bored, nor



Figure 2.

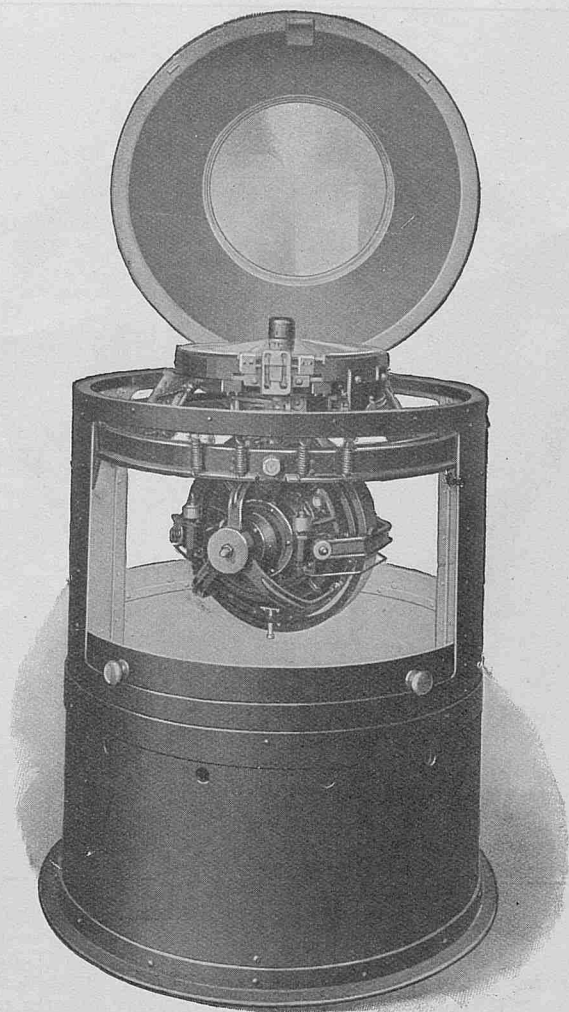


Figure 3.—Gyro Master Compass.

does its attention wander from the steering through "counting up the pay-day."

Another invention that is a help with regard to Dead Reckoning is the Path Indicator. This instrument measures for the navigator the actual distance which the vessel has travelled away from the track laid down, either to Port or Starboard, due to unequal yawing, bad steering, small alterations of course for traffic, etc.

The Path Indicator is controlled by a repeater compass. It is situated in view of the helmsman and should enable the officer of the watch to ensure that the ship "makes good the course."

A ship's distance run is measured with considerable accuracy by modern patent logs, especially if they are towed from a boom and thus kept clear of the ship's wake. There are also types of log that are fitted into the ship's hull and are worked electrically. Many navigators prefer to estimate the distance run by means of the engine revolutions.

The result in each case will largely depend for its accuracy on the care and judgment of the officers in making allowance for the ship's trim, for wind effect on her, and for engine slip, etc.

It is certainly a truism that the finest and most costly instruments and machinery are just so much scrap iron, unless they are used with skill and intelligent understanding.

All these aids to accurate Dead Reckoning do not lessen the need for care in the matter. On the contrary, with facilities for great accuracy has come the increased speed of ships and the greater demand for punctuality in running.

The Reckoning cannot be too carefully kept, for even with the utmost care and skill, it is possible for inaccuracies to creep in. We cannot do better than repeat here what was said by the late LORD KELVIN, than whom navigators have never had a better friend. He said, "We often hear stories of marvellous exactness with which the dead reckoning has been verified by the result. A man has steamed

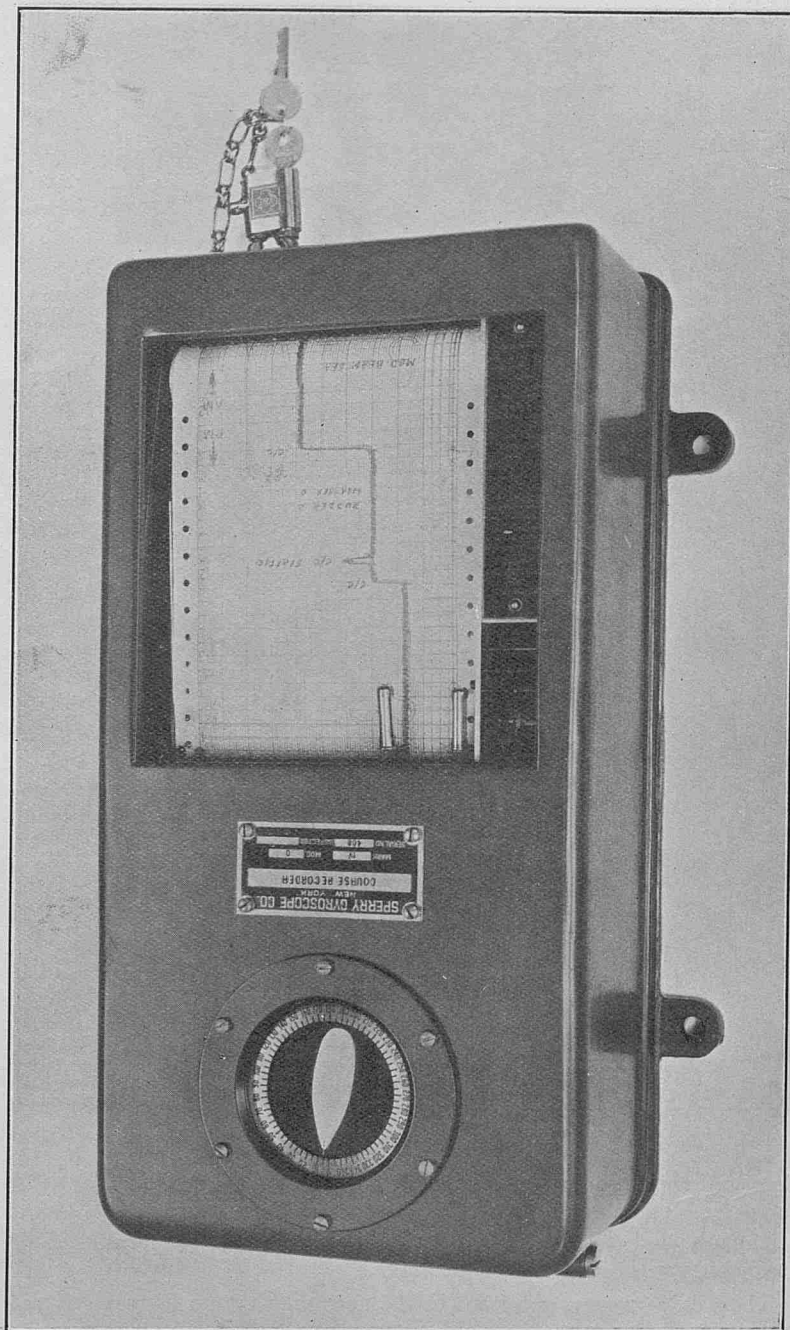


Figure 4.—Course Recorder.

or sailed across the Atlantic without having got a glimpse of sun or stars the whole way, and has made land within five miles of the place aimed at. This may be done once, and may be done again, but must not be trusted to on any one occasion as probably to be done again this time.

"Undue trust in the dead reckoning has produced more disastrous shipwrecks of seaworthy ships, I believe, than all other causes put together.

"... All things considered, a thoroughly skilled and careful navigator may reckon that, in the most favourable circumstances, he has a fair chance of being within five miles of his estimated place after a two hundred miles' run on dead reckoning; but with all his skill and with all his care, he may be 20 miles off it; and he will no more think of imperilling his ship and the lives committed to his charge on such an estimate, than a skilled rifle-shot would think of staking a human life on his hitting a bull's eye at five hundred yards."

Dead Reckoning is chiefly of interest to the Marine Division of the Meteorological Office with relation to the set and drift of ocean currents recorded by ships of the Observing Fleet. The collection of this

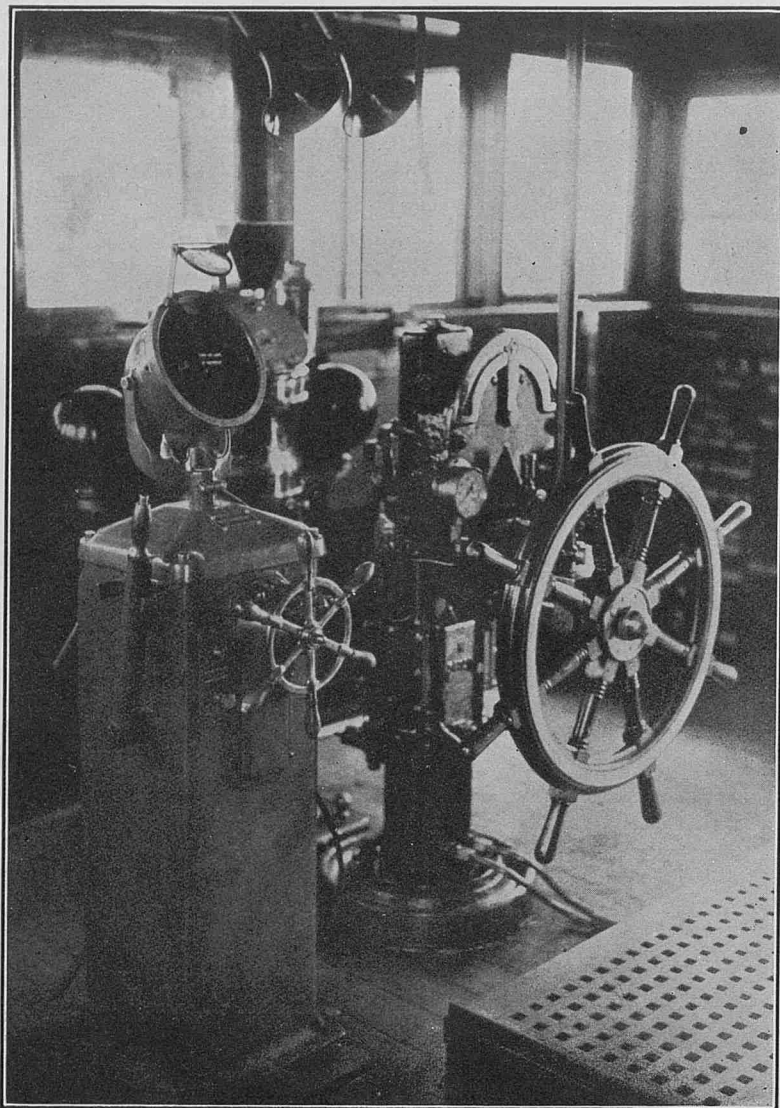


Figure 5.—Gyro Pilot.

data and the preparation of suitable current charts is one of the most important duties of the Division.

Modern invention has given seamen the means of keeping their Reckoning with considerable accuracy.

There is, however, one item in the account that no instrument yet invented can measure in a ship under way: *i.e.*, ocean current.

The movements of the surface currents in the great oceans are complicated, and their causes often obscure.

Only large numbers of observations of set and drift can make possible the construction of reasonably accurate current charts, and it is only from practical navigators that sufficient data can be obtained; they cannot be "worked out" ashore.

Carefully calculated Dead Reckoning is at the very root of the matter.



Figure 6.—The Path Indicator.

In observing ocean currents it is necessary to make a distinction between the D.R. position and what may be conveniently termed the Estimated Position. Their difference is that in the latter calculated position a known or expected current has been allowed for.

For our purpose of *discovering* the true set and drift it would obviously be misleading if this Estimated Position, although often used in practical navigation, were to be recorded in Meteorological Logs or Forms as D.R., unless the amount allowed for expected current was also plainly stated.

In most ships A.M. and P.M. positions by star observations are usual nowadays, and if the D.R. is carefully worked, reliable observations of set and drift can be recorded at shorter intervals than was usual in the past.

In many of the large companies with ships running on regular routes, each captain has his own pet idea of the best track to use at different seasons of the year in order to get advantage of, or to avoid, ocean currents. Most of these officers have sailed on the route for many years and have gained some experience of it. They cannot, however, all be right. If one route is best, then another must be worst.

No man lives long enough to get much experience of anything, but the accumulated experience of hundreds of men over many years must surely be somewhere near the truth.

SCINTILLATION

PREPARED IN THE MARINE DIVISION BY E. W. BARLOW, B.Sc.

THE twinkling of the stars and of other sources of light of small apparent size, such as distant terrestrial lights, is called scintillation. It is a phenomenon known to everyone and has been observed from remote times. Aristotle (384–322 B.C.) noted that the fixed stars twinkle, while the planets shine with a comparatively steady light, a fact which, however, could not be explained at that time.

Scintillation is entirely produced by the earth's atmosphere, through which the light rays from any celestial object must pass before reaching the eye of the observer. When a star at moderate or high altitude twinkles, the phenomenon is seen only as a more or less rapid change in brightness, but when a star at a low altitude twinkles, changes of colour as well as changes of magnitude are seen. To see these colour changes well with unaided vision a bright star should be looked at when within 20° of the horizon; the lower the altitude the better. The colour changes are most readily seen in the case of Sirius, since this star appears to us the brightest of all. On a night of unsteady atmosphere the star will be seen to flash in brilliant changing colours, for example, red, green, blue and violet, and occasionally resuming its normal colour, which, in the case of Sirius, is a bluish-white.

Scintillation varies in rapidity according to the state of the atmosphere. The following observation made on S.S. *City of Lyons* in the North Atlantic Ocean on October 17th, 1934, gives a good account of an unusually vivid colour scintillation:—"Sirius . . . was giving forth a brilliant green light which at the edges turned a bright red and then a soft white which was rapidly turned into a brilliant purple and thence back to green. The star appeared to recede and advance, contract and expand. On contracting the colours became more brilliant and more pronounced, their margins seemed more definite and bolder struck. This phenomenon lasted for about forty minutes when the star was obscured by a large bank of cloud. . . . The next night under similar conditions the star appeared perfectly normal."

Explanation of the Changes of Brightness.—In the article on Deceptions of Vision due to Atmospheric Conditions at Sea, published in *MARINE OBSERVER*, Vol. XII, 1935, page 14, it was shown that the path through the atmosphere of the light from a star is a curved one, becoming more vertical as it approaches the observer, so that the star's altitude is apparently greater than it actually is. This was illustrated by a figure and is the well-known effect of refraction through successively denser layers of atmosphere as the light from the star approaches the earth's surface.

The atmosphere, however, is far from uniform, containing pockets and layers of air of different temperatures and humidities, and consequently of different densities, adjacent to one another. The diagram referred to above, therefore, only shows the path of light from a star in a general way; actually it is subject to slight irregularities along its course. Moreover, these irregularities are usually constantly varying, owing to the movements of the atmosphere which constitute wind at various heights or to vertical movements such as convection from one layer to another. As a result the condition of the air through which the rays of starlight come to the eye is different each succeeding moment and the amount of light which enters the eye is constantly changing. In other words the twinkling is due to the temporary deflection of light from the eye by the variable local refracting power of the atmosphere.

On any night the lower the altitude of the body observed the greater the degree of twinkling, since the light has to pass through a greater thickness of the atmosphere and hence is more likely to be disturbed in its passage. The degree of twinkling varies very much on different nights and may sometimes be nearly or wholly absent except near the horizon. This is the usual state of affairs in the tropics where little or no scintillation is observed at altitudes greater than about 15° . In temperate latitudes it is not infrequently absent at high altitudes, and especially in the zenith, but is often very marked over the entire sky, and there are few nights when stars near the horizon do not twinkle to some extent. Scintillation is very strong in the cold frosty nights of winter in temperate latitudes, also in showery and changeable weather such as is experienced at the rear of a depression.

Explanation of the Changes of Colour.—It is well known that the various coloured rays of which light is composed are refracted unequally by the atmosphere or any other refracting medium, the blue and violet being the most refracted and the red the least refracted.

It follows from this that the rays of different colour entering the atmosphere at the same point must take differently curved paths through the atmosphere. Now when an observer sees a white star to be of its normal white colour all the rays of different colours must be entering his eye simultaneously in correct proportion. For this to be possible the violet ray which he receives as a constituent of the white light must come from a different point, at the outer limit of the atmosphere, to that from which the red ray comes. The other coloured rays will come from points between these two extremes. It has been calculated that for a star at an altitude of 10° above the horizon the separation of the red and violet rays at the outer limit of the atmosphere is about 5 feet, while for a star of altitude 50° the separation is only about 2 inches.

The colour variation in scintillation is due to the differently coloured rays pursuing different paths, so that each ray may be affected differently and independently of the others. For example, if all the coloured rays except the red are temporarily deflected from the eye the star will appear momentarily red. The absence of colour changes at higher altitudes is explained by the fact of the different rays being much less separated, as explained above, so that they are usually subject to the same small local changes of refraction at the same time.

Scintillation of Planets.—The planets present discs of sensible apparent size though these are not visible without optical means. Scintillation of every point of the disc takes place on nights when a star at the same altitude as the planet is twinkling, but as the light from each point comes along a different path through the atmosphere, each point twinkles independently of the others and the resulting fluctuations of brightness cancel each other so that the planet maintains a steady or nearly steady brightness. It should be noted that this rule is not invariable; the planets Mercury, Venus and Mars, which have the smallest apparent discs, may twinkle appreciably when near the horizon. The sun and moon, showing very large discs, never exhibit the phenomenon in any circumstances.

Scintillation in the Telescope.—When optical aid is used scintillation in general decreases. The function of any telescope or binoculars is to collect more light from the object, which it does in proportion to the ratio of the area of the object glass to that of the pupil of the eye. Rays of light deflected by scintillation outside the small area of the pupil may nevertheless fall on the larger area of the lens and the bigger the instrument the more likely this is to happen. The exception to this rule is that the colour changes of scintillation are more readily seen in a very small instrument, such as binoculars, since the increase of light makes them more conspicuous and more than counterbalances any reduction in the degree of change.

When the sun, moon or planets are examined in an astronomical telescope various degrees of rippling, shimmering or "boiling" of the contours may be seen. The details of the markings visible on the discs similarly suffer various degrees of temporary obscuration or blurring. This is scintillation as seen in the telescope, though it does not affect the brightness of the object as a whole. There is a further aspect of scintillation seen only in the case of a star, usually at a relatively low altitude, when examined under a high magnifying power in a large telescope. The star, of course, shows no sensible disc, it is only a point of light, but it will be seen to change its position slightly, a very small movement about its mean position. This movement is also due to the temporary irregularities of refraction.

Abnormal Scintillation.—ALEXANDER VON HUMBOLDT, on June 22nd, 1799, when at Malpays, on the slope of the Peak of Teneriffe, saw the stars near the horizon flickering with peculiar oscillating motion. "It seemed as if a number of small rockets were being projected in the air; luminous points, at an elevation of 7° or 8° , appeared moving, first in a vertical direction, and then oscillating in a horizontal direction. These were the images of many stars, apparently magnified by vapours, and returning to the same point from which they had emanated." Nearly 50 years later PRINCE ADALBERT of Prussia saw the same phenomenon in the same place, both with the telescope and with unaided vision. In this case the temporary irregularities of refraction must have been extreme, possibly due to a cause peculiar to the place, as there is no record of the phenomenon having been seen on other mountains. The abnormalities of scintillation which might be observed

at sea include such observations as unusually vivid colour changes, the persistence of one colour in preference to others, etc.

Scintillation of Terrestrial Lights.—Terrestrial lights of a small apparent size, such as ship's lights or street lights, viewed from a

considerable distance, say several miles, will also twinkle. The irregularities of the atmosphere are well shown over such a small distance, as the twinkling of each of a row of lights will not keep time with the others, often producing a kind of rippling appearance.

WEATHER IN THE NORTH ATLANTIC, OCTOBER 1st to 3rd, 1934

PREPARED IN THE MARINE DIVISION BY
COMMANDER J. HENNESSY, R.D., R.N.R.

ON September 17th, 1934, the S.S. *Millpool*, a vessel of 4,218 tons, sailed from Danzig for Montreal with a cargo of rye. She passed Cape Wrath on September 22nd and was in frequent wireless communication with other ships and shore stations up to October 2nd.

Millpool first intimated that she was in danger on October 2nd, when Belle Isle W/T station sent out the following message, timed 1958 G.M.T. :

"*Millpool* in Latitude 53° 30' N. Longitude 37° 10' W. drifting helplessly before gale with after hatch stove in."

At daylight on the 3rd the *Ascania* and *Beaverhill* searched this position without finding any trace of *Millpool*, who had foundered with the loss of her crew comprising 26 hands.

The following weather charts for Noon G.M.T. on October 1st, 2nd and 3rd, 1934, are made from observations taken by ships of the Voluntary Observing Fleet and show the general weather conditions prevailing prior to and at the time of *Millpool's* loss. On each chart *Millpool's* last reported position is indicated by a +.

CHART 1.—On October 1st, 1934, at 1200 G.M.T. a shallow depression was centred north of Latitude 50° N. and west of Longitude 50° W. Another shallow depression was centred northward of Latitude 55° N. and eastward of Longitude 20° W., while a wedge of high pressure covered the mid-Atlantic between the 30th and 50th meridians. There is no indication of any heavy weather in the North Atlantic on this day.

CHART 2.—On October 2nd, 1934, at 1200 G.M.T., the depression shown on CHART 1, centred over Labrador had deepened and moved in a north-easterly direction, being now centred north-eastward of Latitude 55° N., Longitude 40° W., while a secondary to this depression

had developed and was centred north-eastward of Latitude 52° N., Longitude 30° W.

At this time *Empress of Britain*, situated in Latitude 53° 15' N., Longitude 33° 55' W. to the eastward of *Millpool's* assumed position reported a fresh gale from W. by N., with high sea, and six hours later, at 1800 G.M.T., reported similar conditions but with a very high sea.

Ascania, at 1200 G.M.T. on this day, in Latitude 52° 57' N., Longitude 41° 34' W., to the westward of *Millpool's* assumed position, reported a fresh gale from W. by N., with high sea and heavy swell, and six hours later, at 1800 G.M.T., in Latitude 53° 08' N., Longitude 39° 40' W., reported a whole gale from W. by N., with high sea and heavy long swell.

It was at 1958 G.M.T. of this day that *Millpool*, in Latitude 53° 30' N., Longitude 37° 10' W., was reported by Belle Isle W/T station to be drifting helplessly before gale with after hatch stove in.

CHART 3.—On October 3rd, 1934, at 1200 G.M.T. The depression shown on Chart 2 has, during the past 24 hours moved eastward and deepened. It is now centred in about Latitude 55° N., Longitude 20° W.

At this time *Alaunia*, situated in the rear of the depression, in Latitude 53° 28' N., Longitude 28° 20' W., reported a fresh gale from N.W. by W., with high sea and heavy swell. *Scythia*, also situated in the rear of the depression, in Latitude 52° 18' N., Longitude 32° 25' W., reported a strong gale with very high sea and heavy swell.

In the findings of the Court, under the presidency of Lord Merrivale, which investigated the disaster, the loss of the *Millpool* was ascribed to "Perils of the sea and in particular the weather in which she sank."

Chart 1.—Weather Chart Noon G.M.T. October 1st, 1934.

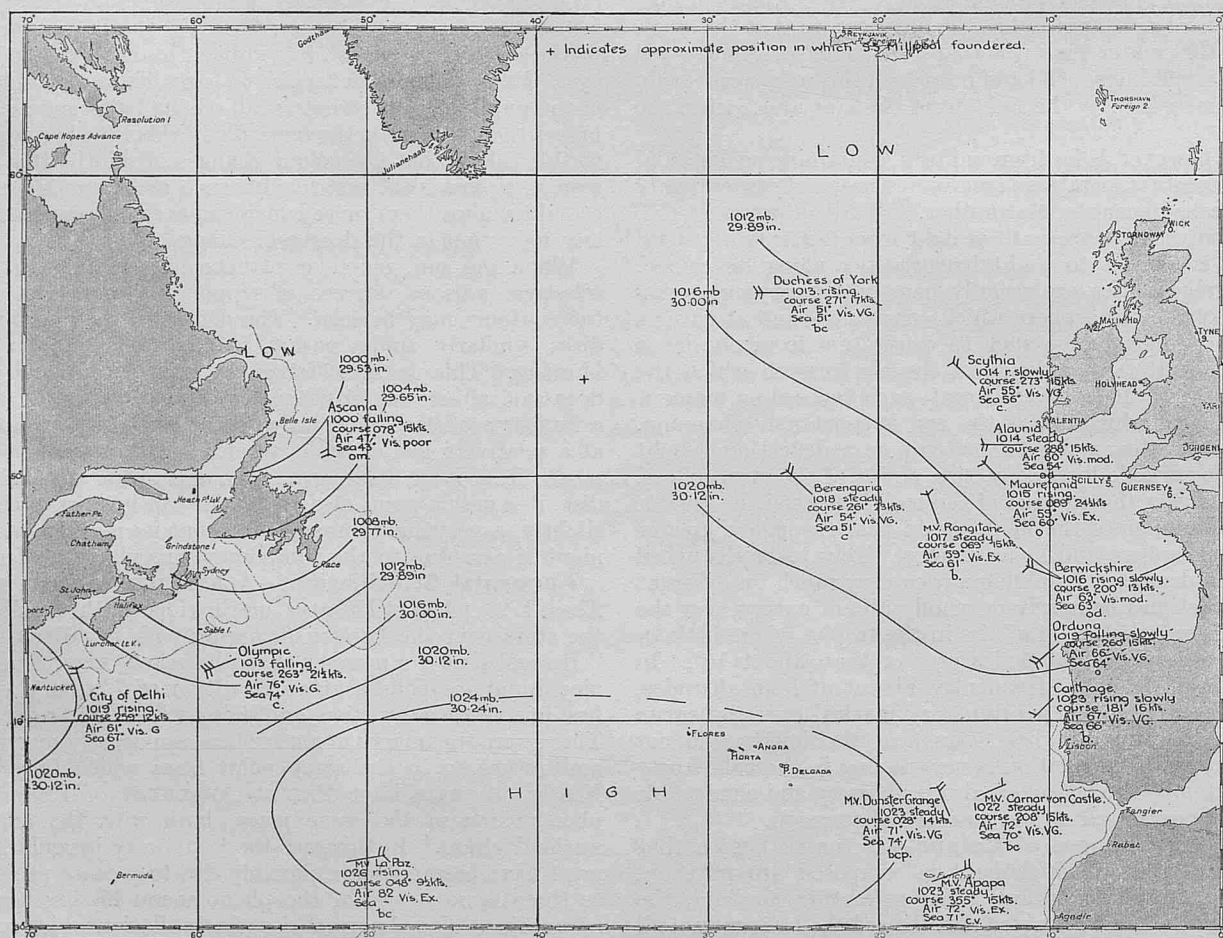


Chart 2.—Weather Chart Noon G.M.T. October 2nd, 1934.

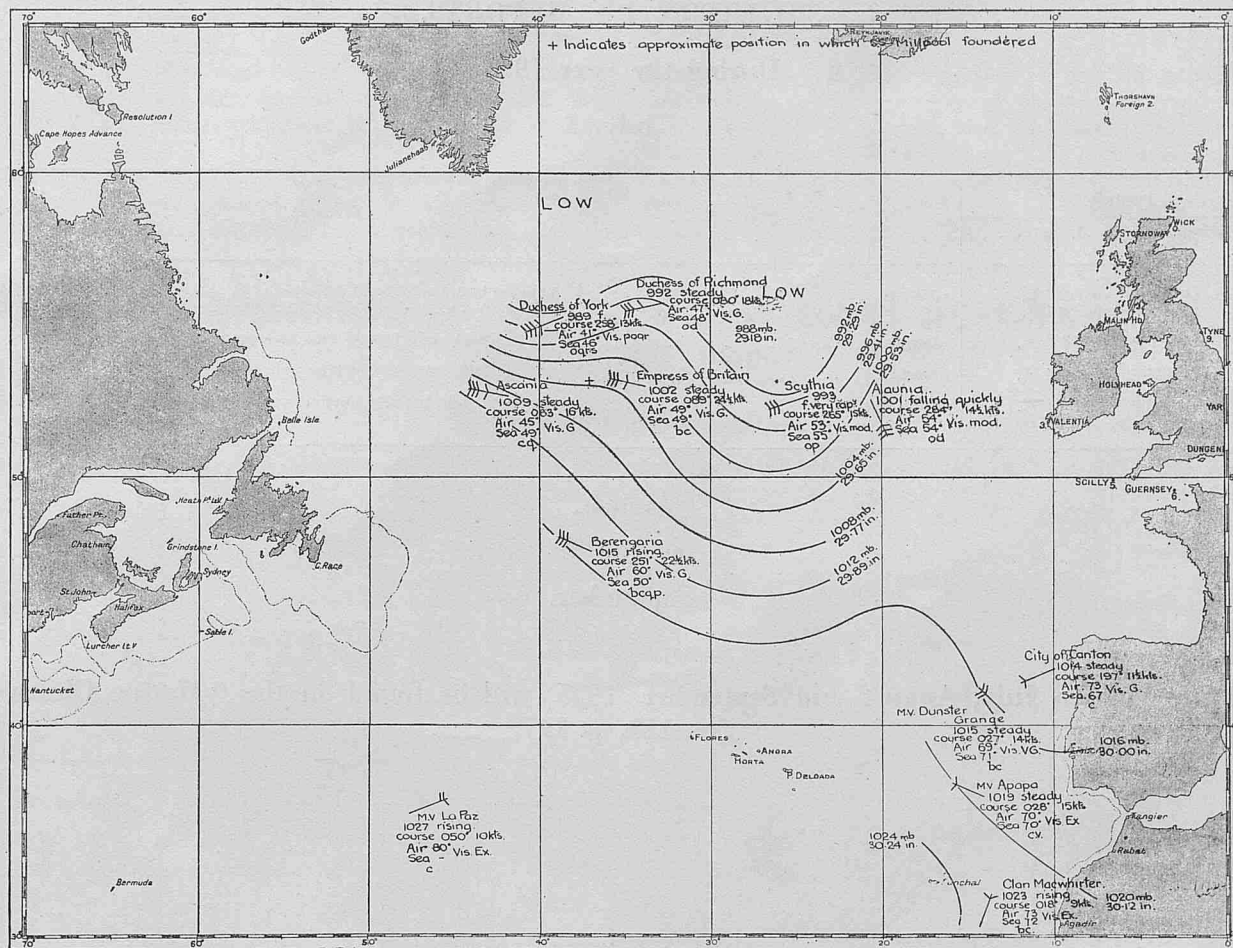
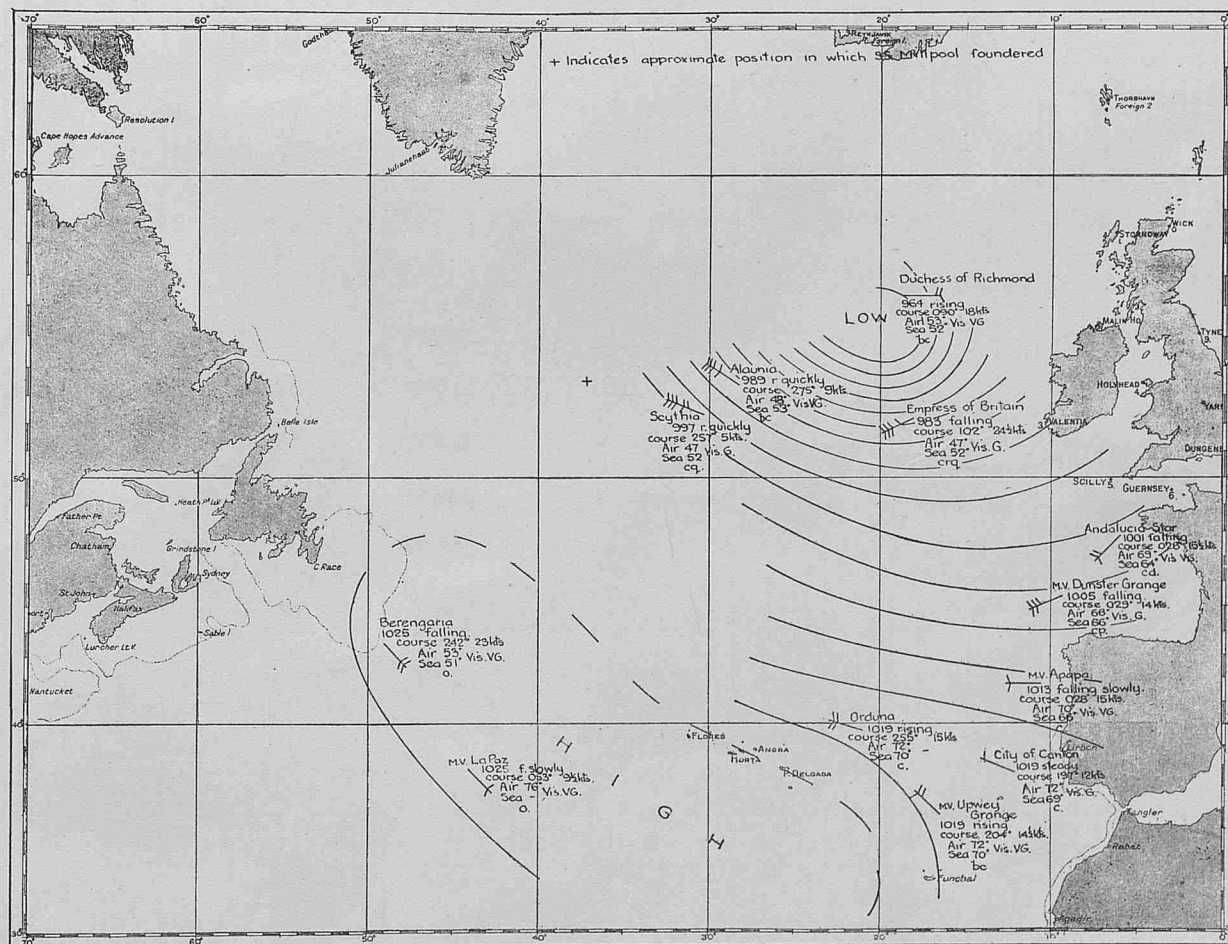


Chart 3.—Weather Chart Noon G.M.T. October 3rd, 1934.



SOUTHERN ICE REPORTS.

During the year 1935.

July.

Year.	Day.	Position.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1935	6	From 44° 58' S. 57° 39' E. To 44° 56' S. 57° 48' E.		5 bergs	Lengths between 150 and 20 feet Heights between 75 and 8 feet estimated	S.S. <i>Mamari</i> .
	7	55° 15' S. 107° 51' W.		Berg	196 feet high and 414 feet long, measured by sextant angle	M.V. <i>Durham</i> .
		54° 57' S. 105° 25' W.		Berg	100 feet high and 300 feet long, estimated dimensions ...	M.V. <i>Durham</i> .
	2	54° 34' S. 106° 22' W.		2 large bergs	Approximately 12 miles north of vessel's course	S.S. <i>Piako</i> .

August.

No reports.

September.

No reports.

Reports of ice previous to July, August and September, 1935, will be found in the "Marine Observer," Vol. XII, No. 119, p. 117.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

To decode these reports, and for information of the system of communication of "Selected Ships," all concerned are referred to the PAMPHLET, M.O. 329, concerning which special notice to the masters of British ships will be found on p. 31, paragraphs (27) and (34) of the January 1936 number of THE MARINE OBSERVER.

Request for Information.

[illegible]

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.				
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55' 40" S. Long. 30° 58' 50" E.	ZSD	—	143 kc/s. (2100 metres).	Indian Ocean S. of 20° S. and Eastward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	No control. Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
	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 0000 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.	Weather.	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' 49" E.	VPQ	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 20° 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).	143 kc/s. (2100 metres).	Indian Ocean and Southern Ocean between Long. 90° and 135° E.; but not within 100 miles of the coast.	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, p. 30, of the January 1936 number.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" E.	VPS	8330kc/s. (36 metres) or 500 kc/s. (600 metres).	143kc/s.* (2100 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. *Alternatively see particulars on p. 108 and use wave length and times for "B Selected Ships."
South Pacific.	Sydney.	Lat. 33° 46' 00" S. Long. 151° 03' 09" E.	VIS	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	S. Pacific Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast.	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, p. 30, of the January 1936 number.
	New Zealand.	—	—	—	—	—	Weather Wellington.	Weather only, four universal groups.	The Meteorological Office, Wellington, will be glad to receive routine reports from British Selected Ships within range of New Zealand W/T Stations through the normal commercial channels.

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

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Malin Head*	Lat. 55° 21' 45" N. Long. 7° 20' 30" W.	GMH	Weather London.	Weather in four universal groups only, in Ships' International Wireless Weather Telegraphy Code.	Station will indicate at 0805 G.M.T. with ordinary traffic calls, the names of British "B" Selected Ships and other British ships within range and North of Lat. 54° N., and West of Long. 7° W., who are desired to report weather at routine times. Thus:—Call signs of ships to report weather through GMH.
	Valentia*	Lat. 51° 55' 48" N. Long. 10° 20' 54" W.	GCK	Weather London.	Weather in four universal groups only, in Ships' International Wireless Weather Telegraphy Code.	Station will indicate at 0825 G.M.T. with ordinary traffic calls, the names of British "B" Selected Ships and other British ships within range, South of Lat. 54° N., and to southward of Ireland West of Long. 7° W., who are desired to report weather at routine times. Thus:—Call signs of ships to report weather through GCK.
South Atlantic.	Salinas.	Lat. 0° 37' 00" S. Long. 47° 23' 00" W.	PPL	Meteoro Rio.	Weather only, including supplementary groups.	
	S. Luiz.	Lat. 2° 31' 28" S. Long. 44° 16' 30" W.	PXM			
	Fortaleza.	Lat. 3° 42' 49" S. Long. 38° 30' 56" W.	PPC			
	Natal.	Lat. 5° 46' 30" S. Long. 35° 16' 20" W.	PXN			
	Olinda.	Lat. 8° 00' 55" S. Long. 34° 50' 40" W.	PPO			
	Amaralina.	Lat. 13° 00' 50" S. Long. 38° 28' 27" W.	PPA			
	Abrolhos.	Lat. 17° 57' 35" S. Long. 38° 42' 00" W.	PXH			
	Victoria.	Lat. 20° 18' 52" S. Long. 40° 19' 06" W.	PPT			
	Rio.	Lat. 22° 59' 19" S. Long. 43° 11' 26" W.	PPR			
	Santos.	Lat. 23° 59' 22" S. Long. 46° 18' 18" W.	PPS			
	Floriano- polis.	Lat. 27° 35' 22" S. Long. 48° 34' 17" W.	PPF			
	Juncçao.	Lat. 32° 03' 22" S. Long. 52° 08' 13" W.	PPJ			
Mediterranean						
Red Sea and Indian Ocean						
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55' 40" S. Long. 30° 58' 50" E.	ZSD	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	
	Algoa Bay (Port Elizabeth).	Lat. 33° 57' 16" S. Long. 25° 35' 30" E.	ZSQ	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	

* To commence 1st July, 1936.

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

(Continued.)

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Indian Ocean <i>(continued)</i> .	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' 49" E.	VPQ	Weather Nairobi.		
	Dar-es-Salaam.	Lat. 6° 50' 38" S. Long. 39° 17' 24" E.	ZBZ	Weather Nairobi.		
	Mauritius.	Lat. 20° 23' 41" S. Long. 57° 35' 25" 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.	
Esperance.	Lat. 33° 52' 40" S. Long. 121° 53' 34" E.	VIE				
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' 37" S. Long. 174° 46' 08" E.	ZLD	Weather Wellington.	Weather only, four universal groups.	The Meteorological Office, Wellington, will be glad to receive routine reports from British Selected Ships within range of New Zealand W/T Stations through the normal commercial channels.
	Wellington.	Lat. 41° 16' 26" S. Long. 174° 45' 55" E.	ZLW			
	Awarua.	Lat. 46° 30' 47" S. Long. 168° 22' 24" E.	ZLB			
	Chatham Island.	Lat. 43° 57' 28" S. Long. 176° 34' 25" W.	ZLC			
	Rarotonga.	Lat. 21° 11' 52" S. Long. 159° 48' 52" W.	ZKR			
	Apia.	Lat. 13° 50' 17" S. Long. 171° 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			
	Melbourne.	Lat. 37° 46' 56" S. Long. 144° 52' 09" E.	VIM			
	Adelaide.	Lat. 34° 51' 14" S. Long. 138° 31' 55" E.	VIA			

II. WIRELESS WEATHER SIGNALS.

Bulletins.

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

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

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

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

SOUTH WEST AFRICA AND UNION OF SOUTH AFRICA.

WEATHER SHIPPING BULLETINS.

The following W/T stations transmit weather Reports on 600 m. in code giving actual observations at 0630 G.M.T. at coast stations and Forecasts of Weather in plain language for coastal areas indicated on the Chart below.

Station reports are made in the International Ships Wireless Weather Telegraphy Code in three five-figure groups.

Instructions for decoding.

To decode these reports the tables given in M.O. 329 are required (Decode for Use with International Code for Wireless Weather messages from ships [Third edition], obtainable from H.M. Stationery Office, price 6d.).

The Key letters are fully described on p. 36 of the January, 1936, number, and in M.O. 329, with the exception of symbol II. II = the distinguishing figures of the coast stations, which are given on the chart.

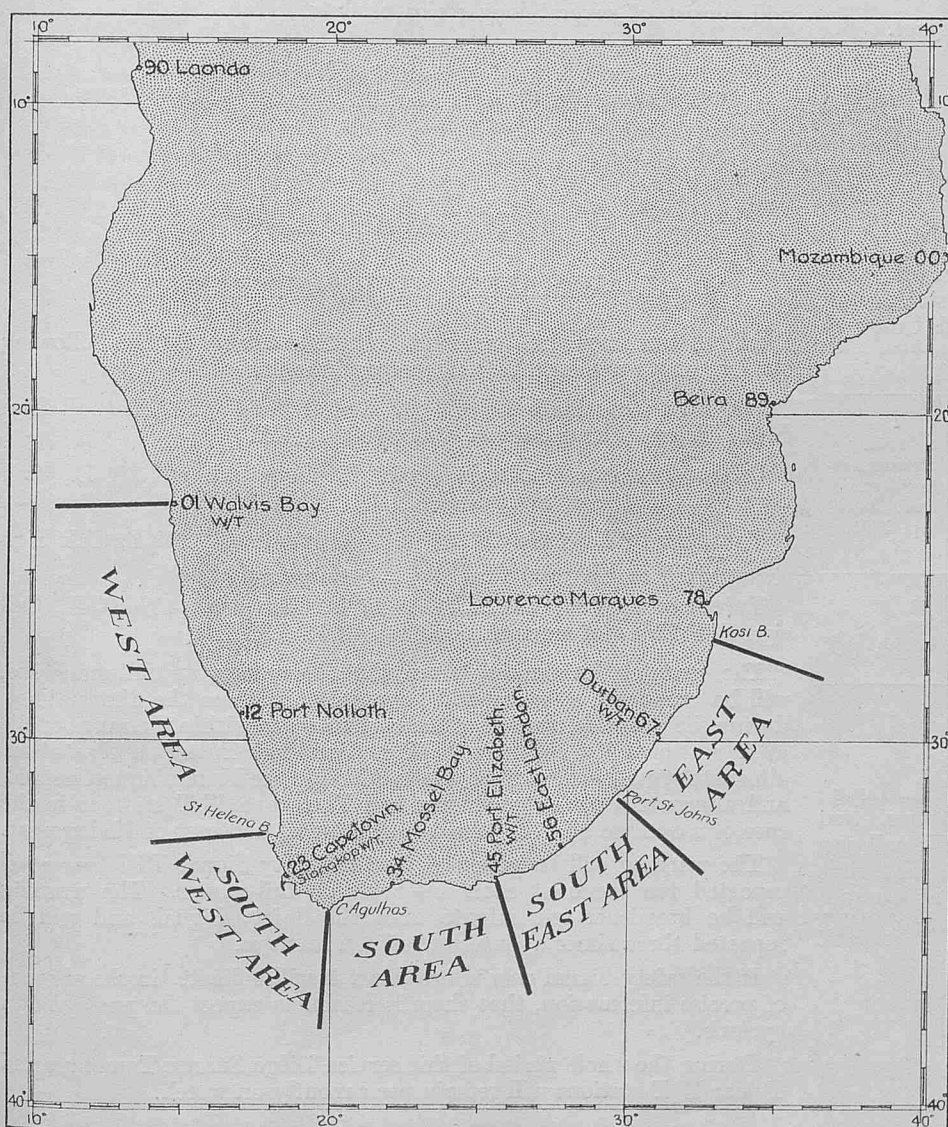
Key letters—IICAK DDFww BBVTT.

Explanation of Chart.

The numbers alongside the names of the stations on the chart are distinguishing numbers.

The Areas for which weather forecasts are made are indicated in large print.

Chart showing Stations and Forecast Areas for Weather Shipping Bulletins South West Africa and Union of South Africa and Stations for Portuguese East Africa.



W/T Station and Position approx.		Call Sign.	Times of Transmission.		Station distinguishing figures (see Chart)
Latitude.	Longitude.		Station reports. G.M.T.	Forecasts. G.M.T.	
Walvis Bay† ... 22° 58' S. 14° 30' E.		ZSV	0850	1250	23, 12, 01, 90.
Capetown (Slangkop) 34° 09' S. 18° 19' E.		ZSC	0930	1220	56, 45, 34, 23, 12, 01.
Port Elizabeth (Algoa Bay). 33° 57' S. 25° 35' E.		ZSQ	0820	1230	67, 56, 45, 34, 23.
Durban (Jacobs) ... 29° 56' S. 30° 59' E.		ZSD	0810	1205	89, 78, 67, 56, 45.

† Wavelength 625m.

Sample Message.

(Broadcast by Capetown, Slangkop W/T, 29th March, 1933.)

Station Reports.

56520	20300	13772
45910	00903	13670
34001	28205	13666
23021	08103	13563
12012	28104	16155
0100X	00003	14667

Forecast.

Coast forecast, Wednesday 29th March, Cloudy with local fogs in west, south-west, south and south-east, fine in east, light to moderate, north-westerly to south-westerly winds, sea slight to moderate.

Weather reports giving actual observations taken at the stations shown on the chart, coded in the same form as above, are included in messages transmitted on a wavelength of 2100 m. C.W. from :—

Capetown (Slangkop) W/T Station ZSC at 0935 G.M.T.

Durban (Jacobs) W/T Station ZSD at 0900 G.M.T.

III.—WIRELESS TIME SIGNALS.

Cape Town (Slangkop) W/T Station, call sign **ZSC**, Latitude $34^{\circ} 09' S.$, $18^{\circ} 19' E.$ (approx.), broadcasts on a wavelength of 600 metres (I.C.W.) time signals which are actuated automatically from the Royal Observatory at the Cape by direct land line.

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

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

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

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

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

Occasionally Campos Rodrigues observatory will transmit other time signals, which must not be confused with those given above. These signals belong to the category of rhythmic time signals, and will consist of several long series of dots.

PORTUGUESE EAST AFRICA.

II.—WEATHER SHIPPING BULLETINS.

The following W/T Stations transmit Weather Reports on 600 m. in code, giving actual observations at 0630 G.M.T. at coast stations, in the same way as those given for South West Africa and Union of South Africa. For key and explanation see page 109.

W/T Station.	Position approx.		Call Sign.	Times of Transmission.		Station distinguishing figures (see Chart p. 109).
	Latitude.	Longitude.		Station reports. G.M.T.	Forecasts. G.M.T.	
Lourenço Marques	$25^{\circ} 58' S.$	$32^{\circ} 36' E.$	CQE	0910	1310	56, 67, 78, 89.
Mozambique ...	$15^{\circ} 02' S.$	$40^{\circ} 45' E.$	CQF	0900	None.	00, 89, 78.

III.—WIRELESS TIME SIGNALS.

Lourenço Marques, W/T station, Lat., $25^{\circ} 58' 05'' S.$, Long., $32^{\circ} 35' 39'' E.$, call sign **CQE**, wavelength 600 metres, and **Polana W/T station**, Lat., $25^{\circ} 57' 40'' S.$, Long., $32^{\circ} 35' 59'' E.$, call sign **CRAP** wavelength 2,400 metres, C.W., transmit, simultaneously, time signals automatically by means of the pendulum clock at Campos Rodrigues Observatory. The new International system of W/T time signals is used.

The transmitting times are :—

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

MADAGASCAR.

II.—WIRELESS STORM WARNINGS.

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

Majunga : Latitude $15^{\circ} 43' S.$, Longitude $46^{\circ} 20' E.$, Call Sign **FIO.**, Times of transmission, 0500, 1630 G.M.T.

Diégo Suarez : Latitude $12^{\circ} 15' S.$, Longitude $49^{\circ} 26' E.$, Call Sign **FIL.**, Times of transmission, 0430, 1600 G.M.T.

Tamatave : Latitude $18^{\circ} 09' S.$, Longitude $49^{\circ} 26' E.$, Call Sign **FIS.**, Times of transmission, 0415, 1615 G.M.T.

Tulear : Approx. Latitude $23^{\circ} 21' S.$, Longitude $43^{\circ} 40' E.$, Call sign **FIT** Times of transmission 0445, 1645 G.M.T.

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

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

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

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

MAURITIUS.

II.—WIRELESS WEATHER BULLETINS.

Mauritius W/T Station approx. position Latitude 20° 24' S., Longitude 57° 35' E.

Call sign **VRS.**

Wavelength 600 metres.

Times of transmission (during cyclone season only November to April).

0830 G.M.T.—Weather report in code giving 0500 G.M.T. observations at the stations given below, followed by a general statement of existing weather conditions.

Station reports in International Ships Wireless Weather Telegraphy Code in two five-figure groups preceded by name of station.

To decode these reports the tables given in M.O. 329 are required. The Key Letters are fully described on p. 36 of the January, 1936, number, and in M.O. 329.

Key letters—DDFww BBVTT.

Observation stations:—

Station.	Position (approx.)	
	Latitude.	Longitude.
Seychelles	4° 34' S.	55° 28' E.
Mauritius	20° 11' S.	57° 27' E.
Rodriguez	19° 40' S.	63° 30' E.

Note.—When the weather is cyclonic additional messages are issued when fresh information becomes available.

INDIA, CEYLON AND BURMA.

II.—WIRELESS WEATHER BULLETINS.

The following **W/T** Stations transmit Weather Bulletins containing a brief summary of weather conditions and reports in code, giving actual observations at 0230 G.M.T. from Indian Stations; 0400 G.M.T. from Gulf of Oman and Mekran coast stations and Aden.

Station reports in International Ships Wireless Weather Telegraphy Code in three five-figure groups.

To decode these reports the tables given in M.O. 329 are required. The Key letters are fully described on p. 36 of the January, 1936, number, and in M.O. 329, with the exception of II. II = index figure of coast station.

Key letters—IICKW DDFww BBVTT.

W/T Station.	Call Sign.	Wave-length, metres.	Position (approx.).		Times of Transmission.	Area covered.
			Latitude. N.	Longitude. E.		
Bombay	VWB	1,000 I.C.W.	19° 05'	72° 50'	0800	Arabian Sea.
Calcutta	VWC	2,000 C.W.	22° 34'	88° 20'	0830	Bay of Bengal.
Matara	GZP	2,000 C.W.	6° 01'	80° 36'	0630*	Arabian Sea, Bay of Bengal and Ceylon.

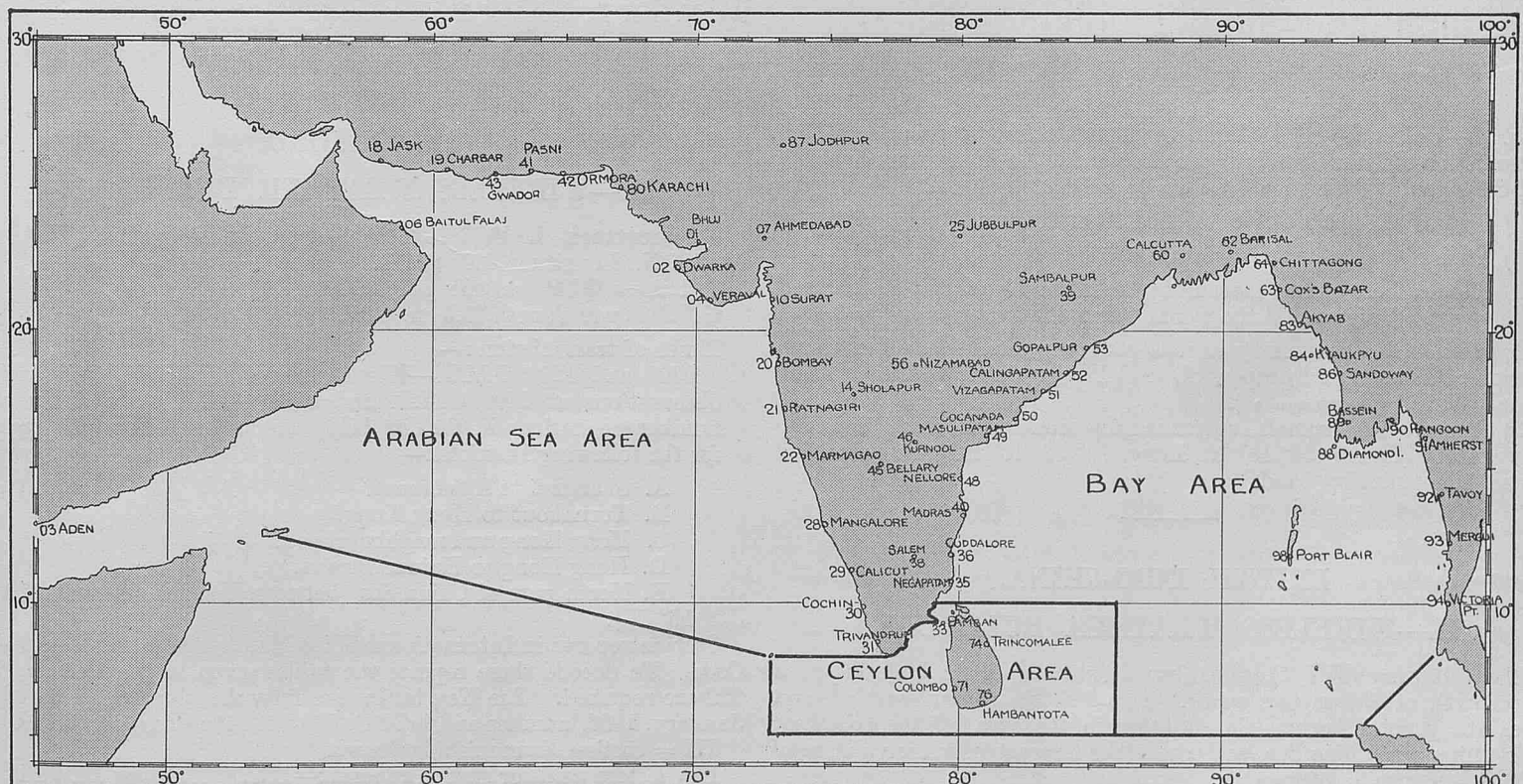
* Information too late for inclusion in 0630 G.M.T. message is sent out at 0948 G.M.T.

A brief summary of weather conditions is broadcast daily from stations below at the following times:—

Time G.M.T.	Station.	Position (approx.).		Call Sign.	Wavelength, metres.
		Latitude.	Longitude.		
0830 and 1630	Karachi...	24° 51' N	67° 03' E	VWK	1,550 (C.W.)†
0800 and 1600	Calcutta*	22° 34' N	88° 20' E	VWC	2,000 (C.W.)
0900 and 1700	Bombay...	19° 05' N	72° 50' E	VWB	1,000 (spk.)
0948 and 1748	Madras ...	12° 59' N	80° 11' E	VWM	1,000 (I.C.W.)
	Rangoon	16° 46' N	96° 12' E	VTR	1,200 "
	Aden ...	12° 49' N	45° 02' E	GZQ	2,000 (C.W.)
	Matara ...	6° 01' N	80° 36' E	GZP	2,000 "

* After the time signal.

† In the event of interruption on the wavelength of 1,550 m. the message will be broadcast on 600 m. (I.C.W.).



WIRELESS STORM WARNINGS.

The following stations broadcast messages containing cyclone warnings immediately on receipt from the Indian Meteorological Department and at the following times. Each transmission is preceded by the W/T Safety Signal — — — (TTT).

Karachi	call sign	VWK	{ at 0030, 0430, 1230 and 2030
Calcutta	" "	VWC	{ G.M.T. Wavelength 600 m. I.C.W.
Bombay	call sign	VWB	{ at 0000, 0400, 1200 and 2000
Madras	call sign	VWM	{ G.M.T. Wavelength 600 m. Spk.
Rangoon	" "	VTR	{ at 0100, 0500, 1300 and 2100
Aden	call sign	GZQ	{ G.M.T. Wavelength 600m. I.C.W.
Matara	" "	GZP	{ at 0148, 0548, 1348 and 2148
			{ G.M.T. Wavelength 600 m. spark.

These Weather Bulletins and Storm Warnings give brief information of the prevailing weather conditions in the Bay of Bengal and Arabian Sea.

III.—WIRELESS TIME SIGNALS.

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 1627-1630	See FIGURE 1.
Colombo. Lat. 6° 55' 14" N. Long. 79° 52' 46" E.	VPB	2,300 C.W. 600 I.C.W.	0557-0600 1657-1700	

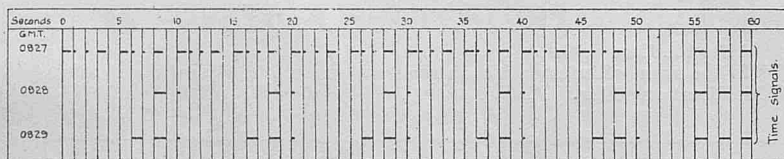


Figure 1.

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.

FRENCH INDO-CHINA.

II.—WIRELESS WEATHER BULLETINS.

The following W/T Stations broadcast a weather bulletin on a wavelength of 600 metres spark. This bulletin is sent *en clair* and gives the general barometric situation in the area off the coasts of Indo-China and China Sea, and a weather forecast which is valid until 0900 G.M.T. the following day.

W/T Station.	Call Sign.	Position (approx.).		Times of Transmission. G.M.T.
		Latitude. N.	Longitude. E.	
Mitho ...	FRM	10° 22'	106° 22'	1220
Padaran ...	FRR	11° 22'	109° 01'	1350
Tourane ...	FRT	16° 05'	108° 13'	1320
Kienan ...	FRK	20° 48'	106° 37'	1250
Fort Bayard ...	FRF	21° 12'	110° 24'	1350

FORMOSA.

II.—WIRELESS WEATHER BULLETINS.

Keelung W/T Station, approximate Latitude 25° 08' N., Longitude 121° 45' E., call sign **JFK**, wavelength 600 metres, broadcasts a weather forecast, issued by Taihoku Meteorological Observatory, *en clair*, in English, at 0230 and 1920 G.M.T. The message is preceded by the signal CQ CQ CQ and contains the direction and force of the wind (Beaufort) and general weather conditions for the following day for the N. and E. coasts of Formosa and the Formosa Channel.

Garanbi W/T Station, approx. Latitude 21° 55' N., Longitude 120° 51' E., call sign **JFG** repeats the above forecast on 600 m. I.C.W. at 0300 and 2020 G.M.T.

Example.—*N.E. Monsoon moderate, cloudy, some rain, Northern and Eastern coast areas; N.E. Monsoon strong, cloudy Formosa Channel.*

WIRELESS STORM WARNINGS.

Keelung W/T Station, call sign **JFK**, wavelength 600 metres, at 0230 and 1920 G.M.T., broadcasts storm warnings *en clair* in English commencing CQ CQ CQ, giving date and hour of observation, type of storm, position of centre, direction of motion and brief remarks. The message may also contain information concerning strong winter monsoons whenever a sudden threatening change is anticipated off the N. and E. coast of Formosa or in the Formosa Channel.

HONG KONG.

II.—WIRELESS WEATHER BULLETINS.

Stonecutters I. W/T station approximate position Latitude 22° 19' N., Longitude 114° 09' E.

Call signs **GYP**, wavelength 2650 m. C.W. } simultaneously.
GZO 6, wavelength 35.5 m. C.W.

Times of transmission :—

0300 and 1200 G.M.T.—Weather reports in code giving actual observations at 2200 G.M.T. and 0600 G.M.T. respectively at a number of stations in the list below and a brief Forecast *en clair* for the following Districts :—

- Shanghai to Turnabout.
- Turnabout to Hong Kong.
- Hong Kong and neighbourhood.
- Hong Kong to Hainan Straits.
- North part of China Sea (between Hong Kong and latitude 16° N.).

Station reports in International Ships Wireless Weather Telegraphy Code. To decode these reports the tables given in the Decode M.O. 329 are required. The Key letters are fully described on p. 36 of the January, 1936, number and in M.O. 329 with the exception of III.

III = station distinguishing figures.

Key letters used for station reports :—IIIAW DDFww BBVTT.

Observation Stations.

Code Letter.	Code No.	Station.	Position.	
			Latitude.	Longitude.
CH	—	Chemulpo ...	37° 26' N.	126° 37' E.
TI	734	Tientsin ...	39° 09' N.	117° 09' E.
NG	—	Nagasaki ...	32° 44' N.	129° 52' E.
OS	—	Oshima ...	28° 23' N.	129° 30' E.
GL	769	Gutzlaff ...	30° 48' N.	122° 10' E.
HW	772	Hankow ...	30° 36' N.	114° 20' E.
BO	—	Bonin I. ...	27° 05' N.	142° 11' E.
IS	—	Ishigakijima ...	24° 20' N.	124° 10' E.
CS	781	Changsha ...	28° 12' N.	112° 47' E.
AM	803	Amoy ...	24° 28' N.	118° 05' E.
TK	—	Taihoku ...	25° 02' N.	121° 31' E.
PD	—	Pescadores ...	23° 32' N.	119° 33' E.
GR	812	Gap Rock ...	21° 49' N.	113° 56' E.
PR	814	Pratas I. ...	20° 40' N.	116° 47' E.
PL	621	Phulien ...	20° 48' N.	106° 38' E.
TR	625	Tourane ...	16° 08' N.	108° 17' E.
CJ	620	Cape St. James ...	10° 20' N.	107° 05' E.
BS	850	Basco ...	20° 28' N.	121° 59' E.
MN	864	Manila ...	14° 35' N.	120° 59' E.
SU	890	Surigao ...	9° 48' N.	125° 29' E.

Alternative.

YU	—	Yuensan ...	39° 11' N.	127° 26' E.
TT	744	Tsingtao ...	36° 03' N.	120° 20' E.
QU	—	Quelpart ...	33° 20' N.	126° 30' E.
KA	—	Kagoshima ...	31° 34' N.	130° 33' E.
NK	763	Nanking ...	32° 07' N.	118° 47' E.
IC	770	Ichang ...	30° 42' N.	111° 16' E.
SA	—	Saipan ...	15° 14' N.	145° 46' E.
NA	—	Naha ...	26° 13' N.	127° 39' E.
KK	777	Kiukiang ...	29° 44' N.	116° 08' E.
SP	801	Foochow(Sharp Peak) ...	26° 03' N.	119° 39' E.
TA	—	Taichu ...	24° 09' N.	120° 41' E.
KH	—	Koshun ...	22° 00' N.	120° 45' E.
HK	810	Hong Kong ...	22° 18' N.	114° 10' E.
FB	984	Fort Bayard ...	21° 05' N.	110° 30' E.
DH	638	Dong Hoi ...	17° 33' N.	106° 37' E.
PD	639	Padaran ...	11° 21' N.	109° 02' E.
AP	852	Aparri ...	18° 22' N.	121° 38' E.
IL	887	Iloilo ...	10° 42' N.	122° 34' E.
—	807	Canton ...	23° 08' N.	113° 27' E.
—	811	Macao ...	22° 11' N.	113° 33' E.

Cape d'Aguilar W/T Station, approximate position Latitude 22° 13' N., Longitude 114° 15' E. Call sign **VPS**, repeats the forecast *en clair* given by **Stonecutters I. W/T** station on a wavelength of 600 m. I.C.W. at 0400 and 1200 G.M.T.

Wireless Telephony, R/T Issues.

Hong Kong, W/T Station, approximate Latitude 22° 17' N., Longitude 114° 09' E., call sign **ZBW**, broadcasts by word of mouth weather reports and forecasts at 0500 and 1200 G.M.T. on 355 m. (R.T.) for the district Hong Kong and neighbourhood.

WIRELESS STORM WARNINGS.

Stonecutters I. W/T Station call signs **GZP** on 2,650 metres C.W. and **GZO 6** on 35.5 metres I.C.W. broadcasts Typhoon warnings with the weather bulletins sent out at 0300 and 1200 G.M.T.

Cape d'Aguilar W/T Station, approximate Latitude 22° 13' N., Longitude 114° 15' E., call sign **VPS**, broadcasts typhoon warnings on 600 m. I.C.W. and 36 m. C.W., on receipt and at 18 minutes past each of the two subsequent hours.

Wireless Telephony R/T Issues.

Hong Kong W/T Station, approximate Latitude 22° 17' N., Longitude 114° 09' E., call sign **ZBW**, wavelength 355 m. R/T, broadcasts by word of mouth typhoon warnings on receipt and at the two subsequent hours. When a typhoon is definitely threatening Hong Kong the warnings are sent as frequently as possible, usually at two hourly intervals.

III.—WIRELESS TIME SIGNALS.

Wireless time signals controlled by the Royal Observatory, Hong Kong, are broadcast from **Cape d'Aguilar W/T Station**, Latitude 22° 12' 39" N., Longitude 114° 15' 19" E., call sign **VPS**, on wave lengths of 600 m. I.C.W. and 36 m. C.W. at the following times :—

G.M.T.					
	h.	m.	s.	h.	m.
	1	55	00	to	2 00 00
and from	12	55	00	to	13 00 00

The time signals consist of dots (· · · · · etc.) each of about 0.2 seconds duration, sent at every second, the 28th, 29th, 54th, 55th, 56th, 57th, 58th and 59th seconds being omitted for the purpose of identifying the signals.

Preliminary warning signals are transmitted between 1h. 53m. and 1h. 54m., and between 12h. 53m. and 12h. 54m., G.M.T., as follows :—"CQ de VPS. HK Time wait."

CHINA.

II.—WIRELESS WEATHER BULLETINS.

Pratas Island W/T Station, approximately Latitude 20° 42' N., Longitude 116° 43' E., call sign **XPI**, broadcasts a daily weather Bulletin at :—

0330 G.M.T. (based upon 2200 G.M.T. observations) wavelength 600m. (spk.).
1100 G.M.T. (" " 0600 " ") wavelength 600m. (spk.).

0330 G.M.T. repeated on a wavelength of 1450m. (C.W.) and 24.5m.
1100 G.M.T. " " " " 47m.

The Weather Bulletins are broadcast *en clair* in English and are preceded by CQ CQ CQ de XPI XPI XPI. They contain the following information :—

Part I. The location of high and low pressure areas.

Part II. Location and expected direction of movement of depression, or typhoon, affecting the China Sea, Eastern Sea, Yellow Sea, Japan Sea (including the Pacific Ocean to the eastward) or S.E. of the Philippine Islands extending northward from Guam and adjacent islands to Northern Japan.

Part III. Wind and weather forecast for South-east coast of China and northern portion of China Sea.

Part IV. Wind direction and force, visibility, state of sea, and state of the weather at Pratas Island during previous six hours.

Shanghai W/T Station, approximate Latitude 31° 12' N., Longitude 121° 26' E., call sign **FFZ**, broadcasts weather forecasts *en clair*, for China and the China Seas, on a wavelength of 600 metres (I.C.W.), and 36m. C.W. simultaneously, repeated immediately on 2100 metres (C.W.), at 0300, 0900, 1400 and 2000 G.M.T.

WIRELESS STORM WARNINGS.

Pratas Island W/T Station call sign **XPI**, broadcasts typhoon warnings for the China Sea when necessary. The warnings are broadcast *en clair* in English and are preceded by the Safety Signal TTT (— — —). They are issued as frequently as changes are observed. Wavelength, 600 metres.

Shanghai W/T Station, call sign **FFZ**, broadcasts typhoon and gale warnings, when necessary after the weather bulletins at 0300 (after Time Signal), 0900 (after Time Signal), 1400 and 2000 G.M.T. The warnings are broadcast *en clair* and give information concerning

the position of the centres of typhoons or continental depressions, for China and the China Seas.

Wavelength 600 metres (I.C.W.), and 36m. C.W. simultaneously, repeated immediately on 2100 metres (C.W.).

The warnings are also broadcast at 0945 G.M.T. on a wavelength of 30.5 m. C.W.

III.—WIRELESS TIME SIGNALS.

Wireless time signals controlled by Zikawei Observatory are broadcast by **Shanghai W/T Station**, Latitude 31° 13' 16" N., Longitude 121° 27' 47" E., call sign **FFZ**, on a wavelength of 600 metres, I.C.W. and **FFZI** on 36.5m. C.W. simultaneously after the general call (QST de FFZ) "Shanghai time signal", in the following manner.—

G.M.T.						Signal.	
h.	m.	s.	h.	m.	s.		
2	55	00	to	2	56	45	• • • — • • • — • • • —
8	57	00	„	57	50		— • • • — • • • — • • • — etc.
	57	55	„	58	00	{ 55 56 57 58 59 60	• • • • • • <i>Time signal.</i>
	58	08	„	58	10	— •	
	58	18	„	58	20	— •	
	58	28	„	58	30	— •	
	58	38	„	58	40	— •	
	58	48	„	58	50	— •	
	58	55	„	59	00	{ 55 56 57 58 59 60	• • • • • • <i>Time signal.</i>
	59	06	„	59	10	— — •	
	59	16	„	59	20	— — •	
	59	26	„	59	30	— — •	
	59	36	„	59	40	— — •	
	59	46	„	59	50	— — •	
2	59	55	„	3	00	00	{ 55 56 57 58 59 60
8				9			• • • • • • <i>Time signal.</i>

— = 1 sec.; • = 0·2 sec.

— = 1 sec.; • = 0.2 sec.

JAPAN.

II.—WIRELESS STORM WARNINGS.

The **Central Meteorological Observatory, Tokyo, W/T Station**, Latitude 35° 39' N., Longitude 139° 45' E., call sign, **JGA**, and **Kobe Marine Observatory W/T Station**, Latitude 34° 41' N., Longitude 135° 11' E., call sign **JTJ**, broadcast storm warnings *en clair*, in English, after the weather bulletins. The warnings contain the following information:—approximate position of typhoon (or cyclone), the direction in which it is moving, or expected movement, or information concerning severe gales, or duration of monsoon, over Japan and the neighbouring seas.

Tokyo, JGA.

Time 0450, 1100 and 2300 G.M.T.

Kobe, JTJ.

Time 0530, 1130 and 2330 G.M.T.

} Wavelength 4000 metres (C.W.).

In cases of urgency they will be broadcast immediately on 600 metres I.C.W. and repeated at the end of the next compulsory silent period.

AUSTRALIA.

II.—WIRELESS WEATHER BULLETINS.

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

Perth W/T Station.

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

Call sign **VIP**.

At 0448 and 1300 G.M.T., on a wavelength 600 metres (I.C.W.).

At 0300 G.M.T., on 2,400 metres (C.W.).

Geraldton W/T Station.

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

Call sign **VIN**, wavelength 670 metres.

At 0200 and 1200 G.M.T., Mondays to Fridays, inclusive. Saturdays 0200 G.M.T. only.

Broome W/T Station.

Approximate, Latitude 17° 58' S. Longitude 122° 14' E.

Call sign **VIO**, wavelength 600 metres.

Times of transmission 0300 and 1400 G.M.T. (Monday to Friday).

Wyndham W/T Station.

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

Call sign **VIW**, wavelength 720 metres (I.C.W.).

At 0130 and 1130 G.M.T., Mondays to Fridays, inclusive. Saturdays, 0130 only.

Darwin W/T Station.

Approximate, Latitude 12° 27' S. Longitude 130° 50' E.

Call sign **VID**, wavelength 600 metres.

Time of transmission, 1500 G.M.T.

Thursday Island W/T Station.

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

Call sign **VII**, wavelength 720 metres (I.C.W.). Ships may obtain the 0500 G.M.T. weather report for the coast of Queensland and a forecast for the ensuing 24 hours upon application to the above W/T Station.

Cooktown W/T Station.

Approximate, Latitude 15° 28' S. Longitude 145° 16' E.

Call sign **VIC**, wavelength 760 metres.

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

Townsville W/T Station.

Approximate, Latitude 19° 16' S. Longitude 146° 50' E.

Call sign **VIT**, wavelength 600 metres (I.C.W.).

Time of transmission, 1100 G.M.T. (Sundays excepted from April 16th to December 16th).

Willis Islets W/T Station.

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

Call sign **VIQ**, wavelength 600 metres.

Times of transmission, 0645 G.M.T., 1045 G.M.T. (November 1st to March 31st) and 2330 G.M.T.

Rockhampton W/T Station.

Approximate, Latitude 23° 24' S. Longitude 150° 30' E.

Call sign **VIR**, wavelength 720 metres.

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

Brisbane W/T Station.

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

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

Times of transmission, 0200 G.M.T.; and 1200 G.M.T. (Sundays excepted, April 16th to December 16th).

Sydney, W/T Station.

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

Call sign **VIS**.

Times of transmission, 0050, 0420 G.M.T.; 0650 G.M.T. (Sundays excepted); and 1035 G.M.T. on a wavelength of 600 metres and at 0200 G.M.T. on a wavelength of 2,400 metres (C.W.).

Melbourne W/T Station.

Approximate, Latitude 37° 47' S. Longitude 144° 52' E.
Call sign **VIM**, wavelength 600 metres (I.C.W.).
Times of transmission, 0200 and 1100 G.M.T.

King Island W/T Station.

Approximate, Latitude 39° 56' S. Longitude 143° 52' E.
Call sign **VIK**, wavelength 760 metres.
Transmits weather report on request.

Hobart (Tasmania) W/T Station.

Approximate, Latitude 42° 52' S. Longitude 147° 19' E.
Call sign **VIH**, wavelength 720 metres (spark).
Ships may obtain a summary of 2300 G.M.T. coastal weather reports on application to the W/T Station, after about 0030 G.M.T., daily (Sundays excepted). A 24 hours' forecast may also be obtained on application after about 0330 G.M.T. The forecast issued on Saturdays is for the ensuing 48 hours.

Adelaide W/T Station.

Approximate, Latitude 34° 51' S. Longitude 138° 32' E.
Call sign **VIA**, wavelength 600 metres (I.C.W.).
Times of transmission, 1130 and 1330 G.M.T.

Esperance W/T Station.

Approximate, Latitude 33° 52' S. Longitude 121° 54' E.
Call sign **VIE**, wavelength 680 metres.
Times of transmission, 0300 and 1300 G.M.T., Mondays to Fridays inclusive; Saturdays at 0300 only.

Hobart (Tasmania), call sign **VIH**, wavelength 720 metres, broadcasts special storm warnings, immediately on receipt from the Weather Bureau and at hourly intervals thereafter until 1000 G.M.T.

Adelaide, call sign **VIA**, wavelength 600 metres.

Esperance, call sign **VIE**, wavelength 680 metres, broadcast special storm warnings immediately on receipt from the Weather Bureau.

III.—WIRELESS TIME SIGNALS.

Station.	Call Sign.	Wave-length (metres).	G.M.T.	System.
Perth Lat. 32° 01' 51" S. Long. 115° 49' 31" E.	VIP	600 (I.C.W.).	0057-0100 1257-1300	{ (See Time Signal Figure, p. 112.) Controlled by Perth Observatory. (See Figure as above.) Transmitted automatically by the standard clock of the Adelaide Observatory.
Adelaide Lat. 34° 51' 14" S. Long. 138° 31' 55" E.	VIA	600 (I.C.W.).	0027-0030 1227-1230	

WIRELESS STORM WARNINGS.

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

For approximate positions of the Stations see pp. 114 and 115.

Perth, call sign **VIP**, wavelengths 600 metres (I.C.W.) and 2400 metres (C.W.).

Geraldton, call sign **VIN**, wavelength 670 metres.

Broome, call sign **VIO**, wavelength 600 metres.

Wyndham, call sign **VIW**, wavelength 720 metres (I.C.W.).

Darwin, call sign **VID**, wavelength 600 metres.

The above W/T Stations broadcast special warnings of the approach of cyclonic storms of tropical origin, including information regarding barometric pressure at stations on the N.W. coast of W. Australia, immediately upon receipt from the Weather Bureau.

Thursday Island, call sign **VII**, wavelength 720 metres (I.C.W.).

Cooktown, call sign **VIC**, wavelength 760 metres.

Rockhampton, call sign **VIR**, wavelength 720 metres.

Brisbane, call sign **VIB**, wavelength 600 metres (I.C.W.).

The above W/T Stations broadcast special storm warnings, immediately upon receipt from the Weather Bureau, and thereafter during the regular W/T watches kept by coastal vessels until receipt of later information from Brisbane Weather Bureau.

Special storm warnings may also be obtained, if the information is available, upon application to any of the above W/T stations.

Willis Islets, call sign **VIQ**, wavelength 730 metres, broadcasts storm warnings during the months November to April inclusive.

Sydney, call sign **VIS**, wavelength 600 metres I.C.W., broadcasts special storm warnings, immediately on receipt. They are repeated at intervals until receipt of later information from the Weather Bureau.

Melbourne, call sign **VIM**, wavelength 600 metres (I.C.W.), broadcasts special storm warnings immediately on receipt from the Weather Bureau.

Flinders Island, call sign **VIL**, wavelength 740 metres (I.C.W.), broadcasts storm warnings immediately on receipt.

King Island, call sign **VZE**, wavelength 760 metres, broadcasts storm warnings immediately on receipt.

Melbourne W/T Station, Latitude 37° 46' 56" S., Longitude 144° 52' 09" E., call sign **VIM**, wavelength 600 metres (I.C.W.).

Wireless time signals are broadcast from Melbourne W/T Station in accordance with the New International System of W/T time signals at the following times:—

G.M.T.						
h.	m.	s.		h.	m.	s.
1	57	00	to	2	00	00
13	57	00	..	14	00	00

The transmission of each series of signals is similar, the procedure being as follows:—

G.M.T.						Signal.							
h.	m.	s.		h.	m.	s.							
13	57	00	to	13	57	50	— . . — — . . — — . . etc.						
	57	55	„	58	00	{ 55 56 57 58 59 60						<i>Time signal.</i>	
						{							
	58	08	„	58	10	{ — .							
	58	18	„	58	20	{ — .							
	58	28	„	58	30	{ — .							
	58	38	„	58	40	{ — .							
	58	48	„	58	50	{ — .							
	58	55	„	59	00	{ 55 56 57 58 59 60						<i>Time signal.</i>	
						{							
	59	06	„	59	10	{ — — .							
	59	16	„	59	20	{ — — .							
	59	26	„	59	30	{ — — .							
	59	36	„	59	40	{ — — .							
	59	46	„	59	50	{ — — .							
13	59	55	„	2	14	00	{ 55 56 57 58 59 60						<i>Time signal.</i>
						{							

NEW ZEALAND.

II.—WIRELESS WEATHER BULLETIN.

Wellington W/T Station, Latitude 41° 16' S. Longitude 174° 46' E. Call sign **ZLW**.
Wavelength 800m. I.C.W. (375 kc/s.). Time of transmission 0930 G.M.T.

General statement of weather conditions for New Zealand waters.
Forecast for New Zealand, New Zealand Waters and the eastern Tasman Sea.

Weather Report in code giving actual observations at the stations below.

The International Ships Wireless Weather Telegraphy Code with a local addition is used and on this account special care is necessary. To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages from ships [Third Edition], obtainable from His Majesty's Stationery Office, price 6d.)

The Key letters are fully described on page 36 of the January, 1936, number and in M.O. 329, with the exception of symbol III meaning the distinguishing figures of the coast stations and S which gives the state of the sea according to the Douglas Scale. *Not swell* which is the only scale for waves in the International Ships Wireless Weather Telegraphy Code, 1929, published for general use of British Shipping.

Key letters IIIAS, DDFww, BBVTT.

Distinguishing

Position approx.

Figures.	Station.	Latitude.	Longitude.
495	Norfolk Island ...	29° 04' S.	167° 58' E.
505	C. Maria Van Diemen ...	34° 29' S.	172° 39' E.
510	Auckland ...	36° 51' S.	174° 47' E.
515	East Cape ...	37° 41' S.	178° 33' E.
520	Cape Egmont... ..	39° 17' S.	173° 45' E.
524	Napier ...	39° 29' S.	176° 56' E.
525	Wanganui ...	39° 52' S.	175° 05' E.
532	Farewell Spit ...	40° 33' S.	173° 01' E.
534	Stephens I. ...	40° 41' S.	174° 01' E.
537	Wellington ...	41° 16' S.	174° 46' E.
540	Cape Campbell ...	41° 43' S.	174° 17' E.
542	Westport ...	41° 27' S.	171° 37' E.
545	Grey mouth ...	42° 27' S.	171° 12' E.
550	Akaroa Lt. Ho. ...	43° 48' S.	172° 59' E.
558	Nugget Pt. ...	46° 26' S.	169° 50' E.
565	Puysegur Pt. ...	46° 10' S.	166° 38' E.
570	Chatham Is. ...	43° 52' S.	176° 42' E.
326	Sydney ...	33° 51' S.	151° 13' E.
394	Hobart ...	42° 53' S.	147° 20' E.
560	Bluff* ...	46° 37' S.	168° 21' E.
506	Russell* ...	35° 15' S.	174° 07' E.

* Stations may be added.

III.—WIRELESS TIME SIGNALS.

Wellington W/T Station Latitude 41° 16' 26" S., Longitude 174° 45' 55" E., call sign **ZLW**, broadcasts time signals daily, on 600 metres (I.C.W.) as follows:—

The transmission is a relay of the time signal from Dominion Observatory, call sign **ZMO**, which is automatically operated by the Standard Time Clock at the Observatory (Latitude 41° 17' 03.8" S., Longitude 174° 46' 00.0" E.).

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

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

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

G.M.T.						Signal.	
h.	m.	s.	h.	m.	s.		
22	58	00	to	22	58	55	— ZMO (every 15 seconds, the dash being of two seconds duration.)
22	59	10	„	22	59	50	— • — • — • — • etc.
23	00	00	„	23	00	03	— — — Time signal.
23	00	12	„	23	00	50	— — — — — etc.
23	01	00	„	23	01	03	— — — Time signal.
23	01	13	„	23	01	50	— — — — — etc.

G.M.T.

h.	m.	s.	h.	m.	s.	
23	02	00	„	23	02	03 — — — Time signal.
23	02	14	„	23	03	50 — — — — — etc.
23	04	00	„	23	04	03 — — — Time signal.
23	04	09	„	23	04	50 — — — — — etc.
23	05	00	„	23	05	03 — — — Time signal.

AR ZMO VA.

In addition to the above, the undermentioned time signals are broadcast on Tuesdays and Fridays, except on New Zealand Government holidays, by the Dominion Observatory, Wellington.

The conditions governing the transmission are similar to those given above.

The first time signal is at 9 h. 00 m. 00 s. (G.M.T.), and is repeated at the 1st, 2nd, 4th and 5th minutes.

There is no time signal at 9 h. 03 m. 00 s. Each signal commences exactly at the beginning of the minute, and lasts for *three seconds*, approximately.

G.M.T.						Signal.	
h.	m.	s.	h.	m.	s.		
8	58	00	to	8	58	55	— ZMO (every 15 seconds, the dash being of two seconds duration.)
8	59	10	„	8	59	50	— • — • — • — • etc.
9	00	00	„	9	00	03	— — — Time signal.
9	00	12	„	9	00	50	— — — — — etc.
9	01	00	„	9	01	03	— — — Time signal.
9	01	13	„	9	01	50	— — — — — etc.
9	02	00	„	9	02	03	— — — Time signal.
9	02	14	„	9	03	50	— — — — — etc.
9	04	00	„	9	04	03	— — — Time signal.
9	04	09	„	9	04	50	— — — — — etc.
9	05	00	„	9	05	03	— — — Time signal.

AR ZMO VA

NOTE.—All hand Key signals, except in the 58th minute, terminate on the 50th second, to enable the observer to take the signals accurately. The hand signals must *not* be used as time signals.

BRITISH NEW GUINEA (PAPUA).

II.—WIRELESS WEATHER BULLETINS.

Samarai W/T Station, approximate, Latitude 10° 36' S., Longitude 150° 40' E.

Call sign **VIJ**. Wavelength 720 metres.

Ships may obtain a weather forecast on application to the W/T Station.

WIRELESS STORM WARNINGS.

Port Moresby, call sign **VIG**, wavelength 720 metres, broadcasts special warnings of disturbances on the Queensland coast immediately on receipt.

Samarai, call sign **VIJ**, wavelength 720 metres, broadcasts special storm warnings immediately on receipt and thereafter in the regular watches kept by coastal vessels, until further information is received from the Brisbane Weather Bureau.

Special storm warnings may also be obtained, if the information is available, upon application to the W/T stations.

NEW BRITAIN.

II.—WIRELESS WEATHER BULLETIN.

Rabaul (Bitapaka) W/T Station, approximate, Latitude 4° 24' S., Longitude 152° 19' E.

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

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

WIRELESS STORM WARNINGS.

Rabaul, call sign **VJZ**, wavelength, 2,400 metres (C.W.) broadcasts special warnings of disturbances on the Queensland coast immediately on receipt.

SOUTH PACIFIC OCEAN ISLANDS.**II.—WIRELESS WEATHER BULLETINS.****Western Area.**

Suva (Fiji) W/T Station, Latitude 18° 09' S. Longitude 178° 28' E. Call sign **VRP**.

Wavelength 800 m. I.C.W.

Times of transmission : 0005 G.M.T.,

0830 G.M.T. (November 1st to April 30th).

Observations taken at 2000 G.M.T. included in 0005 G.M.T. transmission, and observations at 0200 G.M.T. in 0830 G.M.T. transmission.

Weather report in code giving actual observations at the stations numbered 425, 426, 435, 443, 446, 447, 450, 451, 454, 455, 458, 459, 460, 461 and 462 on the Chart below.

The International Ships Wireless Telegraphy Code is used.

To decode these reports the tables given in M.O. 329 are required (Decode for use with International Code for Wireless Weather messages for ships [Third Edition], obtainable from His Majesty's Stationery Office, price 6d.)

The Key letters are fully described on page 36 of the January, 1936, number and in M.O. 329, with the exception of the symbol III which means the distinguishing figures of the coast stations.

Key letters IIICW DDFww BBVTT.

Barometer tendency is added "*en clair*" when necessary.

Central and Eastern Areas.

Apia (Samoa) W/T Station, Latitude 13° 50' S. Longitude 171° 50' W. Call sign **ZMA**.

Wavelength 800 m. I.C.W.

Times of transmission ; 0100 G.M.T.

0920 G.M.T. (November 1st to April 30th).

Observations taken at 2000 G.M.T. included in 0100 transmission, and observations at 0200 G.M.T. in 0920 G.M.T. transmission.

Weather report in code giving actual observations at the stations numbered 439, 467, 473, 477 and 478 on the Chart below.

The Key and Code is the same as for Suva above.

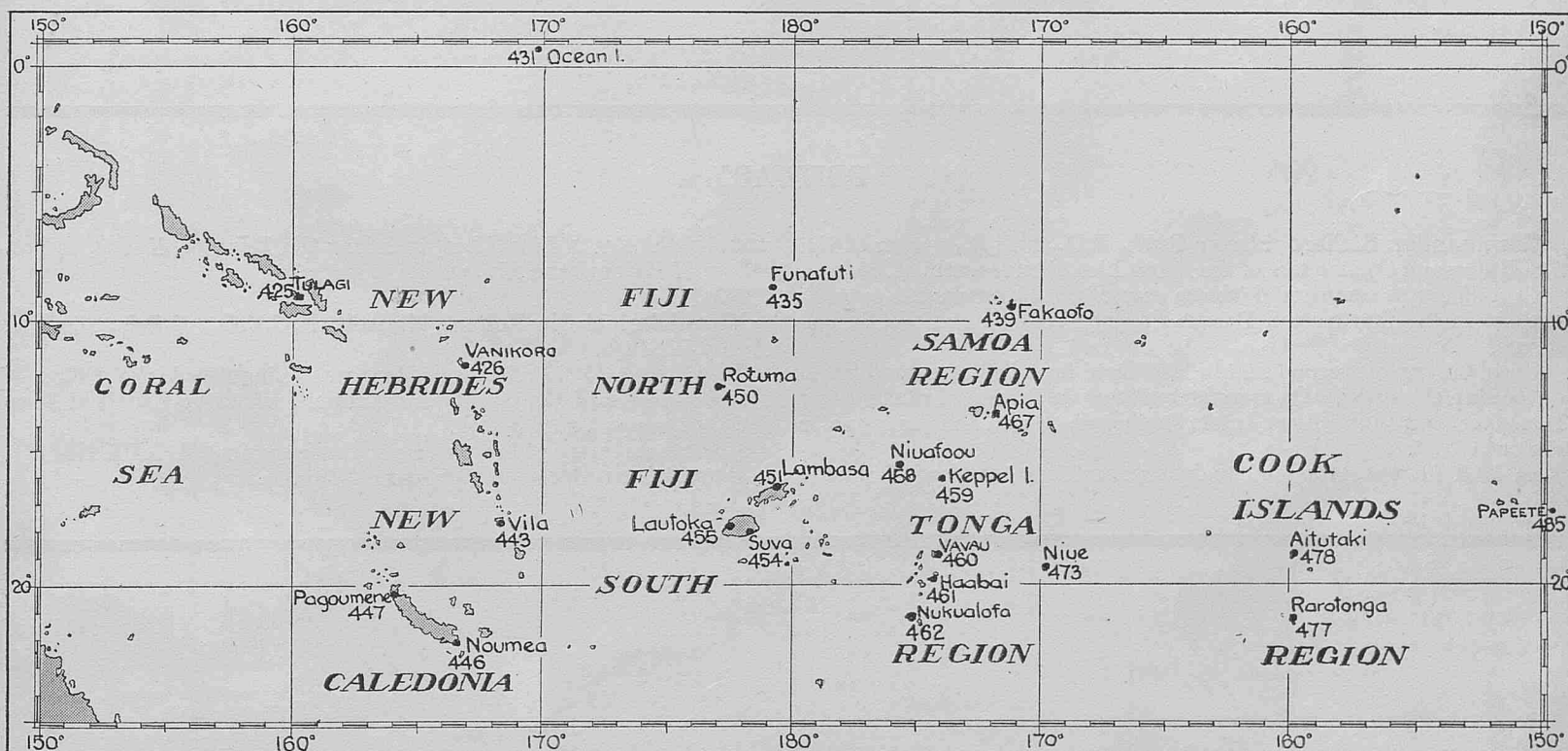
A General statement of weather conditions in plain language is added when necessary and the various regions of the South Pacific will be referred to by the names shown on the chart below.

WIRELESS STORM WARNINGS.**During the Hurricane Season (November 1st to April 30th).**

Suva W/T Station call sign **VRP** and **Apia W/T Station** call sign **ZMA** broadcast storm warnings when necessary on 800 m. I.C.W. immediately after the Weather reports given above.

French Oceania.

Papeete (Tahiti), approximate Latitude 17° 29' S., Longitude 149° 29' W., call sign **FPB**, broadcasts information concerning hurricanes, &c., at any hour when necessary on a wavelength of 600 metres (spark). The safety signal **TTT**, repeated at short intervals ten times on full power, is first sent out followed by the message which is repeated three times with intervals of ten minutes.



PERSONNEL.

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

RETIREMENTS.

Captain W. M. Jermyn, Commander of the Aberdeen Commonwealth Line S.S. *Largs Bay*, has retired from the service after 46 years at sea, the whole of which time he served under one house flag.

Captain JERMYN was educated at Cheltenham and in H.M.S. *Conway*, and went to sea in 1890 as an apprentice in the ship *Aristides*, one of the Aberdeen Line's famous clippers.

After completing his apprenticeship in sail he was appointed 4th officer of the steamer *Thermopylae* and later served in every one of the Company's steamers.

His first Command was the S.S. *Marathon*, in 1915, which ship during the war years, carried about 20,000 troops to all theatres of war.

He has also commanded the *Themistocles*, *Euripides*, *Ferndale*, and since 1929, the *Largs Bay*.

When the Australian Government Line was transferred to the management of the Aberdeen & Commonwealth Line, Captain JERMYN was appointed Commodore.

Since 1924 the vessels under his command have been in the Fleet List of voluntary observing ships.

C. H. W.

Captain E. J. Thornton, R.D., R.N.R., Commander of the R.M.S. *Viceroy of India* and Commodore of the P. & O.S.N. Co., has recently retired from the sea after 39 years in that Company's service.

He was educated at Magdalen College School, Oxford, and went to sea in 1892 as an apprentice in the full-rigged ship *Cromdale*, in which ship he was 3rd mate before he finished his time.

At the age of 19 he joined the P. & O. service and was appointed 5th officer of their S.S. *Oriental*. Passing through the various ranks, he obtained his first command in the Company in 1923, in the S.S. *Jeypore*.

Captain THORNTON joined the R.N.R., as a Sub-Lieut., in 1904. During the war he served as a Lieut., in H.M.S. *Cæsar*, from 1914-1916, having been present in that ship at the Naval Review just prior to the outbreak of war. He was chief examination officer at Bermuda during part of 1916, and later commanded the armed patrol ship *Lady Blanche* in the Irish Sea from November, 1916, to July, 1917. Promoted to Lieut.-Commr., he served on the Staff of Admiral Sir CHARLES DARE at the Naval Base at Milford Haven until 1919.

Ships of the P. & O. fleet commanded by Captain THORNTON are: *Jeypore*, *Nagpore*, *Sudan*, *Caledonia*, *Devanha*, *Morea*, *Rawalpindi*, *Mooltan*, *Razmak*, and from 1931 to this year, *Viceroy of India*. In the latter ship he was present at the Jubilee Naval Review in 1935, and was made Commodore of the P. & O. shortly after.

C. H. W.

OBITUARY.

Commander Richard Henry Buck, R.D., R.N.R., master of the S.S. *Hilary* and Commodore of the Booth Line, died recently at Manaus.

Captain BUCK commenced his sea career in 1895, serving his apprenticeship in the four-masted Barque *Pendragon Castle* and the Barque *Alcedo*.

On obtaining his second mate's certificate he sailed as second mate of the ship *Otterspool*. On transferring to steam he served in the Elder Dempster and Bibby Lines before joining the Booth Line as a junior officer in 1904.

In 1921 he was promoted to master and has commanded several

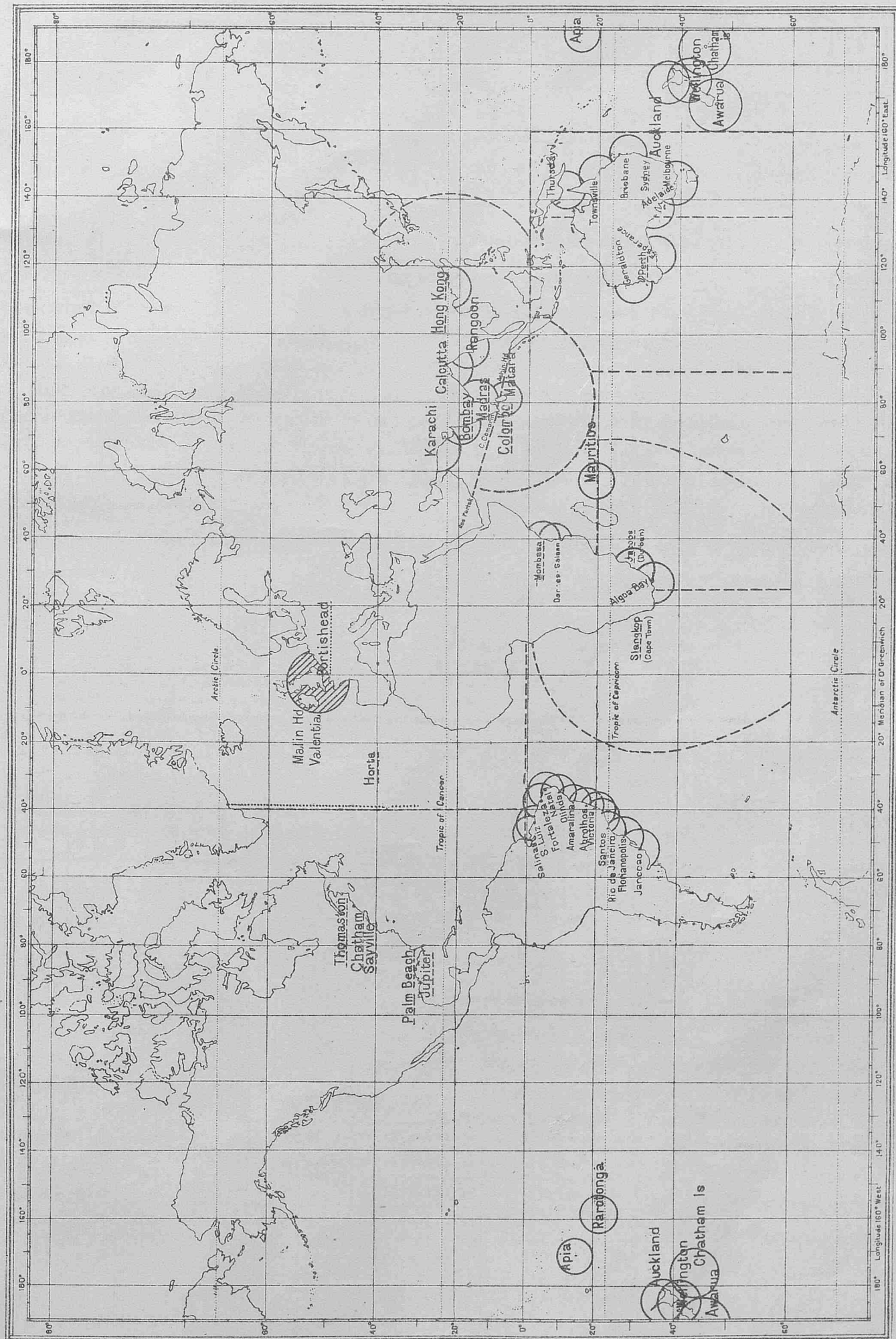
units of the Booth Line Fleet, including the *Dunstan*, *Hubert*, *Aidan*, *Alban*, *Hildebrand* and *Hilary*.

Vice-Admiral Sir Robert Mansell, K.C.V.O., C.B.E., died on April 26th, 1936.

In October, 1935, Admiral MANSELL relinquished the Office of Deputy-Master of the Trinity Corporation, which he had held since 1926, on account of ill-health.

A short summary of his career may be found in Vol. XIII, No. 121, of THE MARINE OBSERVER (January, 1936).

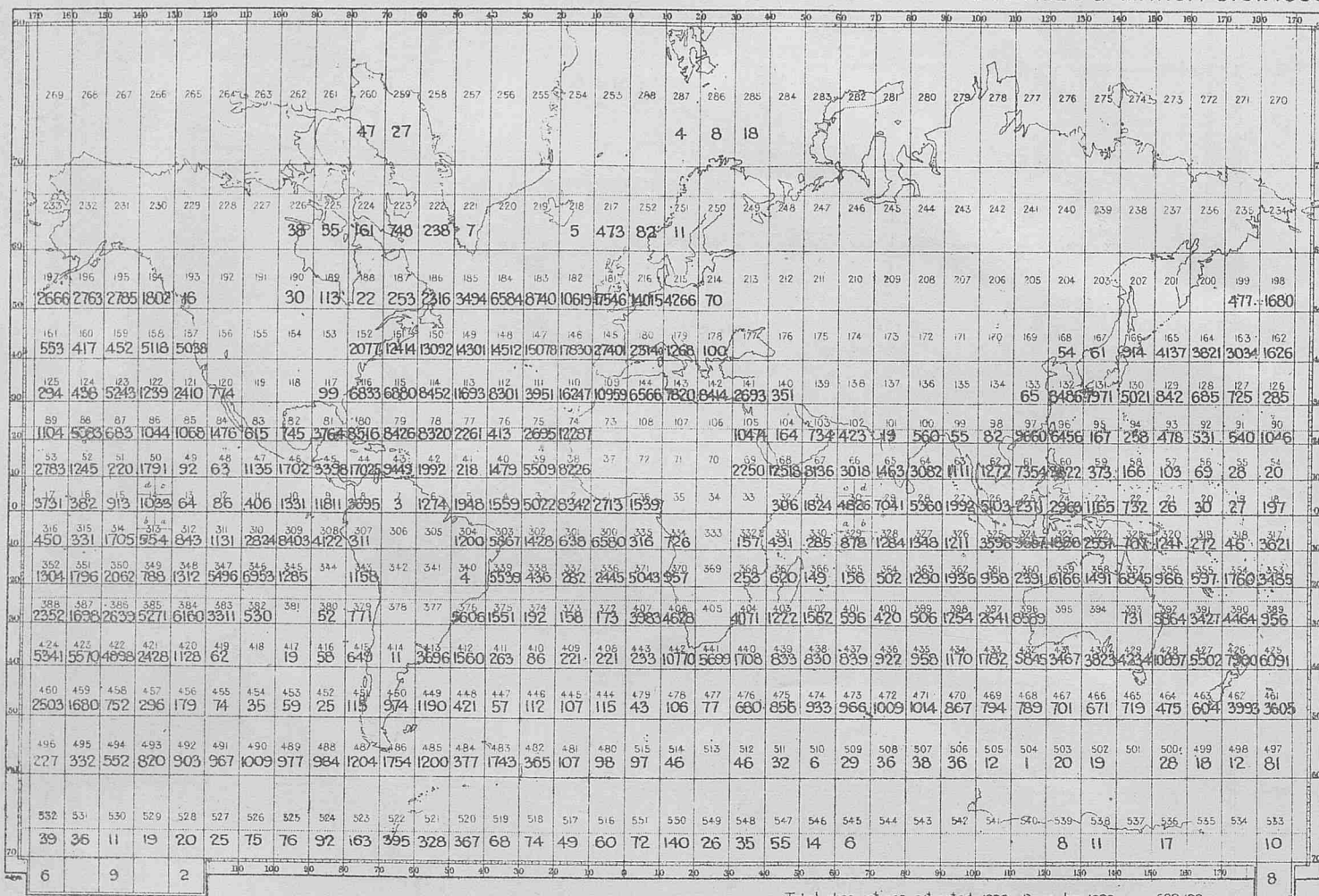
Stations for Reception of Routine Wireless Weather Reports from "Selected Ships."



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

MARSDEN CHART I.

SHOWING NUMBER OF SETS OF OBSERVATIONS EXTRACTED BETWEEN APRIL 1st. 1920 & MARCH 31st. 1936.



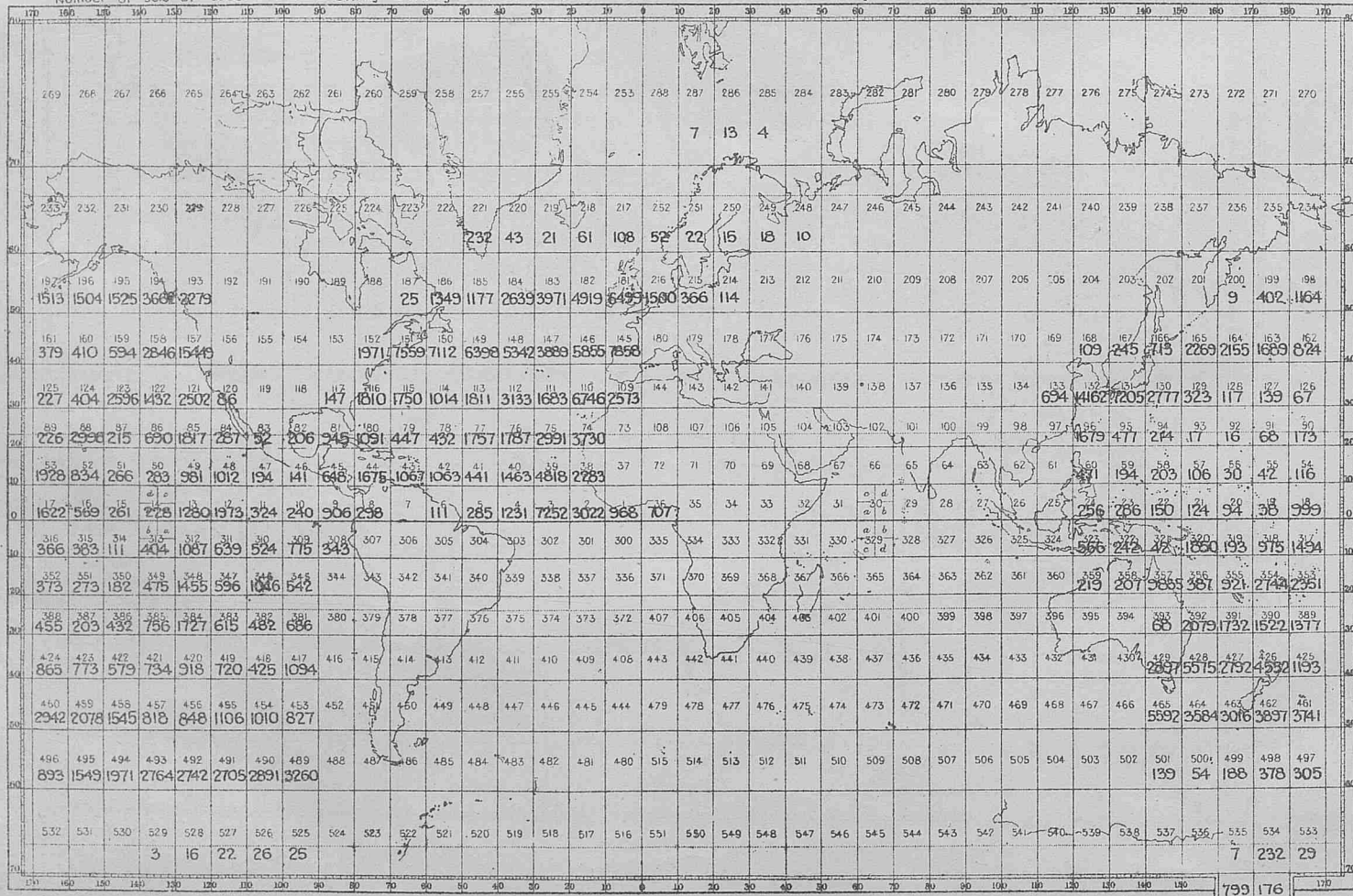
Total observations extracted 1920 - December 1929 682,122

Total observations (new code) extracted Jan. 1st 1930 - Mar. 31st 1936 296,698

Grand total since 1st April 1920 978,820

MARSDEN CHART II.

Number of sets of Observations showing Recovery of Areas of Extraction of Observations from Logs received prior to 1920 for North Atlantic and Pacific Oceans.

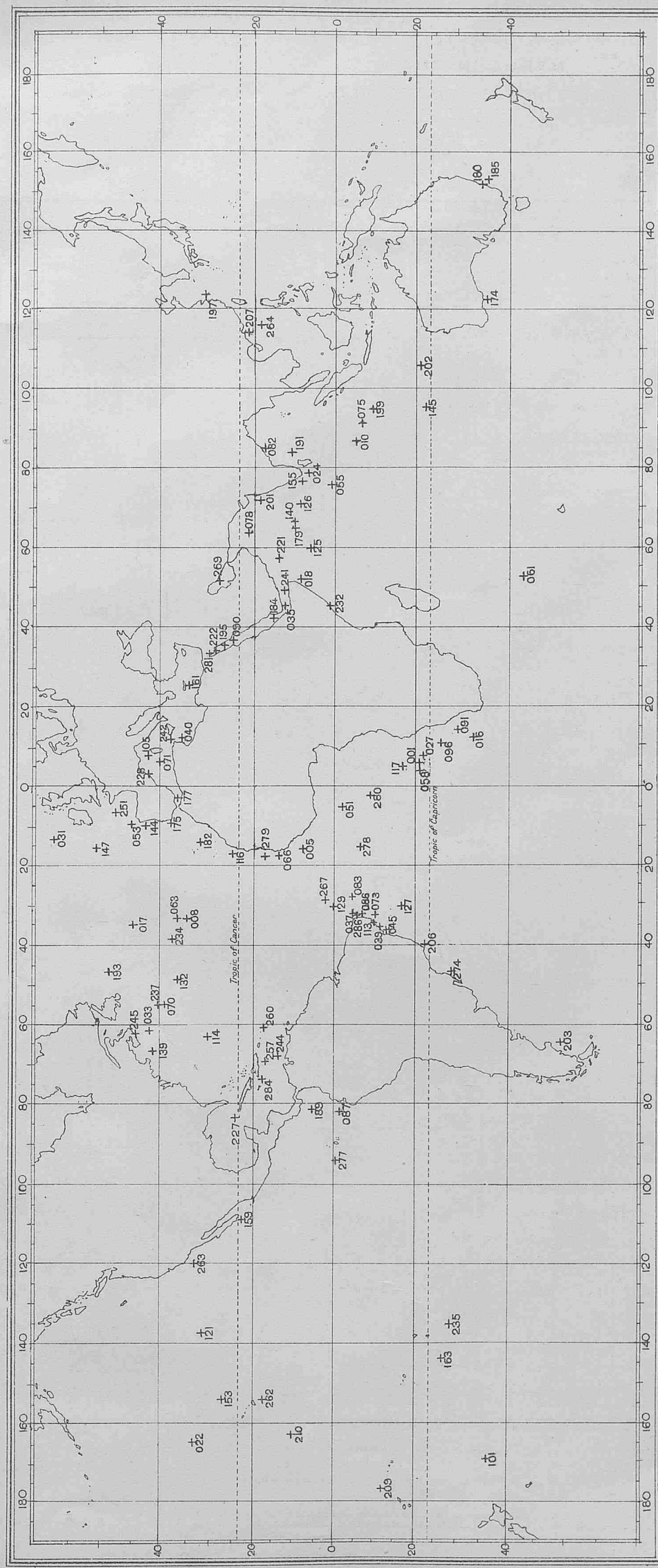


Total observations extracted, Jan. 1st 1933 - Mar. 31st 1936 for

the years 1895 - 1919 = 347,094 observations.

WORK OF THE YEAR. CHART III.

CHART OF THE WORLD SHOWING POSITION OF BRITISH SELECTED SHIPS AT SEA ON JUNE 1st, 1935.



001B Clan Macphee.
005A Warwick Castle, M.V.
008B Losada, M.V.
010B Port Fremantle, M.V.
016B Comliebank, M.V.
017A Aquitania
018B Makalla
022B Alynbank, M.V.
024B Matra
027B Clan Farquhar
031A Caledonia
035B City of Sydney
037B Baroness
039A Arlanza
040B Port Adelaide
045A Avila Star
051B City of Auckland

053A Voltaire
055B Actor
058B Dorset, M.V.
061B Devon
063B Queen City
066A City of Negpur
070B Bayano
071A Rawalpindi
073B Nagara
075B Hobson's Bay
078B Myrtlebank, M.V.
082B Clan Macnair
083A Lautaro, M.V.
086A Alameda Star
087A Orduña
090B Aeneas,
091A Armadale Castle
096A Windsor Castle

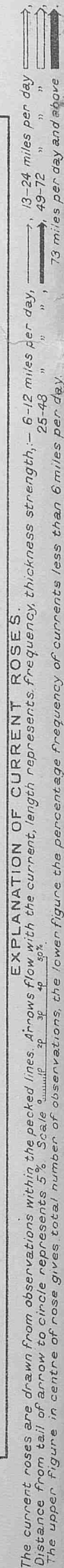
101B Mahia
105A Orsova
113B Upwey Grange, M.V.
114B Arigiani
116A Highland Chieftain, M.V.
117B Cape of Good Hope, M.V.
121B Siamese Prince, M.V.
125B City of Windsor
126B Glengarry, M.V.
127B Port Wellington
129A Alcantara
132B Reina del Pacifico, M.V.
139A California
140B Mahraffa
144B Inverbank, M.V.
145B Berwickshire
147A Laconia
153A Empress of Japan

155A Carthage
159B Fresno City, M.V.
161B Titan
163B Port Gisborne, M.V.
174A Ormonde
175A Almazora
177B Mantola
179B Baranald
180B Baradine
182A Highland Brigade, M.V.
184A Cathay
185A Comorin
189A Ionic
191B Chindwin
193A Empress of Australia
195A Maloja
197A Mantua
199A Mongolia

201A Naldera
202A Narkunda
203B Royal Star
206B Karamca, M.V.
207A Ranpura
209A Aorangi, M.V.
210B Niagara
221B Domala, M.V.
222B Clan Macdougall, M.V.
227B Nardana
228A Ranchi
232B Madura
234B Glaucus
235A Mataroa
237A Berengaria
241B Clan Macbeth
242B British Enterprise
244B Tongariro

245B Turakina
251B Discovery II, R.R.S.
257A Rangitata, M.V.
260B Inanda
262B Hauraki, M.V.
263B Wairuna
264B Tana
267B Lassell, M.V.
269B British Admiral
274B Sultan Star
277B Pakela
278B Middlesex
279B Clan Urquhart
280B Astronomer
281B Kemmendine
284B Director
286B Natia

107 ships out of 287, in favourable positions to report, with about 180 in port or narrow waters.
This is typical and represents a fair average. 37 per cent. in position to report.



CURRENTS IN THE SOUTHERN PORTION OF THE SOUTH PACIFIC.

(Western)

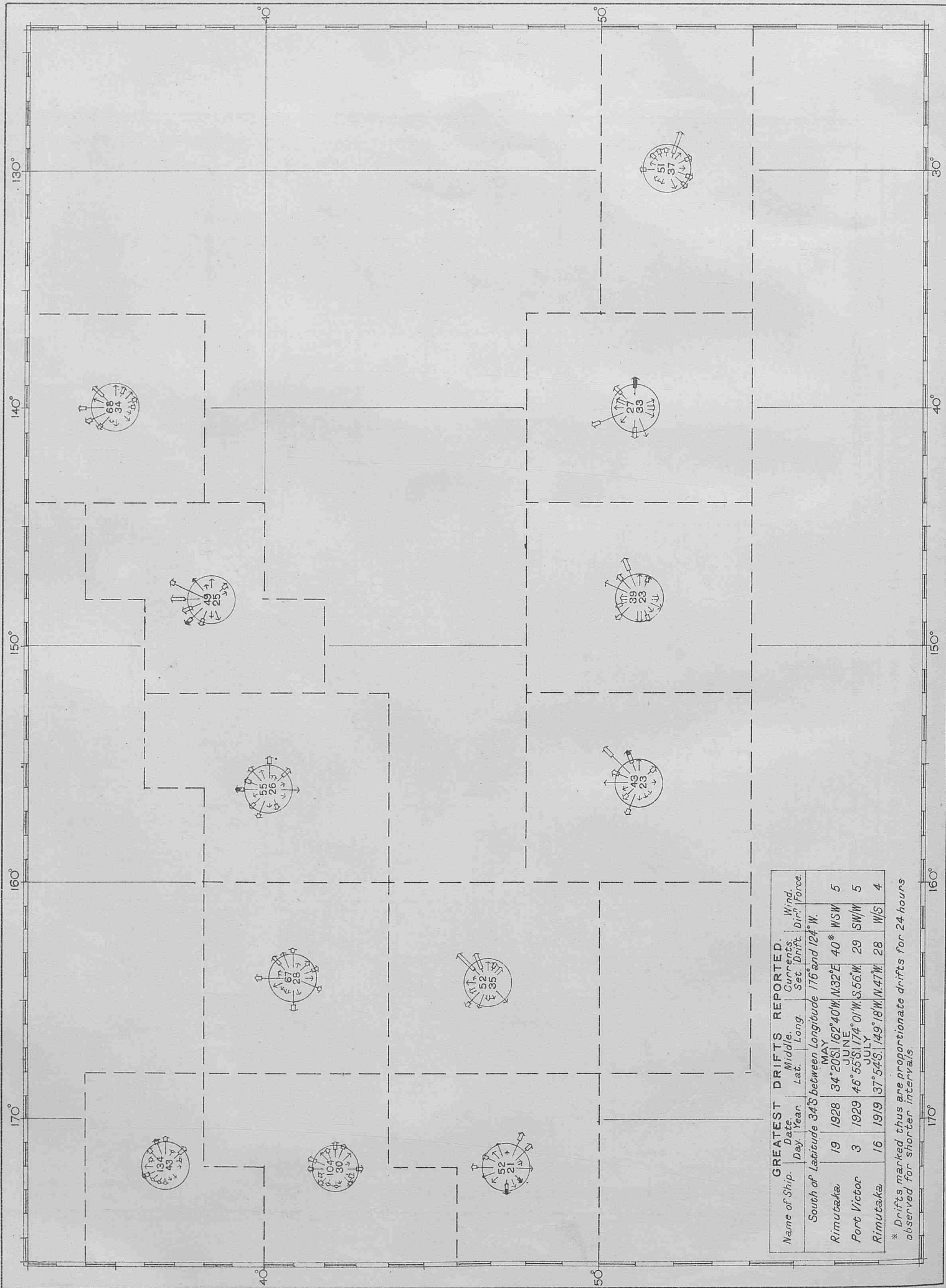
MAY JUNE, and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910-1935.



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.



GREATEST DRIFTS REPORTED.				Wind.	
Name of Ship.	Date.	Middle.	Long.	Currents.	Dir. Force
	Day.	Lat.		Set.	
South of Latitude 34°S between Longitude 176° and 124° W.					
MAY					
Rimutaka	19	34° 20'S	162° 40' W	40*	WSW 5
JUNE					
Port Victor	3	46° 55'S	174° 0' W	3.56° W	SW/W 5
JULY					
Rimutaka	16	37° 54'S	149° 18' W	47° W	WS 4

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

CURRENTS IN THE SOUTHERN PORTION OF THE SOUTH PACIFIC.

(Middle)

MAY JUNE, and JULY.

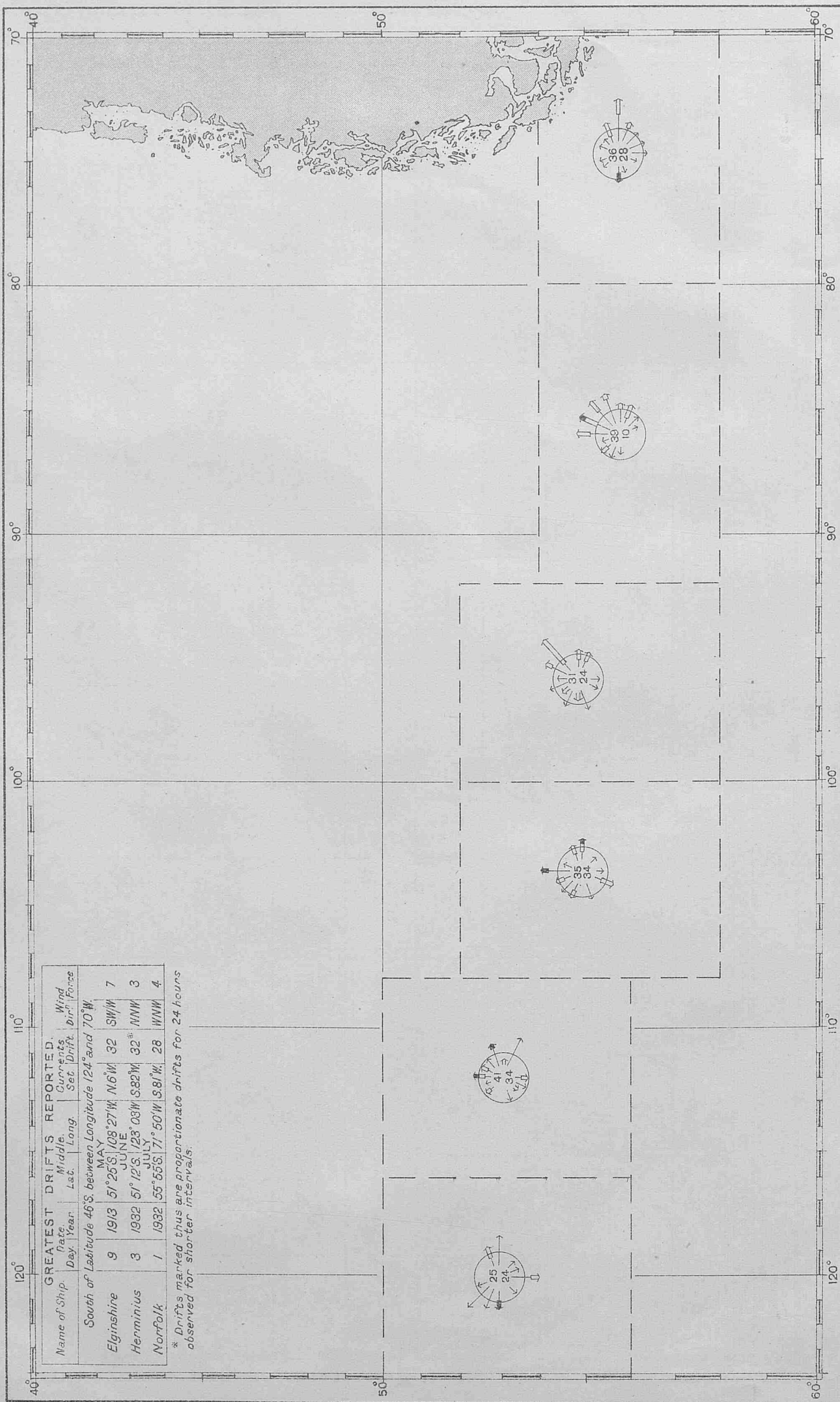
Observations of ships regularly observing for the British Meteorological Office, 1910-1935.



CURRENTS IN THE SOUTHERN PORTION OF THE SOUTH PACIFIC. (Eastern)

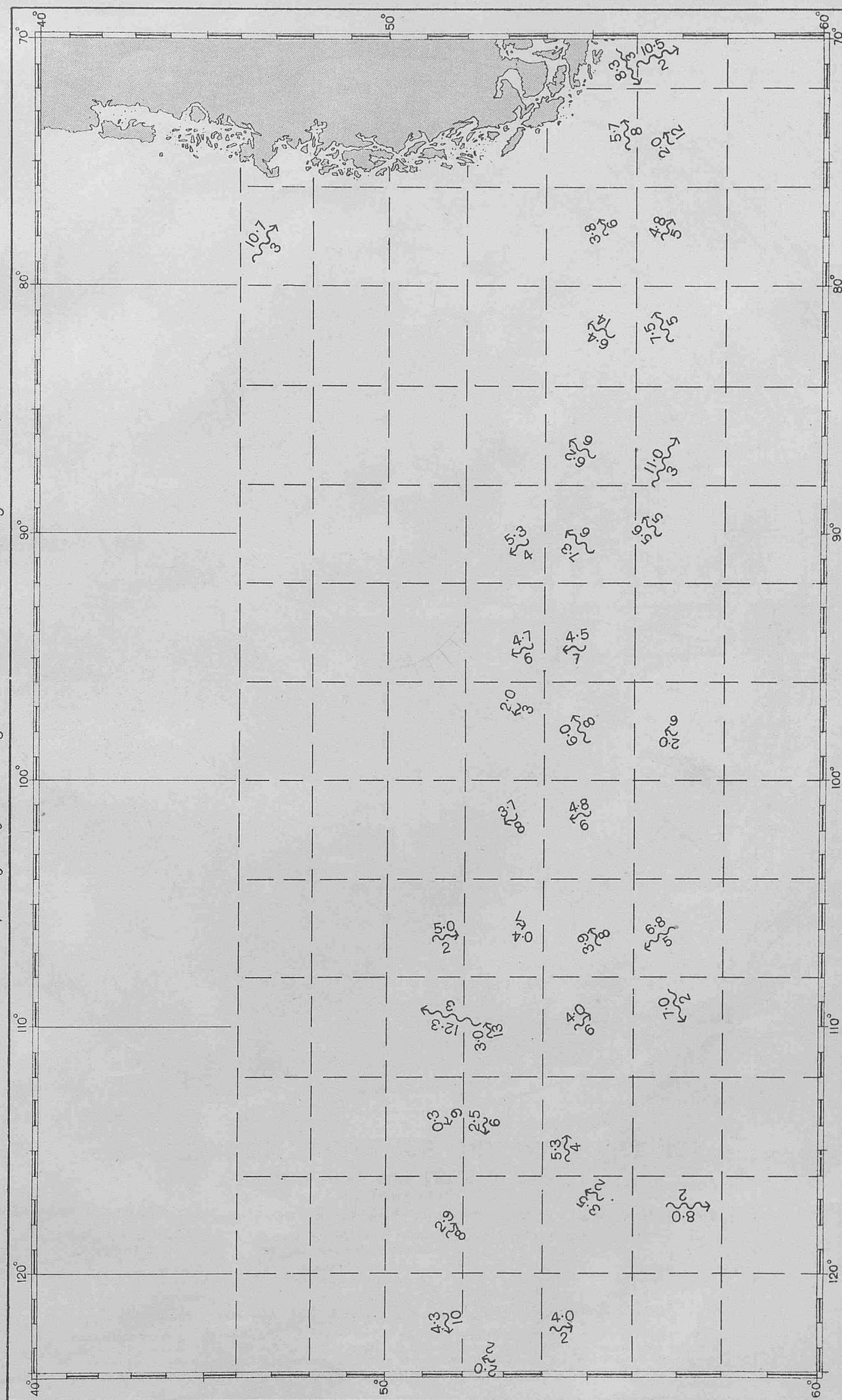
MAY JUNE and JULY

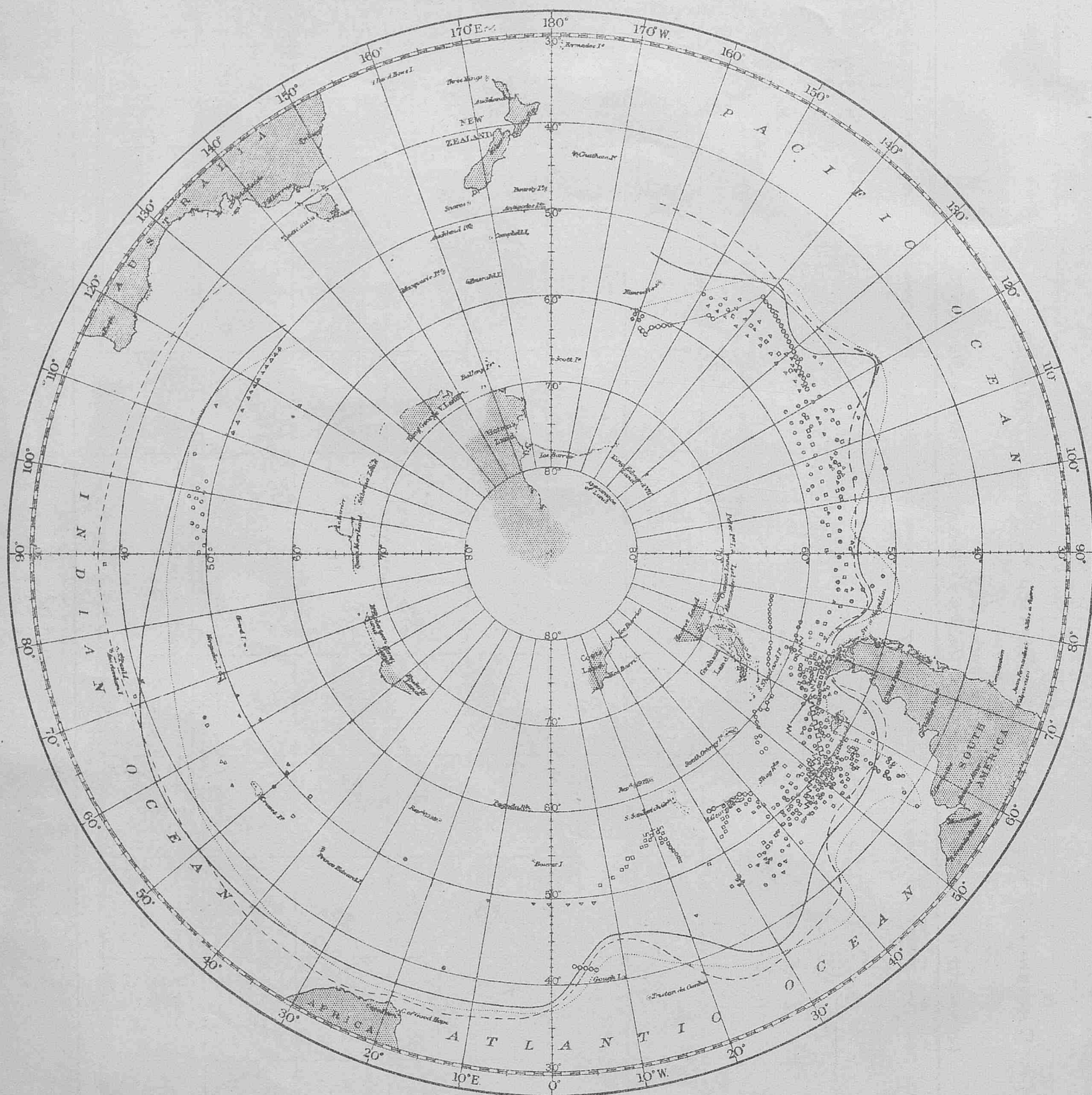
Observations of ships regularly observing for the British Meteorological Office, 1910-1935.



MAY JUNE. and JULY.

Observations of ships regularly observing for the British Meteorological Office, 1910-1935.





ICE CHART OF THE SOUTHERN HEMISPHERE, JULY AUGUST and SEPTEMBER EXPLANATION.

The symbols used to distinguish the ice of each of the three months are as follows:—

Bergs, 1902-1935.			Position of northernmost pack ice actually observed 1885-1935.		Extreme limit of all ice, 1772-1935.	
July.	△		~~~~~		---	
August.	□		~~~~~		---	
September.	○		~~~~~		---	

NOTE — The symbols for pack ice are joined by hair line where desirable.

The coast line of the Antarctic continent as shown on this chart is not completely corrected to accord with the latest survey information. It is intended in a later volume of *The Marine Observer*, after the Admiralty Ice chart of the Southern Hemisphere No. 1241 has been revised, to again publish this chart in *The Marine Observer* with coast lines as complete as possible and to bring the ice information up to date annually.