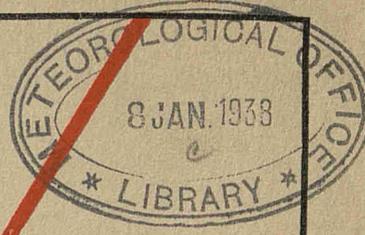


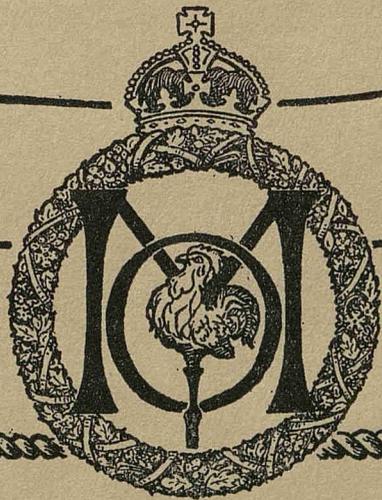
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THE MARINE OBSERVER



Ship "Hotspur."
Capt. H. Toynbee



Admiral R. Fitzroy CB. RN.
• 1854 - 1865 •

Captain H. Toynbee
• 1867 - 1888 •

Lieut. C. W. Baillie RN.
• 1888 - 1899 •

Captain
A. Campbell Hepworth CB. RD. RNR.
• 1899 - 1919 •

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JANUARY
1938

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IN CO-OPERATION WITH
VOLUNTARY MARINE OBSERVERS

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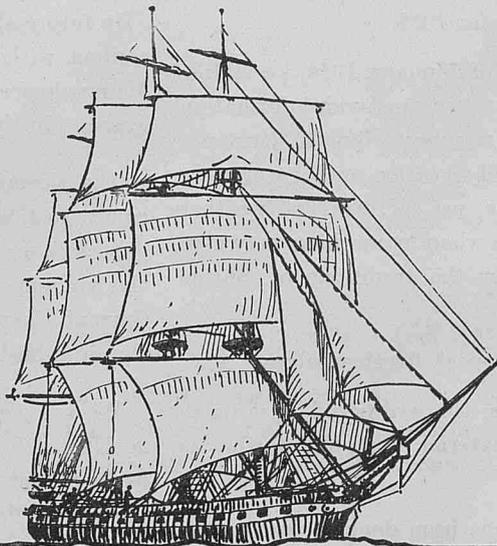
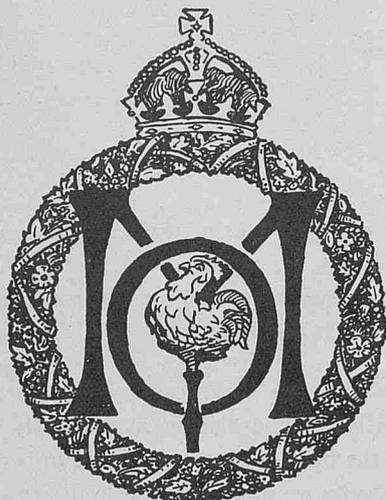
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CAPTAIN L. A. BROOKE SMITH, RD, RNR., MARINE SUPERINTENDENT.

•C.H.W.

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Vol. XV, No 129.

THE MARINE OBSERVER

JANUARY 1938.

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THE MARINE OBSERVER, 1938.

THE best of good wishes to all our readers for 1938.

In the first number of this Journal, that for January, 1924, we said:—
 “The functions of THE MARINE OBSERVER are to provide information useful to navigation concerning winds, weather, climate, currents, derelicts and ice, to stimulate interest in observation and the practice of Meteorology at sea; to promote the use of wireless weather reporting for shipping; to provide a means whereby mariners may give their experiences to others and to foster the traditions of Marine Meteorology upon international lines.”

The pages of the past fourteen volumes speak for themselves.

Upon completion of the present volume, the writing of these notes and the general selection from all the material available of what is to be published will pass to another.

During the past fourteen years much has been done to further the work through information and ideas which have been sent to us by those at sea, and which have not always been published, though considered and oft-times acted upon.

The Marine Observer's Log continues to improve, and to take a greater share in fulfilling the functions set out in 1924. These are the seafarers' own particular pages, and we ask the corps of voluntary marine observers and all officers of the Merchant Navy, who have particularly interesting experiences in which the elements concern them during the coming year, to send us their remarks for publication in 1939 so that my successor may be helped as much as possible in improving upon our past efforts.

In 1921 merchant navy agencies to the Meteorological Office were established on the shores of the Pacific Ocean and in Western Australia, for the purpose of furthering the collection of meteorological observations in the region north of Australia and in regions of the Pacific, which until the opening of the Panama Canal, and the consequent changes in routes over that ocean, had been comparatively little frequented by shipping.

Now that this deficiency has very largely been made good, and just when the pre-war arrears of extraction of data for charting the oceans for climate are being overcome by means of the Hollerith machine and the temporary assistance of a considerably augmented staff in the Marine Division, it has been decided to close the agencies at Sydney, New South Wales and Hong Kong, which are no longer necessary.

In future all the guiding of the work through the medium of personal contact with the Merchant Navy will be concentrated in the Port Meteorological Officers in London and Liverpool and through six agencies in the principal ports of the United Kingdom.

The closing of the last two agencies on the shores of the Pacific comes just when the first new atlas of the Pacific may shortly be expected, for at about the time of the publication of the last number of this volume of THE MARINE OBSERVER we hope to publish an atlas of Current Charts of the South Pacific, similar to that of the Indian Ocean published in 1936.

We are glad to take this opportunity of thanking the following gentlemen for the assistance which they have given us since 1921, as Merchant Navy agents at ports on the shores of the Pacific and eastern portion of the Indian Ocean.

Lieut.-Commander P. W. S. HENDERSON, R.N.	...	Hong Kong.
Captain L. G. BOLGER	... ..	Melbourne.
Lieut.-Commander O. C. G. LEVESON-GOWER, R.N.	...	Hong Kong.
Lieut.-Commander J. H. DRUMMOND, D.S.C., R.N.	...	Hong Kong.
Lieut.-Commander R. G. H. MILLIGAN, R.N.	...	Hong Kong.
Mr. T. S. H. SHEARMAN	... ..	Vancouver.
Captain J. J. AIREY	... ..	Fremantle, W.A.
Captain R. G. BLAYNEY	... ..	Sydney, N.S.W.
Lieut.-Commander G. B. R. RUDYERD HELPMAN, R.N.	...	Hong Kong.
Lieut.-Commander E. H. C. BRANSON, R.N.	...	Hong Kong.
Commander G. D. WILLIAMS, D.S.O., R.N.R.	...	Sydney, N.S.W.
Lieut.-Commander M. V. KEOGH, R.N.	... ..	Hong Kong.
Captain N. G. ROSKRUGE	... ..	Sydney, N.S.W.
Captain G. B. MERCER	... ..	Sydney, N.S.W.
Lieut.-Commander K. W. KIRBY, R.N.	... ..	Hong Kong.

During the last year, the work of the corps of voluntary marine observers and the commanders and officers of British Supplementary Weather Reporting Ships proved the value of the British Selected Ship service, to aerial navigation as well as to navigation, as was acknowledged in the October, 1937, number of this Journal.

May 1938 see this system even more firmly consolidated.

Good luck to seafarers in 1938.

MARINE SUPERINTENDENT

23rd October, 1937.

The Marine Observers' LOG



January, February and March

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.

OCEAN PILOTAGE.

Passage of S.S. "Coalby" to Japan.

BY CAPTAIN J. M. ISAACSON.

I HAVE just made a passage across the Pacific from the Panama Canal to Moji, which I think might interest you.

I did not keep a meteorological log, so can only give you bare data. The route I adopted was:—from Balboa (Fairway Buoy) to a position 07° 00' N., 80° 00' W. (south of Cape Mala); thence due west to position 07° 00' N., 81° 50' W. (south of Cobia Is.); thence on the Great Circle track as far as Latitude 20° 28' N., thence due west to position 20° 28' N., 156° 40' W. (passing between Hawaii and Maui Is.). From thence by direct Mercator to the Bungo Suide, and so through the western arm of the Inland Sea to Moji. The distance covered was 8,620 miles, time 56 days, and throughout the entire passage I *never experienced a head wind or an adverse current*. Winds were between N.E. and E.S.E., never exceeding force 5 at any stage of the passage. Currents set anywhere between 265° and 290° true at daily rates of from 5 to 40 miles a day. I do not know if this constitutes a record but I should think it is pretty near one.

The ship was the *Coalby*, one of ROPNER's old wagons, which I was taking out to Japan to be scrapped. Her best speed on her three boilers was a bare six knots, and when one boiler conked out altogether, she was making rather less than five. Sailing from the Tyne in January I took her to Gibraltar with coal, from there to Huelva and loaded copper ore for New York. Thence to Norfolk for bunkers and on to Jacksonville to load scrap iron for Japan. Thence via Jamaica and the Panama Canal on the route already described.

During the voyage I have had every breakdown known to those who go down to the sea in ships. Engines, boilers, condenser, feed-pump, fan-engines, furnaces, winches, and last, but not least, had the funnel blown overboard in a heavy blow off Hatteras. Still, we made it and that's all that matters. I forgot to mention the steering gear which broke down 500 miles from New York, and I had to steer her in by hand, four men at the wheel, some job. I went up the narrows into New York with a tug on the quarter helping her round the bends. I wish I could write like CONRAD, it would make a *real* sea yarn.

You might ask, why did I adopt that route across the Pacific—the answer is I did it after a very careful study of "Ocean Passages of the World," an excellent work, and one of my most treasured possessions. With a hulk like that I was naturally looking for favourable conditions, but I don't think even Admiral SOMERVILLE himself would have predicted a passage like the one I got, even although his book was responsible for my choosing that route.

I am very sorry I cannot give you more detail, but my mind was on other things, not on ocean meteorology; my main concern was to get her to her destination intact.

CURRENTS IN THE REGION OF THE GILBERT ISLANDS.

THE following remarks are contributed by Captain T. HOPE EVANS, London Missionary Society's Auxiliary Schooner *John William V*.

I visit the Gilbert Islands twice a year, first period between March and June, second period from October to December. Between the months of July and September I am amongst the islands of Samoa, Union and Ellice groups. All my departures are from Suva, Fiji.

My experience amongst these islands is that there is no actual stream such as the Gulf Stream in the Atlantic, but the currents depend entirely on the prevailing winds.

In the Gilbert Islands I have noticed that the current is strongest when the wind is E.N.E., so much so that I calculate my drift from the strength of the wind at the time, also considering its direction, and invariably make a good land fall.

My formula is as follows:—

When the wind is E.N.E. and about force 2–3 I allow $\frac{1}{2}$ to 1 knot westerly set.

When the wind (E.N.E.) is force 3–4 I allow 1 to $1\frac{1}{2}$ knots and when the wind (E.N.E.) is from force 5 upwards then 2 knots is allowed. We hardly ever have this wind blowing stronger than force 5.

As the winds back to the north, the current becomes weaker. This rule only applies to the Gilbert Group.

Between Arorau (Gilbert) and Ellice Group (inclusive), I find the same rule can be applied to a certain extent when the wind is E.S.E., and also the current weakens as the wind becomes more and more southerly.

Between the months of November to March is the period of westerly winds in both the Ellice and Gilbert Groups, and the currents during these months are most erratic, irrespective of the strength or direction of the wind. An easterly set, especially when accompanied with lightning in the west and the sun setting behind a heavy bank of clouds, is a sure warning of a westerly springing up.

A spell of calms means a complete dying away of the current, but the current assumes its direction and set as soon as the wind springs up again, which proves to a very great extent that the current is entirely set up by the prevailing winds at the time.

GULF STREAM.

THE following is an extract from the Meteorological Record of M.S. *Leverbank*. Captain H. A. JONES. Huelva to Philadelphia. Observer, Mr. A. J. FALNASSER, 2nd Officer.

At noon on the 26th January, 1937, in Latitude 35° 15' N., Longitude 70° 21' W., course was set 306° towards Fenwick Island Light, it being expected that the Gulf Stream would set the ship to the northward towards Cape May. At noon on the 27th, however, the position was Latitude 37° 28' N., Longitude 74° 12' W., no current whatever having been experienced and the ship having made her course. At 7 a.m. on the 27th the sea temperature was 70° F., and at 10 a.m. it had fallen to 48°; while the temperature of the air fell from 74° F. at 10 a.m. on the 26th to 30° F. at midnight on the 27th.

NOTE.—As shown by the frequency rose for this part of the Gulf Stream in "Currents on the Main Trade Routes of the North Atlantic," 16 per cent. of observations were of current less than 6 miles per day while there is an appreciable proportion of weak and moderate currents in the area flowing in directions other than that of the Gulf Stream.

AMSTERDAM ISLAND.

South Indian Ocean.

THE following is an extract from the Meteorological Record of S.S. *City of Dieppe*. Captain H. CARTWRIGHT. Beira to Port Pirie. Observer, Mr. J. B. MUIR, 3rd Officer.

26th February, 1937, at 12.45 A.T.S., observed summit of Amsterdam Island above the horizon haze, bearing 069° distant 14 miles. Steered in until Cap d'Entrecasteaux bore 090° distant 4 miles, the course then being altered as required, to pass 1 mile off Recherche, Goodenough and Hosken Points. The steam whistle was repeatedly sounded, but there were no signs of human occupation: nor could the hut or ruins be seen, as this side of the island was in the shadow. The slopes of the hills and ravines were well studded with cattle, principally brown and white and black and white in colour: except for lifting their heads they paid no attention to the whistle.

The weather was fine, sky cloudless, horizon hazy with gentle south breeze; slight sea and swell: there was no cloud on the summit.

WEATHER FORECASTING AT SEA.

M.S. *Essex*. Captain F. N. WYATT. Observing Officer, Sub-Lieutenant J. BROOKE SMITH, R.N.R., 3rd Officer.

The following remarks accompanied the weather charts.

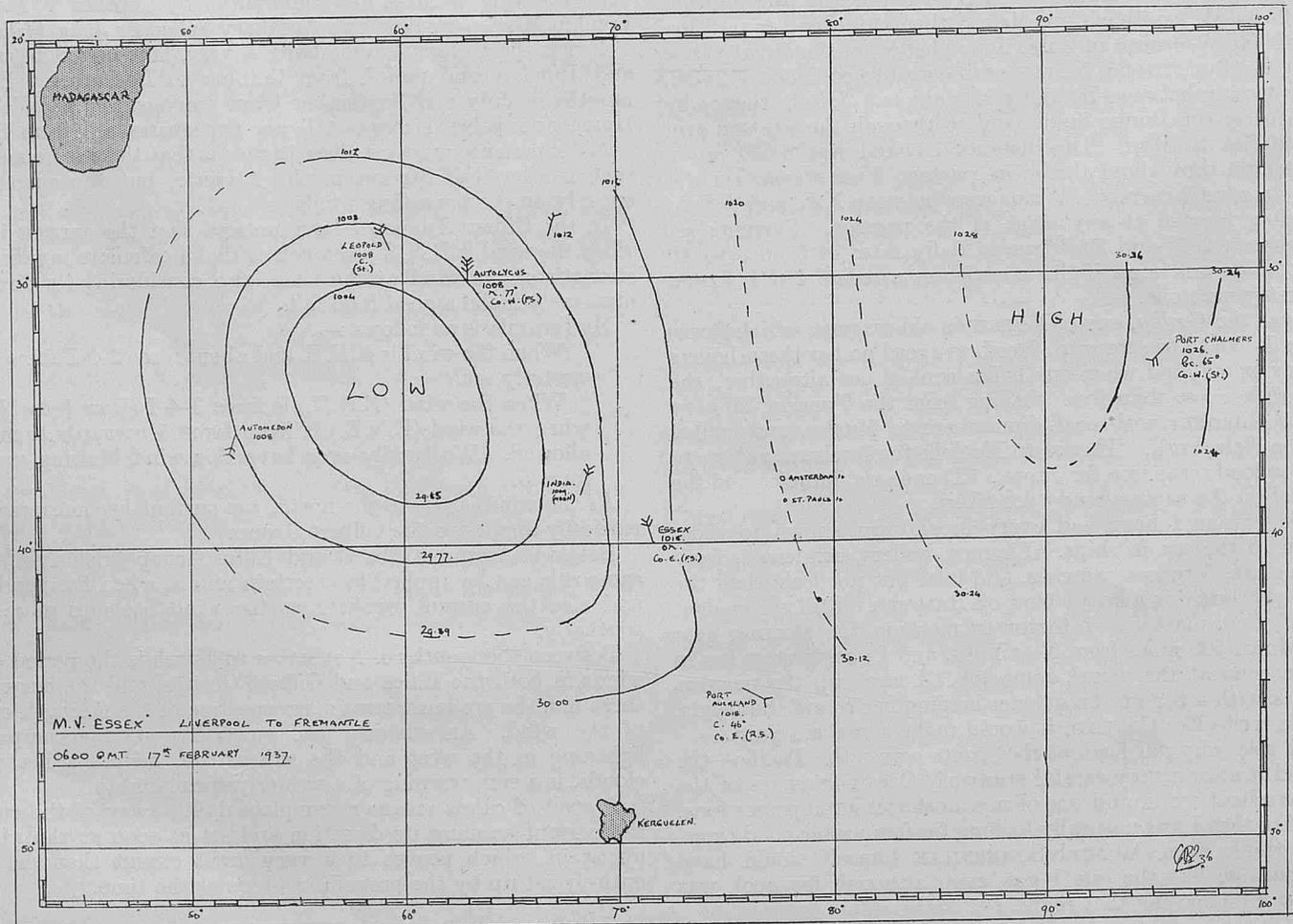
On 16th February it was seen from the Dutch Steamer *Madoera's* 1200 G.M.T. weather report that she had a northerly wind of force 9. Barometer 991 mb. Temperature 23° C. Overcast sky, mist, moderate N.E.'ly swell. Her position being 30° 00' S., 57° 12' E. Course easterly, barometer steady. Her 0600 G.M.T. report on 17th February (Wednesday) was not received, but the following message from *Madoera* to all ships was received at 0945:—

"The disturbance Tuesday 1200 G.M.T. centered about 32° S., 56° E. with barometer low, 990 mbs., and attended by fresh gales has moved

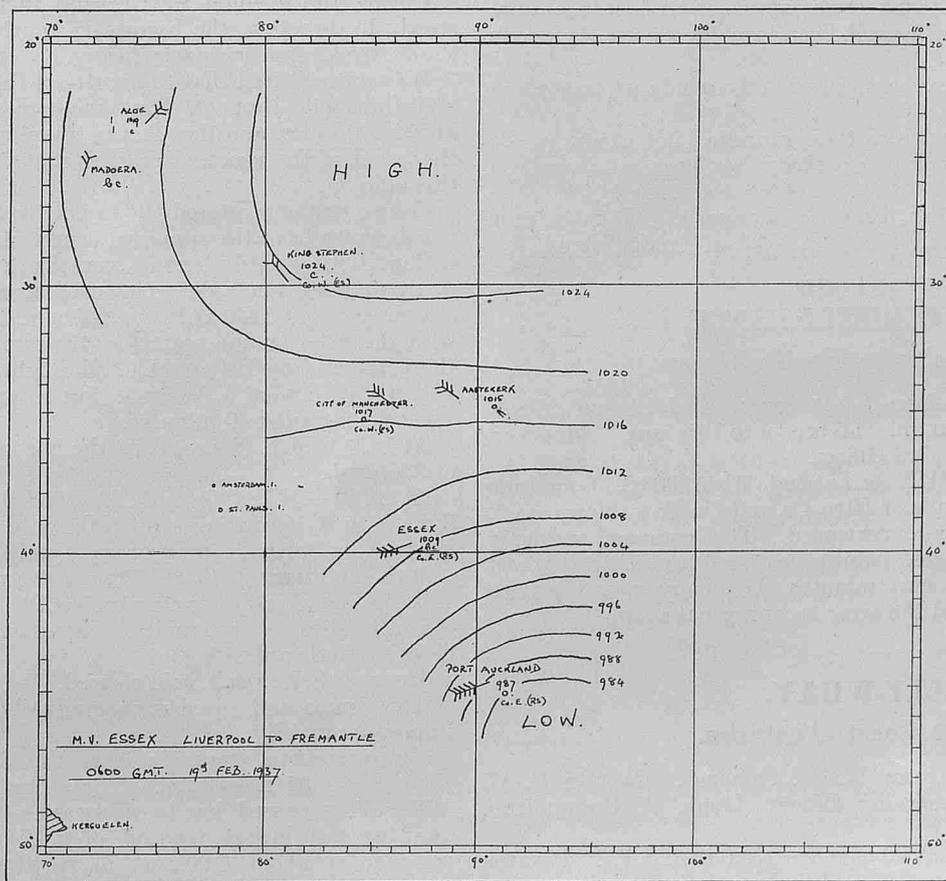
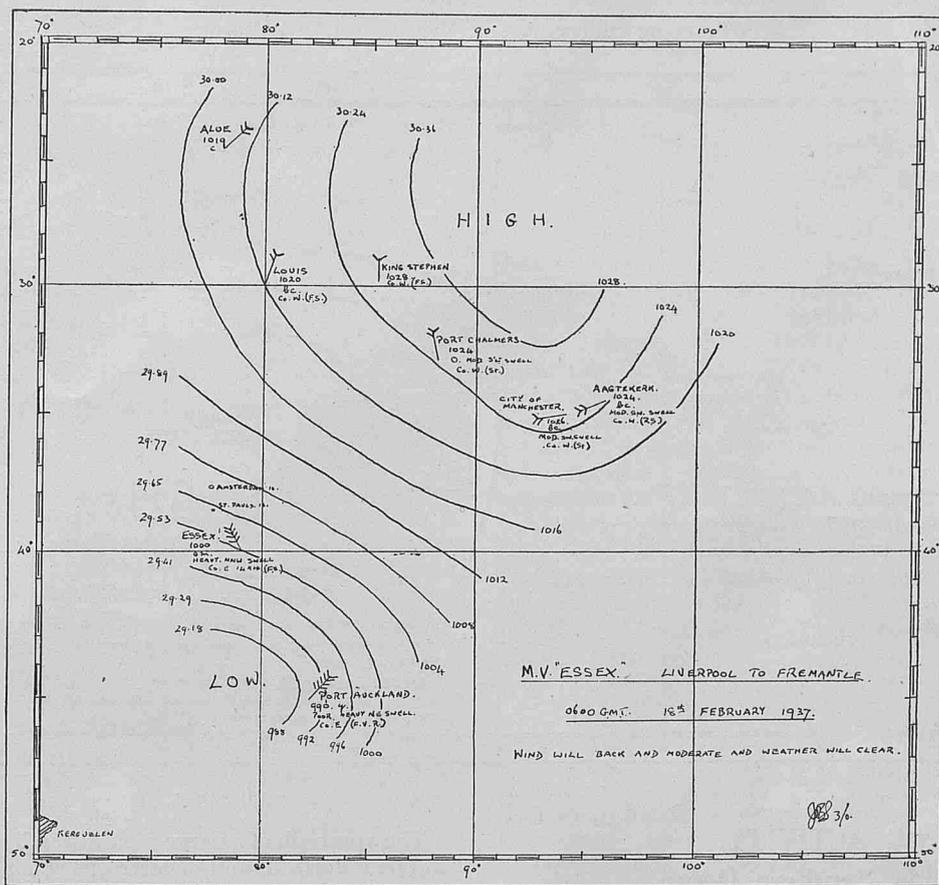
southeastwards and at 0600 G.M.T. to-day was centered about 33° 55' S., 61° 00' E."

A weather chart was made on board *Essex* and from it, it was seen that we should probably get an increasing wind and that it would shift ahead or astern according to whether the centre passed to the northward or southward of the ship.

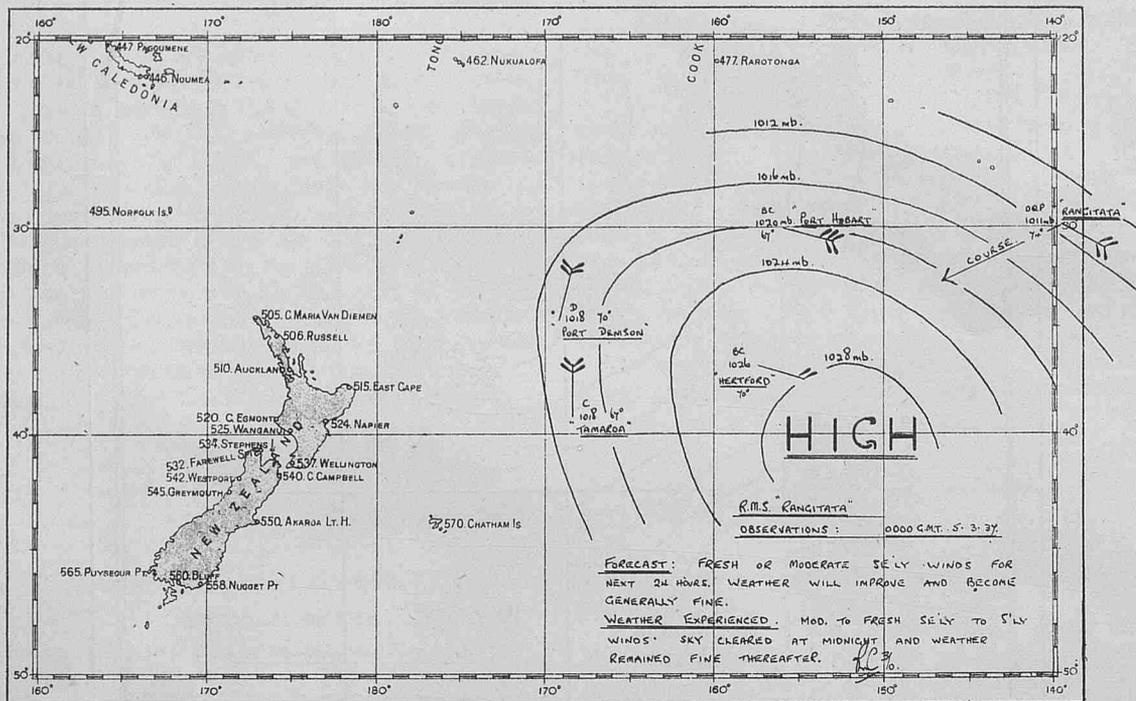
In the afternoon the wind veered to N.N.E. but remained steady at N. throughout the night with barometer falling. By 0600 G.M.T. the following morning it had backed to N.W. by N. and we inferred that the centre would pass to the southward; this was proved to be correct when other ships' reports were received and plotted. It will be seen that the cyclone travelled very much faster this day than it did on the previous day.



THE MARINE OBSERVERS' LOG



R.M.S. *Rangitata*. Captain E. HOLLAND.
Observing Officer, Mr. E. M. CHURCH, 3rd Officer.



VOLCANIC ACTIVITY.

Bristol Islands, Southern Ocean.

THE following is an extract from the Meteorological Log of R.R.S. *Discovery II*. Captain L. C. HILL, O.B.E. Leith to S. Georgia and Southern Ocean. Observer, Lieut. R. WALKER, R.N.R., 1st Officer.

A wireless report was received on 1st January, 1937, from S.S. *Sourabaya* advising us that Mount Darnley was in violent eruption. Mount Darnley is the peak of Bristol Island on the South Sandwich group.

At this time *Discovery II* experienced easterly winds up to force 8 for a period of three days.

According to latest information in the Antarctic Pilot this must be the first occasion on which volcanic activity has been witnessed on this island.

Position of Ship, 00.00 Ship's Time, 1st January, 1937: Latitude $53^{\circ} 02' S.$, Longitude $38^{\circ} 29' W.$, 450 miles N.W. of Bristol Island.

MAGNETIC DISTURBANCE.

Marquesas Islands, Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Middlesex*. Captain H. J. WILDE. Liverpool to Brisbane. Observer, Lieut. A. H. MARTIN, R.N.R., 3rd Officer.

30th March, 1937, 0217 G.M.T., in Latitude $9^{\circ} 45' 30'' S.$, Longitude $139^{\circ} 45' W.$, between the islands of Hiva Oa and Ua Pow (Marquesas), a magnetic disturbance was experienced. The compass suddenly became very erratic, at one time pointing as much as 20° to the east of magnetic north. Within two minutes the compass-card settled down, and an azimuth showed the error to be normal again.

WILLY-WILLY.

Off West Coast Australia.

THE following remarks are from R.M.S. *Ormonde*. Captain G. G. THORNE, R.D., R.N.R. Observing Officer, Lieut. C. EDGEcombe, R.N.R., 3rd Officer.

9th February, 1937 at 0000 G.M.T. (7.20 a.m. S.T.). Position $29^{\circ} 35' S.$, $113^{\circ} 02' E.$ Steering 317° . Wind south, force 4. Barometer 1005.2 mb. steady and moderate southerly swell.

The approach of a depression was indicated by the excessive humidity and poor horizon, and cirrostratus cloud completely covering the sky.

During the next six hours wind veered to S.W. by S., remaining force 4, barometer now starting to fall very rapidly. Swell became very confused with long swell from northward. Two hours later at 0740 G.M.T. (3 p.m. S.T.) continuous rain set in, barometer still falling very rapidly, and a long northerly swell predominating.

During the evening watch wind increased to force 7, remaining steady in direction, the barometer continued to fall very rapidly and the N. by E. swell was very heavy.

We now surmised that the centre of the storm lay between ourselves and the land, Hamelin Pool being on our starboard beam distant about 200 miles, and that it was travelling to the southward following the trend of the coast. Weather reports we received later confirmed this opinion.

Course was now altered 10° to port to 307° with a view to increasing our distance from the supposed centre of the storm.

Conditions steadily became worse with the wind veering and blowing a strong gale from S.W. The swell again became very confused with a high sea. At 1420 G.M.T. (9.40 p.m. S.T.) the ship was "hove to" with the wind on the port bow, the swell now taking the direction of the wind, and by 1640 G.M.T. (Midnight) was very heavy, long south westerly with wind S.W. by S., force 10 to 12.

Clocks retarded 40 minutes.

At 1810 G.M.T. (1 a.m. S.T.) the barometer was at its lowest reading of 986.7 mb.

At 2110 G.M.T. (4 a.m. S.T.) wind had veered to S.W. by W. force 8 to 9, barometer read 990.4 mb. rising very rapidly, rain not intermittent with frequent heavy squalls.

10th February 0000 G.M.T. (6.50 a.m. S.T.). Position $27^{\circ} 15' S.$ $109^{\circ} 20' E.$ Wind was now steady, S.W. by W., force 6 to 7. Barometer 997 mb., rising very rapidly. Sky overcast with nimbus tending to clear to windward.

Heavy S.S.W. swell, rain cleared.

The course and speed were gradually resumed, weather conditions improving rapidly.

An intercepted message from the S.S. *Centaur* which had been "hove to" 55 miles S.W. of Cape Inscription, stated that centre of Willy-Willy passed her to westward at 1.0 a.m., the barometer then showing the lowest reading of 28.74 in., and that her present weather at about 8.00 a.m. in position $26^{\circ} 10' S.$, $111^{\circ} 50' E.$, was wind N.W. by W. 9, barometer 29.46 in. rising rapidly, heavy but thin sea and overcast, drizzle.

This confirmed our earlier opinion that we were in the right hand semi-circle and proved the conclusions we arrived at and actions taken were correct.

Later in the day the weather report was received for observations at 1200 G.M.T. from Perth. This read: Leeuwin 29.39 falling N. 5, confused, wind increasing. Eclipse 29.44 falling, E.N.E. 7, moderate, S.W. forecast. Willy-Willy moving down S.W. coast and expected to round Leeuwin shortly. Rough to high.

Report received the following day from Perth for observations at 1200 G.M.T. showed that depression was then situated south of Eclipse Island, losing in intensity.

FOG BANK.

Coast of Crete.

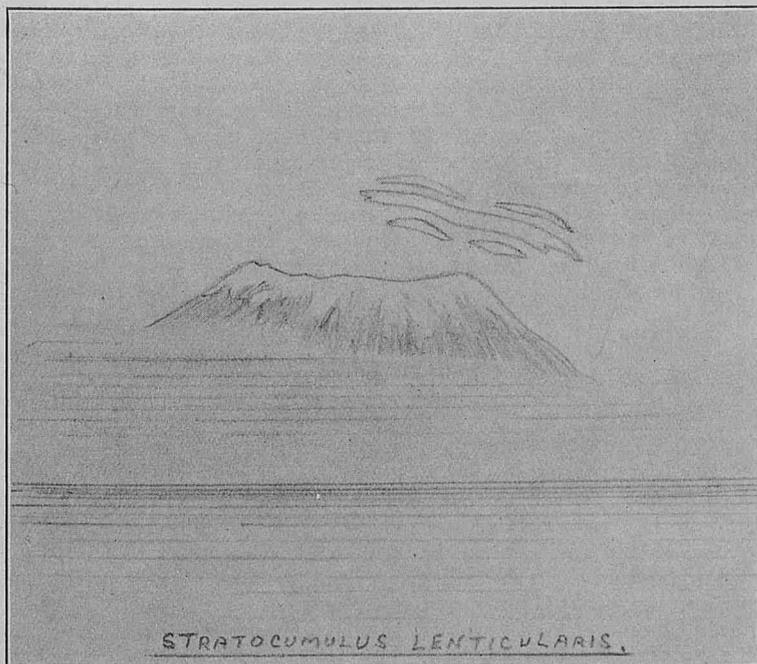
THE following is an extract from the Meteorological Record of M.S. *Agamemnon*. Captain J. G. REYNARD. Kobe to London. Observer, Mr. W. S. HARGRAVE, 3rd Officer.

21st March, 1937, from 1000 A.T.S. in Latitude 34° 19' N., Longitude 24° 56' E., to 1600 A.T.S. in Latitude 35° 00' N., Longitude 23° 09' E. Course 296°, 15.6 knots. While on passage from Port Said to Straits of Messina, encountered, but did not enter, a very thick fog bank, about 700 feet high, lying on the S.W. coast of Crete. The bank apparently extended from the coast to about 25 miles off, while outside this line the visibility was excellent (9 by scale). The peculiarity of the phenomenon was the abruptness and straightness of the limits of the bank, this vessel steaming for the entire six hours along the fringe at distances of from 50 to 500 yards from the fog. The impression was that of steaming along the base of a high cliff. Barometer, air and sea temperatures remained constant throughout at 1014 mb., air 76° F., sea 61° F., wind N.E. to E., force 1. By sights and bearings of the snow-covered high land in the interior of the island, which was clearly visible and excellently defined, Gavdo Island was passed at a distance of 10 miles without being sighted.

WHALE-BACK CLOUD OVER THE SIERRA NEVADA.

Mediterranean Sea.

THE following is an extract from the Meteorological Record of S.S. *City of Sydney*. Captain E. G. HOPPINS. Calcutta to London. Observer, Mr. C. B. P. BRADBURY, 2nd Officer.



23rd February, 1937, 9.30 a.m. A.T.S. Observed well-defined "whale-back" formation of cloud (stratocumulus lenticularis) over the Sierra Nevada. Wind W.S.W., force 5; barometer 30.04 in.

(corrected); air temperature 60° F.; cirrus 5/10ths. Sky intensely blue. "Whale-back" moved slowly eastward and gradually united into one mass and became less defined. The apparent inclination to the eastward was probably due to perspective.

Position of Ship: Latitude 36° 05' N., Longitude 4° 40' W.

TRADE WINDS.

Atlantic Ocean.

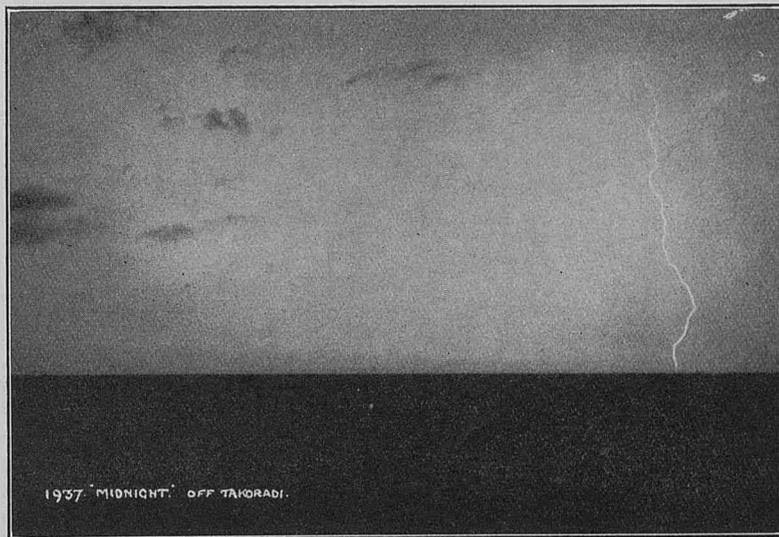
THE following is an extract from the Meteorological Record of M.S. *El Argentino*. Captain F. ELLIS, D.S.C. Liverpool to Montevideo. Observer, Mr. H. NEALE SHERWELL, 2nd Officer.

25th March, 1937, 10.35 p.m. A.T.S. The equator crossed in Longitude 31° 23' W. At this time the north-east trades, which had continued through the doldrums, still remained, although the usual south-easterly swell was observed. Usually on this track in March the south-east trades are met with in about Latitude 2° to 5° S., but in this case north-easterly winds continued until Latitude 13° 08' S., Longitude 35° 44' W., on 28th March, 08.55 a.m., at which time the wind backed to north-west followed by a thunderstorm and torrential rain. The wind backed to south-west during the storm, and remained south-westerly, moderate to fresh, until 03.50 p.m., 29th March, when the south-east trades were finally encountered. Position: Latitude 19° 27' S., Longitude 38° 42' W., not far north of the usual southern limit of these winds.

LIGHTNING.

West African Waters.

THE following is an extract from the Meteorological Record of S.S. *Almanzora*. Captain T. J. C. BURET, D.S.C. Ushant to Freetown. Observer, Mr. E. H. GILLER, Junior 2nd Officer.



This photograph was taken at midnight on 20th February, 1937 in the vicinity of a tornado over land, and shows forked and sheet lightning which was continuous for eight hours with subsequent heavy rain.

Weather conditions: Wind N.W., force 2; air temperature 82° F., sea 83° F.; cloud nimbus and cumulonimbus, altostratus and cirrostratus 10/10ths; barometer 1013 mb.

Position of Ship: 50 miles east of Cape Three Points, Gold Coast, West Africa.

ST. ELMO'S FIRE.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Beaverbrae*. Captain E. J. JONES. London to St. John, N.B. Observer, Mr. P. LOCKE, 4th Officer.

18th January, 1937, 2316 G.M.T. During a violent rain and hail

squall St. Elmo's fire was observed at the foremast truck and along the whole length of the wireless aerial to the mainmast truck. It was of greenish hue, about the colour and appearance of the luminous face of a clock in the dark. The jack-staff on the fore-castle head was crowned in a like manner, the whole presenting a remarkable appearance owing to the extreme darkness at the time.

The phenomenon lasted about four minutes. Barometer was 29.59 in.; wind W. by N., force 8; temperature 36° F.; visibility 6. At 0122 G.M.T. during a similar squall the same phenomenon occurred again, only much less brilliantly.

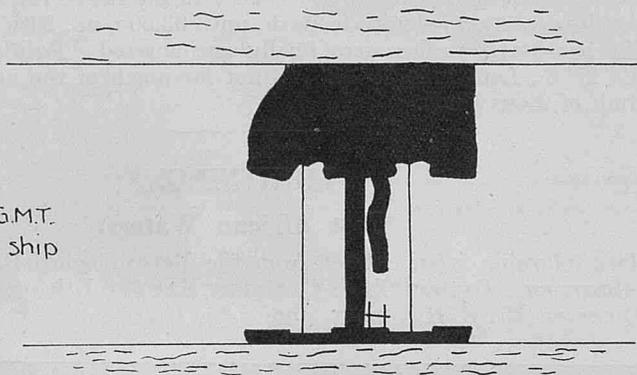
It was ascertained that the wireless installation had not been used recently, either before or after the occurrence.

Position of Ship : Latitude 50° 46' N., Longitude 24° 21' W.

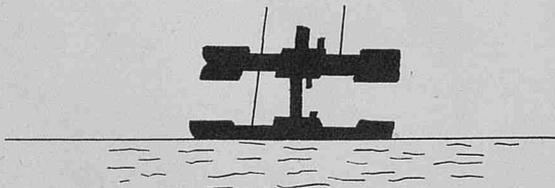
MIRAGE.

North Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Arandora Star*. Captain E. W. MOULTON. San Francisco to Southampton. Observer, Mr. R. L. LEECH, 5th Officer.



At 2220 G.M.T.
2.20 pm at ship



At 2240 G.M.T.

On 4th March, 1937, at 2210 G.M.T. (2.10 p.m. at ship), in Latitude 26° 13' N., Longitude 114° 04' W., a steamer, going the same way, appeared to be upside down. Ten minutes later another horizon appeared above the real one, with a badly distorted image of the ship reaching down and joining the ship funnel-to-funnel. Another vessel, also going the same way but much closer, was also observed to be greatly distorted, with an elongated funnel. At 2240 G.M.T. (2.40 p.m. at ship) the horizon astern of the first ship appeared to be breaking up, and the double horizon disappeared, leaving what appeared to be three ships sailing along on top of each other with the middle one inverted (as in last sketch). When, a few minutes later, the ship resumed a normal appearance, she was found to be hull down, with only her masts and upper-works showing above the horizon. The nearer steamer, however, continued to have a sadly elongated funnel for the remainder of the afternoon. No wind, calm sea and slight N.W'ly swell; air temperature 72° F., sea 66° F.

GREEN FLASH FROM VENUS.

Indian Ocean and Mediterranean Sea.

THE following is an extract from the Meteorological Record of S.S. *Tairoa*. Captain W. G. WEST. Australia to U.K. Observers. Captain W. G. WEST and Mr. W. G. BURR, 3rd Officer.

4th January, 1937, in Latitude 1° 00' S., Longitude 70° 04' E., whilst watching the planet Venus setting, through binoculars, the "green flash" was observed immediately before the planet sank below the horizon. The planet had for some minutes previously been observed to be rapidly changing colour, alternating from yellowish-white to reddish-yellow; turning to a deep green for about half-a-second before disappearing.

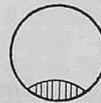
5th January, 1937, in Latitude 1° 50' N., Longitude 66° 11' E., the setting of Venus was observed through a telescope, commencing at about five minutes before the planet set. Alternations of colour were observed. First the whole body showed yellowish-white; and at irregular intervals the body would be noticed to be elongated vertically, red appearing at the lower limb and green at the upper. The periods for which the colours were visible varied considerably; from one to three or four seconds. Before setting, Venus was obscured by cloud, but was visible for about a minute before setting, during which time several alternations were observed, the final colour being a dull green. During this last minute the colours were by no means as brilliant as before.

19th January, 1937, the setting of Venus was watched through a telescope. As the planet became low in the sky, the colours, green at the top and red at the bottom, were very distinct, alternating as on previous occasions with a yellowish-white. When the planet was very low on the horizon, at an altitude of only a few minutes, a reflection on to the horizon was observed, this being very bright and yellowish in colour. Then it turned bright red, and as a pillar of red spreading down from the planet to the horizon. After turning back to yellowish-white, it turned green, and then seemed to sink out of sight rather quickly. The whole of this latter phenomenon lasted for not more than four seconds.

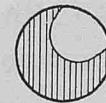
VENUS SETTING.

Indian Ocean.

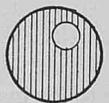
THE following is an extract from the Meteorological Record of S.S. *Mongolia*. Captain H. R. RHODES. Brisbane to London. Observer, Mr. E. J. SPURLING, 3rd Officer.



20.58



21.00



21.02

5th February, 1937, at 20.58 A.T.S., observed the planet Venus setting. Just prior to that time it had the appearance of a very bright steamer's mast-head light at a distance of about one mile. At 20.58 it was first observed to change colour, the altitude at that time being about 1½°; a small portion of the underneath part of the planet was then red, which alternated with the planet's usual colours. As the altitude decreased the alternations became more frequent, and the red area increased; though at no time was the planet completely red. As Venus dipped over the horizon it turned a definite green colour. The planet set at 21.04 A.T.S. Sky cloudless. Temperatures: Air 81° F., sea 83° F.; wind S., force 1.

Position of Ship : Latitude 8° 37' S., Longitude 92° 36' E.

AURORA BOREALIS.

North Sea.

THE following report has been received from Captain D. SINCLAIR, S.S. *Majorca*. Danzig to Leith.

7th January, 1937. As darkness fell the northern sky, to an altitude of about 10°, remained a bright yellow, and at 6.30 p.m. shoots commenced to fan up to an altitude of about 45°, then a belt of light developed from horizon to horizon, east to west, nearly in the same position and about the same breadth as the Milky Way.

This lasted for half-an-hour, then commenced to give way in the centre and gradually dispersed.

At 7.30 p.m. the whole north-west sky to an altitude of about 70° became a deep red. This lasted for about 20 minutes, but the bank of light and the shoots to the north continued until 10 p.m.

We had had a heavy W'ly swell across the North Sea, much greater

than should have been caused by the wind experienced. We also experienced a 36 mile adverse current between the Skaw Light Vessel and the May Islands.

Weather : Strong N.'ly wind, rough confused sea and swell, clear; barometer 29.67 in., rising rapidly; temperature 50° F.

Position of Ship at 4.10 p.m. : Latitude 56° 48' 30" N., Longitude 2° 32' 15" E.

Irish Sea.

THE following is an extract from the Meteorological Record of S.S. *Eros*. Captain S. CLARKE. Garston to Kingston. Observer, Mr. H. T. GREEN, 3rd Officer.

On 3rd February, 1937, at approximately 1900 G.M.T., whilst off the north coast of Wales (Vessel steering 267° between Bar Light Vessel and Skerries) a brilliant auroral display was observed. The display commenced with a dull white glow on the northern horizon (bearing N.N.E.), spreading upwards and at the same time towards the western horizon. It eventually developed into a brilliant series of vertical parallel rays, the length of which varied frequently and almost appeared to be flashing and moving in a westerly direction.

Whilst this display was in progress, there appeared a very brilliant band of deep red which extended in a very regular form from the eastern horizon to the western horizon through the zenith, causing a red glow on the western horizon. This very striking phenomenon lasted until 1930 G.M.T. when it gradually died away. At this time Lynas Point was abeam, distant 8 miles. Stars were clearly visible through the red band. The weather was fine generally, with passing showers and good visibility. Barometer 993 mb., steady; wet and dry bulb thermometers read 48° and 50° F.; wind S.S.W., force 4.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Ascania*. Captain C. G. ILLINGWORTH. London to Halifax and New York.

31st March, 1937, 0540 G.M.T.; in Latitude 48° 47' N., Longitude 28° 26' W. Observed a brilliant red glow in the sky similar in colour to the light from a "neon" lamp and giving the impression that a nebulous mass of this gas was actually glowing in the sky. The sky was clear at the time, except for light cumulus round the horizon. Ordinary white aurora, consisting of shafts of light radiating from a point below the horizon, was visible to the N.N.W.

The patch of red light subtended an arc of about 10°: it bore 280° true and had an altitude of about 15° to 20°. A bright moon only four days past full bore 190° with an altitude of 19°. Although the red light was obviously aurora, being only just outside the westernmost edge of the white fan, attention is drawn to the coincidence of the moon's position, i.e. the same altitude and 90° difference in azimuth. The whole phenomenon lasted about 10 minutes.

AURORA AUSTRALIS.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of M.S. *Port Fremantle*. Captain R. S. DURHAM, D.S.C. London to Melbourne. Observer, Mr. R. BETTESS, 3rd Officer.

22nd January, 1937. 1.00 a.m. Sky overcast Ast. and Steu. with small openings, wind fresh from W., visibility good. A subdued glow appeared behind the clouds over the horizon bearing 150°. It gradually grew brighter, then dimmed, and at 1.20 a.m. the sky was quite dark in that quarter. The glow at its brightest was just sufficient to cast a shadow over the surface of the sea.

1.30 a.m. A glow appeared on the horizon bearing 250°, and increased in brightness rapidly. The sky commenced clearing from the N.W.

1.40 a.m. The glow brightening and spreading quickly eastwards. Its western edge stationary, bearing 250°.

1.45 a.m. The sky now clear except for band of Ast. round the southern horizon extending 5° above it. The whole sky to the south from 250° to 140° extending to an altitude of 20°, now one blaze of light similar to the effect on a dark clear night just before the moon at full

appears over the horizon. Stars visible through glow over bank of cloud.

1.50 a.m. Beam of light appeared 230°, at first very indistinct but becoming clearer.

1.52 a.m. Beam appeared bearing 175°, brightening similarly.

1.54 a.m. Beam of light bearing 230° disappeared.

1.55 a.m. Beam of light at 175° became a well-defined pillar rising to an altitude of 25° on a base of 1½°.

1.57 a.m. Four indistinct beams of light appeared simultaneously bearing 140°, 160°, 210° and 220°. These beams of light were long and thin and appeared to end in a distinct point at an altitude of about 55°. If their paths were continued it looked as if they would all intersect about the zenith. They were invisible through binoculars but easily discernible to the naked eye.

2.00 a.m. Southern sky gradually becoming brighter. Stars just discernible through auroral light by means of binoculars.

2.10 a.m. Aurora gradually blackened out from westward by heavy cumulus clouds.

2.15 a.m. Sky overcast Steu. A very subdued auroral glow in direction of magnetic meridian. This appearance lasted till 3.00 a.m. when the dawn killed all other forms of light.

No change was noted in the magnetic properties of the compass-needles.

Excessive static was noticed on listening-in sets on board, both on short and medium waves.

Position of Ship : Latitude 45° 48' S., Longitude 106° 45' E.

Australian Waters.

THE following is an extract from the Meteorological Record of S.S. *Port Auckland*. Captain C. A. ROBINSON. London to Melbourne. Observer, Mr. E. C. READ, 3rd Officer.

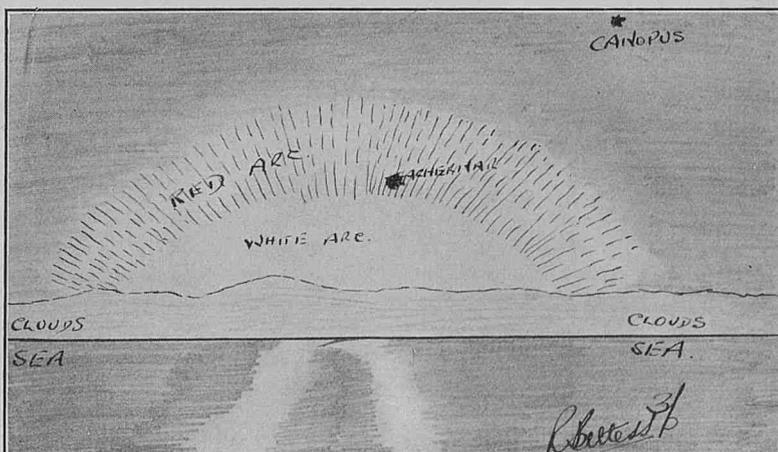
20th February, 1937, at 2000 G.M.T. (3 a.m. A.T.S.). Latitude 45° 00' S., Longitude 103° 18' E.

A brief display of Aurora Australis was observed to the southward, taking the form of two small fan-shaped clusters of three pale white rays apiece, shooting upward from the horizon. These clusters were spaced 15° apart, bearing 175° and 190° respectively, and the rays had a length of some 5°, i.e. from an altitude of 5° to 10° above the horizon. The rays remained visible for a period of four minutes, without apparent movement, before fading out abruptly; and they were followed after a further ten minutes by a single ray bearing 175° and attaining an altitude of 15°; after which there were no further manifestations.

Weather : Fresh W.N.W. breeze; clear, with no moon; cloud cumb. 5/10ths, with low cloud on the southern horizon; air temperature 45° F., sea 46° F.; barometer (corrected) 986 mb.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of M.S. *Port Fremantle*. Captain R. S. DURHAM, D.S.C. Napier to Southampton. Observer, Mr. R. BETTESS, 3rd Officer.



15th March, 1937.

0000 A.T.S. Sky clear except for a bank of cumulus clouds round

horizon to the southward. A subdued glow appeared at the back of the clouds in the S.W. quadrant bearing from 170° to 220° .

0015 A.T.S. Glow becoming brighter.

0020 A.T.S. Bright beam of light shot up over horizon to an altitude of 10° , bearing 200° . Vivid glow where beam crossed horizon, and reflection from sea surface very bright.

0022 A.T.S. Beam of light dimmed rapidly and disappeared.

0024 A.T.S. Beam appeared bearing 210° , but quickly dimmed and vanished.

0036 A.T.S. Auroral glow brightening quickly.

0037 A.T.S. Very bright beams of light shot up suddenly over horizon. They appeared to have their origin at one common centre bearing 180° , and to radiate from it. On appearing over the horizon they were white, but above about 15° turned to a brilliant red. The beams seemed to be made up of innumerable small shafts of light travelling with great rapidity from the horizon towards the zenith.

0038 A.T.S. Beams disappeared.

0040 to 0200 A.T.S. Auroral glow slowly waned, accompanied by spasmodic flickerings of numerous pencils of light within an area of 20° of arc in the vicinity of the true meridian.

Position of Ship : Latitude $47^{\circ} 20' S.$, Longitude $168^{\circ} 02' W.$

WATERSPOUT PHENOMENON.

Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Karamea*. Commander E. T. GRAYSTON, D.S.C., R.D., R.N.R. London to Capetown. Observer, Mr. JOHN F. H. STROUD, 4th Officer.

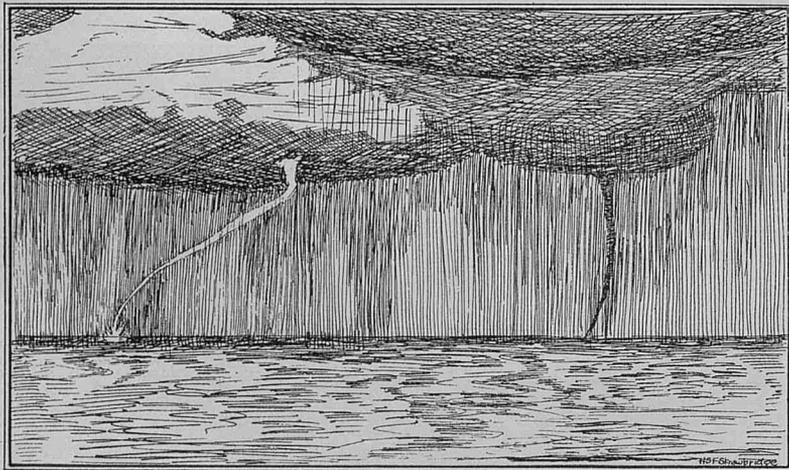
21st February, 1937, at 1800 G.M.T. A patch of water bearing about E.S.E. $1\frac{1}{2}$ miles, was observed to be greatly agitated. The patch appeared to be slightly depressed in the shape of a shallow dish and to have a rotary motion. Immediately above were nimbus clouds at a height of about 200 feet. They were greatly disturbed, having apparently a clockwise circular motion as well as an up-and-down motion. The whole phenomenon was moving in a W.N.W. direction and at 1804 passed over the vessel. The wind increased to gale force and appeared to blow from all directions at once. As it passed over the bridge I felt as though some force were trying to lift me. After it had passed the wind steadied to E.S.E., force 8, with much heavy rain. After about nine minutes the wind had backed slowly to N.E. and fallen to force 3.

Position of Ship : Latitude $5^{\circ} 58' N.$, Longitude $13^{\circ} 18' W.$

WATERSPOUTS.

North Coast of Sumatra.

THE following has been received from R.M.S. *Rohna*. Commander L. W. LEASK, R.D., R.N.R. Observer, Mr. H. S. STRAWBRIDGE, 3rd Officer.



Sunday, 28th February, 1937. White spout appeared first at 0934 I.S.T. right ahead about 5-6 miles distant, dark spout appeared

about half a minute later about 7-8 miles distant. A distinct white splash could be seen where the white spout made contact with the water, the point of contact of the dark spout could not be seen. Both spouts maintained the same shape (approximately) while they lasted. Both spouts dispersed at 0940 to 0941 I.S.T. the white one going first: at this time the ship was about 3 miles off the white spout and heading between the two (a steady course was maintained). The rain cleared up as the ship proceeded; a shower of light rain being experienced about 30 minutes later.

Weather : Calm ; barometer 29.80 in. (corrected) ; temperature $84^{\circ} F.$; fine at ship, heavy rain ahead ; sky 8/10ths clouded, cumulus and cumulonimbus ; rippled sea.

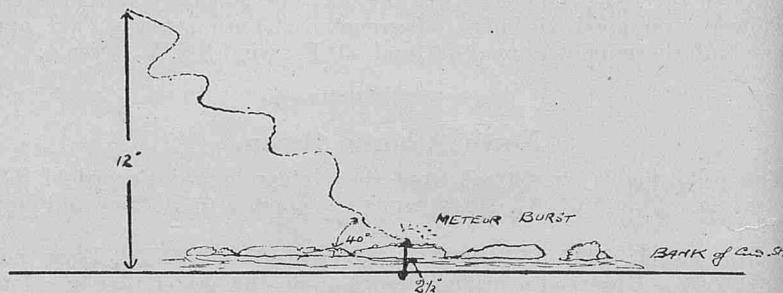
Position of Ship : Latitude $5^{\circ} 41' N.$, Longitude $96^{\circ} 02' E.$ Steering 276° . Speed 11.0 knots.

DAYLIGHT METEOR.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Rangitiki*. Captain H. BARNETT. Plymouth to Kingston. Observers, Lieut.-Cmmdr. H. CASHMORE, R.N.R., Chief Officer, and Sub-Lieut. J. ORMSBY, R.N.R., 4th Officer.

* VENUS
BEARING WEST



On 19th January, 1937, at 6.04 p.m. A.T.S., a brilliant meteor was observed bearing 272° at an altitude of $12\frac{1}{2}^{\circ}$, and travelled downwards until it appeared to burst with a bright red flash at an altitude of $2\frac{1}{2}^{\circ}$. The colour of the meteor when first seen was magnesium blue, then changed to yellow and finally red. At 6.05 p.m. a trail was noticed in the path traversed by the meteor, forming an arc at an angle of 40° with the horizon, gradually assuming an erratic zigzag shape, until at 6.10 it was very similar to the smoke-trail of a sky-writing aeroplane. The well-defined trail lasted until 6.24 p.m. This trail was made most vivid by the sun which had set a few minutes previously, illuminating it in high relief on the twilight sky.

Position of Ship : Latitude $20^{\circ} 32' N.$, Longitude $72^{\circ} 16' W.$

METEOR.

South Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.S. *Losada*. Captain M. ARMSTRONG, D.S.O. Glasgow to Bahia Blanca. Observer, Mr. R. J. G. GOODWIN, 3rd Officer.

18th February, 1937, 2317 Ship's Time. A meteor was observed bearing 240° at an approximate altitude of 10° above the horizon and 20° below Canopus. When it first appeared it had a dull orange-coloured head and a light green tail. It travelled in a N.E.'ly direction, making an angle of about 20° with the horizon, and finally disappeared at an altitude of 5° . At the middle of its flight the head assumed extreme brilliance, becoming bright red in colour, while the tail became a bright green, with faint wisps of smoke which were visible a few seconds after the meteor disappeared. Altogether the phenomenon lasted seven seconds.

Barometer 30.01 in. ; air temperature $80^{\circ} F.$; sky 4/10ths clouded.
Position of Ship : Latitude $14^{\circ} 54' S.$, Longitude $36^{\circ} 29' W.$

SIR ERNEST SHACKLETON.

PREPARED BY COMMANDER M. CRESSWELL, R.N.R.

ERNEST HENRY SHACKLETON was born in Kilkea, Co. Kildare, Ireland, on 15th February, 1874. Young ERNEST spent his early days on a farm, but the general depression of agriculture all over Ireland in the late 'seventies caused his father to seek a new profession, and at the age of thirty-three he commenced to study medicine at Trinity College, Dublin. In 1884, Dr. HENRY SHACKLETON, duly qualified, took his wife and nine children to England, finally settling at 12, West Hill, Sydenham, near the Crystal Palace, and here he built up a good practice.

ERNEST completed his education at Dulwich College, 1887 to 1890, and strongly desired to go to sea, contrary to his father's hope that his son might follow in his footsteps as a doctor. But the boy recoiled from the prospect of years of hard study followed by a life-time of dull routine, being all for freedom and adventure, and the call of the sea was not to be resisted. A cousin of Dr. SHACKLETON, the Rev. E. W. WOOSNAM, who was superintendent of the Mersey Mission to Seamen was able to arrange for ERNEST to make a voyage on probation with the North-Western Shipping Company. This arrangement left him free to give up at the end of the voyage or to be apprenticed.

On 30th April, 1890, young SHACKLETON left Liverpool in the full-rigged ship *Hoghton Tower*, of 1600 tons, under the command of Captain PARTRIDGE. The tall ship was towed down the Mersey out into the Irish Sea, and her sails sheeted home for the long passage to Valparaiso. SHACKLETON'S first voyage followed much the normal course of life in "sail" during the 'nineties. He quickly got over sea-sickness and on the third day out went aloft to the mizzen upper topsail yard, and in a month was "as much at home aloft as on deck." In a letter later written home, ERNEST says that he was afraid he would be laughed at when he said his prayers, "but the first night I took out my Bible to read and they all stopped talking and laughing, and now everyone of them reads theirs."

The Captain was kind and considerate, having the apprentices to dinner with him occasionally, and bringing them into the cabin every Sunday evening for hymn-singing to the accompaniment of his flute, on which the boys thought him but an indifferent performer!

After six weeks of good weather the *Hoghton Tower* was severely buffeted by furious gales whilst rounding Cape Horn in the month of June. Several sails and some of the lighter spars were carried away, two boats swept overboard, and serious injuries inflicted on several of the crew, including the second mate, who sustained a broken thigh. SHACKLETON had a narrow escape from being struck by gear falling from aloft. He said years afterwards that his first voyage round the Horn in the depth of winter "was one continuous blizzard all the way, one wild whirl of stinging sleet and snow, and we were in constant peril of colliding with icebergs or even foundering in the huge seas." His apprenticeship was certainly served in the time-honoured way! During the bad weather off the Horn, he "was obliged to take to smoking, where such indulgence became a real necessity."

They arrived at Valparaiso in August, and by October were in Iquique loading saltpetre for home. SHACKLETON'S stay in Valparaiso was pleasant after the long passage out, but he considered Iquique "a dismal hole where it was unsafe to go ashore in the evening, as the people would think nothing of sticking a knife into you."

Falmouth for orders was reached in March, 1891, short of food and water, and the fresh eggs and cakes from the Cornish bum-boat men were very welcome. The *Hoghton Tower* then sailed for Hamburg to discharge, and in April ERNEST reached home.

Dr. SHACKLETON, hoping that his son would have had enough of the sea, was soon undeceived, and after two months at home ERNEST was formally indentured and sailed again from Cardiff in his old ship, back again to Iquique with a load of patent fuel, and this time under the command of Captain ROBINSON. Of this voyage SHACKLETON wrote "there was more work, less fun and stricter discipline than last time. No Sunday hymn-singing, nor dinners with the captain, no visit from Father Neptune even." There were eight apprentices in the half-deck, and upon them fell the major part of the work of the ship. Another dreadful month was spent beating round Cape Horn, during which one man was lost overboard and several disabled. SHACKLETON was laid up with a fierce attack of lumbago after weeks in wet clothes and

a wet bunk. It was near the end of October before the anchor was let go off the bare mountains and sandy shores of Iquique.

The patent fuel was worked out, saltpetre loaded for Liverpool, and SHACKLETON returned to Sydenham on the 16th May, 1892. At this time he seems to have been thoroughly tired of the *Hoghton Tower* and her strict captain, but after a happy month at home he was again outward bound, on this occasion for India with a cargo of salt. This was his last and longest voyage in sail for, after discharging in Chittagong, the *Hoghton Tower* loaded rice at False Point for Mauritius, thence to Newcastle, N.S.W., and on to the West Coast of South America with coal. When about half-way across the South Pacific Ocean a violent storm was encountered which partly dismasted the ship. SHACKLETON'S own description is of interest as an example of the accidents to which sailing vessels were always liable, and which many of those who served for any time in them experienced.

"It was my look-out. I had only been there for about ten minutes, and the second mate began to take in the royals. It began to thunder fearfully, and the sky was lit up with the most vivid forked lightning when, all of a sudden, a whirlwind struck the fore part of the ship; there was a blinding flash of lightning and a peal of thunder that would wake the dead; my cap blew off, and I was down to leeward looking for it when I heard a tearing, crashing sound above my head. I had just time to crawl up to windward, for the ship was heeling over, when crash down came the fore royal-mast, top-gallant mast and top-mast; the heavy wire stays struck the deck where I had been a moment before and rebounded into the air about thirty feet. It was a miracle that I was not killed. By the next flash I could see that the main-royal mast and yard had also gone, then the rain came down thick and fast and the wind howled and shrieked; the lightning flashed and played about the rigging. Alongside was top-gallant mast and yards battering about, and threatening every moment to knock a hole in the ship's side. At last daylight came and the ship looked a pitiful spectacle, the sails nearly all torn to shreds. Directly after we were dismasted all the men and officers came running forward to see if I was alive. For four days we worked clearing the wreck, snatching a wink of sleep whenever we could at night, and after a bit we started to go ahead again, but much more slowly, for we were minus masts and sails, and since then we have been jogging along, first gales then calms."

However, after a passage of 60 days the ship reached Talcahuano, Chili, discharged part cargo, then on to Tocopilla to finish discharging and to load saltpetre. She sailed at the beginning of December, 1893, for Queenstown for orders, but on the 31st December had to put in to Valparaiso. Her masts, not as strong as those lost earlier in the year had carried away again. The stern captain, too, had broken down, and was obliged to hand over the command and return to England by steamer.

Queenstown was reached in June, 1894, and SHACKLETON left the *Hoghton Tower* in Dunkirk, arriving home on 3rd July. He had completed his indentures and the long, rough training was over. He now realized his own powers and proudly declared to his father that next year he would be no further expense to him.

The examination for second mate was duly passed and, early in November, SHACKLETON found himself steaming down London River as third mate of the Welsh Shire Liner *Monmouthshire*, bound for the Far East. How he must have valued the seclusion of a cabin to himself after being cooped up for four years with a crowd of seven other apprentices! To those who passed from sail to steam this surely was one of the most pleasant features. Then to see the Mediterranean opening out, all the interest of the Suez Canal, the rocky coasts of the Red Sea, and then the harbours and towns of the Straits, China and Japan, so rich and mysterious. What a contrast to the stark barrenness of Chilean nitrate ports!

SHACKLETON'S first voyage in steam lasted seven months. He found the captain "a very decent fellow," and in writing he asked his father to send down some of his finest roses to the ship on her arrival, "so that the captain and his wife could see what real roses were." He added, "My goodness! don't I wish that I were a captain with £300 a year!"

The young officer proudly brought home a brood of alligators as



Sir Ernest Shackleton

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domestic pets, but the maids shrieked with terror at the sight of them, which caused their rapid transfer to the Zoo.

All the foregoing will show that SHACKLETON's early days at sea were precisely similar to those spent by many of the readers of THE MARINE OBSERVER, and therefore this short account of the later heroic happenings in his life must be of particular interest to those serving, or who have served, in the Merchant Navy.

SHACKLETON remained in the Welsh Shire Line and in due course obtained his Master's Certificate, passing the examination at a Naval Court at Singapore in April, 1898. As was the practice in those days, after an apprenticeship in sail and the filling in of time to qualify for master in tramps, he then joined a first-class company, the Union Castle Line, and at the end of March, 1899, sailed for Cape Town as fourth officer of the smart mail ship *Tantallon Castle*, in which he made three voyages up to the time the South African War broke out, when he was promoted to the rank of third officer and appointed to the *Tintagel Castle*, engaged on the duty of carrying troops from Southampton to the Cape.

SHACKLETON now commenced to display his brilliant literary talent, for, in collaboration with Dr. W. MACLEAN, the ship's surgeon, he wrote his first book, which bore the title "O.H.M.S.: A Record of the Voyage of the Tintagel Castle, conveying 1200 volunteers from Southampton to Cape Town, March, 1900." He even asked KIPLING to contribute a poem dealing with the voyage. The book was a financial success, which must have been very gratifying to the joint authors, as must also have been the fact that QUEEN VICTORIA was graciously pleased to accept a copy.

Service in the *Gaika* and *Carisbrook Castle* followed, and during one of his stays ashore he became a Fellow of the Royal Geographical Society. He was always on the alert for any new interest, and, hearing that a National Antarctic Expedition was being planned by a joint committee of the Royal Society and the Royal Geographical Society, he made application for a possible post in the expedition. He had also applied for a commission in the Royal Naval Reserve, and to his great delight, upon arrival at Southampton in the *Carisbrook Castle* during March, 1901, he received an appointment as Sub-Lieutenant, R.N.R., together with a position as junior officer in the National Antarctic Expedition ship *Discovery*.

For this splendidly equipped expedition a new departure was taken, in that a ship was specially built for the work. She was of 700 tons register, steam and sail, and was entirely non-magnetic amidships. Legally a merchant vessel she flew the blue ensign, and officers, scientific staff and crew signed on articles, under the Master, Lieutenant ROBERT F. SCOTT (who was promoted to Commander before he sailed as leader). The chosen crew were picked from an enormous crowd of volunteers, and the special qualification of SHACKLETON must have been his sailing ship experience.

To SHACKLETON the voyage in the *Discovery* was an opportunity and a training for his own great Antarctic achievements which were to come, and no attempt will be made here to tell the story of the National Antarctic Expedition. The work of the *Discovery* was part of an ambitious plan for the systematic renewal of Antarctic research, and special attention was to be given to exploration on land. Sailing from London early in August, 1901, and after a fine outward voyage via Cape Town and New Zealand, the open water of the Ross Sea was reached in the first week of the New Year, 1902.

After cruising along and surveying the edge of the Ross Barrier, the ship was finally made fast for the winter in MacMurdo Sound at the south-west corner of Ross Sea. Equipment and stores were landed and winter quarters prepared, which included a great hut to accommodate all the party if disaster befell the ship. As all were inexperienced it was necessary for the party to develop a technique for their sledging, and a series of short journeys from the base were planned, thus initiating a new phase of exploration in the Antarctic by working from a settled base. The winter was passed comfortably enough on board the ship, where SCOTT kept everyone fully occupied, each having their respective duties, and the four months of darkness did not produce depression or illness of any kind. The ship's electric lights were worked by a windmill, and, except during blizzards, exercise on shore or on the ice was kept up, the ship being firmly frozen in.

A monthly magazine was produced, "The South Polar Times," edited and typed by SHACKLETON. Practically all hands contributed, according to their various attainments, and Dr. WILSON provided the illustrations. Some of the most interesting articles were from the pen of Able Seaman FRANK WILD, with whom SHACKLETON formed an

enduring friendship which eventually developed into years of comradeship, as later events will disclose.

Meteorological observations were kept up day and night, at which all the ward-room party took turns, and the "night out," which fell to each in rotation, was the heaviest and most dangerous task of all. A guide rope stretched from the ship to the thermometer screen a few hundred yards away, and in some cases an observer who had lost hold of the rope had been known to grope for hours in the snow before he found his way back. Dr. WILSON and SHACKLETON established a special meteorological station on Crater Hill (960 feet) and a stiff and dangerous climb in winter darkness was made each day. When daylight again appeared, all were ready and fitted for the real work of exploration of the Antarctic continent.

More practice sledging trips were made in the early spring, until it was possible for a small party to cover as much as 25 miles in one day. SHACKLETON had become proficient in the use of the theodolite for obtaining the latitude, and he was overjoyed when Captain SCOTT selected him, together with Dr. WILSON, as his companions on the long journey south, upon which so much of the success of the National Antarctic Expedition depended.

One very important item to be considered was the management of dogs, an art which takes a northern Canadian years to master. None of this party had any knowledge of dog-team driving, and SCOTT himself designed the harness finally adopted. SHACKLETON had been given charge of the training of the dogs, in view of his inclusion in the southern party, and this task must have been a most difficult one, but, like every other strange and wonderful job entrusted to a seaman, it was carried through successfully.

On 2nd November, 1902, SCOTT, WILSON and SHACKLETON with three sledges and all the dogs commenced a journey with the object of proceeding overland and, if possible, reaching the South Pole. Blizzards and a deep soft snow surface greatly delayed them, and it soon became apparent that after all the best polar draught animals were the human members of the expedition. All suffered at some part of the journey from snow blindness, and it was "drag, drag and drive, drive, from the time we get up till it is time to turn in, feeling very tired and hoarse with shouting at the dogs."

As they struggled on the dogs began to die and hunger was constant. The 81st parallel of latitude was passed, but there was now no hope of reaching the Pole, and SCOTT decided to carry on to 82° S. before turning. On the 31st December the party were in 82° 17' S., at the bottom of a big snow gully and faced with a vertical ice cliff with overhanging summit more than 70 feet high. The way to the Pole was barred and the return journey had to be hastened as there was just enough food remaining to last the party two weeks at an average speed of seven miles a day to the first depot. This was done, the dogs either died or were killed for food, and on 3rd February, 1903, the party returned in safety to the *Discovery*.

Captain SCOTT had turned back when 463 miles distant from the Pole. Endurance without previous experience could not conquer the appalling conditions of Antarctic travel with its constantly increasing altitude and difficult snow and ice surfaces, not to mention the long detours necessary to avoid huge cracks in the ice, and enforced detention in their tiny tent whilst blizzards lasted, sometimes for days on end. SHACKLETON during the latter part of the journey back had an attack of hæmorrhage, but was able to walk the 9 or 10 miles of the daily march. Captain SCOTT, however, would not allow him to pull the sledge any more and SHACKLETON constantly worried about the work done by the others when he was helpless to assist.

The *Discovery* remained south for another winter, but SHACKLETON was invalidated home by the captain's decision, based on the doctor's report. He sailed in the relief ship *Morning* for New Zealand, finally reaching England early in June, 1903, by way of San Francisco and New York.

His health was speedily restored and on 17th June he attended the Annual Conversazione of the Royal Geographical Society, where those present had the opportunity of hearing at first hand the news of the great Antarctic Expedition, and there SHACKLETON met Sir JOHN MURRAY, the great oceanographer of *Challenger* fame, then president of the Royal Scottish Geographical Society.

SHACKLETON now embarked upon a series of "shore jobs." He was employed in connection with the fitting out of a second relief ship for the National Antarctic Expedition; then he decided to take up journalism as a career and secured a position in Sir ARTHUR PEARSON'S office as sub-editor of the Royal Magazine. He wrote an account of

the first year's work of the *Discovery* for Pearson's Magazine, but something more congenial than journalism soon engaged him as he was invited to lecture in Dundee and Aberdeen for the Royal Scottish Geographical Society, and shortly after was appointed secretary of the Society in Edinburgh.

During this period SHACKLETON married Miss EMILY MARY DORMER, and the young couple settled down in a little house, 14, South Learmouth Gardens, Edinburgh. In January, 1905, SHACKLETON was formally adopted as the Liberal-Unionist candidate in Dundee for the next general election, and in February his eldest son was born. The election campaign caused his resignation from the secretaryship, and the weeks and months passed by in a swirl of talk and meetings. It was a far cry now from the third officer of a mail steamer to facing the serious meetings in great halls; but SHACKLETON was at his best when dealing with the hecklers. As an example of his views the following extract from one of his addresses is of interest:

"I am whole-heartedly in favour of the manning of British ships by British seamen. I consider the employment of so many foreign seamen in our mercantile marine as not only an unsound position, but unfair to Britishers, and as a menace to the country in the eventuality of war with foreign Powers. The British merchant sailor is without an equal at sea. I speak of this from actual experience—from a working knowledge as a sailor trained in the hard school of the stormy

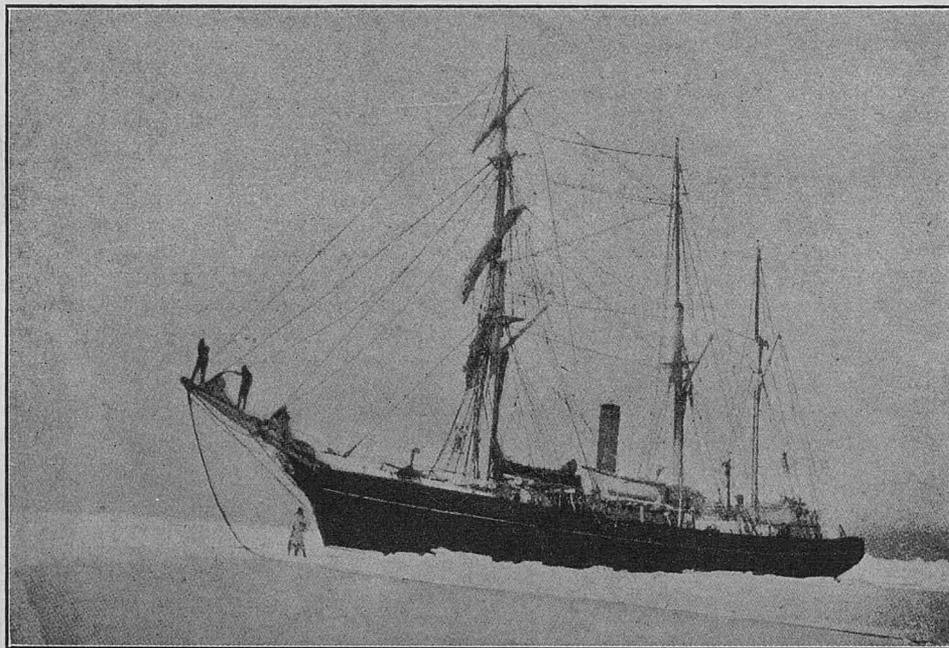
set out, one to go westward to the South Magnetic Pole, and the main party to reach the South Pole.

SHACKLETON's method of equipping an expedition was certainly a novel one, as it amounted to pledging himself to redeem the money advanced by generous supporters from the sale of a prospective book and the results of his future lectures—if the venture proved successful!

In addition to the land journeys, research in magnetism, meteorology, geology and biology was to be undertaken. Transport was to be effected by the use of ponies instead of the troublesome dogs, but the sledges were to be of a size suitable for hauling by man power when necessary. A cinematograph was included, and also a specially adapted motor-car. SHACKLETON, in addition to his own experience, consulted authorities on every point, and was thus able to improve in many important details upon the arrangements made for the *Discovery* expedition.

Immediately following the announcement of the proposed undertaking in the newspapers a flood of applications poured in for positions on the staff. SHACKLETON chose his company very carefully, entrusting each with personal responsibility, and treating all members on terms of equality. Among those finally selected for the shore parties were Dr. E. MARSHALL, Lieutenant J. B. ADAMS, R.N.R., as Meteorologist, and FRANK WILLY, SHACKLETON's friend of *Discovery* days.

With funds low the choosing of a suitable ship was a difficult matter, but the *Nimrod*, a Newfoundland sealer, forty years of age but sound of



The "Nimrod" in the Pack Ice.

Reproduced by permission of Wm. Heinemann Ltd.

seas throughout the world. I know the greater value of one British seaman in rough weather, as compared with three foreigners under the same conditions. I appeal to you, workers, to return me—a worker myself, a worker by my hands as well as by my head, from the time I was a boy of sixteen—as one who, by the hard road of manual toil, has been brought up to understand the conditions of the working man and to sympathize with him."

Polling day, 16th January, 1906, came and went, but all SHACKLETON's hard work and eloquence did not bring him to the head of the poll. Years later, when lecturing at Dundee, he was reminded of this immense popularity during the election period, and he remarked, "Yes, I got all the applause, and the other fellows got all the votes."

His next job was as secretary at the Parkhead works of Mr. W. BEARDMORE (later Lord INVERNAIN) and here he had the opportunity of meeting practical men of business and of gaining some experience in sound commercial undertakings.

It was not long, however, before SHACKLETON's fertile mind evolved the idea of an expedition of his own to the Antarctic, and he opened his mind to Mr. BEARDMORE who was so attracted by the idea that he agreed to guarantee a major part of the estimated expense. The plans were to land near the old *Discovery* base and for two parties to

hull, was bought and placed in the skilled hands of Green's famous Blackwall Shipyard. She was scraped and cleaned, accommodation built in and three new masts stepped. Captain R. G. ENGLAND, late first officer of the *Morning*, was appointed Master, with J. KING DAVIS, A. A. MACKINTOSH and A. E. HARBORD as officers.

On the 30th July, 1907, the spick and span reconditioned *Nimrod* steamed down the Thames, and on 4th August was inspected by KING EDWARD VII at Cowes. His Majesty invested the leader with the 4th class of the Royal Victorian Order, and QUEEN ALEXANDRA presented a Union Jack to be hoisted at the farthest south.

SHACKLETON himself remained in London for two months after the *Nimrod's* departure, completing arrangements and hurrying up delayed equipment. He travelled out as a passenger on board the *India*, lectured at Melbourne and Sydney, where Professor EDGEWORTH DAVID and DOUGLAS MAWSON joined him. The ship had reached Lyttleton Harbour, New Zealand, safely, and all was in readiness.

Although she had proved herself a stout little craft on the voyage out from England, the *Nimrod* was slow under steam and made poor progress under sail, so SHACKLETON decided to have her towed to the Antarctic circle, a distance of 1500 miles across the stormy Southern Ocean. The Union Steamship *Koonya* accomplished this in two weeks,

during which time all on board the *Nimrod* were fully occupied tending the ponies, the ship sometimes rolling fifty degrees and not a dry spot to be found.

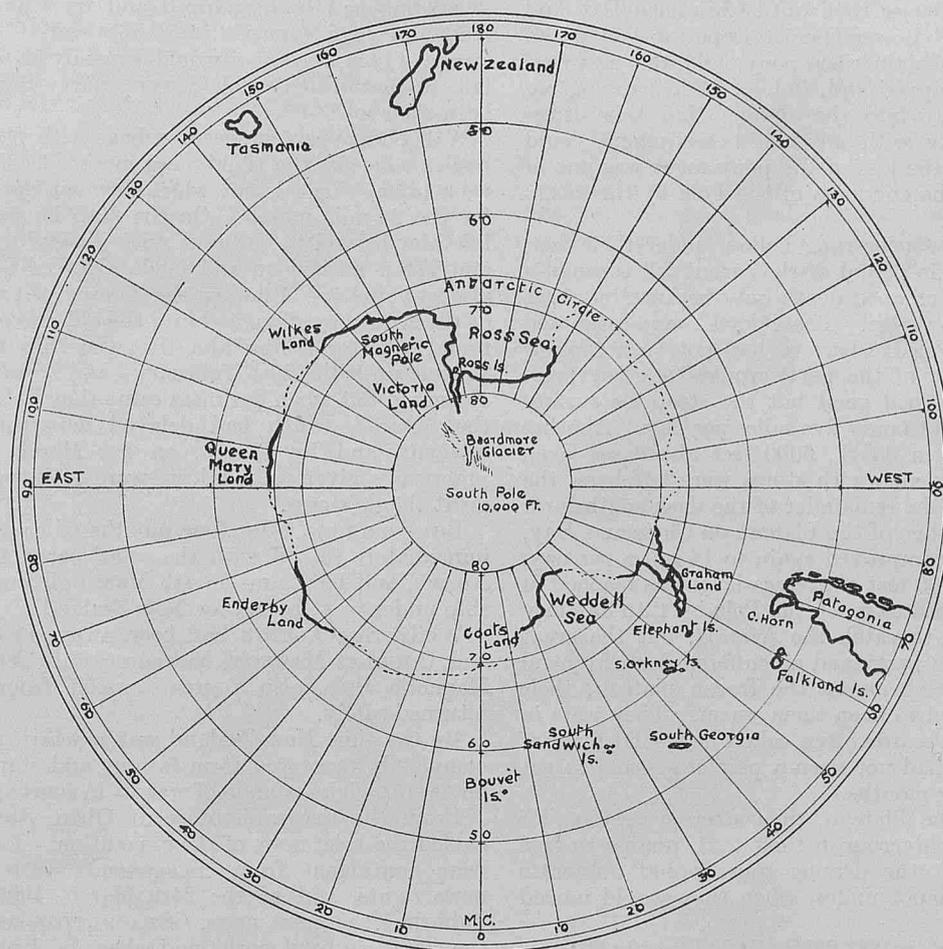
The tow was cast off on 14th January, 1908, and the *Nimrod* steamed through a labyrinth of huge floating icebergs and entered the Ross Sea without, as every previous expedition had done, meeting any pack ice at all.

After cruising along the Great Ice Barrier, SHACKLETON decided that it was too risky to land on the Barrier itself, so the hut and stores were finally put ashore at Cape Royds on Ross Island, immediately below Mount Erebus. The motor-car did useful work hauling the stores across the ice to the flat peninsula upon which the hut was erected. On the 22nd February, SHACKLETON and fourteen companions bade farewell to the *Nimrod* as she sailed for Lyttleton. They were left with stores dumped about and all the work of putting their house in order, living through the Antarctic winter, and preparing for their great adventures in the spring. Before the light went large numbers of penguins had to be killed and stacked up to freeze as fresh food.

meant that an average speed of about 15 statute miles per day for 120 days of sledge driving or hauling had to be maintained, and food for the whole period provided for. The trail out had to be marked so as to ensure a safe and speedy return journey, as the lives of the party would depend upon the food depots being picked up before food in hand was exhausted, for the interior of Antarctica is absolutely barren of life.

As the winter drew to a close, practice sledging trips over the ice were commenced, the men hauling the sledges, to save the ponies, of which four only had survived the winter. Training in sledging and camping was continued until fitness and self-reliance were gained. The one advantage of Antarctic travel is that water in the form of ice or snow is always handy, provided fuel is available to melt it, and the Swedish primus stove, burning paraffin, was a most important item in the stores carried on the sledges.

The party selected for the long journey towards the South Pole consisted of SHACKLETON, ADAMS, MARSHALL and WILD. First a depot, known as depot A, was laid 100 miles south of Hut Point.



Sketch Chart of the Antarctic Regions.

Their hut was illuminated by acetylene gas, warmed with a blubber stove and, as in the case of the *Discovery* expedition, all members of the party were fully employed. When possible the ponies had to be exercised, and among the lighter occupations was the production of a book, "Aurora Australis," one hundred illustrated copies of which were printed on a hand press. There was no terror of darkness that winter, nor any depression of spirits in the crowded hut. All hands were well and jolly, always busy and full of hope.

SHACKLETON had perfected his plans for the great southern journey so far as was humanly possible. From Hut Point it was 750 geographical miles to the Pole, 1500 geographical or 1730 statute miles for the return journey. He had literally to "blaze the trail," as no one yet knew of a possible route and it could only be conjectured that either the Barrier surface, some 150 feet above sea-level, led straight to the Pole, or that if some great mountain chain swung eastward across the path, some glacier would be found leading to a plateau, thousands of feet above the sea.

Four months was the extreme time allowable for the journey, which

They returned to Cape Royds in 15½ days after covering 320 miles, an average of 20 miles per day, which augured well for the attack on the Pole.

On SCOTT'S first journey south the average rate of progress had only been 6½ miles per day, so that for SHACKLETON to reach the Pole and return he had to count on doing nearly three times as much, a prospect which might well have daunted him.

The real start south was made from Hut Point on 3rd November, 1908, depot A being reached on the 14th. The weather was mainly fine, the surface fairly good and their daily march 15 miles or more per day; on 19th November they were in 80° 32' S., a position not reached from the *Discovery* until 16th December, which was very cheering.

Depot B was constructed about 100 miles south of depot A, one pony had been killed and the meat kept. The Barrier surface was flat and good, the ponies pulled well and daily marches lengthened to 18 miles, and on 26th November they passed the farthest south of 1902, which had taken the *Discovery* party until 29th December to reach.

On 28th November, depot C was made and a second pony shot. The onward march was then made with only two loaded sledges, carrying supplies for nine weeks, two men helping each pony by hauling on the sledge. At each halting place snow pillars were built as guides for the return journey. On 1st December the third pony had to be shot, leaving only one, Socks, to help haul the sledges, which was now extremely heavy work over the undulating Barrier surface. All suffered from heat as the sun shone hotly day and night and the temperature rose nearly to the melting point of ice.

Mountains had appeared ahead and Shackleton struck due south towards an isolated summit, which he named Mount Hope, and the party arrived at its base on 2nd December. A stupendous glacier descended between prodigious cliffs, falling sheer for thousands of feet. To this SHACKLETON gave the name of the Beardmore Glacier, in memory of his friend and supporter in Glasgow. Where this ice-river met the flat Barrier surface it produced huge pressure ridges and crevasses, but far to the south it lay like a smooth, straight, gently sloping road to the high snowfield upon which lay the Pole.

Progress up the Beardmore Glacier took until Christmas Day and was full of danger and anxiety. Lower Glacier Depot was made on 5th December, but on the 7th Socks, their last pony, fell into a crevasse, the swingle-tree of the sledge snapped and, but for Wild hanging on, it would have followed the pony into the abyss. Had this sledge been lost it is doubtful if the party, with only half its equipment, could have ever returned. As it was, the loss of the pony meat was one of the factors which finally made the conquest of the Pole by SHACKLETON'S party impossible.

Sometimes the surface of the glacier rang hollow under their feet, and each one of the party at some period of the ascent fell through a snow bridge into a crevasse and escaped death only because his stout harness held him anchored to the sledge. These cracks were estimated to be 1000 feet deep, and if the sledge harness had not been capable of standing huge strains, not one of the party would have survived.

Fortunately, the weather remained good but the steep ice surface at one time slowed down progress to only five miles per day. Another depot was made on the Glacier in 85° S., 6000 feet above sea-level, heavy clothing, a tent and one sledge with stores were left here, the party crowding into one tent for the remainder of the dash southward.

After a miniature feast at the edge of the Plateau on Christmas Day, at a height of 9500 feet, progress improved again to 14 miles per day, still increasing altitude until 10,000 feet above sea-level was reached in 86° 31' S. SHACKLETON now hoped to reach the Pole by 12th January and be back by 28th February to catch the *Nimrod*, but the great altitude was now telling upon the party and all suffered from frightful headaches. The cold wind howled across the frozen plateau, their worn clothing and tent now failed to keep them warm. They were in a dreadful state, their faces and beards often caked in a solid mass of ice with their clothes, and they had not even a pair of scissors to cut the matted hair from about their mouths.

The last depot was laid on the Plateau, then after proceeding for two days a blizzard kept them shivering in their tent, unable to face the head wind and fearful that the driving snow would obliterate their footprints, or snow their depot under, when they would indeed have been doomed.

At last, on 9th January, 1909, in 88° 23' S., 162° E., only 97 geographical miles from the South Pole, SHACKLETON, to save the lives of his party, had to call a halt. The Union Jack, presented by QUEEN ALEXANDRA, was displayed and MARSHALL took a photograph of SHACKLETON, ADAMS and WILD standing in the snow beside the flag. The Plateau was formally annexed to the British Empire, a brass tube with a record buried in the snow, then hurriedly these men turned their backs on their unreachd goal and started a race against Death of 700 miles.

The fierce wind was now behind them and a sail set on the sledge greatly helped in hauling. Their outward footprints were clearly visible and they averaged 18 miles then 20 miles a day, increasing their daily runs as the surface began to slope downward; on the 19th January 29 miles were covered. This was the best day's march ever made, but they were now on the downward slope of the Glacier. Bad falls and other trying experiences were again encountered until to their intense relief they cleared the Glacier and headed homeward on the last but longest stretch of their desperate race. Each depot had been found just in time to save them from starvation, though they suffered acutely from continual hunger. The snow pillars built on the outward route were standing and picked up one by one, but now progress was slowed

down by deep soft snow and all the party suffered from dysentery, brought on, it was surmised, by the pony meat and their exhausted condition. The 4th February, a calm sunny day, was passed in misery, no one could stir from the tent, but next day, although still very ill and weak, 8 miles were marched, and gradually with a fresh southerly wind and the sail helping them the daily runs again increased up to 16 and 20 miles.

The south wind blew into a blizzard which would at any other time have kept them in their tent, but with sail set they made 19 miles, and depot A was reached again on 20th February. Still the blizzard raged but there could be no halting with a fair wind. Their lives now depended upon finding a depot with ample food which SHACKLETON had ordered to be laid out to the east of Minna Bluff. A party was to remain there until 10th February, but then to return to the ship. By camping time on the night of the 22nd, this depot had not been located and starvation faced them; but miraculously next morning, WILD caught sight of the long-sought depot flag, far away to the eastward and only in view a short time by the accident of a mirage. A bearing had been snapped and by 4 p.m. on the 23rd, abundant food and even luxuries were obtained. But for this extraordinary stroke of luck, the depot would certainly have been missed and a similar fate to that which befell SCOTT'S party three years later would have been their lot.

A day was spent in sleeping bags with plenty of food, as their tired bodies were for the time being incapable of hauling. MARSHALL had been taken very ill, but when they set out next day struggled along for the 24-mile march. On the 25th he was so ill that SHACKLETON left him behind in the tent with ADAMS to look after him, while he and WILD pushed on and made a forced march to Hut Point in the almost vain hope of finding the *Nimrod* still waiting. Late on the night of the 28th they staggered into the old *Discovery* hut, and SHACKLETON found a letter telling him that the ship would be lying at Glacier Tongue until the 26th February—and it was now the 28th. This was alarming, but when darkness came they lit a fire which was sighted by the *Nimrod*, which had delayed departure until the last possible moment, and by 11 a.m. on 1st March, SHACKLETON and WILD, practically given up as lost, were received on board to everyone's great thankfulness.

But even now, after four months of hardship, SHACKLETON himself immediately set off with the relief party to bring in MARSHALL and ADAMS, and by 1 a.m. on 4th March all were safely on board and the ship under way, bound for New Zealand.

Whilst SHACKLETON had been away, Professor EDGEWORTH DAVID and DOUGLAS MAWSON, had successfully led their party to the South Magnetic Pole, also a great exploit from which all members had returned safely.

By the time New Zealand was reached, all the southern party had completely recovered from fatigue and starvation. One member put on twenty-eight pounds of weight in fourteen days!

From the telegraph office at Oban, Stewart Island, SHACKLETON cabled the brief news of the expedition. Large payments to the funds were contingent from engagements with newspapers for exclusive news rights, and on the 24th March, 1909, the London newspaper published the great news. SHACKLETON was immediately the talk of the whole civilized world, and when the *Nimrod* later entered Lyttleton Harbour he was overwhelmed with congratulations. All members of the expedition were fit and well; in spite of all their thrills and hardships and dangers not one life had been lost.

KING EDWARD VII expressed the feelings of the whole British Empire in this telegram:

"I congratulate you and your comrades most warmly on the splendid result accomplished by your expedition, and in having succeeded in hoisting the Union Jack presented you by the QUEEN within 100 miles of the South Pole, and the Union Jack on the South Magnetic Pole. I gladly assent to the new range of mountains bearing the name of Queen Alexandra.

"EDWARD R AND I."

After lecturing in New Zealand and Australia en route for home, SHACKLETON arrived at Charing Cross Station on 14th June, 1909. A London crowd of 10,000 people filled Trafalgar Square and the Strand to welcome him. With his wife and children he drove in an open carriage amid bursts of cheering. He had become at that time the idol of the British public.

It would require many pages to describe all the honours which were

bestowed upon SHACKLETON during the period of his great popularity, and only brief mention is here made of them. One of the first was his appointment as a Younger Brother of the Trinity House. The King bestowed upon him the third class of the Royal Victorian Order (C.V.O.), and the Prince of Wales, after hearing his lecture before the Royal Geographical Society, presented the special gold medal which the Society had had struck for the occasion, showing SHACKLETON'S portrait on the obverse. The other members of the expedition able to be present were also handed silver replicas by His Royal Highness.

In SHACKLETON'S talks and lectures it was observed that he always used the pronoun "we," and no leader ever acknowledged more fully the part played by his comrades, every one of whom was ready to follow him again and again literally to the ends of the earth.

The cinematograph films and photographs had turned out very successfully, and SHACKLETON'S lectures and the preparation of his book, not to mention all the functions he was forced to attend, must have occupied all his waking moments. Honours and distinctions were conferred upon him by geographical and other Societies both at home and abroad. KING EDWARD VII commanded him to deliver his lecture at Balmoral and there he was able to enjoy hearty Highland hospitality for a delightful week-end.

Another memorable occasion was when he presented the prizes at Dulwich College of which he was certainly the most famous old boy.

The *Nimrod* arrived home in due course and was moored in the Thames at Temple Pier. Thousands of people visited her and saw the exhibition of Antarctic specimens on board. She then set out on a tour round the coast in aid of charity.

In all, the whole cost of the expedition had only been £45,000, less indeed than had been paid for the ship alone of the National Antarctic Expedition. The Government was so impressed by the great value of the discoveries made in the course of SHACKLETON'S expedition, and by the efficient and economical manner in which the whole of the enterprise was conducted, as shown by the return of the entire party

and by the comparatively small total outlay incurred, that Parliament made a grant of £20,000 to meet a portion of the expenditure. SHACKLETON was thus able to relieve his guarantors at once from their obligations and pay off the debt at the bank.

His book, "The Heart of the Antarctic," was published in two great volumes at the end of October. It contained the finest array of illustrations to be included in a book of travel since the photographic era came in. As a feat of rapid writing and production this great work must stand unrivalled.

During the next year, SHACKLETON travelled 20,000 miles and lectured at 123 different places in Europe and America. Whilst at Rugby on 9th November, the headmaster was able to congratulate the lecturer on the honour of knighthood announced that morning in the King's Birthday List. Later, the KING personally decorated Sir ERNEST and his companions of the shore party with the Silver Polar Medal, or an extra clasp for those who had been in the *Discovery*, and the officers of the *Nimrod* who had not wintered, with the bronze medal.

At Berlin, SHACKLETON delivered a private lecture before the KAISER, who appeared in the uniform of a British Admiral of the Fleet, and was greatly interested. "Did you shoot many bears?" asked the KAISER. "There are no bears in the Antarctic, sir," answered SHACKLETON, to which the KAISER countered "Why not?"

The proud rulers in their European capitals all welcomed SHACKLETON, the TSAR talked with him for nearly two hours, and so his triumphal tour proceeded. To no man now living will it ever be possible, however much wealth he may be prepared to spend, to find again the Court of a Hohenzollern in Berlin, a Habsburg in Vienna, or a Romanoff in St. Petersburg. These dynasties have passed with their triumphs and their glories.

In the United States it was much the same story. Sir ERNEST was received at the White House by President TAFT, who later presented to him the Hubbard Gold Medal of the National Geographical Society.

(To be continued.)

WESTERN AUSTRALIAN HURRICANES.

PREPARED BY COMMANDER J. HENNESSY, R.N.R.

IN the "Marine Observer's Log" of this number will be found an account of a Willy-Willy encountered by the R.M.S. *Ormonde* when off the west coast of Australia in February, 1937. This storm, after proceeding in a southerly direction down the west coast of Australia, rounded the Leeuwin, whence it moved in an easterly direction, being still active when south of Albany.

Seamen in general do not consider the west coast of Australia as a hurricane region, situated as it is on the eastern side of an ocean where cyclones are not expected to develop; nevertheless, the storms which frequent the north-west and west coasts of Australia, generally termed Willy-Willies, are intense revolving storms of tropical origin, having the same characteristics as the hurricanes of the West Indies or the typhoons of the China Sea.

The hurricanes which affect the west coast of Australia chiefly originate in the Timor or Arafura Seas, some develop in the Cambridge Gulf and a few come from the Coral Sea, crossing the extreme north-east corner of Queensland and the Northern Territory. Hurricanes develop chiefly during the summer months. The season may be regarded as lasting from the middle of November to the end of April, but storms may occur during other months of the year. The monthly frequency of eighty hurricanes recorded by the Australian Bureau of Meteorology, affecting Western Australia, is as follows:—

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
24	15	18	7	—	—	1	—	1	1	2	11

The maximum number of hurricanes recorded in any one year is five, in some years there have been three, while for two years in succession no storms were recorded. The average yearly occurrence of storms is between one and two. The Australian Meteorological Bureau find that a December or January hurricane is followed by a storm later in the season nearly four times as often as it is followed by none. If there is no storm anywhere in Western Australia in December or January the probability of there being no storm during the rest of the season is about 11 : 17 and the probability of there being two storms about 3 : 11. On the average, a hurricane only occurs during April to July inclusive in about one year in six.

CHARTS I AND II show some tracks of Western Australian hurricanes recorded by the Australian Bureau of Meteorology during the hurricane season, November to April.

The general path of those storms originating in the Timor or Arafura Seas is at first in a south-westerly direction, the centre keeping well off the coast. When in about Latitude 20° N. they recurve to the south or to the south-east. In the latter case they strike the coast generally a little north of the North-West Cape, and while some dissipate shortly after passing inland others continue in a south-easterly direction and after crossing Western Australia enter the Great Australian Bight, pass through Bass Straits, and finally reach New Zealand waters. Adelaide has on several occasions been affected by such storms. Those storms that recurve to the south pass down the west

**Some Recorded Tracks of Western Australian Hurricanes.
November, December and January.**

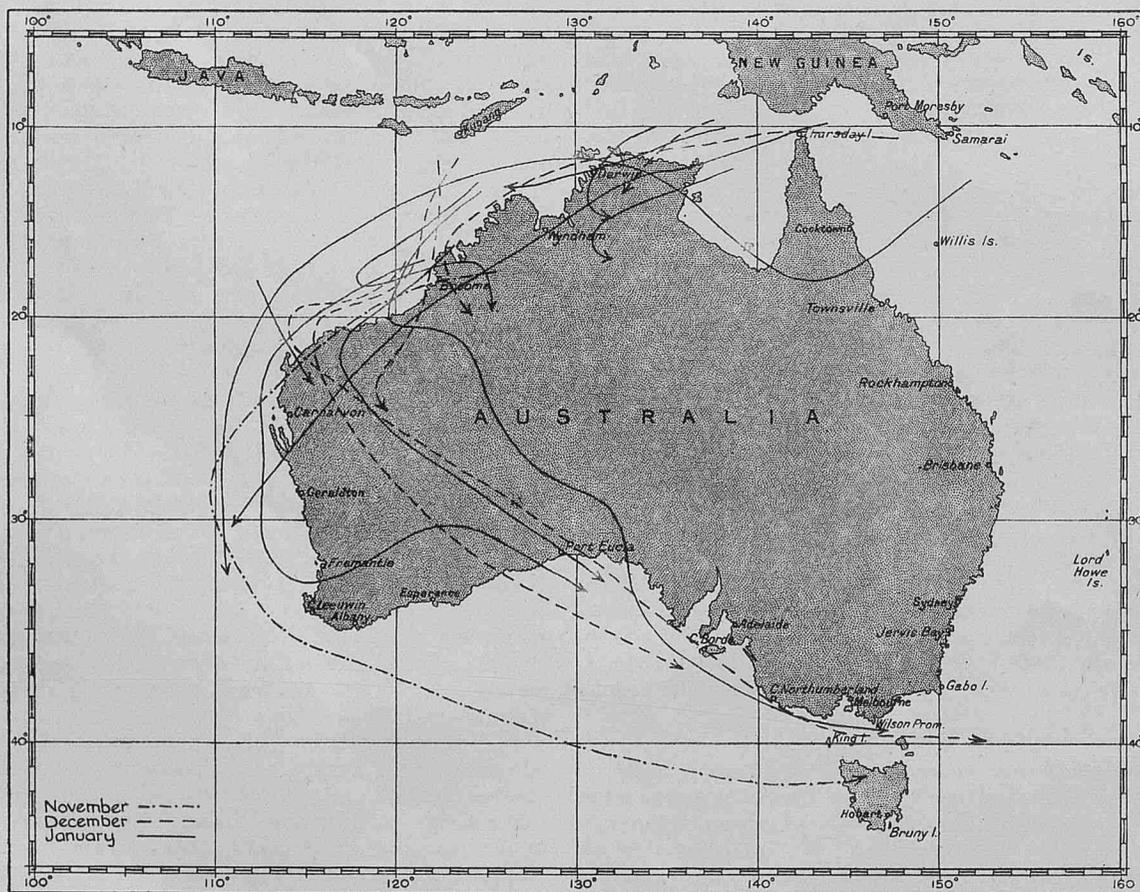


Chart 1.

Some Recorded Tracks of Western Australian Hurricanes
February, March and April.

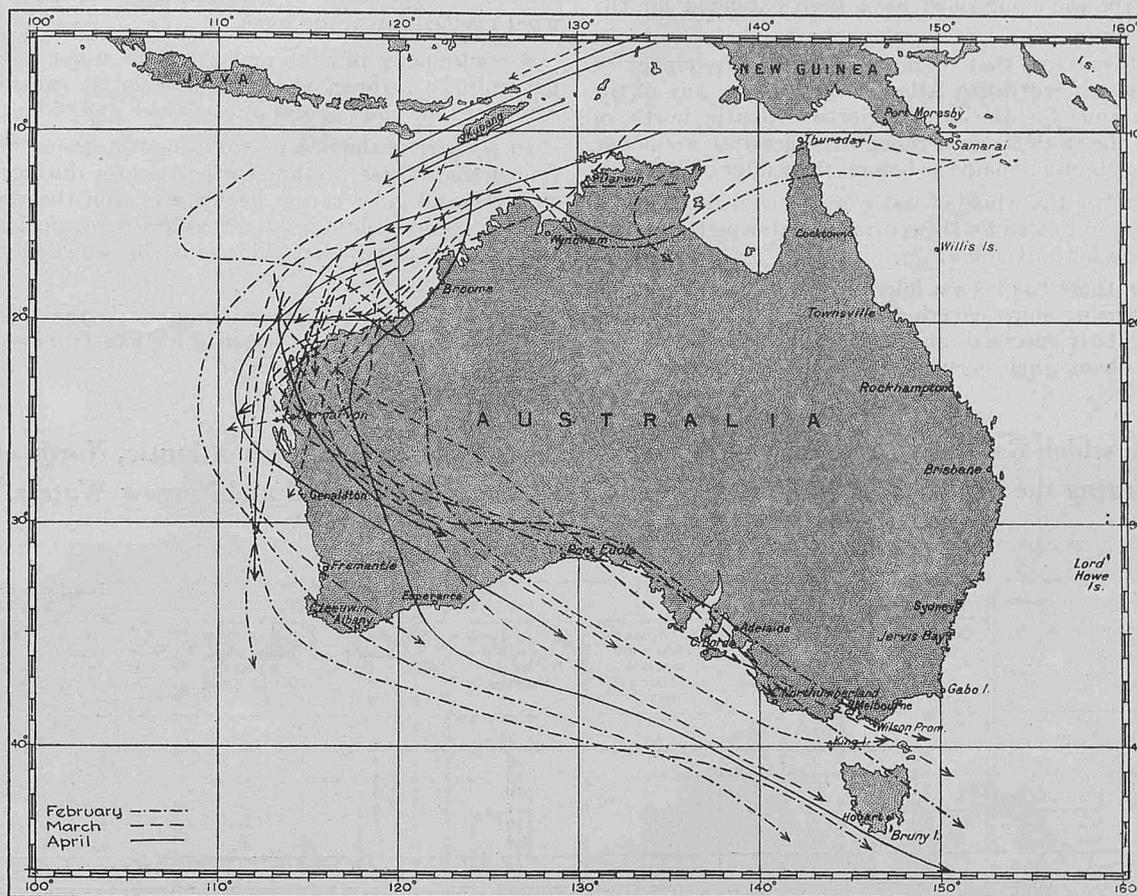


Chart 2.

coast, and while some continue on into higher latitudes, others on reaching the Leeuwin again recurve and proceed in a south-easterly direction to beyond Tasmania. The storms that originate in the Coral Sea, after crossing the Northern Territory enter the Indian Ocean and follow a path similar to those storms originating in the Timor or Arafura Seas.

The rate of progression of different storms varies considerably and may be only a few miles or as much as 500 miles or more per day. Storms have been known to remain stationary for one or two days.

Generally they increase their speed as they progress, travelling twice as rapidly after as before recurvature. When moving in a south-westerly direction before recurvature, their average speed is about 200 miles per day and after recurvature to the south or south-east 400 miles per day.

The storm field of Western Australian hurricanes does not generally cover so wide an area as that of tropical revolving storms in other

localities. The inner storm belt containing winds of a destructive nature is frequently less than 100 miles and rarely greater than 150 miles in diameter.

The approach of a hurricane is generally indicated by sultry weather and a falling barometer, followed by an ugly and threatening appearance of the weather. The storms are always accompanied by heavy rain and electrical discharge. The surest warning is given by the barometer, which should be watched closely when within the hurricane zone. Any irregularity in the diurnal range of pressure should at once place the navigator on his guard.

The storms may be of a very intense nature and have in the past caused great destruction to life and property both afloat and ashore. In the more intense hurricanes, atmospheric pressure at the vortex may be more than 68 mb. (2 inches) below normal, the average barometric gradient being rather more than 34 mb. (1.0 inch) in 50 nautical miles.

COMPARISON OF THE SEVERITY OF THE WEATHER IN THE NORTH ATLANTIC DURING THE LAST SEVEN WINTERS.

BY CAPTAIN L. A. BROOKE SMITH, R.N.R.

THE season for winter load line laid down by the International Load Line Convention, 1930, and incorporated in the Merchant Shipping (Safety and Load Line Conventions) Act, 1932, for the North Atlantic north of Latitude 45° N. between Longitude 15° W. and 50° W. and north of 60° N. from Longitude 15° W. to the Norwegian coast, extends

from 16th October to 15th April, and for the remainder of the North Atlantic north of Latitude 36° N. from 1st November to 31st March.

In the January, 1936, number we compared the severity of the weather during the winters 1930-1935 in the western, central and eastern portions of the North Atlantic, north of Latitude 36° N.,

along the trade routes, by summarizing the number of days during each month or part of the month on which gales were reported by all British voluntary observing ships at sea in those waters.

The tables and curves then published have been extended for the past two winters.

During last winter they show that there was a greater frequency of gales in the central and eastern North Atlantic than during any of the previous six winters, and for the whole North Atlantic north of Latitude 36° N. along the trade routes; though the greatest frequency for the western North Atlantic remains as before, the winter of 1930-31.

On two days only during the whole of last winter was wind of hurricane force reported, that indicated for the central zone during December, and for the eastern zone for November.

Since 1st May, 1930, there has been a fairly constant distribution of British voluntary observing ships covering the region, whose written returns have been regularly received, and though at times gales may have passed between them, such occurrences are few; so that these

tables give a good indication of the number of days on which there were gales, that is wind of force 8 and above. They also indicate the number of days when the wind reached whole gale force 10, included in the number for gale force 8; and similarly the number of days when the wind reached hurricane force.

A continuance of gales makes for the worst conditions. Wind may not only be a direct cause of damage; it causes the sea and swell, which are the chief causes of casualties due to weather.

In no part of the oceans are worse conditions reported on the trade routes than those of the North Atlantic during the winter, when a succession of gales causes heavy seas, and the veering of the wind in cyclonic storms brings about a heavy confusion of sea and swell, raising such waves that ships must be seaworthy in every respect to weather them.

Some account of weather was given in the 1936 MARINE OBSERVER in the North Atlantic in which ships had foundered during the winter 1934-35.

Number of Days on which Gales were reported by British Observing Ships in the North Atlantic, North of Latitude 36° N. during the Winter Months 1930-31 to 1936-37, excluding Coastal and Narrow Waters.

Month.	WESTERN. American Coast to Longitude 45° W. North of Latitude 36° N.			CENTRAL. Longitude 45° W. to 25° W. North of Latitude 36° N.			EASTERN. Longitude 25° W. to European Coast North of Latitude 36° N.			
	No. of Days on which GALES were reported.	No. of Days on which WHOLE GALES were reported.	No. of Days when wind reached HURRICANE force.	No. of Days on which GALES were reported.	No. of Days on which WHOLE GALES were reported.	No. of Days when wind reached HURRICANE force.	No. of Days on which GALES were reported.	No. of Days on which WHOLE GALES were reported.	No. of Days when wind reached HURRICANE force.	
1930	October 16-31	4	0	0	5	2	0	5	0	1
	November	13	2	1	16	4	0	18	4	2
	December	12	1	0	16	4	0	17	0	0
1931	January	11	2	0	10	0	0	12	0	0
	February	6	0	0	7	0	0	14	0	1
	March	20	4	0	19	1	0	9	0	0
	April 1-15	1	0	0	4	0	0	1	0	0
	Total for Season	67	9	1	77	11	0	76	4	4
1931	October 16-31	5	1	0	7	1	0	5	1	0
	November	4	0	0	13	0	1	14	4	1
	December	13	0	1	18	2	0	11	0	0
1932	January	7	1	0	16	1	0	20	1	2
	February	15	4	1	12	0	1	4	2	0
	March	6	2	0	9	3	0	12	1	2
	April 1-15	0	0	0	3	0	0	6	0	0
	Total for Season	50	8	2	78	7	2	72	9	5
1932	October 16-31	3	0	0	6	0	0	4	1	0
	November	6	2	0	13	2	1	8	2	0
	December	2	0	0	18	3	6	16	2	2
1933	January	10	1	0	15	1	2	12	4	0
	February	9	0	1	9	0	0	7	0	0
	March	8	0	0	9	2	0	9	0	1
	April 1-15	0	0	0	2	0	0	0	0	0
	Total for Season	38	3	1	72	10	9	56	9	3
1933	October 16-31	2	0	0	4	1	0	5	0	0
	November	13	1	1	15	2	1	11	1	0
	December	14	1	0	16	4	0	13	2	0
1934	January	6	2	0	14	3	0	16	3	0
	February	7	1	0	3	0	0	3	0	0
	March	5	1	0	13	3	2	12	2	0
	April 1-15	3	0	0	4	0	0	2	0	0
	Total for Season	50	6	1	69	13	3	62	8	0
1934	October 16-31	2	0	0	1	0	0	5	0	0
	November	12	2	0	17	2	0	6	0	0
	December	11	2	0	17	7	0	14	2	0
1935	January	6	2	0	15	1	0	6	0	0
	February	5	0	0	19	7	2	13	5	4
	March	7	1	0	14	0	1	10	1	0
	April 1-15	3	0	0	4	1	0	3	0	0
	Total for Season	46	7	0	87	18	3	57	8	4
1935	October 16-31	4	0	0	7	0	0	7	0	0
	November	8	0	0	15	0	0	13	0	0
	December	11	0	0	11	4	0	13	1	0
1936	January	15	1	0	12	1	0	19	2	0
	February	10	1	0	13	4	1	14	2	0
	March	2	0	0	12	0	0	10	2	0
	April 1-15	2	0	0	4	0	0	3	0	0
	Total for Season	52	2	0	74	9	1	79	7	0
1936	October 16-31	3	0	0	5	2	0	3	0	1
	November	8	2	0	11	4	0	11	1	1
	December	8	0	0	13	3	1	17	1	0
1937	January	12	1	0	26	7	0	25	4	0
	February	11	0	0	16	1	0	16	1	0
	March	9	1	0	15	5	0	14	2	0
	April 1-15	7	1	0	10	1	0	5	0	0
	Total for Season	58	5	0	96	23	1	91	8	1

SOUTHERN ICE REPORTS.

During the year 1937.

January.

Year	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.	
		Latitude.	Longitude.				
1937	1	60° 00' S.	57° 45' E.	Bergs, growler and brash	2 small tabulars, 1 broken down tabular, 1 small pinnacle, 1 old and worn berg, 4 growlers. A very little brash ...	R.R.S. <i>William Scoresby</i> .	
		60° 04' S.	58° 28' E.	Bergs	4 small and irregular bergs	Do.	
		60° 07' S.	58° 38' E.	Bergs	10 small and irregular bergs, 1 bergy bit, 2 growlers ...	Do.	
		60° 14' S.	58° 24' E.	Bergs	6 small and irregular bergs, 2 growlers	Do.	
		60° 33' S.	58° 42' E.	Bergs, bergy bit	1 broken down tabular, 2 small irregular bergs, 1 low bergy bit, 2 growlers. Other distant bergs.	Do.	
		60° 52' S.	59° 11' E.	Bergs	4 small, old and sea-worn bergs, 1 bergy bit, 1 growler ...	Do.	
	2	60° 56' S.	60° 31' E.	Bergs and growlers	4 small, old and sea-worn bergs, 3 growlers	Do.	
		61° 02' S.	61° 31' E.	Bergs, bergy bits, growlers	1 small tabular, much crevassed and caverned and hummocked, 3 small irregular bergs, 3 bergy bits. Several growlers. Brash and growlers around small tabular. All the above within 5 miles of track. Other more distant bergs.	Do.	
	3	61° 07' S.	61° 35' E.	Bergs, bergy bits	2 medium tabulars, 8 small irregular bergs, 2 bergy bits, growlers. Some growlers and brash around medium tabular.	Do.	
							Bergs ... ..	2 small tabulars, 2 small worn and irregular bergs ...	Do.
		61° 08' S.	62° 55' E.	Bergy bit, growlers	1 bergy bit. A few small growlers	Do.	
		61° 09' S.	63° 51' E.	Berg, bergy bit, growlers	1 small and sea-worn berg, 1 bergy bit. A few growlers ...	Do.	
		61° 09' S.	64° 37' E.	1 bergy bit ... ..	...	Do.
		61° 05' S.	65° 50' E.	2 bergs, 1 growler	Bergs small and irregular	Do.	
		60° 50' S.	66° 56' E.	1 bergy bit ... ..	...	Do.
		60° 47' S.	68° 01' E.	1 bergy bit ... ..	...	Do.
		60° 50' S.	68° 39' E.	Berg, bergy bit and growler	Berg, old and worn	Do.	
		60° 46' S.	70° 00' E.	Bergy bit, growler ... ..	...	Do.
		60° 46' S.	70° 14' E.	2 bergy bits ... ..	...	Do.
		4	60° 49' S.	70° 52' E.	Bergs	2 medium tabulars (low), 2 small pinnacle bergs	Do.
	60° 55' S.							71° 35' E.	Bergs, bergy bits ... ..	1 medium tabular, 1 small tabular, 2 broken down tabulars, 2 small irregular bergs, 1 bergy bit, growlers. ... ..	Do.
	60° 59' S.		72° 21' E.	Bergs, bergy bits	2 small and sea-worn bergs, 2 bergy bits. Some brash and growlers.	Do.	
	5		60° 59' S.	73° 21' E.	Bergs, bergy bits	6 medium tabulars, 1 medium "island" tabular, 1 medium broken-down tabular, 2 large tabulars, 2 small tabulars, 1 small irregular, 1 small listed tabular.	Do.
	6		60° 54' S.	77° 21' E.	50 bergs, bergy bits, growlers	Bergs on both sides of vessel's track (090°). 18 medium tabulars, 1 tabular with very uneven snow-covered top. About 30 small tabulars, broken-down tabulars, or irregular and sea-worn bergs. 12 bergy bits. Brash and growlers widely scattered.	Do.
			60° 50' S.	79° 28' E.	Bergs, growlers and bergy bits	2 medium tabulars, 12 small tabulars, 2 small broken-down tabulars, 1 glacier berg, 14 small, irregular bergs, 3 bergy bits, and growlers.	Do.
			60° 50' S.	80° 10' E.	Bergs, growlers and bergy bits	2 medium tabulars, 3 small broken-down tabulars, 7 small irregular or sea-worn bergs, 3 bergy bits. Brash and growlers scattered freely and widely.	Do.
			61° 12' S.	80° 55' E.	Bergs, bergy bits and growlers	1 small glacier berg with strata of morainic dirt visible, 3 large tabulars, 2 medium tabulars (of which 1 was much hummocked on top), 16 small tabulars, 1 medium broken-down tabular, 9 small irregular bergs (3 old and sea-worn).	Do.
		61° 38' S.						81° 56' E.	Bergs, bergy bits and growlers ... ..	6 medium tabulars, 18 small tabulars, 6 small and broken-down tabulars, 10 small and irregular bergs, of which 2 or 3 had a saucer shape, snow covered, with wall sides, bergy bits, growlers. Other bergs, very distant.	Do.
		62° 00' S.	82° 43' E.	Bergs, bergy bits and growlers	3 medium tabulars (2 of which 155 ft. high, measured by sextant angle and 4 pt. bearing), 9 broken-down tabulars, or irregular, or sea-worn bergs.	Do.	
		62° 10' S.	83° 04' E.	Bergs, bergy bit	1 small tabular, 1 small pinnacle, 1 tall broken-down tabular, 1 bergy bit, 1 growler.	Do.	
	7	62° 17' S.	84° 05' E.	5 bergy bits and 2 growlers	1 small tabular, 2 bergy bits, 6 large low growlers. A continual stream of medium and small growlers. Some very scattered brash.	Do.	
							62° 23' S.
	8	62° 28' S.	85° 11' E.	Bergs, bergy bits, floe bergs, drift	5 miles S.E. of given position encountered heavy drift ice, being scattered remains of very heavy pack. Many floes (estimated) 20 ft. high and 300-400 ft. long. Proceeded eastward through this for about 35 miles. 1 tabular (small) and 1 small irregular.	Do.	
							62° 28' S.	86° 06' E.	Bergs, bergy bits, floe bergs, drift ... ..	Proceeding into more open sea. Drift ice more scattered, though many large floes visible.	Do.
		62° 28' S.	86° 06' E.	Bergs, bergy bits, floe bergs, drift	Turned N.N.E. at noon (62° 28' S. and 86° 06' E.), and proceeded 16 miles before passing clear of drift, in position 62° 14' S. and 86° 20' E.	Do.	
		From 62° 28' S.	86° 06' E.	...	Saw: 2 large "island" tabulars (estimated 1 mile and 1 1/2 miles long, respectively). 1 earth discoloured growler, 2 or 3 small worn bergs, containing morainic strata, small tabulars, bergy bits, brash, etc.	Do.	
		62° 04' S.	86° 27' E.	...	1 medium tabular, 2 bergy bits. Some very scattered drift.	Do.	
		61° 37' S.	86° 50' E.	Bergs, bergy bits, growlers	4 medium tabulars. Tops much hummocked, one of which was exceptionally hummocked with large boulders of snow, or ice, also many caverns and crevasses.	Do.	
		61° 21' S.	87° 03' E.	Bergs, bergy bits, growlers	2 very low tabulars, level tops showing distinct layer of snow several feet deep on top of pale blue ice, 2 small irregular bergs, 1 bergy bit, partly discoloured.	Do.	
							61° 14' S.	86° 57' E.	Bergs ... ..	2 small irregular bergs, 8 bergy bits, growlers and some brash.	Do.
61° 10' S.		86° 54' E.	1 bergy bit	1 medium tabular, 3 small tabulars, 1 broken-down tabular, 1 small irregular berg.	Do.		
						61° 04' S.	87° 23' E.	Bergs, bergy bits, growlers ... ..	3 small tabulars, 1 small hummocked tabular.	Do.
60° 57' S.	87° 46' E.	Bergs	5 small irregular, or sea-worn, bergs, bergy bits and growlers.	Do.			
61° 00' S.	88° 06' E.	Bergs	2 small tabulars, 2 broken-down tabulars, 5 small irregular bergs, 1 old and worn berg.	Do.			
					60° 55' S.	88° 25' E.	Bergs, bergy bits, growlers ... ..	1 medium tabular, 5 irregular bergs, or broken-down tabulars, all small.	Do.
9	60° 57' S.	88° 07' E.	Bergs	1 medium, hummocked, tabular, 4 broken-down tabulars, or irregular or sea-worn, bergs, 5 bergy bits. Many growlers. Some brash ice.	Do.		
						60° 53' S.	87° 27' E.	Bergs ... ..	3 small worn and irregular bergs ... ..	Do.
				12 bergs, either broken-down tabulars or worn irregulars ...	Do.		

SOUTHERN ICE REPORTS (continued.)

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1937	9	60° 55' S.	87° 10' E.	Bergs	1 broken-down tabular, much caverned and split (210 ft. by vertical angle).	R.R.S. <i>William Scoresby</i> .
		60° 56' S.	86° 45' E.	Bergs, growlers	1 large tabular, 1 medium tabular, 3 small tabulars, 1 broken-down tabular, 4 small and irregular. Growlers and brash. 1 small tabular with morainic strata.	Do.
		60° 58' S.	85° 57' E.	Bergs, growlers	About 40 bergs. A few medium tabulars, mainly small broken-down tabulars, or small irregular bergs, 1 partly discoloured bergy bit, and 2 partly discoloured growlers.	Do.
		61° 11' S.	84° 32' E.	Bergs, growlers	5 large tabulars (estimated $\frac{3}{4}$ mile long), 4 medium tabulars. About 20 small tabulars, broken-down tabulars, irregular, and sea-worn bergs, 2 bergy bits, growlers.	Do.
	10	61° 22' S.	83° 19' E.	Bergs, bergy bits, growlers	1 very large tabular about 5 miles to N., 4 medium tabulars, 6 small tabulars, 6 broken-down tabulars, 6 small, old and sea-worn bergs, 4 small irregulars, 11 bergy bits, 4 large growlers.	Do.
		61° 34' S.	81° 57' E.	Bergs, bergy bits, growlers, some brash	About 40 tabulars, 15 of medium size, 25 small, or mainly broken down, or listed. 30 irregular bergs of varying sizes, mainly small. 1 berg of barrier ice, with sloping, uneven, snow-covered top, and low wall sides with veins and patches discoloured by morainic material. Many growlers and some areas of brash.	Do.
		62° 02' S.	80° 55' E.	Bergs, bergy bits, growlers	35 bergs, varying descriptions, all small tabulars, broken-down tabulars, sea-worn, or irregular bergs, 1 small glacier berg. Many bergy bits.	Do.
		62° 13' S.	79° 36' E.	Bergs, bergy bits, growlers	3 medium tabulars, 5 small tabulars, 3 broken-down tabulars, 4 old, worn and irregular bergs, 6-12 bergy bits. Very few growlers.	Do.
		62° 24' S.	78° 15' E.	Bergs, bergy bits, growlers	4 medium tabulars, 6 small and/or broken-down tabulars. Visibility very good. 6 small, irregular, sea-worn bergs. Bergs becoming fewer.	Do.
		62° 33' S.	77° 00' E.	Bergs, bergy bits, growlers	1 small tabular, much hummocked, 5 small irregular or sea-worn bergs, 1 bergy bit, few growlers, some brash near small tabular.	Do.
	11	62° 44' S.	75° 45' E.	Bergs, bergy bits, growlers	2 small tabulars, 4 small, irregular, old and worn bergs, 3 bergy bits, 3 growlers.	Do.
		63° 09' S.	74° 56' E.	Bergs, bergy bits, growlers	5 medium tabulars, 2 small, broken-down tabulars, 5 small, irregular bergs, some growlers.	Do.
		63° 14' S.	75° 09' E.	Bergs, bergy bits, growlers	2 small, much hummocked tabulars, 1 small, irregular berg, a few growlers, bergy bits.	Do.
		63° 11' S.	76° 33' E.	Bergs, bergy bits, growlers	2 medium tabulars, 3 small tabulars, 2 small, low, pieces of barrier ice, 2 small, irregular bergs.	Do.
		63° 05' S.	77° 42' E.	Bergs, bergy bits, growlers	2 medium tabulars, 1 much hummocked on top, 4 small, irregular bergs, 8 bergy bits, a few growlers.	Do.
	12	63° 04' S.	78° 29' E.	4 bergs, 1 bergy bit	1 broken-down tabular, 2 small tabulars, 1 old and worn berg	Do.
		63° 03' S.	79° 27' E.	4 bergs, 1 growler	1 broken-down tabular, 1 small tabular, 2 old and worn bergs	Do.
		62° 57' S.	80° 06' E.	3 bergs	1 medium tabular, 1 small tabular, 1 small irregular ...	Do.
		62° 58' S.	80° 32' E.	5 bergs	2 medium tabulars, 3 small irregular bergs, 2 bergy bits, a few growlers.	Do.
	13	63° 05' S.	81° 03' E.	Bergs	1 medium tabular, 3 small irregular bergs	Do.
		62° 53' S.	81° 40' E.	Bergs, bergy bits	1 small low tabular, 3 bergy bits (1 of glacier ice)	Do.
		62° 43' S.	82° 35' E.	Bergs, bergy bits, growlers	6 small tabulars, 3 broken-down tabulars, 2 small irregulars, 3 old and worn bergs, 2 bergy bits. Much brash near broken-down tabulars. Some growlers.	Do.
		62° 29' S.	83° 27' E.	Growlers	6 bergs (irregular and broken-down tabulars). Moderate fog for 3 hours.	Do.
		62° 26' S.	83° 41' E.	Bergs, bergy bits	2 large "island" tabulars, estimated 1 mile long, 1 medium tabular, 3 bergy bits, 35 growlers to leeward of "island" tabular.	Do.
	14	62° 23' S.	83° 59' E.	Bergs	1 small old and worn, 1 small irregular berg	Do.
		62° 10' S.	85° 08' E.	Bergs, bergy bits, growlers, drift	1 medium-sized tabular, 11 small irregular bergs or broken-down tabulars. Visibility variable, poor to moderate. Ran for 1 hour among widely scattered drift ice, mainly remains of very heavy floes, much honeycombed and listed. Some floes 30-40 ft. high. Growlers, bergy bits, brash, etc.	Do.
		61° 58' S.	85° 58' E.	Bergs, bergy bits	2 large hummocked tabulars, estimated 1 mile long, 9 small tabulars, or irregular or sea-worn bergs, 25 bergy bits, growlers, brash.	Do.
		61° 30' S.	87° 04' E.	Bergs, bergy bits, growlers	1 medium tabular, estimated 2,500 ft. long, and nearly rectangular, 2 medium tabulars, low and uneven, 7 small irregulars, or broken-down tabulars, 2 large floe-bergs, listed. Some of the bergs and bergy bits with morainic marks. The medium rectangular tabular above mentioned had a new appearance, with clean-cut sides.	Do.
	15	61° 06' S.	86° 50' E.	Bergs, bergy bits, growlers	2 medium tabulars, 25-28 small irregular, or old and worn bergs. About 12 bergy bits.	Do.
		60° 54' S.	87° 04' E.	Bergs, bergy bits, growlers	2 large tabulars, 2 medium (1 much hummocked on top), 7 small tabulars, 7 broken-down tabulars, 10 old and worn bergs, 3 irregulars, 5 bergy bits.	Do.
	16	60° 44' S.	87° 17' E.	Berg and growlers	1 new, clean cut, medium tabular, growlers	Do.
		60° 36' S.	87° 29' E.	Bergs	1 medium and 2 small tabulars, 1 tall broken-down tabular, 1 old and worn berg, 1 irregular berg.	Do.
		60° 35' S.	87° 43' E.	Bergs	1 small tabular, 1 small, listed, broken-down tabular ...	Do.
		60° 29' S.	87° 48' E.	Bergs	5 small irregular bergs, a few growlers	Do.
		60° 19' S.	88° 01' E.	Bergs	1 medium "island" tabular, 1 small tabular	Do.
		60° 32' S.	88° 08' E.	Bergs	2 small tabulars	Do.
		60° 42' S.	88° 20' E.	Bergs	4 small tabulars	Do.
	17	60° 39' S.	88° 35' E.	Bergs	1 broken-down tabular. Some scattered brash and growlers in lee.	Do.
		60° 37' S.	88° 46' S.	Bergs	1 medium "island" berg, 2 small tabulars, 1 broken-down tabular, 1 small irregular berg, 1 bergy bit.	Do.
		60° 48' S.	89° 07' E.	Bergs, bergy bits	2 small tabulars, 1 capsized tabular, 2 small irregulars ...	Do.
		60° 58' S.	89° 08' E.	Bergs, bergy bits	1 broken-down tabular, 1 small half-capsized tabular, 1 old and worn berg.	Do.
		61° 00' S.	88° 56' E.	Bergs	2 small tabulars, 2 broken-down tabulars, 1 irregular ...	Do.
		61° 00' S.	89° 18' E.	Bergs	2 small tabulars. Remainder small, old and worn, or irregulars.	Do.
	18	61° 22' S.	90° 39' E.	Bergs, bergy bits	2 small tabulars, 5 small, old and worn, or irregulars. Visibility poor. A few bergy bits, 1 with morainic markings.	Do.
		61° 21' S.	91° 01' E.	Bergs	1 medium and 3 small tabulars, bergy bits, growlers and brash.	Do.
		61° 32' S.	91° 19' E.	Bergs, bergy bits	1 medium and 7 small tabulars, 2 irregular and 1 old and worn berg, 3 bergy bits, 2 growlers, scattered brash.	Do.
		61° 41' S.	91° 47' E.	Bergs, bergy bits	9 small tabulars (some broken down), 6 irregulars, 1 sea-worn bergy bit with strata of clear ice.	Do.
		61° 48' S.	92° 02' E.	Bergs, bergy bits, growlers	2 large tabulars (1 estimated $1\frac{1}{2}$ miles long, and 1 at $\frac{3}{4}$ mile long), 4 medium tabulars, 8 small tabulars, 16 small irregular or sea-worn bergs, 7 bergy bits, growlers, and occasional scattered brash. Course since last position 113° (T). Majority of bergs to northward of this.	Do.

SOUTHERN ICE REPORTS (continued).

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1937	19	61° 43' S.	91° 55' E.	Bergs	About 4 small tabulars, and 11 irregular, or old and worn bergs. Some of this seen from last position.	R.R.S. <i>William Scoresby</i> .
		61° 45' S.	92° 28' E.	Bergs	1 medium, 6 small and 8 broken-down tabulars, 4 old and worn and 14 irregular bergs (one with pronounced morainic marking).	Do.
	61° 50' S.	92° 46' E.	Bergs	1 broken-down tabular, 1 small irregular	Do.	
	61° 58' S.	93° 19' E.	Bergs	5 medium tabulars, 1 medium irregular, 5 small irregular bergs, 3 bergy bits, a few growlers.	Do.	
	20	61° 58' S.	93° 00' E.	Bergs, bergy bits	2 medium and 1 small tabular, 7 small irregular bergs ...	Do.
		61° 50' S.	93° 19' E.	Bergs, bergy bits	2 large and 5 medium tabulars, 12 small irregular bergs, 10 bergy bits, growlers and scattered brash.	Do.
	21	61° 55' S.	93° 37' E.	Bergs, bergy bits	1 large tabular, 4 small tabulars, 1 broken-down tabular, 1 irregular, 1 old and worn berg, 3 growlers, 1 bergy bit.	Do.
		61° 56' S.	93° 51' E.	Bergs, bergy bits	6 small tabulars, 6 irregular bergs, 10 bergy bits, a few growlers.	Do.
	22	61° 50' S.	93° 48' E.	Bergs, bergy bits	1 large and 6 small tabulars, 3 broken-down tabulars, 10 irregulars, 10 bergy bits.	Do.
		61° 47' S.	93° 42' E.	Bergs, bergy bits	Some ice and 1 large tabular (estimated $\frac{3}{4}$ mile long) ...	Do.
	23	61° 29' S.	94° 10' E.	Bergs, bergy bits	10 small tabulars, about 20 small irregular bergs, 8 bergy bits, many growlers.	Do.
		61° 25' S.	94° 21' E.	Bergs, bergy bits	3 small tabulars, 2 broken-down tabulars, 15 small irregular bergs, bergy bits and growlers.	Do.
	24	61° 18' S.	94° 48' E.	Bergs, bergy bits	5 small tabulars, 7 small irregulars, bergy bits and a little brash.	Do.
		61° 14' S.	94° 54' E.	Bergs	4 small tabulars, 4 irregulars, 2 old and worn bergs... ..	Do.
	25	81° 13' S.	94° 57' E.	Bergs, growlers	12 small tabulars, 2 irregulars, growlers	Do.
		61° 16' S.	94° 44' E.	40 bergs, growlers	8 small tabulars (2 much hummocked). Remainder small irregular or sea-worn bergs, 10 bergy bits.	Do.
	26	61° 08' S.	94° 55' E.	Bergs, bergy bits	5 small tabulars, 2 broken-down tabulars, 5 irregulars, 3 old and worn.	Do.
		60° 53' S.	95° 33' E.	Bergs, bergy bits	14 small tabulars, mostly broken down, 9 irregular bergs ...	Do.
	27	60° 41' S.	96° 00' E.	Bergs, bergy bits	4 small tabulars, 2 broken-down tabulars	Do.
		60° 25' S.	96° 16' E.	Bergs, 3 growlers	2 small tabulars, 4 broken-down tabulars (1 morainic) ...	Do.
	28	60° 16' S.	96° 28' E.	Berg, bergy bit	1 pinnacle berg, 1 bergy bit	Do.
		60° 00' S.	96° 56' E.	2 bergs	2 small tabulars, 1 broken-down tabular, 1 old and worn berg	Do.
	29	59° 58' S.	96° 32' E.	1 small tabular berg ... ..	... ..	Do.
		60° 07' S.	95° 32' E.	5 bergs	1 small tabular, 4 small irregular bergs	Do.
	30	60° 26' S.	94° 31' E.	Bergs, growlers	5 small tabulars, 4 irregulars, 1 old and worn berg	Do.
		60° 41' S.	93° 42' E.	Bergs, growlers	8 small tabulars, 9 broken-down tabulars, 8 small irregulars	Do.
	31	60° 43' S.	92° 39' E.	Bergs, growlers, bergy bits	10 small tabulars, 6 broken-down tabulars, 9 small irregulars, 5 bergy bits, growlers and brash.	Do.
		60° 46' S.	92° 19' E.	Bergs, bergy bits	2 irregular, 2 old and worn bergs, and 1 bergy bit	Do.
	32	61° 03' S.	91° 28' E.	Bergs	2 medium tabulars, 15 small or broken-down tabulars, 12 small irregular bergs.	Do.
		61° 18' S.	90° 50' E.	Bergs, bergy bits	3 medium tabulars, 8 small tabulars, 4 small irregular bergs, bergy bits, growlers and brash.	Do.
	33	61° 45' S.	90° 06' E.	Bergs, bergy bits, growlers, brash	2 medium tabulars, 8 small tabulars, 3 broken-down tabulars, 5 irregular, 3 old and worn bergs, 10-15 growlers, 3 bergy bits, some brash.	Do.
		62° 48' S.	89° 04' E.	Bergs, bergy bits, growlers, brash	1 medium and 5 small tabulars, 12 irregulars and old and worn bergs, bergy bits and growlers.	Do.
	34	62° 59' S.	88° 30' E.	Bergs, bergy bits, growlers	3 medium tabulars, 5 small tabulars, 22 broken-down tabulars, irregular or sea-worn bergs.	Do.
		63° 32' S.	87° 48' E.	Bergs, bergy bits, growlers	3 large tabulars (including 1 "island" tabular), 5 medium tabulars, 21 small tabulars, 2 broken-down tabulars, 6 irregular bergs, 6 old and worn bergs, 14 bergy bits. Innumerable growlers.	Do.
	35	64° 03' S.	86° 55' E.	Bergs, bergy bits, growlers	4 medium tabulars, 16 small and 10 broken-down tabulars, 2 large irregular bergs consisting of large pieces of shelf ice with irregular snow-covered tops and many snow boulders with earth coloured marks, 26 small and irregular bergs. Some bergy bits with morainic markings.	Do.
		64° 24' S.	86° 43' E.	Bergs, bergy bits, growlers	2 large tabulars, 3 medium, 5 small tabulars, 20 small irregular and old and worn bergs. Bergy bits and growlers and some scattered drift to S.W.	Do.
	36	64° 00' S.	85° 59' E.	Bergs, drift ice and loose pack	7 miles S.E. of position given encountered large belt of loose and very heavy pack. Many floes 10-15 ft. high, and some several hundred feet long, with much open water between. Several large "island" tabulars (one of them 1 mile long, estimated). Pack extends out of sight to westward. Skirted edge to N.E. About 10 tabulars, 3 medium, remainder small. 12 irregulars or large floe bergs. Many growlers.	Do.
		63° 25' S.	86° 08' E.	Bergs, drift ice and loose pack	5 "island" tabulars (medium), 5 medium tabulars, 10 small tabulars and/or irregulars, drift, bergy bits, growlers.	Do.
	37	63° 16' S.	86° 08' E.	... ..	Entered area of very scattered drift and floe ice	Do.
		63° 04' S.	86° 08' E.	... ..	Passed clear of drift ice. During passage through saw 9 bergs, 1 small tabular and 8 irregulars, probably floe bergs.	Do.
	38	62° 59' S.	86° 02' E.	Bergs	1 medium and 1 small tabular. 10 irregular bergs... ..	Do.
		62° 47' S.	84° 53' E.	Bergs, bergy bits, growlers	1 small and 1 broken-down tabular, 15 small irregulars and sea-worn.	Do.
	39	62° 40' S.	84° 09' E.	Bergs, bergy bits, growlers	8 small tabulars (3 hummocked and 3 listed), 22 small, irregular and sea-worn bergs, 10 bergy bits, a good deal of brash.	Do.
		62° 26' S.	83° 18' E.	Bergs, bergy bits, growlers	1 large, 11 small tabulars (including 1 "island"), 10 broken-down tabulars, 6 irregulars, 8 old and worn bergs, 6 bergy bits, 2 large and many small growlers, 1 broken-down tabular, 252 ft. high by vertical angle.	Do.
	40	62° 11' S.	82° 12' E.	Bergs, bergy bits, growlers	3 medium and 22 small tabulars, 10 broken-down tabulars, 30 small, irregular or old and worn bergs.	Do.
		62° 05' S.	81° 35' E.	Bergs, bergy bits, growlers	8 small tabulars, 27 irregular or old and worn bergs ...	Do.
	41	62° 00' S.	80° 27' E.	Bergs, bergy bits	7 small tabulars (1 hummocked on top), 8 irregular and/or old and worn bergs	Do.
62° 01' S.		79° 49' E.	Bergs, bergy bits	3 broken-down tabulars, 3 small irregulars	Do.	
42	62° 15' S.	78° 45' E.	Bergs, bergy bits	3 tabulars, 4 irregular bergs	Do.	
	62° 17' S.	77° 34' E.	Bergs	1 medium tabular, 1 broken-down tabular, 5 irregular bergs	Do.	
43	62° 17' S.	76° 34' E.	Bergs	4 small tabulars, 2 small irregulars, 1 bergy bit	Do.	
	62° 20' S.	76° 02' E.	Bergs	1 large tabular (estimated $\frac{3}{4}$ mile long), 2 small irregular bergs.	Do.	
44	62° 26' S.	75° 15' E.	No ice	Ran 261° for 28 miles and saw no ice	Do.	
	62° 42' S.	74° 45' E.	Berg	Small irregular	Do.	
45	62° 47' S.	73° 32' E.	Bergs	2 small irregular, 1 small tabular	Do.	
	62° 49' S.	72° 50' E.	Bergs	3 small irregular, 1 small tabular, 1 old and worn berg ...	Do.	
46	62° 58' S.	71° 17' E.	Berg	Small irregular	Do.	
	63° 03' S.	70° 22' E.	Berg, growlers	Small tabular, and 3 growlers	Do.	
47	63° 07' S.	69° 21' E.	Bergs, growlers	2 small tabulars and 1 large growler	Do.	
	63° 14' S.	67° 51' E.	Berg	Small irregular	Do.	
48	63° 10' S.	66° 17' E.	Bergs, growler	5 small irregular, 1 small tabular, 1 growler	Do.	
	62° 56' S.	65° 40' E.	Bergs	4 small irregular	Do.	
49	63° 15' S.	64° 52' E.	Bergs	2 small irregular	Do.	
	63° 23' S.	64° 29' E.	Berg and growler	Small irregular	Do.	

SOUTHERN ICE REPORTS (continued).

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1937	1	From 56° 25' S.	39° 25' W.	2 bergs	Small and irregular, with black markings, within 1½ and 2 miles.	R.R.S. <i>Discovery II</i> .
	2	To 56° 30' S.	39° 40' W.	Berg	Small and irregular, within 4 miles	Do.
	4	57° 27' S.	42° 39' W.	Berg	Small and irregular, within 1 mile	Do.
	5	60° 14' S.	51° 13' W.	3 bergs	One large tabular, within 1 mile, 1 irregular medium, black markings, 1 mile, and 1 small and irregular, within 2 miles.	Do.
		Anchored off N. Foreland, King George Island, S. Shetlands.			2 bergs	Small and irregular, close to ... ..	Do.
	Anchored off N. Foreland, King George Island.			Berg	Pinnacle	
				6 bergs	Aground (apparently) between Ridley Island and mainland.	

REMARKS on icebergs observed whilst ashore near N. Foreland, King George Island, for 12 days, 6th January, 1937, to 18th January, 1937

For the first seven days the wind remained easterly and bergs in deep water were usually sighted to the N. and eastward of the Foreland. On approaching the island they came under the influence of the current which runs round the island in a counter clockwise direction, and were swept towards the channel between Ridley Island and the mainland. The largest bergs grounded in the eastern approaches to this channel, in some cases they disintegrated into two or three smaller bergs and so passed on through the channel. One large tabular berg was seen to roll over on its side.

The bergs which had grounded close to our camp were constantly on the move. This movement was not rapid, but the bergs appeared to be aground but trundled over the sea bottom with the flood and ebb tides.

On the eighth day an off-shore wind drove many of them into deeper water, where they floated and moved rapidly away to the North. The next day, however, the wind blew right on-shore and several of these bergs were recognized where they had run aground again almost in the same position from which they had been released.

February.

1937	1	63° 28' S.	63° 16' E.	Bergs, growlers	4 small irregular bergs, 4 growlers	R.R.S. <i>William Scoresby</i> .
		63° 33' S.	62° 09' E.	Bergs, 1 bergy bit	1 medium tabular, 1 small tabular, 2 small irregular bergs	Do.
		63° 40' S.	61° 32' E.	Bergs, growlers	6 small irregular bergs	Do.
		63° 22' S.	60° 17' E.	Bergs, growlers	3 small irregular bergs, 4 growlers	Do.
		63° 26' S.	58° 54' E.	Bergs, growlers	6 small irregular bergs, 1 medium and 3 small tabulars	Do.
		63° 32' S.	57° 23' E.	Bergs, 1 bergy bit	3 small irregular bergs, 1 medium and 2 small tabulars	Do.
	2	63° 40' S.	56° 02' E.	1 growler	Large	Do.
		63° 52' S.	54° 38' E.	1 berg	Small and irregular	Do.
		64° 00' S.	54° 04' E.	2 bergs	Small tabulars, some scattered brash	Do.
		64° 31' S.	53° 39' E.	2 bergs	Small	Do.
	3	64° 56' S.	52° 58' E.		No ice seen. Enderby Land in sight about 60 miles S.W. ...	Do.
		65° 46' S.	52° 53' E.	Bergs, growlers, brash	5 large tabulars, about 50 medium tabulars. Heavy close pack and some grounded bergs about 3 miles to south. Growlers, brash, loose drift. No bergs were passed until within 12 miles of coast.	Do.
		65° 28' S.	52° 25' E.		No bergs seen since leaving Enderby Land 12 miles astern ...	Do.
	4	64° 34' S.	51° 38' E.	Bergs	1 small tabular, 1 small irregular	Do.
		64° 00' S.	50° 45' E.	Bergs, bergy bits	2 small irregulars, 2 bergy bits, about 6 growlers	Do.
		63° 27' S.	50° 14' E.	Bergs	2 small irregulars	Do.
		62° 42' S.	49° 37' E.	Bergs	2 small irregulars	Do.
	5	62° 32' S.	49° 24' E.	Berg, bergy bit	1 small irregular, 1 bergy bit	Do.
		62° 11' S.	48° 59' E.	Berg, bergy bit	1 small irregular, 1 bergy bit	Do.
		61° 57' S.	48° 20' E.	Bergs	2 small irregulars	Do.
		61° 32' S.	47° 27' E.	Bergs, growler	4 small irregulars, 1 large growler	Do.
	6	61° 24' S.	47° 13' E.	2 bergy bits		Do.
		61° 29' S.	47° 01' E.	Berg, bergy bits	1 small irregular, 2 bergy bits	Do.
		61° 50' S.	46° 13' E.	Berg, growlers	1 small irregular, 2 growlers	Do.
		61° 38' S.	45° 42' E.	2 bergy bits		Do.
		61° 49' S.	45° 11' E.	3 bergs	1 low and worn, 2 small irregulars	Do.
		61° 58' S.	44° 51' E.	Berg	1 broken-down tabular	Do.
		62° 11' S.	43° 49' E.	Berg, bergy bit	Berg, small irregular	Do.
		62° 37' S.	42° 33' E.	Bergs and bergy bits	6 small irregular bergs, 2 bergy bits	Do.
	8	63° 42' S.	40° 19' E.	Berg	Small irregular	Do.
		64° 12' S.	40° 02' E.	Berg, growler	Berg, small irregular	Do.
		64° 13' S.	38° 32' E.	Berg	Small irregular	Do.
9	63° 31' S.	36° 34' E.	Bergy bit		Do.	
11	64° 14' S.	32° 22' E.	1 bergy bit		Do.	
	64° 23' S.	32° 23' E.	1 berg	Small and sea-worn	Do.	
13	64° 38' S.	30° 12' E.	1 berg	Small irregular	Do.	
14	64° 37' S.	30° 33' E.	1 berg	Small, old and sea-worn	Do.	
	64° 23' S.	30° 36' E.	2 bergs	Small old and sea-worn, 3 growlers	Do.	
	64° 00' S.	31° 13' E.	Growler		Do.	
15	63° 44' S.	29° 51' E.	Berg	Small irregular	Do.	
16	65° 21' S.	27° 35' E.	Growlers	1 small and 1 large and old	Do.	
17	67° 11' S.	26° 30' E.	Berg	Small and irregular	Do.	
	67° 49' S.	26° 09' E.	Berg	Low tabular, small	Do.	
	67° 45' S.	26° 39' E.	Berg	Small irregular	Do.	
19	65° 05' S.	28° 49' E.	Berg	Small irregular	Do.	
	64° 46' S.	29° 08' E.	Bergs, growlers	2 old and worn bergs, 2 old and small growlers	Do.	
20	64° 45' S.	29° 50' E.	Berg	Small irregular	Do.	
	64° 14' S.	28° 42' E.	Bergs	2 small irregular	Do.	
	64° 02' S.	28° 26' E.	Berg	Small irregular	Do.	
21	63° 37' S.	26° 16' E.	Berg	Small irregular	Do.	
22	63° 26' S.	25° 11' E.	Berg	Small irregular	Do.	
23	63° 54' S.	24° 40' E.	Berg	Small irregular	Do.	
25	66° 22' S.	22° 47' E.	Berg	Small irregular	Do.	
	67° 05' S.	22° 28' E.	Bergy bit		Do.	
	66° 40' S.	23° 23' E.	Berg	Small irregular	Do.	
27	64° 27' S.	26° 52' E.	1 growler		Do.	
28	62° 44' S.	28° 19' E.	2 bergs	Small irregular	Do.	
16	From 59° 07' S.	47° 46' W.	18 bergs	Mainly small and irregular, several with heavy black markings, within 5 miles.	R.R.S. <i>Discovery II</i> .	
	To 59° 04' S.	48° 03' W.				

March.

1937	1	61° 01' S.	29° 17' E.	Berg and growler	Berg, small irregular	R.R.S. <i>William Scoresby</i> .
	2	61° 28' S.	29° 11' E.	Berg	Berg, small irregular	Do.
	4	62° 50' S.	23° 15' E.	Bergs	2 small irregular	Do.
		62° 55' S.	22° 15' E.	Bergs	2 small irregular	Do.
		62° 58' S.	20° 43' E.	Berg and growlers	Berg, small irregular, 2 growlers	Do.
	8	64° 47' S.	17° 14' E.	Berg	1 small listed tabular	Do.
	13	64° 03' S.	9° 43' E.	Berg	1 small berg distant to eastward	Do.
		63° 44' S.	9° 53' E.	Berg	1 small tabular about 14 miles E.N.E. of given position	Do.
	14	63° 15' S.	10° 24' E.	Berg, growlers and bergy bit	1 small irregular, 2 growlers and 1 bergy bit	Do.
		62° 30' S.	10° 48' E.	Berg, growlers	1 small irregular, 6 large growlers	Do.
		62° 01' S.	10° 49' E.	Bergs, growlers and brash	2 small listed tabulars, growlers and brash	Do.
	15	60° 51' S.	10° 18' E.	Berg	1 small old and worn berg, partly discoloured	Do.
		60° 17' S.	10° 24' E.	Bergs, bergy bit	4 small old and worn bergs, 1 bergy bit	Do.
		60° 12' S.	10° 25' E.	Berg	1 small old and worn berg	Do.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.	
		Latitude.	Longitude.				
1937	16	59° 58' S.	10° 23' E.	Bergs, growlers	2 small old and worn bergs, growlers	R.R.S. <i>William Scoresby</i> .	
				Bergs, bergy bits, growlers	1 small listed tabular, 29 small irregular bergs, 8 bergy bits, 10-15 growlers, some brash ice.	Do.	
			58° 32' S.	10° 01' E.	Bergs, bergy bits, growlers	12 small irregulars, 10 bergy bits (discoloured), about 10 growlers.	Do.
			57° 53' S.	10° 14' E.	Bergs, bergy bits, growlers	About 10 small irregular bergs, bergy bits and growlers ...	Do.
		17	57° 35' S.	10° 19' E.	Bergs	3 small irregulars and 1 tabular berg (small), some brash ...	Do.
	57° 13' S.		10° 19' E.	Bergs, bergy bits, growlers	5 small irregulars, 2 bergy bits, 5 growlers, some brash ...	Do.	
			57° 03' S.	10° 19' E.	Bergs, bergy bits	4 small irregular bergs, 3 bergy bits (all within 1/4 mile of track)	Do.
			56° 46' S.	10° 19' E.	Bergs, bergy bits, growlers	1 broken-down tabular, 1 small listed tabular, 8 small irregular and sea-worn bergs, about 35 bergy bits (1 of dark ice and 3 or 4 with parts of dark (bottle-green) ice), many growlers.	Do.
			55° 25' S.	10° 16' E.	Bergs, growlers	4 tabular bergs (3 small and 1 medium), 6 growlers ...	Do.
		18	54° 54' S.	10° 16' E.	Bergs	2 very small, low and sea-worn bergs	Do.
				53° 30' S.	10° 16' E.	Berg	Small ... ..	Do.
		11	57° 56' S.	30° 19' W.	Berg	Small irregular, 2 miles distant	R.R.S. <i>Discovery II</i> .
				From 58° 12' S.	30° 03' W.	26 bergs and some large growlers	Bergs, small and irregular ... ..	Do.
			To 58° 29' S.	29° 46' W.	8 bergs	Medium sized and small irregular	Do.
			To 58° 29' S.	29° 46' W.	2 bergs	Large tabulars, within 5 miles	Do.
		12	To 58° 41' S.	29° 34' W.	Berg	Large tabular, 1 mile distant	Do.
				From 59° 41' S.	28° 32' W.	Berg	Irregular, 2 miles distant ... ..	Do.
			To 59° 41' S.	27° 39' W.	About 30 bergs	Within 3 miles, mainly irregular. Medium and small ...	Do.
		15	From 64° 47' S.	21° 34' W.	2 bergs	Large tabulars, 2 miles off	Do.
				To 65° 13' S.	21° 03' W.	Berg	Irregular, 3 miles off ... ..	Do.
					Growler	Large, 1/2 mile off	Do.
					Many bergs and growlers	Irregular, small and medium	Do.
		16	From 65° 13' S.	21° 03' W.	14 bergs	Large tabulars, within 5 miles of ship... ..	Do.
				To 65° 38' S.	20° 30' W.	Slush and pancake ice, 26 bergs and many growlers.	Passed through area of slush ice and small pancake ice.	Do.
			From 66° 29' S.	19° 22' W.	Berg	Bergs irregular and tabular, within 5 miles.	Do.
			To 66° 48' S.	18° 58' W.	Numerous bergs and heavy pack ice	Large tabular, 2 miles off	Do.
	17	From 67° 50' S.	18° 42' W.	Brash ice	Heavy pack ice in sight to the east	Do.	
			To 69° 18' S.	16° 22' W.	Pancake and brash ice	Occasional streams of brash ice	Do.
		From 69° 50' W.	15° 33' W.	Pancake and brash ice	Navigating in pancake ice and brash	Do.	
	18	To 69° 44' W.	15° 16' W.	Pack ice	Navigating in fields of ice formed of scattered pieces of old pack ice consolidated into fields by newly formed and forming pancake ice.	Do.	
			From 69° 44' S.	15° 16' W.	Pancake ice	Navigating in small pancake ice	Do.
		To 69° 34' S.	15° 01' W.	Pancake ice	Navigating in small pancake ice	Do.	
		To 67° 54' S.	15° 04' W.	Clear of ice	Navigating in small pancake ice	Do.	
	19	From 67° 54' S.	15° 04' W.	2 bergs	Small irregular, distant 5 miles	Do.	
			To 67° 38' S.	15° 00' W.	2 bergs	Small irregular, 4 miles off	Do.
		From 67° 38' S.	15° 00' W.	2 bergs	Small irregular, 2 miles off	Do.	
		To 67° 02' S.	14° 36' W.	7 bergs	Medium irregular, distant 4 miles	Do.	
	23	From 63° 34' S.	0° 20' E.	4 bergs	Medium irregular, distant 4-5 miles	Do.	
			To 58° 39' S.	0° 06' E.	3 bergs	Irregular small, distant 3 miles	Do.
	25	From 58° 39' S.	0° 06' E.				
			To 58° 17' S.	0° 04' E.			
	26	From 56° 54' S.	0° 01' E.				
			To 56° 19' S.	0° 01' E.			

Reports of Ice previous to January, February, and March, 1937, will be found in the "Marine Observer," Volume XIV, No. 125, p. 27.

WIRELESS WEATHER SIGNALS.

Under the heading "Wireless Weather Signals" it is intended to publish particulars and concise descriptions of Signals and Code used for reporting Weather, Ice and Time, in conformity with the International Convention of Safety of Life at Sea, in four sections.

I. Ships' Wireless Weather Signals.

II. Wireless Weather Signals made from the shore to ships. (Weather Bulletins and Storm Warnings.)

III. Wireless Time Signals.

IV. Wireless Ice Signals.

Sections II, III and IV will be published as far as possible in geographical order, so that the most suitable of these signals for all parts of the world may be as complete as possible in each year's Numbers of *THE MARINE OBSERVER*.

The International Ships' Wireless Weather Telegraphy Code, which came into force on May 1st, 1930, is given on pp. 37 to 40.

Request for information to Meteorological Services of Maritime Countries.

Invitation is hereby given to send concise descriptions of Weather Signals made for the information of shipping and seamen in all parts of the World, in accord with the International Convention of Safety of Life at Sea, 1929, with a view to publication in the appropriate number of "The Marine Observer." Only limited space is available.

REQUEST TO WEATHER SERVICES OF ALL MARITIME COUNTRIES.

In conformity with the International Convention for Safety of Life at Sea, the State Weather Services of maritime countries in all parts of the world, desiring to receive routine weather reports from British shipping, are invited to forward the names of W.T. stations appointed to receive weather reports from Selected Ships in order that the British Meteorological Office may be enabled to encourage the service specified in Article 35, clause (c) of that Convention, and so fulfil Great Britain's part in this International Contract.

The organization of British Selected Ships has now been worked up to a high state of efficiency and, where necessary, other British ships are invited to complete the desired service as far as possible. It is therefore necessary that the lists of wireless stations detailed to receive reports from British Selected Ships should be kept up to date and be as complete as possible in "The Marine Observer" so that these lists may be copied in other publications available generally to British shipping. Foreign, British Dominion and Colonial Weather Services are therefore asked—if they desire weather reports from British ships—to forward the following information:—

(1) The name of the receiving station which is appointed to work in conformity with the schedule given on page 30 for Type A.1, C.W. ships ("A" Selected Ships), with its call sign, latitude and longitude, similar to that given on page 32 for Portishead, GKU, except that the control system is only necessary in areas of great congestion such as the Eastern North Atlantic and North Sea.

(2) The name of the station or stations detailed to receive reports from "B" Selected Ships, working the schedule given on page 30, for Type A.2, I.C.W., and Type B ships, with call sign, latitude and longitude, similar to that given on page 34 for Humber, GKZ.

(3) The telegraphic address of the appropriate meteorological centre should be given in each case, together with the desired groups of the International Ships' Wireless Weather Telegraphy Code.

(4) It is desirable that the stations appointed to receive reports from British Selected Ships and other British ships where and when necessary should be well distributed, and as far as possible that one station only should be appointed to serve an area consistent with the wireless range of Selected Ships, which is up to about 1,800 miles for "A" Selected Ships, and upwards from 200 miles for "B" Selected Ships.

I. SHIPS' WIRELESS WEATHER SIGNALS.

WORLD-WIDE SYSTEM OF VOLUNTARY SELECTED SHIPS ROUTINE WIRELESS WEATHER TELEGRAPHY

(1) For the purpose of aiding navigation, in accordance with Article 35, para. (c) of the International Convention for Safety of Life at Sea, 1929, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, First Schedule (see The Marine Observers Handbook, Sixth Edition, page 106), and to assist the meteorological services of the world with weather intelligence, it is intended that there shall be an agreed number of regularly reporting ships, termed Selected Ships, of all nations, distributed over all oceans, working voluntarily under their national state meteorological institutions.

At present the number agreed upon is 1,000 of all nations.

(2) In order that this work may be fairly distributed amongst the different national merchant navies, and to prevent congestion in wireless communication, it is intended that each national meteorological service should maintain in voluntary service a number of Ships on the register of their own country as Selected Ships, in accordance with their proportion of the world's tonnage of steam and motor vessels of over 100 tons.

The following table gives the world's tonnage and the number of Selected Ships at present desired for each maritime country of the world, including those that are not yet party to the Convention of Safety of Life at Sea.

Total Merchant Tonnage Approximate (Steam and Motor) of the World.

(Vessels over 100 tons, Lloyd's Register Book, 1937-38)

And Number of Selected Ships Required for Making W.T. Weather Reports in all Oceans, World Wide.

Country.	Steamers and Motor Vessels.		Percentage of World Tonnage.	Number of Selected Ships required.	Approximate Number of Ships fitted for C.W. Long Wave Transmission (July, 1937)
	Number.	Gross Tons.			
British Empire Total	8,911	19,967,412	31.9	319	171
America (United States)(excluding Lakes).	2,517	9,439,950	15.1	151	249
Argentina ...	290	293,335	0.5	5	4
Belgium ...	200	420,454	0.7	7	8
Brazil ...	286	472,599	0.8	8	11
Chile ...	90	137,786	0.2	2	—
China ...	288	599,986	1.0	10	—
Denmark ...	691	1,117,512	1.8	18	22
Finland ...	343	505,914	0.8	8	—
France ...	1,295	2,843,688	4.6	46	15
Germany ...	2,185	3,927,916	6.3	63	35
Greece ...	613	1,855,435	3.0	30	—
Holland ...	1,406	2,630,802	4.2	42	16
Italy ...	1,109	3,174,089	5.1	51	156
Japan ...	2,564	4,475,110	7.2	72	341
Jugo-Slavia ...	176	378,763	0.6	6	—
Latvia ...	89	184,057	0.3	3	—
Norway ...	1,899	4,346,782	6.9	69	14
Panama ...	103	512,358	0.8	8	14
Portugal ...	199	243,291	0.4	4	15
Russia (Soviet Union).	667	1,253,824	2.0	20	11
Spain ...	821	1,043,715	1.7	17	13
Sweden ...	1,238	1,494,432	2.4	24	3
Turkey ...	173	195,148	0.3	3	—
Other Countries ...	678	885,053	1.4	14	29
Total ...	28,831	62,399,411	100.0	1,000	1,125

Country.	Steamers and Motor Vessels.		Percentage of World Tonnage.	Number of Selected Ships required.	Approximate Number of Ships fitted for C.W. Medium Wave Transmission (July, 1937)
	Number.	Gross Tons.			
Great Britain and Ireland.	6,903	17,436,207	27.9	279	148
Australia and New Zealand.	525	652,809	1.0	10	—
Canada (excluding Lakes).	624	826,718	1.3	13	19
Hong Kong ...	110	294,046	0.5	5	—
India and Ceylon...	171	220,932	0.3	3	1
South Africa and Other Colonies*.	578	536,700	0.9	9	3
British Empire Total.	8,911	19,967,412	31.9	319	171

* Including Dominion of Newfoundland.

(3) Selected Ships are broadly divided into two types, "A" and "B."

"A" Selected Ships are ships fitted for long range W.T. transmission (Type A.1, C.W. apparatus) mostly mail steamers sailing and arriving at dates fixed by advertised programmes.

"B" Selected Ships are ships fitted for shorter range W.T. transmission (Type A.2, I.C.W. apparatus), including passenger and cargo liners sailing according to an advertised programme, as well as a number of vessels whose movements are not advertised and may vary from voyage to voyage.

(4) It is necessary that observations reported by wireless telegraphy should synchronize. The International times of observation for weather telegraphy at sea are 0000, 0600, 1200 and 1800 hours G.M.T.

(5) It is necessary that weather reports made for the information of all ships and the meteorological services of the different countries should be in one code, simple and concise, giving only essential information.

Selected Ships use the International Ships' Wireless Weather Telegraphy Code.

British Selected Ships.

(6) When British ships become regular voluntary observing ships to the Meteorological Office, London, their Commanders volunteer to carry out the duties of Selected Ships when required.

The names of all British observing ships are published in a fleet list at the end of THE MARINE OBSERVER, corrected monthly by supplement.

(7) Selected Ships are selected from this list, according to their sailing schedules and trades to provide distribution, and according to their wireless apparatus to ensure efficient communication.

(8) When observing ships are detailed as Selected Ships, their commanders are specially notified; and each Selected Ship is identified by a number placed before her name in the fleet list.

(9) There are (Oct. 1st, 1937), 3,760 British ships fitted with wireless telegraphy. The proportion fitted with Type A.1 is about 1 to every 26 fitted with Type A.2 or Type B apparatus.

Of the total of 3,760 British ships fitted with W/T.—

145 are fitted for sending Medium Wave, C.W.

350 " " " Short Wave, I.C.W.

Nearly all British ships carrying W/T are capable of receiving on medium wave, and this is not subject to skip, whereas far fewer can receive on short wave, and it is subject to skip.

(10) A fairly long range without skip being desirable, at present medium wave, C.W., is more reliable, and British "A" Selected Ships are at present confined to ships so fitted.

Times of Observation.

(11) The following Chart indicates the zones for which the International watch-keeping periods are fixed for wireless operators, all four times of meteorological observation being indicated in each zone.

only does he leave his post of lookout, but he returns to the bridge momentarily blinded.

(13) Wireless meteorological reports are not asked for in British Selected Ships during the hours of darkness in which there is only one officer in each watch.

The times of observation which are starred on the chart are those which generally fall during daylight in the different zones, and at these times all British Selected Ships are requested to record observations for reporting by wireless.

(14) In certain parts of the world "A" Selected Ships having two officers in each watch are requested to record observations at all four times, and report them to certain meteorological services.

Communication.

(15) In order that communication may be effective (that is, that the reports may reach as many ships as possible as well as the appropriate meteorological centres), British Selected Ships work a time schedule for transmitting their reports and use prescribed wave lengths both when addressing specified stations or all ships.

(16) Generally Selected Ships address their reports to specified centres, when within range (on the appropriate wave length) of coast stations appointed to receive weather reports in this service, through such stations.

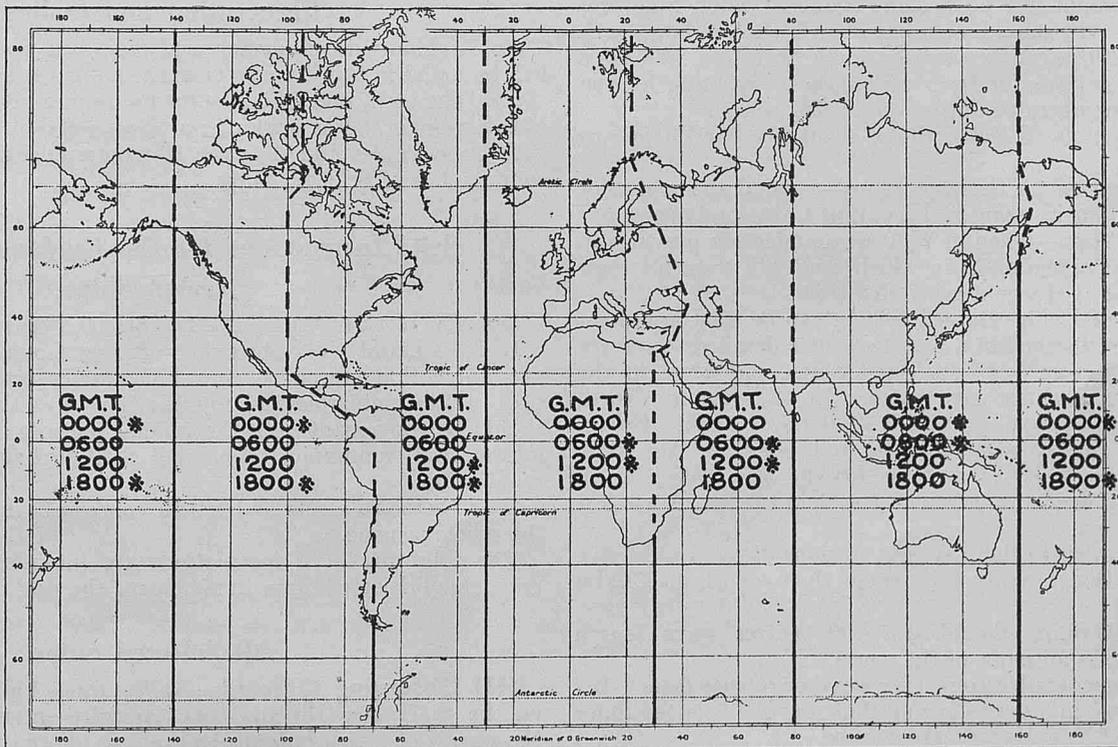
When not within range of such stations, or when those stations indicate that the reports are not desired ashore, to **CQ.**

(17) It cannot be too strongly emphasized that these reports are intended for all ships; and therefore, particularly when reports are not desired ashore, and within range of an appointed station, or in parts of the world where stations are not appointed to receive these reports, the routine report should be made to **CQ.**

(18) Great importance is attached to the S O S. periods of silence.

International Observation Times for Weather Telegraphy at Sea.

* Indicates usually daylight.



6.6.36. 4797

(12) Many Selected Ships only have one officer in each watch. The first essential for safe navigation is a good lookout kept by the officer of the watch, as well as the lookout man. The officer of the watch is responsible for meteorological observation, and the accuracy of reports. If the officer of the watch at night goes into the lighted chart house to read meteorological instruments and record them, not

Therefore the times of transmission for "A" Selected Ships are fixed to commence immediately at the end of the appropriate S O S. silence period.

This allows a sufficient interval from the time of observation for recording and coding the observations carefully and sending the coded messages from the bridge to the wireless house.

(19) Usually the times of commencement of transmission for "A" and "B" Selected Ships are fixed at 18 minutes and 30 minutes respectively after observation time; but for ships with only one W.T. operator in certain zones, special commencing periods are fixed to accord with wireless watch.

(20) The schedule which follows indicates the times of observation and commencement of times of transmission for both "A" and "B" Selected Ships in the different zones.

Schedule.

All times are G.M.T.

Zones between Greenwich Meridians.	FIRST WEATHER REPORT.			SECOND WEATHER REPORT.		
	Times of observations.	Times of reporting by Type A1 (C.W.) Ships.	Times of broadcasting by Type A2 (I.C.W.) and Type B (Spark) Ships.	Times of observations.	Times of reporting by Type A1 (C.W.) Ships.	Times of broadcasting by Type A2 (I.C.W.) and Type B (Spark) Ships.
30° W.—30° E.	0600	{ 0618 0818 }	0830	1200	1218	1230
30° E.—80° E.	0600	{ 0618 0818 }	{ 0630 0830 }	1200	1218	1230
80° E.—160° E.	0000	0018	0030	0600	{ 0618 0818 1818 }	0830
160° E.—140° W.	0000	0018	0030	1800	{ 1818 2018 }	2030
140° W.—70° W.	0000	0018	0030	1800	{ 1818 2018 }	{ 1830 2030 }
70° W.—30° W.	1200	1218	1230	1800	{ 1818 2018 }	2030

It will be noted that against some of the observation times there are two times of commencement of periods for transmitting. The second of these times, where two occur, are for single operator ships to report, in cases where they would not be keeping wireless watch following the observation hour. It should be remembered that a large proportion of "Selected Ships" carry two or three operators, and they should use the earlier periods for transmission, also repeating for the benefit of ships with one operator during the second period.

In working this schedule, Selected Ships should be careful not to jam each other.

It may be advantageous for Selected Ships—beyond the region of the Eastern North Atlantic, regulated by Roll Calls, and when not reporting to a shore station—when in W/T communication previous to reporting time to arrange the order in which they will transmit their weather reports to **CQ** at the next scheduled time.

(21) For "A" Selected Ships the wave length to be used in reporting to shore stations is specified in a list of stations detailed to receive coded weather reports from "A" Selected Ships, published in the latest number of *THE MARINE OBSERVER*. In the Eastern North Atlantic, where there is great congestion of wireless traffic, British Selected Ships work in accordance with roll calls for the day, broadcast from the specified W/T stations for the information of all shipping, particulars of which are given in the detailed list of wireless stations above mentioned.

In parts of the world where there are not stations detailed to receive reports from "A" Selected Ships, they make their reports to **CQ** on 2100 metres.

(22) "B" Selected Ships should use 600 metres wave length throughout the service in all parts of the world.

The names of stations detailed to receive weather reports from "B" Selected Ships are given in a list following that for "A" Selected Ships in the latest number of *THE MARINE OBSERVER*.

(23) The Chart of the World accompanying the lists of wireless stations detailed to receive reports from British Selected Ships, at the end of *THE MARINE OBSERVER* is revised and kept up to date quarterly. It is intended to illustrate the foregoing description by indicating graphically the stations and their approximate range, or the limits of the areas for which they should be used by British Selected Ships, and for which the details are given in the aforementioned lists.

(24) In order that all ships should know when Selected Ships make their reports, and be able to decode them, a pamphlet M.O. 32 entitled *DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS* has been published since May 1930. This has been placed on board British ships by their owners and the schedule of communication is now so well known throughout the sea service that jamming and confusion have been much reduced.

All are asked to help in maintaining the success of this voluntary scheme.

(25) No communication charges are made to the ship for Selected Ships' routine wireless weather reports broadcast to all ships, addressed to meteorological centres specified in the lists in the latest number of *THE MARINE OBSERVER*. Wireless weather reports addressed by ships to meteorological centres not conforming to these instructions may be liable to charges.

(26) The number of messages required for this service is comparatively small, when effectively organized.

Relaying on wave lengths specified in (21), (22), and in the lists of stations in *THE MARINE OBSERVER* (that is to say, wave lengths used for Selected Ship weather reporting) should not be resorted to.

Every endeavour should be made for the reports in areas in which International W/T link or collective ships, such as the French *S.S. Cuba*, are working, to reach those ships, who will relay them to special shore stations for the information of meteorological centres on a special short wave (long range).

The main object of this system is to make one transmission serve as many ships as possible and the appropriate meteorological centre with the information reported.

(27) While there is congestion in the Eastern North Atlantic and Selected Ships and other British ships are therefore indicated by roll call to report, in other parts of the world there may often be insufficient Ships to provide an adequate service of routine reports.

In the regions of heavy weather on the less frequented routes of the Southern Ocean, and particularly in the Hurricane regions during the Hurricane season, British ships other than Selected Ships are asked to assist in this service.

This will be dealt with in (34).

Observation and Coding.

(28) Guidance in observing and recording meteorological elements will be found in the *MARINE OBSERVER'S HANDBOOK*.

(29) The code, and guidance for its use are given on pages 37 to 44 of this number. For working purposes a glazed code card Form 138 with Code Tables and schedule for communication is supplied to the commanders of Selected Ships.

Brief Instructions for the Guidance of British Selected Ships.

(30) The work of "A" and "B" Selected Ships is interdependent. It is essential that observing officers should be conversant with communication as well as being skilled in observation, and the application of the meteorological information; and that wireless operators should be conversant with the general purpose and application of the information communicated as well as skilled in this system of communication.

It is therefore essential that all concerned should be familiar with the whole scheme.

The following brief instructions are intended to assist the Commanders of Selected Ships in regulating the work under their command.

All Selected Ships.

(31) **Observing Officers.**—At the times indicated for observation on the chart, see (13) and (14), carefully enter your observations in the record of synchronized observations, Form 911 or 915.

Code these observations on to the Register, Form 138.

If the message is to be broadcast to **CQ** the weather information may be conveniently abbreviated to the four universal groups of figures; and instead of using supplementary groups, information of Ice or Set and Drift of current may be given briefly in plain language.

If the message is to be sent to a meteorological centre, ascertain from the list in the latest *MARINE OBSERVER* what groups are desired and make out the message accordingly.

Write out the message on Form 139 and address carefully to **CQ Weather** or the specified meteorological centre for the part of the world given in the lists in the latest number of **THE MARINE OBSERVER**. Send it to the wireless operator just before the commencement of the SOS period following the observation time.

Example. For Meteorological centre.—From **GMLJ** to **GKU** Weather London 20506, 13106, 18603, 88660, 35x08, 54528, 65825.

Example. For all ships.—**CQ** Weather 13167, 55106, 00000, 16979 Current from 15N. 52E. to 16N. 54E. 58 degrees one knot Dalgoma.

“ A ” Selected Ships.

(32) **Wireless Operator.**—Consult the list of stations detailed to receive reports in **THE MARINE OBSERVER**.

In the Eastern North Atlantic, when on the roll call transmit the weather report to **GKU** accordingly on the appointed wave length, following the order of the roll call at the schedule time. The reports for 0000 and 1800 hours G.M.T. should be made as soon as convenient after the silence period.

In parts of the world where the message is addressed to a meteorological centre call the station detailed in **THE MARINE OBSERVER** at schedule time, see (20), and on the wave length specified, and transmit the report, which will be acknowledged in the ordinary way, remembering that this message is intended for ships within range as well as the shore station.

The message will be addressed to **CQ** in parts of the world where there is no station detailed in **THE MARINE OBSERVER**. Send it out at schedule time on 2100 metres.

Make your transmissions as above with due consideration to circumstances.

“ B ” Selected Ships.

(33) **Wireless Operator.**—If the message is addressed **CQ**, broadcast it at, or following schedule time given in (20) on 600 metres. When in range of stations indicated in the list given in **THE MARINE OBSERVER** as detailed to receive wireless weather reports from “ B ” Selected Ships, and the message is addressed to a meteorological centre, make it to the appropriate station.

In the Eastern North Atlantic, when on the roll call of **GMH** or **GCK**, transmit the weather report to that station on 600 metres wave length, following the order of roll call and at schedule time.

Ships’ Wireless Weather Reports in Parts of the World where there are not sufficient Selected Ships to provide an adequate Service.

(34) Under Article 34 of the Convention for Safety of Life at Sea, the master of every ship meeting a dangerous tropical storm, is bound by law to report to ships in the vicinity, and to the first point of the coast with which he can communicate (see **THE MARINE OBSERVER HANDBOOK**, Sixth Edition, page 106). In addition to this, the voluntary service of routine reports is particularly desirable in all parts of the world; and where there are not sufficient Selected Ships to provide an adequate service, all British Ships fitted with wireless telegraphy are asked to assist in the service.

This applies particularly to the regions of heavy weather in the Southern Ocean and to regions of tropical revolving storms.

As far as possible the International Ships’ Wireless Weather Telegraphy Code should be used and the procedure for Selected Ships should be carried out. British ships which are not Selected Ships should only make routine wireless weather reports to the shore through stations which have been detailed to receive weather reports

without charge to the ship. Such stations are notified in the lists before mentioned in **THE MARINE OBSERVER**, and these lists are copied in the Admiralty list of Wireless Signals, and are kept up to date by Admiralty Notices to Mariners.

With a view to stimulating this supplementary service of making weather reports in the Selected Ship service when and where there are not Selected Ships, a supplementary list of British Weather Reporting Ships is being made.

Only British ships suitably fitted with wireless telegraphy, and who have been visited by the Merchant Navy Agents to the Meteorological Office, and whose masters have then undertaken to perform this service, are included in this list, which is not published, but which is sent for information to stations working a roll call.

The masters of all British ships are advised to procure the pamphlet, **M.O.329, DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS**, published and sold by H.M. Stationery Office, through any bookseller, price 6d.

M.O. 379, a HANDBOOK OF WEATHER, CURRENTS, AND ICE FOR SEAMEN, gives guidance in weather forecasting, also published by H.M. Stationery Office, price 4s. 0d.

Additional Local Reports.

(35) If for local reasons, British ships are asked locally to report weather at times other than those of the routine times for British Selected Ships, they are requested to do so if convenient; but British Selected Ships, and British ships carrying on the service where there are not Selected Ships, should in such cases also report at the routine times laid down, so that there may always be a service of routine weather reports made at Schedule times for the benefit of navigation.

In regions where for local reasons observations are desired to be reported additional to those specified in the schedule on page 30 by ships at sea to meteorological centres ashore, Notices to Mariners, specifying a special time of observation, will be published through the appropriate State nautical authority.

These reports should be made in the International Ships’ Wireless Weather Telegraphy Code.

The observations need not be recorded on the Forms supplied to British Selected Ships, for the return of observations to the Marine Division of the British Meteorological Office, for the purpose of worldwide weather investigation. Records of synchronized observations made at the four International times given in Sections (4), (11) and (20) are sufficient for this purpose.

The following optional additional observation times for reports to shore stations have been notified:—

- GREAT BRITAIN.—For one-operator ships only, in the Eastern North Atlantic, when reporting to Weather London and on the roll calls for Malin Head or Valentia, usually during the summer months, 15th April to 15th October inclusive, but occasionally at other times of the year when specially desired 2100 G.M.T.
- INDIA.—For the stations named in the lists bordering the Arabian Sea 0300 G.M.T.
- HONG KONG.—For the stations named in the lists bordering the China Seas and Western North Pacific 2200 G.M.T.
- FIJI.—For Suva, when in range of that station and between Longitude 160° E. and 140° W. 2000 G.M.T.

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

Request for Information.

THE ATTENTION OF METEOROLOGICAL SERVICES IS DIRECTED TO THE INVITATION GIVEN ON PAGE 27 OF THIS NUMBER.

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.				
<i>Column No. 1.</i>	<i>No. 2.</i>	<i>No. 3.</i>	<i>No. 4.</i>	<i>No. 5.</i>	<i>No. 6.</i>	<i>No. 7.</i>	<i>No. 8.</i>	<i>No. 9.</i>	<i>No. 10.</i>
North Atlantic and North Sea.	Portishead.	Lat. 51° 28' 41" N. Long. 2° 47' 30" W.	GKU	149 kc/s. (2013 metres) and 121 kc/s. (2479 metres) simultaneously	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. but not within 300 miles of station. (see Chart of the World.)	Weather London.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"Selected Ships" chosen to report in given order notified by station daily at 2300, 0330, and 1030 G.M.T. Roll call thus—Weather London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08' 32" N. Long. 5° 20' 29" W.	GYW	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Eastern North Atlantic, South of Lat. 37° N. and Mediterranean Sea.	Meteor Gibraltar.	Weather only. No. 3 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule.
North Atlantic.	Horta, Azores.	Lat. 38° 32' N. Long. 28° 38' W.	CTG	125 kc/s. (2400 metres).	125 kc/s. (2400 metres).	Those "A Selected Ships" not in the Roll Call for reporting to Weather London through Portishead, in the Eastern North Atlantic, east of Long. 40° W should report to this station.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"A Selected Ships" in the Eastern North Atlantic not on the roll call made through Portishead (described in these notes for Portishead) should report to Horta in accordance with schedule given in the instructions for British "A" Selected Ships.
	Louisburg.	Lat. 46° 09' 16" N. Long. 59° 56' 48" W.	VAS	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	North Atlantic West of Longitude 40° W.	Signals Toronto.	Weather only, preferably No. 3 Supplementary Groups.	All British "A Selected Ships" within area when bound to or from Newfoundland and Canadian ports or ports to the northward to address their 0000 and 1200 G.M.T. observations to Signals Toronto and their 1800 G.M.T. observations to CQ in accordance with schedule.
	Chatham Mass. Amagansett (Montauk). Thomaston. Jupiter. Palm Beach.	Lat. 41° 43' N. Long. 70° 47' W. Lat. 41° 00' N. Long. 72° 03' W. Lat. 44° 01' N. Long. 69° 13' W. Lat. 26° 42' N. Long. 80° 02' W. Lat. 26° 42' N. Long. 80° 02' W.	WCC WSL WAG WMR WOE		142.9kc/s. (2098 metres).	North Atlantic West of Longitude 40° W.	Observer Washington	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	All British "A Selected Ships" within area when bound to or from United States ports or ports to the southward to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.

**WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM
" A SELECTED SHIPS."
(Continued.)**

Ocean.	Station.	Position.	Call Sign.	Frequency and Wavelength.		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.				
<i>Column No. 1.</i>	<i>No. 2.</i>	<i>No. 3.</i>	<i>No. 4.</i>	<i>No. 5.</i>	<i>No. 6.</i>	<i>No. 7.</i>	<i>No. 8.</i>	<i>No. 9.</i>	<i>No. 10.</i>
South Atlantic.	Slangkop (Cape Town)	Lat. 34° 08' 46" S. Long. 18° 19' 18" E.	ZSC	—	143 kc/s. (2100 metres).	South Atlantic Westward 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.	Only 0600 G.M.T. observations required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
Red Sea and Indian Ocean.	Port Sudan.	Lat. 19° 36' 35" N. Long. 37° 13' 28" E.	STP	—	143 kc/s. † (2100 metres).	From Suez to Ras Fartak, Ras Hafun, and western limit of Colombo area.	Weather Khartoum.	Weather only. Four universal groups.	All British "A Selected Ships" within area should report in accordance with Schedule. † Alternatively see particulars on p. 35 and use wavelength and times for "B Selected Ships."
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.	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. 9 Supplementary Groups.	See Section (35), p. 31 of this number.
	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. 9 Supplementary Groups.	
	Colombo.	Lat. 6° 55' 14" N. Long. 79° 52' 46" E.	VPB	143 kc/s. (2100 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.	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.	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. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 29, of this number.
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12' 39" N. Long. 114° 15' 11" E.	VPS	8330 kc/s. (36 metres) or 500 kc/s. (600 metres).	143 kc/s.* (2100 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory	Weather only. No. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. *Alternatively see particulars on p. 36 and use wavelength 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. 9 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 29, of this number.

**WIRELESS STATIONS DETAILED TO RECEIVE 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.
<i>Column No. 1.</i>	<i>No. 2.</i>	<i>No. 3.</i>	<i>No. 4.</i>	<i>No. 5.</i>	<i>No. 6.</i>	<i>No. 7.</i>
Norwegian Sea.	Wick.	Lat. 58° 26' 16" N. Long. 3° 05' 53" W.	GKR	Weather London.	Weather in four universal groups.	No roll call. British "B Selected Ships" should report at routine times when North of Lat. 60° N. and eastward of Long. 7° W., and when more than 20 miles from the coasts.
North Sea.	Humber.	Lat. 53° 19' 43" N. Long. 0° 16' 34" E.	GKZ	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	No roll call. British "B Selected Ships" should report at routine times when more than 20 miles from the coasts.
North Atlantic.	Malin Head.	Lat. 55° 21' 45" N. Long. 7° 20' 30" W.	GMH	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	Station will indicate at 0805 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2005 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 G.M.H. See Section (35), p. 31 of this number.
	Valentia.	Lat. 51° 55' 48" N. Long. 10° 20' 54" W.	GCK	Weather London.	Weather in four universal groups, optional No. 3 Supplementary Groups.	Station will indicate at 0825 G.M.T. and when additional reports of 2100 G.M.T. observations are desired, at 2025 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 G.C.K. See Section (35), p. 31 of this number.
	St. John's N.F.	Lat. 47° 34' 09" N. Long. 52° 41' 04" W.	VON	Signals Toronto.	Weather only, optional No. 3 Supplementary Groups.	
North Atlantic and Mediterranean	Gibraltar	Lat. 36° 08' 32" N. Long. 5° 20' 29" W.	GYW	Meteor Gibraltar.	Weather in four universal groups only.	
Mediterranean	Alexandria.	Lat. 31° 11' 53" N. Long. 29° 51' 46" E.	SUH	Meteor Heliopolis	Weather in four universal groups, optional Supplementary Groups.	
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° 45' 27" S. Long. 35° 11' 42" 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			

WIRELESS STATIONS DETAILED TO RECEIVE 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.
Column No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
South Atlantic (continued).	Victoria. Rio. Santos. Floriano- polis. Juncçao.	Lat. 20° 18' 52" S. Long. 40° 19' 06" W. Lat. 22° 59' 19" S. Long. 43° 11' 26" W. Lat. 23° 59' 22" S. Long. 46° 18' 18" W. Lat. 27° 35' 22" S. Long. 48° 34' 17" W. Lat. 32° 03' 22" S. Long. 52° 08' 13" W.	PPT PPR PPS PPF PPJ	Meteoro Rio.	Weather only, including supplementary groups.	
Red Sea and Indian Ocean.	Port Sudan	Lat. 19° 36' 35" N. Long. 37° 13' 28" E.	STP	Weather Khartoum.	Weather only, four universal groups.	
Persian Gulf						
Indian Ocean.	Jacobs (Durban). Algoa Bay (Port Eliza- beth). Calcutta. Rangoon. Madras. Bombay. Karachi. Matara. Mombasa. Dar-es- Salaam. Mauritius. Geraldton. Esperance.	Lat. 29° 55' 40" S. Long. 30° 58' 50" E. Lat. 33° 57' 16" S. Long. 25° 35' 30" E. Lat. 22° 33' 31" N. Long. 88° 20' 16" E. Lat. 16° 45' 57" N. Long. 96° 11' 51" E. Lat. 12° 59' 17" N. Long. 80° 10' 56" E. Lat. 19° 04' 55" N. Long. 72° 49' 54" E. Lat. 24° 51' 05" N. Long. 67° 02' 32" E. Lat. 6° 01' 07" N. Long. 80° 35' 39" E. Lat. 4° 03' 11" S. Long. 39° 39' 49" E. Lat. 6° 50' 38" S. Long. 39° 17' 24" E. Lat. 20° 23' 41" S. Long. 57° 35' 25" E. Lat. 28° 47' 15" S. Long. 114° 36' 24" E. Lat. 33° 52' 40" S. Long. 121° 53' 34" E.	ZSD ZSQ VWC VTR VWM VWB VWK GZP VPQ ZBZ VRS VIN VIE	Met. Met. Weather. Weather. Weather. Weather. Weather. Weather. Weather. Weather Nairobi. Weather Nairobi. Observatory Mauritius. Weather.	Weather only, 4 universal groups and first group of No. 6 Supplementary Groups. Weather only, 4 universal groups and first group of No. 6 Supplementary Groups. Weather only, preferably No. 9 Supplemen- tary Groups. Weather only, 4 universal groups and first of No. 6 Supplementary Groups. Weather only, preferably No. 9 Supplemen- tary Groups.	See Section (35), p. 31, of this number. See Section (35), p. 31, of this number. When east of Long. 90° E., but not within 100 miles of the coast.
Indian Ocean and China Sea.	Penaga (Penang). Paya Lebar (Singapore).	Lat. 5° 32' 02" N. Long. 100° 22' 51" E. Lat. 1° 20' 26" N. Long. 103° 53' 20" E.	VPX VPW	Obs. Weather Singapore.	Weather only, preferably No. 9 Supplemen- tary Groups.	

**WIRELESS STATIONS DETAILED TO RECEIVE 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.
<i>Column No. 1.</i>	<i>No. 2.</i>	<i>No. 3.</i>	<i>No. 4.</i>	<i>No. 5.</i>	<i>No. 6.</i>	<i>No. 7.</i>
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. 9 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50' 37" S. Long. 174° 46' 08" E.	ZLD	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Wellington.	Lat. 41° 16' 26" S. Long. 174° 45' 55" E.	ZLW	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Awarua.	Lat. 46° 30' 47" S. Long. 168° 22' 24" E.	ZLB	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Chatham Island.	Lat. 43° 57' 28" S. Long. 176° 34' 25" W.	ZLC	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Rarotonga.	Lat. 21° 11' 52" S. Long. 159° 48' 52" W.	ZKR	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Apia.	Lat. 13° 50' 17" S. Long. 171° 49' 42" W.	ZMA	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Suva.	Lat. 18° 08' 43" S. Long. 178° 27' 35" E.	VRP	Weather Suva.	Weather in four universal groups, optional supplementary groups.	See Section (35), p. 3 of this number.
	Thursday I.	Lat. 10° 35' 14" S. Long. 142° 12' 43" E.	VII	Weather.	Weather only, preferably No. 9 Supplementary Groups.	} When west of Long. 160° E., but not within 100 miles of the coast.
	Townsville.	Lat. 19° 16' 09" S. Long. 146° 49' 47" E.	VIT	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Brisbane.	Lat. 27° 25' 34" S. Long. 153° 07' 19" E.	VIB	Weather.	Weather only, preferably No. 9 Supplementary Groups.	} When between Long. 90° E. and 160° E., but not within 100 miles of the coast.
	Melbourne.	Lat. 37° 46' 56" S. Long. 144° 52' 09" E.	VIM	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Adelaide.	Lat. 34° 51' 14" S. Long. 138° 31' 55" E.	VIA	Weather.	Weather only, preferably No. 9 Supplementary Groups.	

INTERNATIONAL SHIPS' WIRELESS WEATHER TELEGRAPHY CODE.

Adopted by the International Meteorological Organization, 1929 and 1935.

Code and Instructions for Coding Messages.

The International Ships' Wireless Weather Code is a figure code, arranged in groups of five figures.

The first four groups are universal and the remaining groups are in three alternative or supplementary sets of groups. The first figure in the fifth group of message (or first supplementary group) indicates which set of supplementary groups is used.

The first four universal groups should always be used, and the supplementary sets of groups may be omitted, or abbreviated by omitting the last group or groups of the set; that is, the code figure message may be shortened as necessary, but the order of the figures and groups must always be strictly maintained, otherwise the message is not decodable.

If an observation or element is not available, an X (or the appropriate number of Xs) (— ● ● —) should take its place in order to maintain the sequence of figures in the groups.

Having entered synchronized weather observations and particulars of set and drift of current and ice in the Ship's Meteorological Record, Form 911, or the Meteorological Log, Form 915 (specially ruled pages at end of book), the observations should be coded, thus—

First. From the list of wireless stations detailed to receive routine coded weather reports from "Selected Ships," ascertain the number of groups and the supplementary groups desired by the shore meteorological services from ships in the part of the world that the ship is in, remembering that the seventh group can only be given completely by ships having a special barograph; and decide on the information to be sent, not forgetting the desirability of information of the set and drift of current, ice, and navigational obstructions being included in reports intended for "all ships," but not through W/T stations for certain meteorological centres. In such cases, brevity being desirable, only the first four or universal groups should be given in code. This ensures the necessary brevity and information for the meteorological centre, and the necessary information for ships at sea. Do not include information in C.W. reports addressed to meteorological centres which they do not require.

Second. On Form 138, the register for coded "Selected Ships" wireless meteorological reports, in No. 1 column write the address of the Meteorological Centre if your ship is within range of a station detailed in the List in "The Marine Observer," but to "All Ships' Weather" where there is no such station.

Universal Groups.

With the Code Card, Form 138A, from synchronized weather observations entered on Form 911 or 915, code as follows:—

		KEY LETTERS.
Column 2.—Code the Day of the Week. Table I ...	Y	
" 3.—Code the Octant of the Globe. Table II ...	Q	
" 4.—Code the Latitude by entering the whole degrees (prefixing 0 if necessary to make up two figures); and dividing the minutes by six, neglecting the remainder. Enter the result	LLL	
" 5.—Code the Longitude by entering the whole degrees (prefixing 0 if necessary to make up two figures, or omitting the initial 1 if Longitude is 100° or over). Divide the minutes by six, neglecting the remainder. Enter the result	lll	
" 6.—Enter the hours of the Greenwich Mean Time of Observation	GG	
From the Code Card Form 138A.		
" 7.—Code the Direction of the Wind. Table III	DD	
" 8.—Code the Force of the Wind, forces 9 and above are entered as 9, but if 10, 11 or 12, add the words Gale, Storm, or Hurricane at the end of the message. Table V ...	F	
" 9.—Code the Present Weather. Table VI ...	ww	
" 10.—Code the corrected barometer reading by entering the two last whole figures if a millibar barometer, or coding, if inches, by Table VIII	PP	

	KEY LETTERS.
Column 11.—Enter the Visibility by Scale. Table XII ...	V
" 12.—Enter the Air Temperature in whole degrees Fahrenheit, omitting the initial 1, if over 100°	TT

No. 3 Supplementary Groups.

If these groups have been decided upon, in Column 13 enter "3" as distinguishing number for the remainder of the coded message.

	KEY LETTERS.
Column 14.—Code type of Lower Cloud. Table XIII ...	C _L
" 15.—Code type of Middle Cloud. Table XIV ...	C _M
" 16.—Code type of Upper Cloud. Table XV ...	C _H
" 17.—Code the total amount of sky covered. Table XVII	N
" 18.—Subtract the lesser from the greater of the Air and Sea Temperatures and code the result with Table XVIII	t _d
" 19.—Enter the Swell by Scale. Table XIX ...	K
" 20.—Code the True Direction of Swell. Table IV	d
" 21.—Code the Past Weather. Table VII ...	W
" 22.—Code the proportion of sky covered with Lower Cloud. Table XVII	N _L
" 23.—Code the course of ship. Table IV	d _s
" 24.—Code the speed of the ship. Table XXI ...	f
" 25.—Code the characteristic of the Tendency of the Barometer, as shown by barograph Table X	a
" 26.—Code the Amount of rise or fall of the Barometer in the last 3 hours. Table XI...	bb

No. 6. Supplementary Groups.

If these groups have been decided upon, in Column 27 enter "6" as distinguishing number for the remainder of the coded message.

	KEY LETTERS.
Column 28.—Enter the Swell by Scale. Table XIX ...	K
" 29.—Code the True Direction of the Swell. Table IV	d
" 30.—Code the Predominating type of Cloud. Table XVI	C
" 31.—Code the total amount of sky covered. Table XVII	N
" 32.—Subtract the lesser from the greater of the Air and Sea Temperatures and code the result. Table XVIII	t _d
" 33.—Code the Course of the Ship. Table IV ...	d _s
" 34.—Code the recorded change of the barometer in the last two, three, or four hours. Table IX	A
" 35.—Code the Past Weather. Table VII ...	W
" 36.—Code type of Upper Cloud. Table XV ...	C _H

No. 9. Supplementary Groups.

If these groups have been decided upon, in Column 37 enter "9" as distinguishing number for the remainder of the coded message.

	KEY LETTERS.
Column 38.—Enter the Sea and Swell by Douglas Scale. Table XX	SK
" 39.—Code the True Direction of the Swell. Table IV	d
" 40.—Code the Past Weather. Table VII ...	W
" 41.—Code the Predominating type of Cloud. Table XVI	C
" 42.—Code the total amount of sky covered. Table XVII	N
" 43.—Code the proportion of sky covered with Lower Cloud. Table XVII... ..	N _L
" 44.—Code the recorded change of the barometer in the last two, three or four hours. Table IX	A
" 45.—Subtract the lesser from the greater of the Air and Sea Temperatures and code the result. Table XVIII	t _d

For messages which are to be broadcast to **C.Q.** or made to shore services indicated in the list of W/T stations in **THE MARINE OBSERVER** as requiring such information, in Column 46, enter briefly in plain language the set and drift of current experienced, with position **from and to**, Ice or other navigational obstructions.

On no account should such information be entered in messages for shore services that do not require it.

The ship's call sign should be given in the usual way in sending the report.

In Column 47.—After the message has been despatched enter the

call sign of the station through which it was sent, with wave length, or **C.Q.**, as the case may be.

In Column 48.—After the message is sent enter the exact time (G.M.T.) of despatch.

Be sure that your message is correctly coded, and that you have not duplicated the Supplementary Groups.

Write out the message on the signal pad (Form 139) provided and send to the wireless operator for despatch in accordance with instructions given in World Wide System of Voluntary Selected Ship Routine Wireless Weather Reports, pages 36 to 40, schedule for which is also given on Code Card Form 138A.

CODE TABLES.

Day and Position.

Table 1.

Y.—Day of the Week.

Code Figure.	Day	Code Figure.
1	Thursday	5
2	Friday	6
3	Saturday	7
4	Sunday	

Table II.

Q.—Octant of the Globe.

Longitude.	Code Figure.
0° W. — 90° W....	0
90° W. — 180° W....	1
180° E. — 90° E. ...	2
90° E. — 0° E. ...	3
0° W. — 90° W....	5
90° W. — 180° W....	6
180° E. — 90° E. ...	7
90° E. — 0° E. ...	8

Compass.

Table III.

DD.—Compass Table for Wind Direction to points.

True Direction.	Code Figures.	True Direction.	Code Figures.
Calm ...	00	S. by W. ...	17
N. by E. ...	01	S.S.W. ...	18
N.N.E. ...	02	S.W. by S. ...	19
N.E. by N. ...	03	S.W. ...	20
N.E. ...	04	S.W. by W. ...	21
N.E. by E. ...	05	W.S.W. ...	22
E.N.E. ...	06	W. by S. ...	23
E. by N. ...	07	W. ...	24
E. ...	08	W. by N. ...	25
E. by S. ...	09	W.N.W. ...	26
E.S.E. ...	10	N.W. by W. ...	27
S.E. by E. ...	11	N.W. ...	28
S.E. ...	12	N.W. by N. ...	29
S.E. by S. ...	13	N.N.W. ...	30
S.S.E. ...	14	N. by W. ...	31
S. by E. ...	15	N. ...	32
S. ...	16		

Table IV.

d and d_s.—Compass Table to Half Cardinal Points.

True Direction.	Code Figure.
No Sea or Swell; or Ship hove to	0
N.E.	1
E.	2
S.E.	3
S.	4
S.W.	5
W.	6
N.W.	7
N.	8
No observation or no information	9

Wind.

Table V.

F.—Wind Force, Beaufort Scale.

Beaufort Number.	Code Figure.
Nought. Calm	0
One. Light airs	1
Two. Light breeze	2
Three. Gentle breeze	3
Four. Moderate breeze	4
Five. Fresh breeze	5
Six. Strong breeze	6
Seven. Moderate gale	7
Eight. Fresh gale	8
Nine. Strong gale	9
Ten. Whole gale	9 Gale*
Eleven. Storm	9 Storm*
Twelve. Hurricane	9 Hurricane*

* These words to be written at end of weather message.

Weather.

Table VI.

ww.—Present Weather. (Abridged for British Ships.)

Code Figures.
00
01
02
03
05
07
08
10
11
13
14
15
16
20
30
40
41
42
49
50
57
58
59
60
67
68
69
70
80
88
89
90

Preference should be given to the largest number of this code which applies to the weather at the position of the ship at the time of observation.

Table VII.

W.—Past Weather.

Code Figure.	W.—Past Weather.
0	Fair (clear or slightly clouded)
1	Variable sky
2	Mainly overcast
3	Sandstorm or duststorm, or storm of drifting snow
4	Fog or thick dust haze (visibility less than five cables)
5	Drizzle
6	Rain
7	Snow or sleet
8	Showers
9	Thunderstorm

Barometer.

Table VIII.

P.P.—Code Table for corrected barometer readings in millibars and inches.

(Adapted for British Ships.)

Mb.	In.	Code Figs.	Mb.	In.	Code Figs.	Mb.	In.	Code Figs.	Mb.	In.	Code Figs.
925	27.32	25	960	28.35	60	995	29.38	95	1025	30.27	25
926	27.35	26	961	28.38	61	996	29.41	96	1026	30.30	26
927	27.38	27	962	28.41	62	997	29.44	97	1027	30.33	27
928	27.41	28	963	28.44	63	998	29.47	98	1028	30.36	28
929	27.44	29	964	28.47	64	999	29.50	99	1029	30.39	29
930	27.46	30	965	28.50	65	1000	29.53	00	1030	30.42	30
931	27.49	31	966	28.53	66	1001	29.56	01	1031	30.45	31
932	27.52	32	967	28.56	67	1002	29.59	02	1032	30.48	32
933	27.55	33	968	28.59	68	1003	29.62	03	1033	30.51	33
934	27.58	34	969	28.62	69	1004	29.65	04	1034	30.53	34
935	27.61	35	970	28.65	70	1005	29.68	05	1035	30.56	35
936	27.64	36	971	28.67	71	1006	29.71	06	1036	30.59	36
937	27.67	37	972	28.70	72	1007	29.74	07	1037	30.62	37
938	27.70	38	973	28.73	73	1008	29.77	08	1038	30.65	38
939	27.73	39	974	28.76	74	1009	29.80	09	1039	30.68	39
940	27.76	40	975	28.79	75	1010	29.83	10	1040	30.71	40
941	27.79	41	976	28.82	76	1011	29.86	11	1041	30.74	41
942	27.82	42	977	28.85	77	1012	29.89	12	1042	30.77	42
943	27.85	43	978	28.88	78	1013	29.92	13	1043	30.80	43
944	27.88	44	979	28.91	79	1014	29.94	14	1044	30.83	44
945	27.91	45	980	28.94	80	1015	29.97	15	1045	30.86	45
946	27.94	46	981	28.97	81	1016	30.00	16	1046	30.89	46
947	27.97	47	982	29.00	82	1017	30.03	17	1047	30.92	47
948	28.00	48	983	29.03	83	1018	30.06	18	1048	30.95	48
949	28.03	49	984	29.06	84	1019	30.09	19	1049	30.98	49
950	28.05	50	985	29.09	85	1020	30.12	20	1050	31.01	50
951	28.08	51	986	29.12	86	1021	30.15	21	1051	31.04	51
952	28.11	52	987	29.15	87	1022	30.18	22	1052	31.07	52
953	28.14	53	988	29.18	88	1023	30.21	23	1053	31.10	53
954	28.17	54	989	29.21	89	1024	30.24	24	1054	31.13	54
955	28.20	55	990	29.24	90						
956	28.23	56	991	29.26	91						
957	28.26	57	992	29.29	92						
958	28.29	58	993	29.32	93						
959	28.32	59	994	29.35	94						

NOTE.—It will be seen that the code figures may represent two values of barometric pressure, but this only takes place with a very high or a very low barometer, so that recipients of a message will be able to decide which value is intended.

Table IX.

A—Change of Barometer in last 2, 3 or 4 hours.

(Adapted for British Ships.)

(The change in 3 hours should be given if possible.)

	In 2 hours.	In 3 hours.	In 4 hours.	Code Figure.
Barometer steady —Has not risen or fallen more than	0.3 mb. (.01 in.)	0.5 mb. (.01 in.)	0.7 mb. (.02 in.)	0
Barometer rising slowly —Has risen.	0.7-1.0 mb. (.02-.03 in.)	1.0-1.5 mb. (.03-.05 in.)	1.3-2.0 mb. (.04-.06 in.)	1
Barometer rising —Has risen	1.4-2.4 mb. (.05-.07 in.)	2.0-3.5 mb. (.06-.10 in.)	2.8-4.8 mb. (.08-.14 in.)	2
Barometer rising quickly —Has risen.	2.6-4.0 mb. (.08-.12 in.)	4.0-6.0 mb. (.12-.18 in.)	5.2-8.0 mb. (.15-.24 in.)	3
Barometer rising very rapidly —Has risen.	over 4.0 mb. (.12 in.)	over 6.0 mb. (.18 in.)	over 8.0 mb. (.24 in.)	4
Barometer falling slowly —Has fallen.	0.7-1.0 mb. (.02-.03 in.)	1.0-1.5 mb. (.03-.05 in.)	1.3-2.0 mb. (.04-.06 in.)	5
Barometer falling —Has fallen.	1.4-2.4 mb. (.05-.07 in.)	2.0-3.5 mb. (.06-.10 in.)	2.8-4.8 mb. (.08-.14 in.)	6
Barometer falling quickly —Has fallen.	2.6-4.0 mb. (.08-.12 in.)	4.0-6.0 mb. (.12-.18 in.)	5.2-8.0 mb. (.15-.24 in.)	7
Barometer falling very rapidly —Has fallen.	over 4.0 mb. (.12 in.)	over 6.0 mb. (.18 in.)	over 8.0 mb. (.24 in.)	8

Barograph.

Table X.

a—Characteristic of changes of the Barometer in the last three hours.

(Adapted for British Ships.)

Code Figure.	Description of Changes.
0	Barometer rising at first, then falling by a smaller or like amount
1	Barometer rising at first, then steady or rising less quickly... ..
2	Barometer unsteady, but generally rising or stationary
3	Barometer steady or rising
4	Barometer falling or steady at first, then rising by the same or larger amount
5	Barometer rising, at an increasing rate
6	Barometer falling at first, then rising by a smaller amount
7	Barometer falling at first, then steady or falling less quickly
8	Barometer unsteady, but falling
9	Barometer falling
	Barometer steady or rising at first, then falling by a larger amount
	Barometer falling, at an increasing rate

NOTE.—These changes can generally only be given by ships which have special barographs on board.

For illustration of these characteristic changes and guidance see MARINE OBSERVERS HANDBOOK.

Table XI.

bb.—Amount of Rise or Fall of the Barometer in the last three hours.

(Adapted for British Ships.)

Amount of Rise or Fall.		Code Figs.	Amount of Rise or Fall.		Code Figs.	Amount of Rise or Fall.		Code Figs.	Amount of Rise or Fall.		Code Figs.
Mbs.	Inches.										
0.2	.01	01	4.6	.14	23	9.0	.27	45	13.4	.40	67
0.4	.01	02	4.8	.14	24	9.2	.28	46	13.6	.41	68
0.6	.02	03	5.0	.15	25	9.4	.28	47	13.8	.41	69
0.8	.02	04	5.2	.16	26	9.6	.29	48	14.0	.42	70
1.0	.03	05	5.4	.16	27	9.8	.29	49	14.2	.43	71
1.2	.04	06	5.6	.17	28	10.0	.30	50	14.4	.43	72
1.4	.04	07	5.8	.17	29	10.2	.31	51	14.6	.44	73
1.6	.05	08	6.0	.18	30	10.4	.31	52	14.8	.44	74
1.8	.05	09	6.2	.19	31	10.6	.32	53	15.0	.45	75
2.0	.06	10	6.4	.19	32	10.8	.32	54	15.2	.46	76
2.2	.07	11	6.6	.20	33	11.0	.33	55	15.4	.46	77
2.4	.07	12	6.8	.20	34	11.2	.34	56	15.6	.47	78
2.6	.08	13	7.0	.21	35	11.4	.34	57	15.8	.47	79
2.8	.08	14	7.2	.22	36	11.6	.35	58	16.0	.48	80
3.0	.09	15	7.4	.22	37	11.8	.35	59	16.2	.49	81
3.2	.10	16	7.6	.23	38	12.0	.36	60	16.4	.49	82
3.4	.10	17	7.8	.23	39	12.2	.37	61	16.6	.50	83
3.6	.11	18	8.0	.24	40	12.4	.37	62	16.8	.50	84
3.8	.11	19	8.2	.25	41	12.6	.38	63	17.0	.51	85
4.0	.12	20	8.4	.25	42	12.8	.38	64	17.2	.52	86
4.2	.13	21	8.6	.26	43	13.0	.39	65	17.4	.52	87
4.4	.13	22	8.8	.26	44	13.2	.40	66			

Visibility.

Table XII.

V.—Visibility.

Code Figure.	Description of Changes.
0	Dense fog. Objects not visible at 50 yards.
1	Thick fog. Objects not visible at 1 cable
2	Fog. Objects not visible at 2 cables
3	Moderate fog. Objects not visible at 1/2 mile (nautical)
4	Mist or haze, or very poor visibility. Objects not visible at 1 mile (nautical)
5	Poor visibility. Objects not visible at 2 miles (nautical)
6	Moderate visibility. Objects not visible at 5 miles (nautical)
7	Good visibility. Objects not visible at 10 miles (nautical)
8	Very good visibility. Objects not visible at 30 miles (nautical)
9	Excellent visibility. Objects visible more than 30 miles

Clouds.

Table XIII.

C _L .—Form of Low Cloud.		Code Figure.
Form of Cloud.		
No low clouds	...	0
Cumulus of fine weather	...	1
Cumulus (Large, without anvil)	...	2
Cumulonimbus	...	3
Stratocumulus (spread from Cumulus)	...	4
Stratus or Stratocumulus (in layer)	...	5
Scud	...	6
Cumulus and Stratocumulus of fine weather	...	7
Cumulus, large (or Cumulonimbus) and Stratocumulus	...	8
Cumulus, large (or Cumulonimbus) and Scud	...	9

Table XIV.

C _M .—Form of Middle Cloud.		Code Figure.
Form of Cloud.		
No middle cloud	...	0
Altostratus, typical thin	...	1
Altostratus, typical thick (Sun or Moon invisible), or Nimbostratus	...	2
Alto cumulus or high Stratocumulus, single layer	...	3
Alto cumulus, in bands, decreasing	...	4
Alto cumulus, in bands, increasing	...	5
Alto cumulus, spread out from Cumulus	...	6
Alto cumulus with Altostratus; or Altostratus with parts resembling Alto cumulus	...	7
Alto cumulus Castellatus (Alto cumulus in ragged fragments)	...	8
Alto cumulus in several layers, generally with fibrous veils and chaotic appearance of sky	...	9

Table XV.

C _H .—Form of Upper Cloud (Cirrus Cloud).		Code Figure.
Form of Cloud.		
No upper clouds (cirrus type)	...	0
Cirrus, fine, not increasing; scarce	...	1
Cirrus, fine, not increasing; plentiful, but not a continuous layer	...	2
Cirrus, anvil	...	3
Cirrus, fine, increasing	...	4
Cirrus or Cirrostratus increasing, below 45° altitude	...	5
Cirrus or Cirrostratus increasing, and reaching above 45° altitude	...	6
Cirrostratus veil covering whole sky	...	7
Cirrostratus, not increasing, and not covering whole sky	...	8
Cirrocumulus predominating, and a little Cirrus	...	9

Table XVI.

C.—Predominating Form of Cloud.		Code Figure.
Form of Cloud.		
Cirrus	...	1
Cirrostratus	...	2
Cirrocumulus	...	3
Alto cumulus	...	4
Altostratus	...	5
Stratocumulus	...	6
Nimbostratus	...	7
Cumulus or Fractocumulus	...	8
Cumulonimbus	...	9
Stratus or Fractostratus	...	0

Table XVII.

N. and (N _r).—Amount of Cloud.		Code Figure.
Proportion of Sky covered, in tenths.		
0	...	0
Less than 1	...	1
1	...	2
2 to 3	...	3
4 to 6	...	4
7 to 8	...	5
9	...	6
More than 9, but with openings	...	7
10, completely covered	...	8
Sky obscured by fog, duststorm or other phenomenon	...	9

Temperatures.

Table XVIII.

t _a .—Difference between Air and Sea Surface Temperature.		Code Figure.
Air Temperature higher than Sea Temperature.		
More than 9° Fahrenheit	...	0
6° to 9°	...	1
3° to 6°	...	2
1° to 3°	...	3
0° to 1°	...	4
Air Temperature lower than Sea Temperature.		
0° to 1° Fahrenheit	...	5
1° to 3°	...	6
3° to 6°	...	7
6° to 9°	...	8
More than 9°	...	9

Swell.

Table XIX.

K.—Swell.		Code Figure.
No swell	...	0
Low swell, short or average length	...	1
Low swell, long	...	2
Moderate swell, short	...	3
Moderate swell, average length	...	4
Moderate swell, long	...	5
Heavy swell, short	...	6
Heavy swell, average length	...	7
Heavy swell, long	...	8
Confused swell	...	9

Douglas Sea and Swell Scale.

Table XX.

SK.—Sea and Swell.

SEA.	SWELL.									
	No Swell. 0	Low.			Moderate.			Heavy.		
		Short or Average. 1	Long. 2	Short. 3	Average. 4	Long. 5	Short. 6	Average. 7	Long. 8	Confused. 9
0 Calm	00	01	02	03	04	05	06	07	08	09
1 Smooth	10	11	12	13	14	15	16	17	18	19
2 Slight	20	21	22	23	24	25	26	27	28	29
3 Moderate	30	31	32	33	34	35	36	37	38	39
4 Rough	40	41	42	43	44	45	46	47	48	49
5 Very rough	50	51	52	53	54	55	56	57	58	59
6 High	60	61	62	63	64	65	66	67	68	69
7 Very high	70	71	72	73	74	75	76	77	78	79
8 Precipitous	80	81	82	83	84	85	86	87	88	89
9 Confused	90	91	92	93	94	95	96	97	98	99

Speed.

Table XXI.

f.—Speed of Ship.		Code Figure.
Ship stopped	...	0
1 to 3 knots	...	1
4 to 6	...	2
7 to 9	...	3
10 to 12	...	4
13 to 15	...	5
16 to 18	...	6
19 to 21	...	7
22 to 24	...	8
More than 24 knots	...	9

PERSONNEL.

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

RETIREMENTS.

Captain Cecil Norman Bickford, commander of the R.M.S. *Winchester Castle*, has retired from the sea. He commenced his sea career in the Barque *Rosebery* and served later in the *Wamphray*, which ship had to be abandoned off Cape Horn the crew being rescued by the German ship *Franz Ruiter*. Transferring to steam in 1893, Captain BICKFORD subsequently joined the Castle Line as a junior officer and was appointed to command the *Susquehanna* on the New York—Cape route in 1926. Since then he has commanded twelve ships of the Union Castle fleet, including the *Sandgate Castle*, *Windsor Castle*, *Llanstephan Castle*, *Dunbar Castle*, *Edinburgh Castle* and *Winchester Castle*.

J. H.

Captain E. A. Comley retired from the service of the Union Castle Line in September, 1937, after 48 years at sea, 35 of which were with the Company.

ERNEST ALFRED COMLEY went to sea in 1889 as an apprentice in the full rigged ship *Sierra Colonna*. Completing his time in that ship

and in the *Sierra Lucina* and *Sierra Nevada*, he passed the examination for 2nd Mate, and was appointed 3rd Mate of the *Sierra Blanca* in May, 1895.

After one voyage in her he was promoted to 2nd Mate and served in her as 2nd and as Mate until he obtained his Master's ticket in May, 1900.

In December that year he entered the service of the Royal Mail Steam Packet Company as a 5th Officer. He was 4th Officer of the R.M.S.P. *Tagus* when she was trooping during the South African War. Leaving that Company in 1902 he joined the Union Castle Line as a 4th Officer. He was promoted through the various ranks and was made Chief Officer in 1914.

He was Chief Officer of the *Braemar Castle* throughout the Great War and until May, 1919.

Captain COMLEY'S first command was the *Hansa* in 1928. He later commanded various ships of the Company, including the mail ships, *Edinburgh Castle*, *Windsor Castle* and *Balmoral Castle*.

C. H. W.

OBITUARY.

WITH deep regret we record the following :—

Commander Gordon S. Horsburgh, O.B.E., R.D., R.N.R., Marine Superintendent of Cunard White Star, Ltd., died at Liverpool on 22nd October, 1937.

After being in H.M.S. *Conway* from 1894 to 1896, he commenced his sea-going career in the ship *Sierra Blanca*, then, after further experience in sail and steam, he joined the Cunard Line in 1904 a 3rd Officer of the *Veria*.

For the next ten years he served in various famous Cunard steamers, and in 1914 was appointed to the command of the *Lycia*.

A Royal Naval Reserve Officer since his *Conway* days he served throughout the Great War in the Royal Navy. He was in the battle-

ship *Majestic* when she was torpedoed in the Dardanelles; then, after further service afloat, he became Naval Transport Officer at Port Said and, later, at Constantinople.

On return to the Cunard Line in 1919 he served at sea until 1925, his last command being the *Samaria*. He was then appointed Deputy Marine Superintendent and in 1934 Marine Superintendent.

Captain HORSBURGH served on several committees in connection with nautical affairs and was an assessor to the British delegation to the International Convention on Safety of Life at Sea in 1929. He was a member of the Court of the Honourable Company of Master Mariners.

M. C.

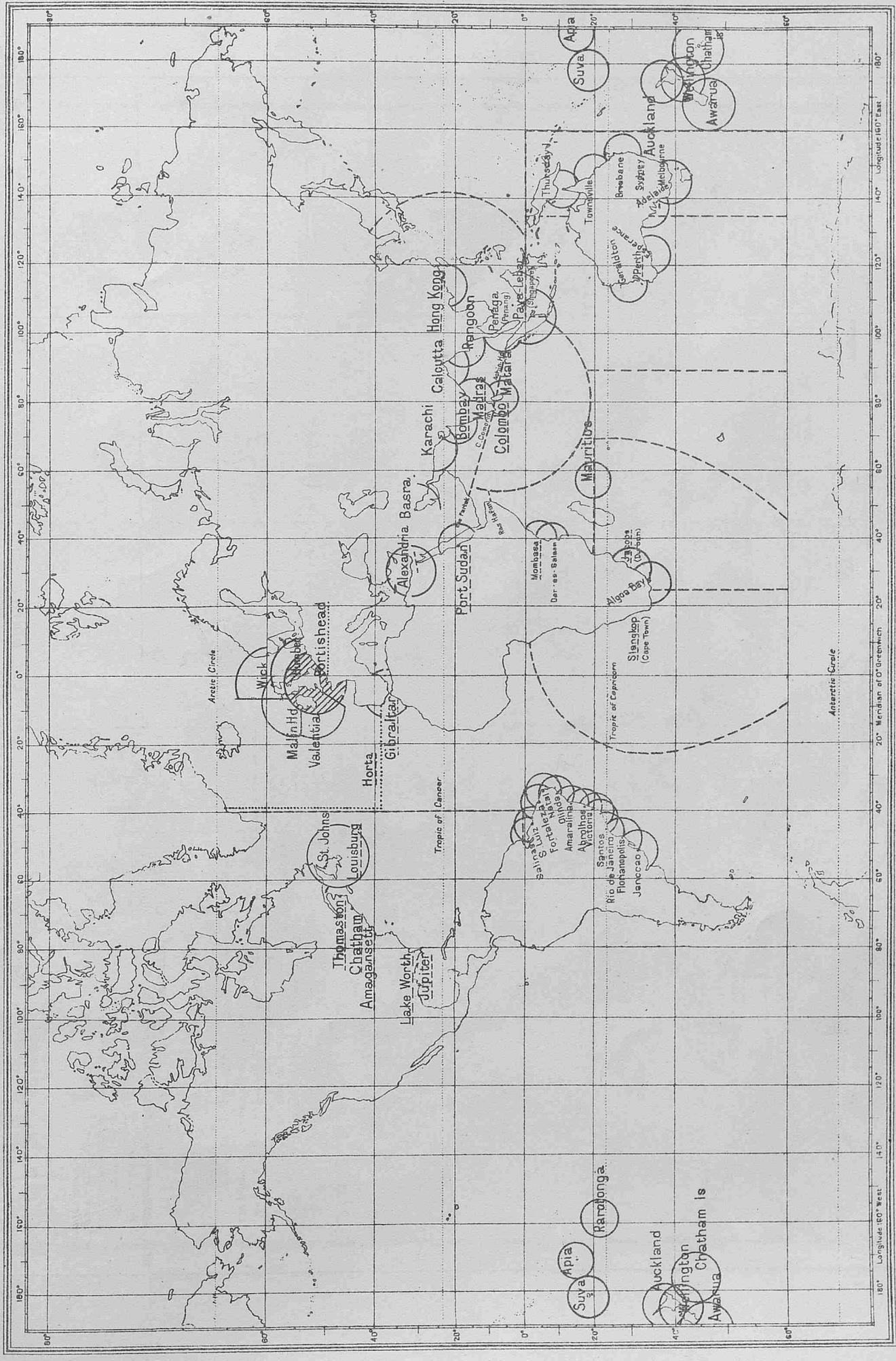
MEMORANDUM

TO :

FROM :

SHIPS' WIRELESS WEATHER SIGNALS. CHART OF THE WORLD.

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



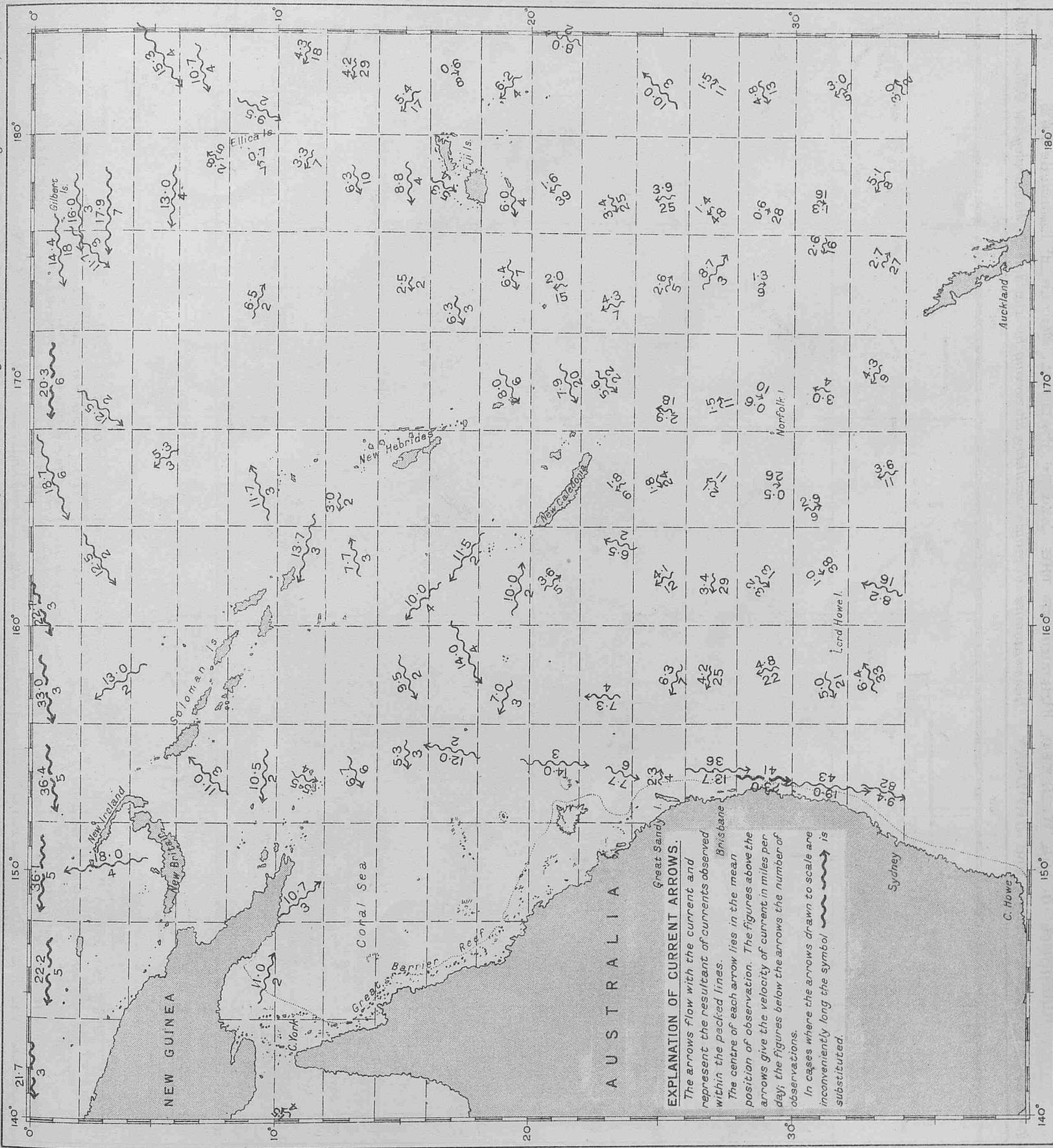
The full circles indicate the areas round islands and coast stations which are detailed to intercept "B". Selected Ships' reports made to CQ on 600 metres.

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

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

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

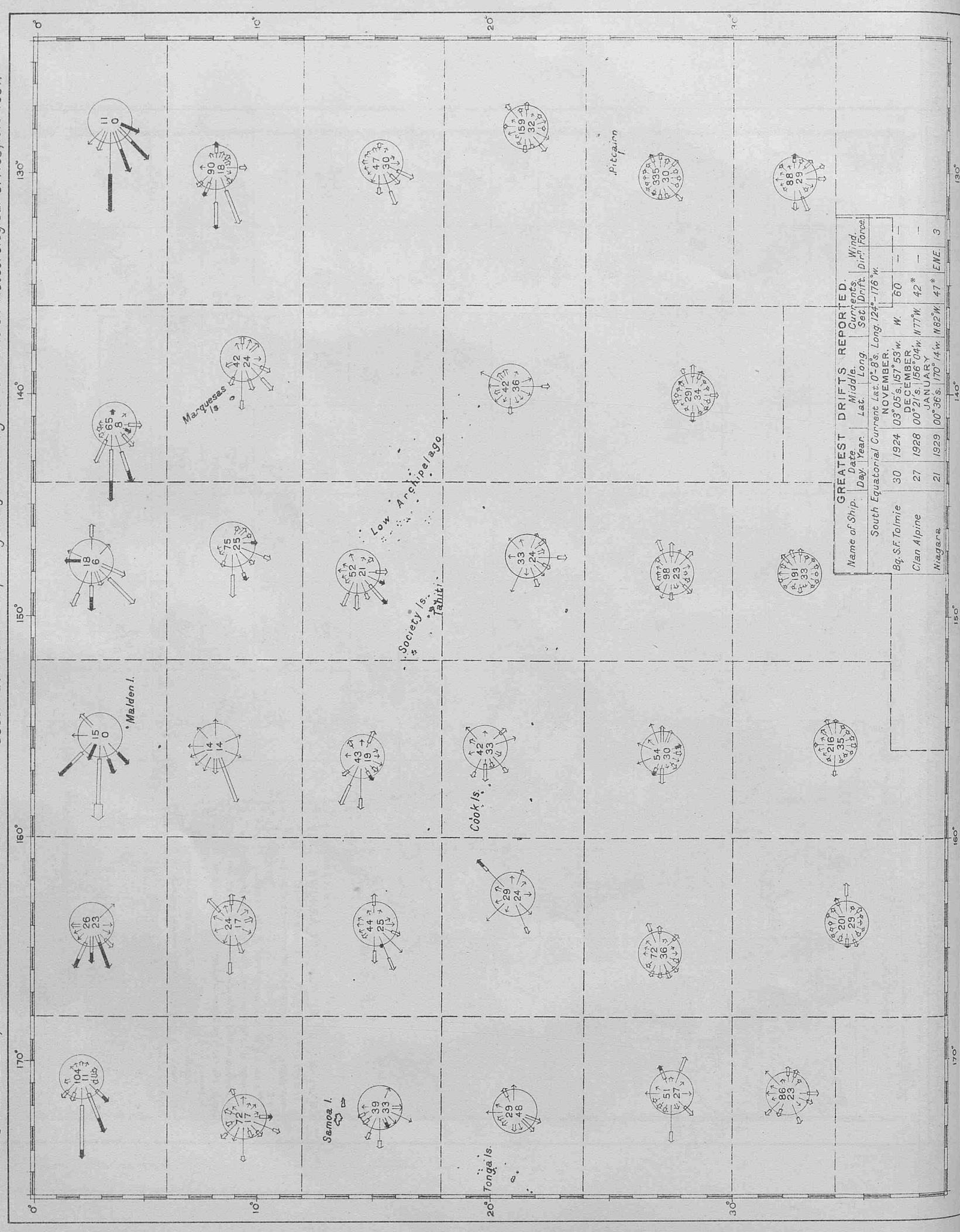
CURRENTS IN THE WESTERN PORTION OF THE SOUTH PACIFIC. North of Latitude 34°S.
NOVEMBER, DECEMBER and JANUARY. Observations of ships regularly observing for the British Meteorological Office, 1910-1937.



EXPLANATION OF CURRENT ARROWS.
 The arrows flow with the current and represent the resultant of currents observed within the packed lines.
 The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity of current in miles per day; the figures below the arrows the number of observations.
 In cases where the arrows drawn to scale are inconveniently long the symbol \rightarrow is substituted.

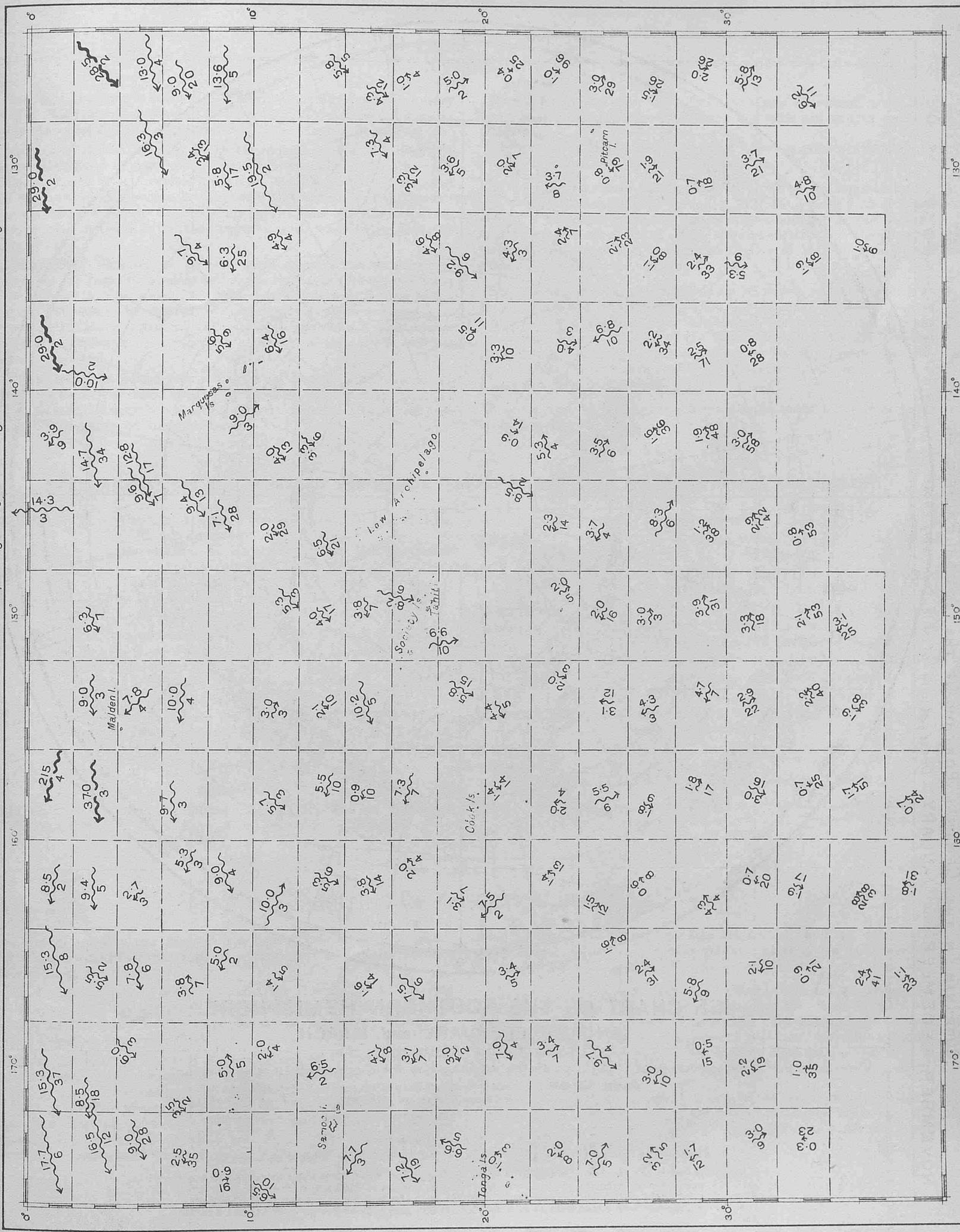
CURRENTS IN THE CENTRAL PORTION OF THE SOUTH PACIFIC. North of Latitude 34° S.

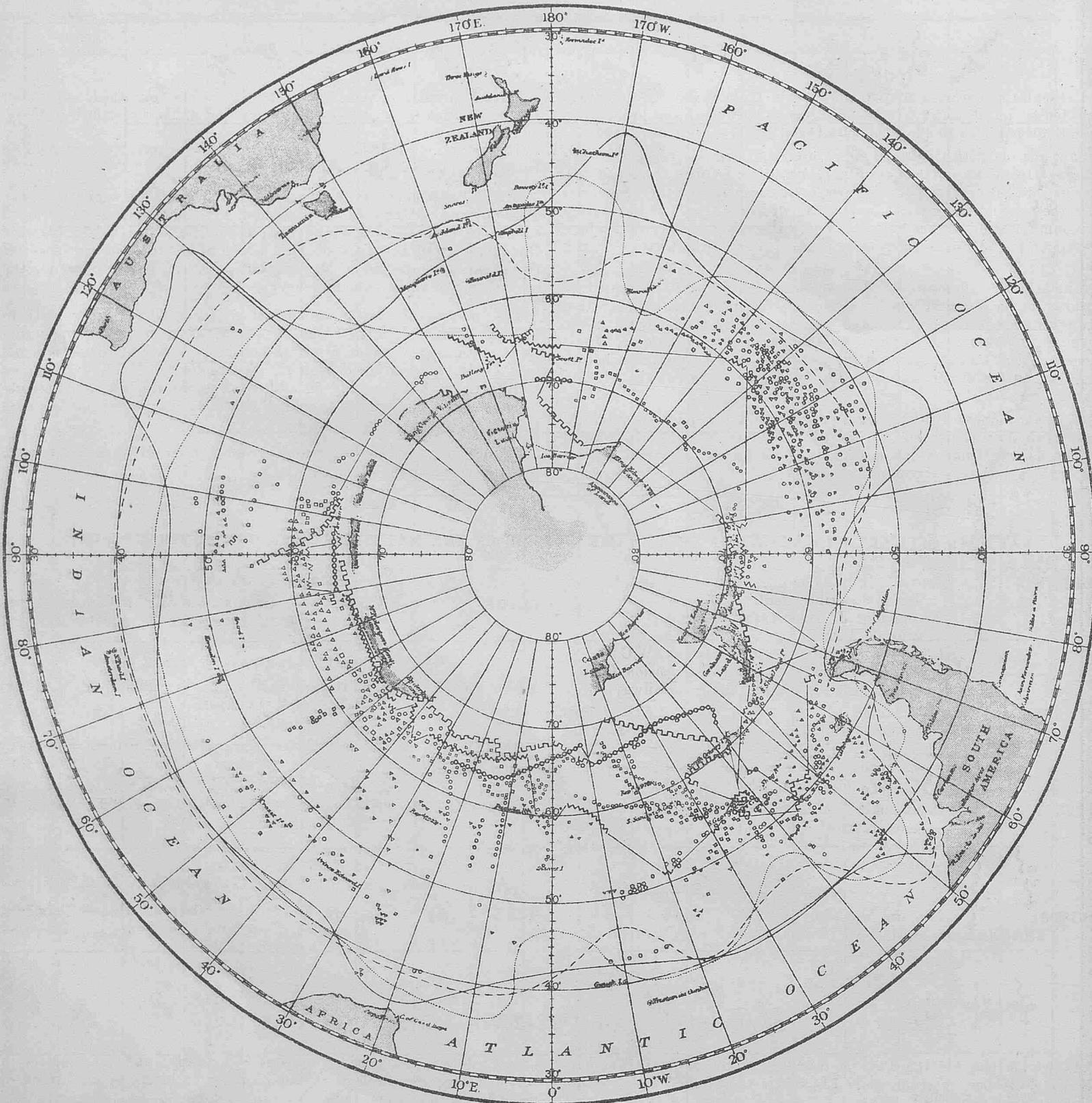
NOVEMBER, DECEMBER and JANUARY. Observations of ships regularly observing for the British Meteorological Office, 1910-1937.



Name of Ship.	Date		Middle		Long.		Currents		Wind.	
	Day	Year	Lat.	Long.	Lat.	Long.	Set	Drift.	Dir.	Force.
South Equatorial Current Lat. 0° 8' S. Long. 122° - 176° W.										
By S.F. Taimie	30	1924	03° 05' S.	157° 53' W.	W.		60			
Clan Alpine	27	1928	00° 21' S.	156° 04' W.	177° W.		42*			
Nagara	21	1929	00° 36' S.	170° 14' W.	162° W.		47		ENE.	3

CURRENTS IN THE CENTRAL PORTION OF THE SOUTH PACIFIC. North of Latitude 34° S.
NOVEMBER, DECEMBER and JANUARY. Observations of ships regularly observing for the British Meteorological Office, 1910-1937.





**ICE CHART OF THE SOUTHERN HEMISPHERE,
JANUARY, FEBRUARY and MARCH.**

EXPLANATION.

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

	Bergs, 1902-1937.	Position of northernmost pack ice actually observed 1885-1937.	Extreme limit of all ice, 1772-1937.
January.	△	~~~~~	-----
February	□	~~~~~	-----
March	○	○-○-○-○-○	-----

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 N° 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.

No. 1 XV. No. 129.

NOTICE.

Particular attention is invited to "World Wide System of Voluntary Selected Ships' Routine Wireless Telegraphy", revised and brought up to date on pages 28 to 40 of this number of the *MARINE OBSERVER*.

Captains of British Selected Ships are requested to ensure that the *MARINE OBSERVER* is made readily available not only to the observing officers, but also to the wireless operators; for it is absolutely essential that they should at all times be familiar with the details of the system of communication for the Selected Ship service, and the stations which are appointed in the *MARINE OBSERVER* to work with British Selected Ships.

Similarly the Directors of Meteorological Services are requested to ensure that the directing wireless authorities responsible for the operation of the wireless stations which have been detailed, at their request in the *MARINE OBSERVER* to receive weather reports addressed to their meteorological service, have all the necessary information contained in the *MARINE OBSERVER* to advise the officers in charge of the wireless stations concerned.

Of recent months, British Selected Ships in different parts of the world have been inconvenienced, apparently through some stations detailed in the *MARINE OBSERVER* not being entirely familiar with the British Selected Ship system of communication.

Mutual familiarity with this system by those concerned, afloat and ashore, is essential to increase efficiency and maintain smooth working.

The service of British Selected Ships is being greatly extended by British Supplementary Weather Reporting Ships.

British Supplementary Weather Reporting Ships are supplied by the Meteorological Office with the Pamphlet, M.O. 329, which is an abridged edition of the description and instructions published in the *MARINE OBSERVER*; and the lists of W.T. stations detailed in the *MARINE OBSERVER* are repeated in the Admiralty List of W.T. Signals for the information of all British shipping.

The practice of routine broadcasting of coded weather reports to C.Q. by British Selected Ships, when out of range of the appointed coast stations, being now firmly established, greater attention is being paid by the Marine Division of the Meteorological Office, its branches and agencies, to reports being addressed to the appropriate meteorological centres through the appointed stations; and the scheme has been revised with this end in view.

Reports made to shore stations are also intended to be intercepted by ships as desired.

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

LONDON ...	... Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent. Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant. Room 205, Victory House, Kingsway, W.C.2. (Telephone No. : Holborn 3434 Extension 421.) Nearest station, Temple, District Railway.		
THAMES...	... Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (Telephone No. : Albert Dock 2659. Telegraphic Address : Barometric Aldock, London.)	Agents—(contd.).	CLYDE Captain W. HENDERSON, 80, Buchanan Street, Glasgow, C.1. (Telephone No. : Central 3775.) FORTH Captain G. MORE, Chief Dock Master's Office, Leith. (Telephone No. : Leith 35481.) HONG KONG, China. Lieut. Commander M. V. KEOGH, R.N., Chart Depot, H.M. Dockyard. (Telephone No. : 108 Dockyard.) HUMBER ... W. H. CARR, Esq., Master Mariner, Ferensway Chambers, Ferensway, Hull. (Telephone No. : Hull 16063.)
MERSEY ...	... Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (Telephone No. : Bank 8959. Telegraphic Address : Meteorite, Liverpool.)	SOUTHAMPTON	Captain Sir BENJAMIN CHAVE, K.B.E. Room 35, Royal Mail House. SYDNEY, New South Wales. Captain N. G. ROSKRUGE. Captain G. B. MERCER. Customs House. (Telephone No. : B6421.)
BRISTOL CHANNEL.	Captain EDWARD HALL, 21, Dowlais Buildings, West Bute Street, Cardiff. (Telephone No. : Cardiff 1268.)	TYNE ...	... Captain F. B. WEST, Customs House Chambers, Quayside, Newcastle upon Tyne, 1. (Telephone No. : Newcastle 23203.)

VISITING OF OBSERVING SHIPS.

As far as possible the Port Meteorological Officers and Merchant Navy Agents visit observing ships at ports in their districts at intervals of about three months.

The purpose of these visits is to assist the Captain in the carrying out by his ship of the voluntary obligations which he has undertaken, with the assistance of his officers and wireless operators, as a unit of the British *Voluntary Observing Fleet*.

Besides the routine duties of examining meteorological instruments on board, and giving advice as to details of observation and methods of weather forecasting, and so forth, for all of which it may be sufficient for them to see the observing officers with the cognisance of the Captain, it is often most desirable that they should see the Captain himself. Particularly in the case for consultation with a view to improvements of general organization, and the great problems of the future concerning

ocean pilotage, navigation, wireless telegraphy, and all matters in which marine meteorology should properly fit in the general work of the merchant navy and the ship's own economy.

The visiting officers often lose much valuable time in their attendance upon observing ships. It will be of great assistance if the Captain will instruct his observing officers to notify the Port Meteorological Officer or Merchant Navy Agent by telephone or post card, as soon as possible after the arrival of the ship, of the day and time during their stay in port when he will be on board and be able to receive the visiting officer.

If, at the same time, information is given to the Port Meteorological Officer or Merchant Navy Agent of instruments out of order requiring to be replaced, or other matters to which his attention is desired, it will greatly assist in the work.

CHART OF THE WESTERN NORTH ATLANTIC.

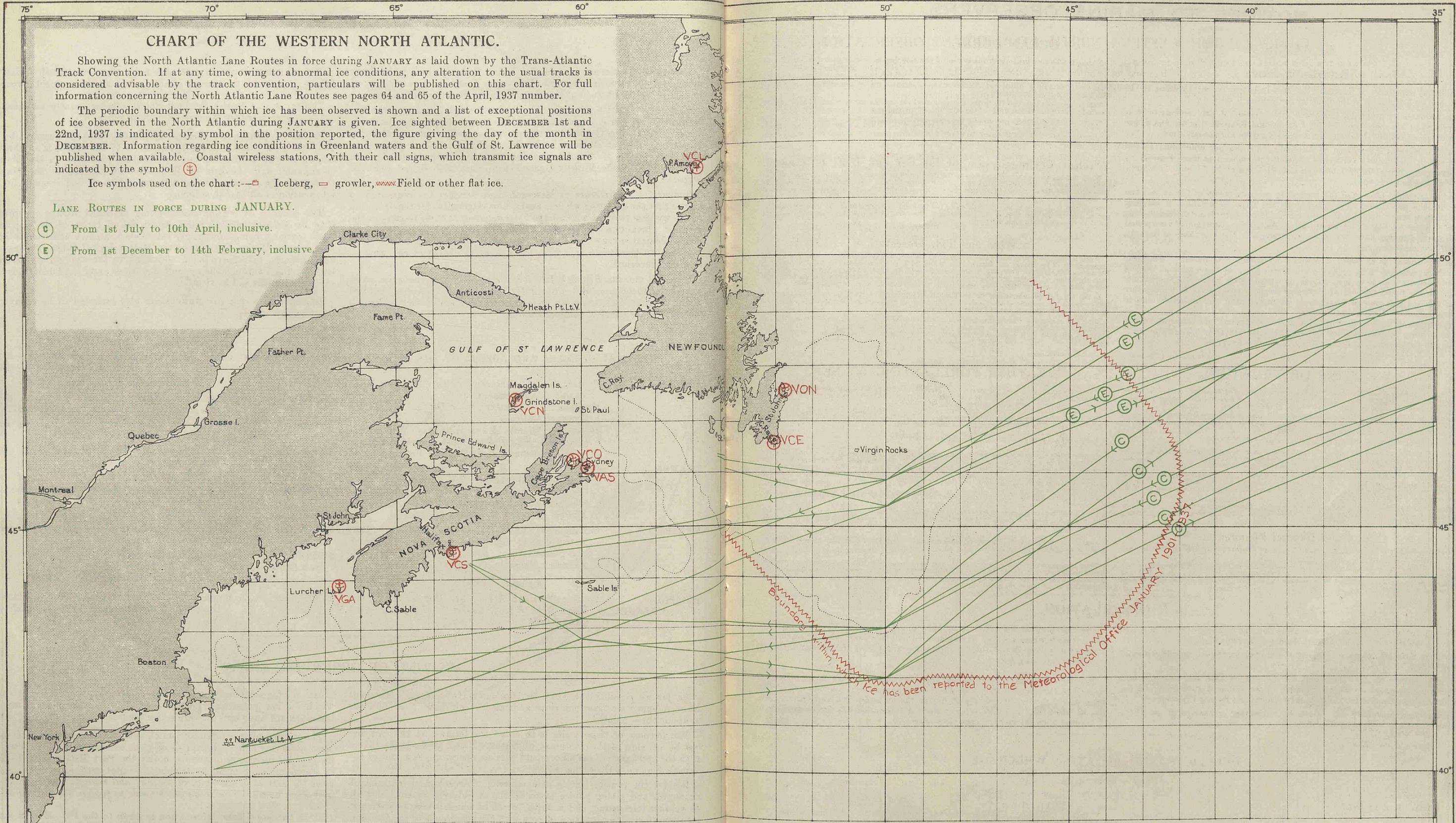
Showing the North Atlantic Lane Routes in force during JANUARY as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 64 and 65 of the April, 1937 number.

The periodic boundary within which ice has been observed is shown and a list of exceptional positions of ice observed in the North Atlantic during JANUARY is given. Ice sighted between DECEMBER 1st and 22nd, 1937 is indicated by symbol in the position reported, the figure giving the day of the month in DECEMBER. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol ⊕.

Ice symbols used on the chart: —■ Iceberg, —□ growler, wavy Field or other flat ice.

LANE ROUTES IN FORCE DURING JANUARY.

- ⊙ From 1st July to 10th April, inclusive.
- ⊙ From 1st December to 14th February, inclusive.



PHENOMENAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position.		Remarks.
		Lat.	Long.	
Jan. 14, 1836	H.M.S. Cove	60°55' N.	5°50' W.	2 bergs.
" 9, 1913	S.S. Orillanne	48°37' N.	34°42' W.	Berg 40 ft. high, 400 ft. long.
" 27, 1910	S.S. Rio Verde	33°34' N.	70°32' W.	Hummock 2 ft. high, 30 ft. in circumference.

NOTICES TO MARINE OBSERVERS.

REMARKS.

Experientia docet.

Published experience is generally the best incentive to improvement of the work, and its adaptation to the needs of navigation.

The Captains of observing ships will greatly assist if they will write their experiences in the space provided for "Additional Remarks" at the end of the meteorological log and the record for synchronized weather observations.

Much interesting information of peculiar phenomena has been collected and published in the MARINE OBSERVER through the medium of these remarks by the observing officers; but it is desirable that the scope of the "Marine Observer's Log" should be made wider.

One of the main objects of the work is to promote safety of life at sea, and therefore the publication of experience by the Captains of ships in handling their ships in heavy weather, avoiding intense tropical revolving storms, making use of wireless intelligence of fog or bad visibility, the detection of unexpected variation in compass error, and other experiences in the avoidance of hazards, will all help other seamen.

Another object is to assist in making navigation economical. Therefore experience published in the "Marine Observer's Log" of ocean pilotage in cases where fuel and time have been saved, or where routes have been successfully chosen for the better carriage of particular cargoes, with respect to temperature of air and sea and general climates, or ocean currents, cannot fail to tend to improve national sea-borne commerce.

Experiences in improving ventilation of living quarters and cargo spaces will also be of value to the whole service, since these affect the health of ships' companies and passengers, and the condition in which cargo is delivered.

WEATHER OBSERVATION.

Routine synchronized weather observations should be entered in Form 911 by means of the Beaufort Scale and Notation, and Sea and Swell by the Douglas Scale methods which have been developed through hundreds of years of observation at sea by seamen.

Similarly, the Clouds should be entered with abbreviations of cloud types now well known to seamen, derived originally from the nomenclature suggested by the Reverend Luke HOWARD at the beginning of the nineteenth century.

The elements should not be entered on Form 911 in code.

It is desirable that observation and direct entry should be made by marine observers in regular observing ships in a manner which is familiar and simple to seamen, so that it may spread naturally and become permanent throughout the merchant navy and fishing fleets.

For reporting by wireless, the observations thus taken may be readily coded in the register or upon an appropriate form. The code is subject to periodical revision, while these well-tried Scales and Notations of seamen have stood the test of hard sea service, and have been gradually improved by experience.

Full particulars for weather observation, both the natural observation of seamen and observation of pressure, temperature, and so on by instruments, will be found in the MARINE OBSERVER'S HANDBOOK, Sixth Edition, December, 1936.

Optical and General Phenomena.

Observing officers are requested to "remark" upon all unusual phenomena observed by their ships.

General descriptions of most of the well-known optical and other phenomena are given in the MARINE OBSERVER'S HANDBOOK, Sixth Edition, but the frequency with which they occur, and other information about them remains to be obtained; and much of this information can be derived only from observation at sea.

ICE OBSERVATION.

Drifting ice, derelicts, and other floating dangers to navigation are reported by all the means of communication at the disposal of the master.

See Appendix III, pages 106 to 108 of the MARINE OBSERVER'S HANDBOOK, Sixth Edition.

It is also desirable that more detailed information than can be given in a TTT wireless message should be available to the Meteorological Office for the purpose of research, and for the Admiralty Charts and Sailing Directions.

Marine observers will greatly assist by noting the conditions of ice, either drifting or fast.

OCEAN CURRENT OBSERVATION.

During the past 14 years, with the system of charting currents established with the MARINE OBSERVER, much that was not known before has been learned of the currents of the oceans.

It is most desirable that the observation of current should be continuously sustained by the regular observing fleet. Observing officers are requested to log the set and drift of current whenever it can be accurately obtained.

This is especially provided for in the meteorological log and the ship's record of synchronized weather observations (Form 911).

When obtaining the set and drift by the usual method of navigation, running fixes may not at all times be sufficiently accurate. Usually in the open ocean, the set and drift as ascertained by the difference between Observed and Dead Reckoning positions is best obtained between twilight stellar fixes.

Wireless Communication of the Set and Drift of Current.

When making routine weather reports in the Selected Ship system to all ships, but not usually to meteorological centres ashore, the set and drift of the current, last experienced (distinct from tidal streams) before the time of weather observation of the report, may be made with advantage to other ships.

When this is done, it is best only to make the four universal groups of the weather message, and to add the set and drift of the current in degrees and knots (not miles per day) with the positions *from* and *to*, in plain language.

Wind and Tide Observation.

When in tidal waters, whether under way or at anchor, it may help considerably towards the improvement of knowledge and information of the tides, if marine observers will "remark" in the meteorological log or Form 911 on observed effects of the wind, whether local or at a distance, upon the height of the tide differing from that of astronomical prediction as indicated in the tide tables, and of variations in the tidal streams due to such causes.

In the "Marine Observer's Log" of the July, 1936, number (Vol. XIII, No. 123, pages 84 to 86) will be found the remarks of the Captains of a number of cross-channel steamers upon the effect of wind upon the tidal streams in British Home waters.

Long and systematic observation is desirable before reliable deductions can be formed of this phenomena, but knowledge of it may be improved in all tidal waters of the world if marine observers will take such opportunity as they have to observe and log the effect of wind upon the tide.

WEATHER FORECASTING AT SEA.

Simple general guidance for the officers of the merchant navy in this art is given in a HANDBOOK OF WEATHER, CURRENTS, AND ICE FOR SEAMEN; but greater incentive is desirable for the whole service to reap the benefit of the skill of its officers.

The corps of voluntary marine observers generally have better facilities for this work than the officers of many ships which are not regular observing ships.

Their example is of great value to the whole merchant navy.

It may help to promote incentive, and give encouragement to others, if marine observers who are successful in weather forecasting will attach to the meteorological log or Form 911 a few samples of the weather charts they have drawn (faded in black and white), together with the weather forecasts they made, the weather subsequently experienced, and notes of any advantage gained therefrom in the navigation of the ship.

If the Captain will add his comments, it may help to further the objects of this invitation.

Only an occasional selection of such charts and weather forecasts is desired from each observing ship which has been successful in this work, with a view to publishing a few of them in the MARINE OBSERVER.

Outline charts for different regions of the oceans may be obtained by marine observers from the Port Meteorological Officers and Merchant Navy Agents.

These charts have recently been revised, and have upon them the coast stations (with their distinguishing numbers or letters) for which weather reports are given in weather shipping bulletins published in the MARINE OBSERVER; and they are so arranged that they may be used separately or together to cover a whole ocean.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.	Date.	Position.		Description.
	Latitude.	Longitude.			Latitude.	Longitude.	
ENGLISH CHANNEL.							
6.12.37	49°09'N.	4°31'W.	Red painted conical buoy, letters <i>R.T.</i> in white.	NORTH SEA.			
9.12.37	48°15'N.	5°44'W.	Black 30 ft. boat, upside down.	9.12.37	52°15'N.	2°00'E.	Raft of timber, 14 ft. by 8 ft., almost submerged.
10.12.37	48°47'N.	4°42'W.	Long mast.	11.12.37	53°02'N.	4°05'E.	Mast projecting 3 ft. out of water.
12.12.37	49°10'N.	4°16'W.	Small spherical buoy with topmark.	MEDITERRANEAN.			
NORTH ATLANTIC.							
5.12.37	51°15'N.	46°30'W.	Large floating round object.	5.12.37	39°03'N.	3°04'E.	Wreck.
9.12.37	47°15'N.	50°29'W.	Part of wreck.	10.12.37	39°51'N.	4°04'E.	Damaged wooden hulk, 75 ft. long.
10.12.37	50°36'N.	5°48'W.	Spar floating vertically 3 ft. out of water.	12.12.37	38°45'N.	3°24'E.	Large tree trunk 33 ft. long.
				12.12.37	39°46'N.	1°30'E.	Tree trunk.

LATE NOTICE.

FLEET LIST.

VOLUNTARY OBSERVING SHIPS.

The following is a complete list of British observing ships regularly carrying out voluntary services of marine meteorology with the guidance of the Marine Division of the Meteorological Office.

The names of the Captains and observing officers of observing ships, and the Senior Wireless Operators of Selected Ships are given, as ascertained from the last written return received.

Meteorological Logs, Records, and W/T Weather Registers received between the dates specified at the head of the seventh column are acknowledged by Form number, with commencing and ending dates of period covered by the returns; the date when the last return was received being given in the eighth column.

The Captains of observing ships are requested to take this acknowledgment in cordial thanks and grateful recognition to them and their observing officers and wireless operators for the returns made and the voluntary service rendered in all parts of the world.

The classification of meteorological logs, records and registers will be notified to the Captains by post card Form 1343. Only in exceptional cases will individual letters be sent to the Captains of observing ships.

The Port Meteorological Officers and Merchant Navy Agents at the ports are advised as necessary, and they will, as necessary, communicate such advice verbally by personal call upon the Captain.

Excellent Awards will be made at the end of the financial year. The names of the Captains and Principal Observing Officers gaining these awards will be published in a special list in the Marine Observer.

It is requested that prior notification of changes of service, probable periods of lay up, transfer of Captains, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Ships not making the appropriate written returns within a reasonable period will be removed from the list, steps taken to recover any instruments lent, and the free issue of the Marine Observer discontinued.

The number of voluntary observing ships is limited to a maximum total of 350.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 279.

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

Explanation of Abbreviations.

The number appearing before the name of an observing ship in this list is her number for the time being as a British Selected Ship.

†† indicates fitted with wireless telegraphic apparatus for long range, long wave, continuous wave transmission and reception.

*† indicates fitted with wireless telegraphic apparatus for transmission and reception; fitted for reception only of long range, long wave, continuous wave.

M.S. = Motor Ship.

(t-e) = Turbo-electric.

S.T. = Steam Trawler.

(tank) = Tanker.

Ships having no such letters after their names are steamships.

Abbreviations in Equipment Column.

M.L. = Equipped with a complete set of tested instruments lent by the Meteorological Office for keeping the meteorological log.

M. = Ships' own mercurial barometer, found to be sufficiently accurate and reliable for the purpose of observation for making wireless weather reports.

S. = Partly or wholly equipped with tested instruments lent by the Meteorological Office for the purpose of carrying out the duties of a Selected Ship, when detailed to do so.

A. = Ships' own aneroid.

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37	Date Last Return Received.
275 †† <i>Abosso</i> , M.S. ...	J. C. Shooter ...	D. D. Jones, R. Inglis, K. Elkin.	G. Arrowsmith	M.-S.	Elder Dempster Lines, Ltd.	Fms. 911 & 138 15.9.37 to 21.10.37	26.10.37
122 †† <i>Accra</i> , M.S. ...	P. Sola, D.S.O., Lt-Commr., R.N.R.	P. M. Ralston.	... ..	"	" "	" " 3.9.37 to 27.11.37	30.11.37
123 †† <i>Adda</i> , M.S. ...	E. V. Davies, D.S.O. ...	D. Morrish, G. T. Dodgshun, E. A. Drummond.	A. J. L. Edwards	"	" "	" " 20.8.37 to 13.11.37	17.11.37
273 *† <i>Adrastus</i> ...	A. Shaw ...	S. J. Weller, E. A. H. Gepp, N. B. Jones.	G. B. Price ...	M.L.	A. Holt & Co. ...	Fm. 915 3.3.37 to 12.7.37	1.9.37
090 *† <i>Aeneas</i> ...	J. Hatfield ...	T. S. Hardy, W. K. Hole, A. S. Barclay.	H. G. Nuttall ...	S.	" " ...	Fms. 911 & 138 20.4.37 to 7.8.37	16.8.37
166 *† <i>Agamemnon</i> , M.S.	J. G. Reynard ...	G. A. C. Barnard, A. Harrison, E. B. Sandon.	A. C. Nevin ...	"	" " ...	" " 3.5.37 to 2.8.37	21.8.37
065 †† <i>Akaroa</i> ...	W. G. Summers ...	H. H. Falkiner, A. G. Mackenzie, E. H. Vaughan.	J. Butler ...	"	Shaw, Savill & Albion Co., Ltd.	" " 9.8.37 to 12.11.37	17.11.37
129 †† <i>Alcantara</i> ...	J. A. Hodges, R.D., Commr., R.N.R.	H. A. Wright, G. N. Wood, W. S. Thomas.	C. McCarthy ...	M.-S.	Royal Mail Lines, Ltd.	" " 8.9.37 to 8.10.37	12.10.37
178 *† <i>Alipore</i> ...	L. Parfitt ...	J. S. G. Christian, E. F. Ferraby, L. H. Howard.	A. G. Hastings...	M.	P. & O. S.N. Co.	" " 26.8.37 to 9.11.37	29.11.37
175 †† <i>Almanzora</i> ...	F. R. Miles, R.D., Capt., R.N.R.	G. M. Fletcher, S. T. Whiteside, K. Drake.	J. Caldwell ...	S.	Royal Mail Lines, Ltd.	" " 25.8.37 to 26.11.37	1.12.37
086 †† <i>Almeda Star</i> ...	H. C. Howard ...	R. Robson, J. L. Anson, J. Ashwood.	R. N. Austin ...	M.-S.	Blue Star Line, Ltd.	" " 22.8.37 to 12.10.37	16.10.37
022 *† <i>Alynbank</i> , M.S.	D. Gillies ...	A. C. Glover, J. W. Jackson, E. P. Stephens.	P. T. Brown ...	S.	A. Weir & Co. ...	" " 3.9.37 to 6.10.37	13.11.37
160 *† <i>Amarapoora</i> ...	J. F. Burke ...	R. Treasurer, W. D. Tullock, P. F. Carnochan.	A. M. Douglas...	"	P. Henderson & Co.	" " 26.7.37 to 6.10.37	9.10.37
*† <i>Amsterdam</i> ...	B. M. Stone ...	F. B. Allen, E. Gould ...	D. T. Wright ...	"	L. & N. E. Rly....	" " 5.9.37 to 27.11.37	2.12.37
006 †† <i>Andalucia Star</i>	R. Vernon ...	E. P. S. Lewis, F. Stokes, J. Budge.	R. V. Gregory ...	M.-S.	Blue Star Line, Ltd.	" " 2.8.37 to 24.11.37	29.11.37
113 *† <i>Andania</i> ...	F. J. Burd ...	J. G. Bradley, R. V. Youd, H. L. Chaloner.	J. L. Blanchard	S.	Cunard White Star, Ltd.	" " 29.8.37 to 12.11.37 Fm. 912 29.8.37 to 15.10.37	15.11.37 19.10.37

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37.	Date Last Return Received.
040 *† <i>Anselm</i> ...	F. C. P. Harris ...	N. Caris, S. Pollock, G. E. Freeman.	J. O'Sullivan ...	S.	Booth S.S. Co., Ld.	Fms. 911 & 138 3.10.37 to 8.11.37	20.11.37
259 *† <i>Antonia</i> ...	B. H. Davies, O.B.E., R.D., Capt. R.N.R.	K. M. Nicholson, W. J. Foster, H. G. Hayward.	J. Doyle ...	"	Cunard White Star Ld.	" " 15.8.37 to 26.11.37	30.11.37
209 †† <i>Aorangi</i> , M.S. ...	T. V. Hill ...	T. Germein, D. Blacklaws, C. Woods.	C. F. G. Taylor	M.L.	Canadian-Australasian Line, Ld.	Fm. 915 15.4.37 to 6.6.37	31.8.37
120 †† <i>Apapa</i> , M.S. ...	J. H. Lawson ...	B. C. Haigh, H. C. Allen ...	J. Rea ...	M.-S.	Elder Dempster Lines, Ld.	Fms. 911 & 138 12.8.37 to 5.11.37	18.11.37
017 †† <i>Aquitania</i> ...	J. C. Townley ...	W. L. P. Cox, W. Pickersgill	J. N. Cragg ...	S.	Cunard White Star, Ld.	" " 26.8.37 to 16.11.37	18.11.37
201 †† <i>Arandora Star</i> ...	E. W. Moulton	R. S. Winder, H. O. V. Anderson, W. J. Shircliff.	J. C. Mann ...	M.-S.	Blue Star Line, Ld.	" " " " " " " "	" " " " " " " "
248 *† <i>Arawa</i> ...	T. V. Roberts, R.D., Commr., R.N.R.	B. R. Coe, H. Rawstron, T. H. Bull.	B. M. Evans ...	S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 12.6.37 to 16.9.37	21.9.37
114 *† <i>Ariguani</i> ...	A. E. Harvey ...	B. R. Coe, H. Rawstron, T. H. Bull.	B. M. Evans ...	S.	Elders & Fyffes, Ld.	" " 17.8.37 to 24.11.37	27.11.37
039 †† <i>Arlanza</i> ...	A. Cocks, D.S.C., R.D., Capt., R.N.R.	C. C. Dingle, R. J. Finch, F. G. Dawson.	G. Hunt ...	"	Royal Mail Lines, Ld.	" " 28.7.37 to 24.10.37	3.11.37
092 †† <i>Arundel Castle</i> ...	W. Weller ...	" " " " " " " "	" " " " " " " "	"	Union-Castle Mail S.S. Co., Ltd.	" " " " " " " "	" " " " " " " "
233 †† <i>Ascania</i> ...	A. C. Greig, O.B.E., R.D., Capt., R.N.R.	G. T. Marr, A. G. Cuthill, J. H. Kenworthy.	J. W. Haynes ...	"	Cunard White Star, Ld.	" " 13.9.37 to 26.11.37	29.11.37
013 †† <i>Asturias</i> ...	A. Purvis ...	J. Fox, W. Thatcher...	T. Bradfield ...	"	Royal Mail Lines, Ld.	Fms. 911 & 138 11.8.37 to 3.11.37	9.11.37
091 †† <i>Athenia</i> ...	W. Rennie ...	A. M. Mackinnon, L. Napier, J. R. Henderson.	D. Don ...	"	Donaldson Atlantic Line.	" " 11.7.37 to 24.9.37	26.11.37
028 †† <i>Athlone Castle</i> , M.S.	A. Barron ...	S. Thompson, G. H. Pickering, E. Harvey.	H. Oliver ...	"	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 16.5.37 to 3.7.37	9.7.37
199 †† <i>Atlantis</i> ...	" " " " " " " "	" " " " " " " "	" " " " " " " "	M.-S.	Royal Mail Lines, Ld.	" " " " " " " "	" " " " " " " "
240 *† <i>Aurania</i> ...	C. G. Illingworth, R.D. Capt., R.N.R.	D. W. Austin, R. L. Williams, H. D. V. Evans.	" " " " " " " "	"	Cunard White Star, Ld.	Fms. 911 & 138 23.8.37 to 5.11.37	10.11.37
103 *† <i>Ausonia</i> ...	W. C. Battle, D.S.C., R.D., Capt., R.N.R.	J. W. Tone, W. F. Dennison, C. Osborne.	V. Newton ...	"	" " "	" " 5.9.37 to 20.11.37	23.11.37
046 *† <i>Australia Star</i> , M.S.	T. Williams ...	J. Davis, N. Wilson, C. Mond	J. St. C. Smart	M.	Blue Star Line, Ld.	Fms. 911 & 138 31.5.37 to 9.10.37	15.11.37
133 †† <i>Avelona Star</i> ...	G. E. Hopper ...	P. A. Clark ...	S. J. J. Scott ...	M.-S.	" " "	" " 22.7.37 to 7.11.37	12.11.37
045 †† <i>Avila Star</i> ...	J. Fisher ...	S. Ranson, E. Baker, K. Solomon.	H. Varley ...	"	" " "	" " 5.9.37 to 26.10.37	29.10.37
068 †† <i>Balmoral Castle</i>	H. L. Schofield ...	H. E. Macmillan ...	J. H. Summers	S.	Union-Castle Mail S.S. Co., Ld.	" " 18.9.37 to 7.11.37	9.11.37
110 *† <i>Balmoralwood</i> ...	L. C. Cockerell, D.S.O.	S. L. Iley ...	S. N. Bissit ...	"	Constantine Steamships, Ld.	" " 6.9.37 to 10.10.37	22.10.37
037 *† <i>Baronesa</i> ...	R. W. Compton ...	J. R. Faulkner, F. W. Kent, S. W. Howell.	H. Tanner ...	M.	Furness Lines, Ld.	Fms. 911 & 138 17.7.37 to 1.10.37	5.10.37
180 *† <i>Beaverbrae</i> ...	E. J. Jones ...	B. Russel, G. Geddes, A. Mackay.	F. A. Evans ...	M.-S.	Canadian Pacific Steamships, Ld.	" " 18.9.37 to 13.11.37	18.11.37
130 *† <i>Beaverburn</i> ...	A. S. Phillips ...	R. J. Hyland, D. E. T. Newell, W. E. Halbert.	S. J. Taylor ...	"	" " "	Fm. 912 15.8.37 to 4.9.37	8.9.37
138 *† <i>Beaverdale</i> ...	A. Rothwell ...	G. M. Ball, H. G. Waugh.	J. Ormiston ...	"	" " "	Fms. 911 & 138 21.8.37 to 20.11.37	23.11.37
279 *† <i>Beaverford</i> ...	D. Pert ...	R. A. Sharp, G. P. Billot, R. Jones.	J. J. Fraser ...	"	" " "	Fm. 912 4.8.37 to 20.11.37	23.11.37
*† <i>Benarty</i> ...	J. Watt ...	J. Philip ...	" " " " " " " "	M.	W. Thomson & Co.	Fms. 911 & 138 11.9.37 to 6.11.37	15.11.37
*† <i>Benmohr</i> ...	J. C. Sinclair ...	A. V. Anderson, A. Griffiths, G. W. Patterson.	" " " " " " " "	M.L.	" " "	Fm. 912 29.5.37 to 28.8.37	31.8.37
111 *† <i>Benwyvis</i> ...	H. J. Small ...	W. M. Marshall, W. P. Gollam, C. J. Birnie.	A. Johnston ...	M.	" " "	Fms. 911 & 138 4.9.37 to 30.10.37	4.11.37
069 †† <i>Berengaria</i> ...	G. Gibbons, R.D., Capt., R.N.R.	E. Gleave, F. G. Watts, H. D. Percy.	S. W. Brown ...	S.	Cunard White Star, Ld.	Fms. 911 & 138 29.8.37 to 1.12.37	3.12.37
145 *† <i>Berwickshire</i> ...	F. A. Parker ...	R. A. Harris.	B. W. Simmons	"	Turnbull, Martin & Co., Ld.	" " 22.7.37 to 7.10.37	3.11.37
007 *† <i>Bradfyne</i> ...	M. O'Neill ...	H. F. Thomas, P. Evans, T. McKenna.	C. E. Wheeler ...	"	Sir Wm. Reardon Smith & Partners, Ld.	" " 3.10.36 to 6.4.37	26.4.37
*† <i>Brighton</i> ...	W. Lidbetter ...	E. Balcombe ...	A. Jones ...	"	Southern Rly. ...	" " 2.9.37 to 30.11.37	3.12.37
189 †† <i>Britannic</i> , M.S.	A. T. Brown, R.D., Capt., R.N.R.	L. D. W. Rand, R. B. O'Brien, A. H. Young.	F. Clark ...	"	Cunard White Star, Ld.	" " 6.9.37 to 21.11.37	25.11.37
106 *† <i>British Colonel</i> (tank)	C. H. Fulcher ...	R. Mowbray, N. Pinkney, S. Rennels.	A. K. Evans ...	M.	British Tanker Co., Ld.	" " 28.8.37 to 6.11.37	27.11.37
038 *† <i>British Corporal</i> (tank)	J. H. Bovill ...	H. A. Scott, H. H. Burke, E. H. Smith.	W. E. G. Rickards	"	" " "	" " 27.8.37 to 6.10.37	12.10.37
*† <i>British Diplomat</i> , M.S. (tank)	R. M. Maughan ...	H. Evans ...	" " " " " " " "	"	" " "	Fm. 911 23.7.37 to 23.9.37	1.10.37
*† <i>British Endurance</i> , M.S. (tank)	R. O. Putt ...	J. C. Clarke, A. C. Sparks, T. Gaffney.	T. W. Naylor ...	"	" " "	Fms. 911 & 138 23.8.37 to 7.11.37	22.11.37
054 *† <i>British General</i> (tank)	F. O. Armstrong ...	P. E. Norton, A. I. Henderson, D. H. Walker.	F. Harford ...	"	" " "	" " 17.9.37 to 28.10.37	4.11.37
*† <i>British Grenadier</i> (tank)	J. A. Ferrier ...	H. P. Finch ...	" " " " " " " "	"	" " "	Fm. 911 6.8.37 to 22.9.37	1.10.37
*† <i>British Hussar</i> (tank)	S. D. Bumstead ...	A. A. Beldon, J. Davies, D. T. Roberts.	H. B. Pattendon	"	" " "	Fms. 911 & 138 16.8.37 to 30.10.37	2.11.37
6 *† <i>British Officer</i> (tank)	W. Watkin-Thomas ...	C. E. Tanner, A. Wilson, K. Johnson.	W. Taylor ...	"	" " "	" " 27.8.37 to 8.10.37	26.10.37
*† <i>British Premier</i> (tank)	C. W. Stook ...	T. S. Mitchell ...	J. Payne ...	"	" " "	Fms. 911 & 138 24.10.37 to 3.11.37	9.11.37
*† <i>British Resolution</i> , M.S. (tank)	R. H. Farrington ...	W. Graham ...	" " " " " " " "	"	" " "	Fm. 911 1.9.37 to 11.10.37	15.10.37
*† <i>British Statesman</i> (tank)	J. S. Copplestone ...	F. P. Newbolt ...	" " " " " " " "	"	" " "	" " 29.8.37 to 9.10.37	30.10.37
*† <i>British Strength</i> , M.S. (tank)	J. C. Leybourne ...	F. W. Willis ...	" " " " " " " "	"	" " "	" " 1.9.37 to 18.11.37	29.11.37
*† <i>British Workman</i> (tank)	A. C. Baillie ...	R. T. Hedley ...	" " " " " " " "	"	" " "	" " 16.8.37 to 30.10.37	9.11.37
249 *† <i>Buteshire</i> ...	S. Y. Strange ...	E. C. Hobbs, R. M. Adam ...	W. W. Whewell	S.	Houston Line ...	Fms. 911 & 138 21.6.37 to 20.9.37	8.10.37
200 *† <i>Cairnesk</i> ...	E. A. Organ ...	R. D. Radcliffe, S. W. Parks	F. A. Munday ...	"	Cairns, Noble & Co., Ltd.	Fms. 911 & 138 14.8.37 to 26.10.37	28.10.37
241 *† <i>Cairnglen</i> ...	A. W. Melling ...	A. Molineaux ...	P. E. W. Conway	"	" " "	Fm. 912 8.9.37 to 26.10.37	28.10.37
159 *† <i>Cairnvalona</i> ...	A. C. Dickson ...	E. Cairns, J. R. Smith, R. Armstrong.	E. O. Bradley ...	"	" " "	Fms. 911 & 138 24.8.37 to 31.10.37	2.11.37
031 †† <i>Caledonia</i> ...	A. Collie ...	H. L. P. King, H. Brown, B. S. Leiper.	J. F. Reid ...	"	Anchor Line, Ld.	Fm. 912 31.8.37 to 31.10.37	2.11.37
						Fms. 911 & 138 19.9.37 to 19.10.37	23.10.37
						Fm. 912 19.9.37 to 19.10.37	29.11.37
						Fms. 911 & 138 5.9.37 to 23.10.37	26.10.37
						Fm. 912 4.9.37 to 23.10.37	26.10.37

FLEET LIST

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37	Date Last Return Received.
139 †† <i>California</i> ...	R. W. Smart ...	H. D. Campsie, J. D. Mackenzie, D. Barclay.	D. Thompson ...	S.	Anchor Line, Ld.	Fms. 911 & 138 2.10.37 to 13.11.37	16.11.37
*† <i>Cambria</i> ...	E. B. Turner ...	F. G. J. Manning ...	J. Pritebard ...	"	L.M. & S. Rly. ...	" " 14.8.37 to 8.10.37	18.10.37
223 *† <i>Cambridge</i> ...	C. R. Pilcher ...	R. J. Olsen, P. S. Brallsford, G. E. Mason.	A. C. Taylor ...	"	Federal S.N. Co., Ld.	" " 20.6.37 to 16.11.37	1.12.37
042 †† <i>Cameronia</i> ...	G. B. Kelly ...	D. G. Barr, J. George, J. Chessy.	W. Less ...	"	Anchor Line, Ld.	{ Fm. 912 " 22.8.37 to 5.11.37	10.11.37
252 *† <i>Camito</i> ...	R. J. Bostock ...	A. W. King, H. C. Cruickshank.	R. E. Blizzard ...	"	Elders & Fyffes, Ld.	{ Fms. 911 & 138 " 17.10.37 to 7.11.37	10.11.37
*† <i>Cape Barfleur</i> , S.T.	W. Jonsen ...	...	...	"	Hudson Bros. Trawlers, Ld.	" " 22.9.37 to 29.11.37	2.12.37
117 *† <i>Cape of Good Hope</i> M.S.	A. T. McGlashan ...	R. J. Carnochan, P. A. Wallace, H. Evans	G. W. Pragnell...	"	Lyle Shipping Co., Ld.	" " 26.6.37 to 23.9.37	21.10.37
266 †† <i>Carinthia</i> ...	P. A. Murchie, O.B.E., R.D., Capt., R.N.R.	F. J. Owen, R. Conway, J. Ashcroft.	R. F. Watson ...	"	Cunard White Star, Ld.	{ Fm. 912 " 7.6.37 to 17.7.37	30.7.37
155 †† <i>Carthage</i> ...	W. S. L. Pocock ...	R. A. Gerry, M. Greasley, L. Beggs.	F. Rose ...	M.-S.	P. & O. S.N. Co.	{ Fms. 911 & 138 " 7.6.37 to 17.7.37	30.7.37
184 †† <i>Cathay</i> ...	H. R. Rhodes ...	D. West, L. Porter, F. H. J. Orton.	E. L. Boyce ...	"	" " "	" " 10.5.37 to 11.8.37	14.8.37
<i>Cato</i> ...	—, Robinson ...	...	...	M.L.	Ellerman's Wilson Line, Ld.	" " 13.6.37 to 10.11.37	12.11.37
127 *† <i>Cavina</i> ...	W. T. Forrester, O.B.E.	W. G. Chanter, G. M. Roberts	A. N. Taylor ...	S.	Elders & Fyffes, Ld.	{ Fms. 911 & 138 " 23.9.37 to 7.11.37	9.11.37
011 †† <i>Ceramic</i> ...	H. C. Elford ...	G. F. Cresswell, M. Foster ...	W. M. Ross ...	"	Shaw, Savill & Albion Co., Ld.	{ Fm. 912 " 22.8.37 to 4.10.37	8.11.37
029 *† <i>Cheshire</i> , M.S.	P. H. Potter ...	—, Stanger, J. B. Quinn, A. N. Williamson.	F. W. Greaves ...	"	Bibby Bros. & Co.	{ Fms. 911 & 138 " 12.9.37 to 24.9.37	8.11.37
191 *† <i>Chindwin</i> ...	R. B. Reid ...	J. S. Whitehead, J. A. Anderson, J. Taylor.	C. Q. Maikes ...	"	P. Henderson & Co.	" " 30.9.37 to 3.11.37	8.11.37
067 *† <i>Chinese Prince</i> , M.S.	W. Finch ...	E. T. Cleaver, A. H. Kent, E. J. Roberts.	D. T. de Witt ...	M.L.	Furness Lines Ld.	Fm. 915 " 12.7.37 to 2.9.37	27.9.37
192 †† <i>Chitral</i> ...	H. Elliott Smith, R.D., Lt.-Commr., R.N.R.	C. E. Lord ...	W. B. Goodsell ...	M.-S.	P. & O. S.N. Co.	{ Fms. 911 & 138 " 17.6.37 to 26.9.37	17.11.37
051 *† <i>City of Auckland</i>	H. G. Jenkins, O.B.E.	E. G. O'Driscoll, D. C. Hamilton	G. B. Cleland ...	S.	Ellerman Lines, Ld.	" " 23.9.37 to 29.10.37	22.11.37
135 *† <i>City of Barcelona</i>	W. Hill ...	R. A. Jones, A. G. Daniels, H. G. Williams.	R. Stewart ...	M.	" " "	" " 30.8.37 to 2.11.37	4.11.37
265 *† <i>City of Baroda</i>	A. V. Radcliffe, R.D., Commr., R.N.R.	R. S. Steel, W. L. Smith, J. R. Roland.	G. S. Creighton ...	S.	" " "	" " 1.9.37 to 7.11.37	16.11.37
057 †† <i>City of Benares</i> ...	A. Lee ...	H. H. Asher, R. L. Pallister, W. G. McCulloch.	A. McMurray ...	"	" " "	" " 8.10.37 to 24.10.37	22.11.37
158 *† <i>City of Cairo</i> ...	A. N. Hogg ...	T. B. Savigny, S. E. Britt, F. C. Mason.	A. C. Gavin ...	M.	" " "	" " 13.7.37 to 12.8.37	16.8.37
215 *† <i>City of Canberra</i>	H. R. Jackson ...	A. Travis, A. Westlake, T. Cain.	T. Tolland ...	"	" " "	{ " " 2.9.37 to 5.10.37	15.11.37
033 *† <i>City of Canton</i> ...	E. Srymgeour...	M. W. Tyrrell, W. E. Fletcher, T. L. Vaughan.	L. J. Delaney ...	"	" " "	{ Fm. 912 " 31.3.37 to 19.8.37	2.9.37
157 *† <i>City of Delhi</i> ...	F. W. Penberthy ...	W. Nimmo, T. Lovell. ...	T. A. Walker ...	S.	" " "	{ Fms. 911 & 138 " 30.8.37 to 16.9.37	28.9.37
030 *† <i>City of Dieppe</i>	H. Cartwright ...	J. F. MacVicar, J. F. Mitchell, J. B. Muir.	W. A. Bassom ...	"	" " "	" " 18.6.37 to 18.10.37	4.11.37
049 *† <i>City of Evansville</i>	D. O. Evans ...	F. P. Monkton, A. G. Freeman, F. W. Woods.	F. J. Glynn ...	M.	" " "	" " 25.7.37 to 8.11.37	19.11.37
220 †† <i>City of Exeter</i> ...	D. L. Lloyd ...	P. C. Wilson, R. Webber, W. H. Wilson.	L. Hugo ...	S.	" " "	" " 24.6.37 to 2.8.37	28.9.37
089 *† <i>City of Hereford</i>	W. J. Merchant ...	N. Williams, R. A. Groves, I. McBeath.	W. J. Sillars ...	M.	" " "	" " 31.5.37 to 1.8.37	14.8.37
237 †† <i>City of London</i> ...	J. G. Brown ...	W. J. Nixon, W. Dick, W. McMillan.	O. A. Read ...	S.	" " "	" " 14.9.37 to 24.11.37	27.11.37
256 *† <i>City of Lyons</i> ...	E. Mason ...	J. W. Cubbon, H. E. Roberts, W. James.	W. R. Beynon ...	M.	" " "	" " 15.9.37 to 3.10.37	8.10.37
066 †† <i>City of Nagpur</i> ...	N. McNeil, O.B.E.	E. H. H. Walton, S. G. Findlam, W. Dick.	A. E. Dowe ...	S.	" " "	" " 25.8.37 to 5.10.37	29.11.37
074 †† <i>City of Paris</i> ...	L. Nicol ...	W. G. Stubbs, A. J. Barnett, D. McLoughlin.	G. Fenton ...	"	" " "	" " 27.6.37 to 5.11.37	27.11.37
271 *† <i>City of Roubaix</i>	H. Spencer, D.S.C.	H. Nish, T. V. Birkett, A. H. G. Jones.	F. Sanson ...	M.	" " "	" " 24.8.37 to 30.10.37	3.11.37
272 *† <i>City of Singapore</i>	T. R. Watkins ...	K. B. James, G. Mathias, R. H. Broadbent.	J. J. Stephenson	"	" " "	" " 1.10.37 to 19.10.37	25.10.37
035 *† <i>City of Sydney</i> ...	E. G. Hoppins...	E. P. B. Bradbury, E. M. Robertson, R. M. Hall.	D. Uttley ...	"	" " "	" " 6.8.37 to 2.9.37	28.9.37
167 *† <i>City of Tokio</i> ...	G. Burton ...	J. H. Aldridge, L. Hernan, R. K. Walker.	G. J. Manson ...	S.	" " "	{ " " 4.9.37 to 24.11.37	3.12.37
*† <i>City of Winchester</i>	W. S. Coughlan ...	H. Laird ...	...	"	" " "	{ Fms. 911 & 138 " 10.6.37 to 17.7.37	10.8.37
125 *† <i>City of Windsor</i>	F. Tibbetts ...	G. D. B. Davies, F. C. Dashley, N. Bradley.	M. J. Hicks ...	"	" " "	" " 4.8.37 to 8.10.37	11.10.37
027 *† <i>Clan Farquhar</i> ...	A. Low ...	J. Browne, J. Napier, H. S. Pengelly.	A. C. Gavin ...	M.	Clan Line Steamers, Ld.	Fm. 911 29.4.37 to 12.8.37	24.8.37
050 *† <i>Clan Macalister</i>	R. W. Mackie ...	S. M. Werrey-Easterbrook, J. Hubbard, M. Bruce.	C. J. Andrews ...	S.	" " "	Fms. 911 & 138 25.8.37 to 22.10.37	30.10.37
222 *† <i>Clan Macdougall</i> , M.S.	L. M. Redford ...	W. Graham, H. F. Town, J. L. Lowrey.	G. Turner ...	"	" " "	" " 14.9.37 to 1.10.37	26.10.37
101 *† <i>Clan Macfarlane</i>	W. J. Hughes ...	J. E. Clayton, G. A. Fox, R. F. Carter.	T. M. Ferguson	"	" " "	" " 3.10.37 to 24.10.37	5.11.37
118 *† <i>Clan Macindoe</i> ...	H. Andrews ...	E. H. Pyett, A. S. Palethorpe-May, K. C. Simpson	D. C. Munro ...	"	" " "	" " 15.4.37 to 22.7.37	23.8.37
082 *† <i>Clan Macnair</i> ...	R. J. W. Bennett ...	J. B. Sparkes, R. W. Cook, T. O. Man.	L. Jones ...	"	" " "	" " 30.5.37 to 17.8.37	18.9.37
255 *† <i>Clan Macneil</i> ...	H. E. G. Scott Smith, O.B.E., R.D., Lieut.-Commr. R.N.R.	W. R. Thomas, E. Coultas, D. Devall.	J. Brennan ...	"	" " "	" " 2.10.37 to 21.10.37	29.11.37
001 *† <i>Clan Macphee</i> ...	J. H. Crellin ...	G. S. Bullock, R. N. Johnson	W. Scott ...	"	" " "	" " 1.10.37 to 19.10.37	23.11.37
168 *† <i>Clan Mactaggart</i>	C. C. Parfitt ...	M. F. Stewart, J. de Garis, P. Gilles.	J. G. Wood ...	"	" " "	" " 4.5.37 to 1.8.37	5.8.37
261 *† <i>Clan Mactavish</i>	H. M. Rodger ...	J. McIvor, G. Stronach, S. R. Woods.	W. J. McGonnell	"	" " "	" " 14.8.37 to 21.10.37	27.10.37
002 *† <i>Clan Macwhirter</i>	E. E. Arthur ...	A. Woodall, J. V. Findlay, T. P. Cranwell.	J. Marshall ...	"	" " "	" " 14.8.37 to 15.11.37	25.11.37
109 *† <i>Clan Morrison</i> ...	B. A. Hardinge ...	B. Grindley, J. W. Rennie, F. B. Fairweather.	C. Ashcroft ...	"	" " "	" " 26.7.37 to 9.10.37	13.10.37
*† <i>Clement</i> ...	W. E. Griffiths, Lt.-Commr., R.N.R.	T. E. Williams, G. G. Roberts	...	"	Booth S.S. Co., Ld.	" " 5.9.37 to 12.11.37	30.11.37
041 *† <i>Clydebank</i> , M.S.	W. Broome ...	C. W. Haycraft, J. R. Mahon, E. W. Dibble.	A. J. Lamont ...	"	A. Weir & Co. ...	{ Fm. 911 " 9.4.37 to 17.7.37	27.8.37
						{ Fms. 911 & 138 " 5.9.37 to 23.10.37	11.11.37

FLEET LIST

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37.	Date Last Return Received.
116 †† <i>Highland Chieftain</i> , M.S.	A. R. Murley ...	N. C. Hearsee W. R. Moore...	T. Desboro ...	M.-S.	Royal Mail Lines, Ltd.	Fms. 911 & 138 14.9.37 to 31.10.37	5.11.37
099 †† <i>Highland Monarch</i> , M.S.	S. Weller ...	W. B. Avison, S. R. Lloyd, J. Thomas.	E. F. Weatherhead.	"	" " "	" " 2.9.37 to 17.10.37	22.10.37
230 †† <i>Highland Patriot</i> , M.S.	R. H. Robinson ...	G. E. Leech, W. B. Tennant, P. P. Warren.	M. J. Carpenter	"	" " "	" " 19.8.37 to 5.10.37	9.11.37
250 †† <i>Highland Princess</i> M.S.	A. E. Cormick ...	H. E. Sang, H. Davies, H. Bowker.	C. P. Thayne ...	"	" " "	" " 21.7.37 to 14.11.37	19.11.37
*† <i>Hopestar</i> ...	J. Steward ...	...	...	S.	A. Stott & Co. Ltd.	...	...
*† <i>Imperial Star</i> M.S.	D. R. Macfarlane ...	H. H. Arton, K. Laycock, R. M. Thorne.	C. North ...	M.	Blue Star Line, Ltd.	Fm. 911 31.7.37 to 12.11.37	22.11.37
260 *† <i>Inanda</i> ...	W. H. Gibbings ...	P. B. Jones, E. P. Simmons, R. P. Jones.	E. J. Cook ...	"	T. & J. Harrison	Fms. 911 & 138 11.9.37 to 20.10.37	23.10.37
*† <i>Inkosi</i> ...	J. T. Ling ...	F. G. La Hive, J. R. Bremner, T. W. Kent.	T. Fleetwood ...	S.	" "	" " 14.8.37 to 16.11.37	23.11.37
144 *† <i>Inverbank</i> , M.S.	A. C. Loads ...	F. H. Cummings, L. C. Smith, J. W. Beveridge.	J. T. Jupp ...	"	A. Weir & Co. ...	" " 13.8.37 to 30.10.37	22.11.37
*† <i>Isle of Guernsey</i>	F. W. Hodges, R.D., Commr., R.N.R.	A. Howe ...	H. Sturdy ...	"	Southern Rly. ...	" " 21.7.37 to 27.7.37	28.9.37
*† <i>Isle of Jersey</i> ...	H. H. Golding ...	H. Wellan ...	T. Barron ...	"	" " "	" " 30.8.37 to 1.11.37	4.11.37
*† <i>Isle of Sark</i> ...	R. J. Large ...	H. F. Breville ...	A. J. Rosney ...	"	" " "	" " 6.9.37 to 12.11.37	13.11.37
*† <i>Izion</i> ...	J. O'Connor ...	R. Johnston, A. Dobbin, C. L'Estrange.	F. Walls ...	M.L.	A. Holt & Co. ...	Fm. 915 16.3.37 to 3.9.37	29.10.37
226 *† <i>Japanese Prince</i> , M.S.	C. S. Smith ...	H. Patterson, W. O. Young, J. T. Gray.	J. A. Campbell	"	Furness Lines ...	" " 30.12.36 to 16.6.37	28.7.37
*† <i>Jeyapore</i> ...	R. B. Beck ...	P. Brett, C. T. Halliday, H. M. Askin.	C. V. Edwards ...	M.-S.	P. & O. S.N. Co.	Fm. 911 4.7.37 to 15.10.37	1.11.37
188 †† <i>Kaisar-i-Hind</i> ...	L. F. Edwards ...	G. A. Wild, E. R. Rose ...	J. D. Downie ...	"	" "	Fms. 911 & 138 29.11.36 to 20.5.37	24.5.37
206 *† <i>Karamea</i> , M.S....	E. T. Grayston, D.S.C., R.D., Commr., R.N.R.	L. B. Miller, N. S. Milne, J. H. Stroud.	W. S. Davies ...	S.	Shaw Savill & Albion Co., Ltd.	" " 14.2.37 to 2.6.37	5.6.37
*† <i>Kemmendine</i> ...	W. C. C. Plage ...	O. T. Low, J. McKean ...	W. C. Clarke ...	M.	P. Henderson & Co., Ltd.	" " 27.6.37 to 7.9.37	11.9.37
190 *† <i>Kenbane Head</i> ...	J. R. Moore ...	R. J. English, J. Green, W. A. Haddock.	A. McCartney ...	S.	G. Heyn & Sons	{ Fm. 912 7.9.37 to 30.11.37 Fms. 911 & 138 23.7.37 to 21.8.37	3.12.37 24.8.37 30.11.37
112 *† <i>Kent</i> ...	J. V. Williams ...	G. Willis, C. Cremin, T. Gibbon.	A. S. Crocker ...	"	Federal S.N. Co., Ltd.	{ Fm. 912 20.6.37 to 21.11.37 Fms. 911 & 138 25.6.37 to 26.6.37	27.11.37 2.10.37
203 *† <i>Kyno</i> ...	J. Marshall ...	G. Arderton, R. V. Turner, R. J. Dalgleish.	J. Parrit ...	"	Ellerman Wilson Line, Ltd.	{ Fm. 912 13.9.37 to 28.11.37 Fms. 911 & 138 16.8.37 to 30.11.37	1.12.37 1.12.37
147 †† <i>Laconia</i> ...	P. R. Vaughan, D.S.C., R.D., Commr., R.N.R.	R. O. Price, W. B. Tanner, G. T. Kavanagh.	R. M. Shore ...	"	Cunard White Star, Ltd.	{ Fm. 912 17.8.37 to 3.11.37 Fms. 911 & 138 17.8.37 to 3.11.37	9.11.37
267 *† <i>Lassell</i> , M.S. ...	W. W. Watson ...	W. R. Bevin, T. J. Sweeney, B. Green.	K. B. Fry ...	"	Lampport & Holt Line, Ltd.	" " 17.5.37 to 12.9.37	15.9.37
083 *† <i>Lautaro</i> , M.S. ...	R. E. Skellorn ...	A. Lang, I. G. Menzies, A. H. Turner.	P. O'Sullivan ...	M.	Pacific S.N. Co....	" " 9.7.37 to 6.10.37	27.10.37
251 *† <i>Leverbank</i> , M.S.	H. A. Jones ...	A. E. Newton, T. J. Howell	H. S. Matheson	S.	A. Weir & Co. ...	" " 7.9.37 to 5.11.37	16.11.37
093 *† <i>Llandaff Castle</i> ...	J. C. Simpson ...	R. S. Davies ...	E. H. Pitt ...	"	Union-Castle Mail S.S. Co., Ltd.	" " 8.8.37 to 15.10.37	18.10.37
094 *† <i>Llandoverly Castle</i>	E. A. Smyth, R.D., Commr., R.N.R.	A. Hurry ...	A. E. Hunter ...	"	" " "	" " 10.7.37 to 10.9.37	20.9.37
097 †† <i>Llangibby Castle</i> , M.S.	R. W. Goodacre, R.D., Commr., R.N.R.	J. S. Higham, J. W. Grace ...	A. Sutton ...	"	" " "	" " 12.9.37 to 20.11.37	24.11.37
216 *† <i>Llanstephan Castle</i>	B. Ray ...	C. W. Armstrong ...	...	"	" " "	" " 17.8.37 to 9.11.37	15.11.37
137 *† <i>Logician</i> ...	E. B. Curphey ...	W. C. Johnston, W. S. Eustance, G. H. Howard.	G. M. B. Price ...	"	T. & J. Harrison	Fms. 911 & 138 16.8.37 to 22.11.37	30.11.37
268 *† <i>Loriga</i> M.S. ...	A. C. Taylor ...	J. Williams ...	...	M.	Pacific S.N. Co. Ltd.	" " 19.7.37 to 2.11.37	5.11.37
008 *† <i>Losada</i> , M.S. ...	M. Armstrong, D.S.O....	R. J. G. Goodwin ...	A. E. M. Parsons	"	" " "	" " 2.8.37 to 6.10.37	19.10.37
232 *† <i>Madura</i> ...	J. A. Wright ...	D. A. Jones, R. Haynes, K. Noble.	H. O. Francis ...	"	British India S.N. Co., Ltd.	" " 28.3.37 to 21.7.37	30.7.37
062 *† <i>Mahia</i> ...	W. T. Thompson ...	D. Ashley, R. A. Costa, N. Banks.	D. Irwin ...	S.	Shaw, Savill & Albion Co., Ltd.	" " 25.9.37 to 15.10.37	20.11.37
140 *† <i>Mahratta</i> ...	W. Hill ...	G. J. Nuttall, A. G. Gorham	B. J. Smith ...	M.	T. & J. Brocklebank, Ltd.	" " 30.7.37 to 20.11.37	24.11.37
014 *† <i>Mahronda</i> ...	L. T. Owen ...	A. E. Austin, W. F. Harris, J. B. Newman.	W. H. Ritche ...	"	" " "	" " 8.6.37 to 30.8.37	2.9.37
015 *† <i>Mahsud</i> ...	H. D. Fulcher...	P. D. McKenzie, H. Simpson, J. Owen.	R. Burton ...	"	" " "	" " 16.4.37 to 25.7.37	8.9.37
018 *† <i>Makalla</i> ...	J. Greenall ...	G. E. Jones, H. Gillespie, J. P. Hewitt.	W. Fallowfield	"	" " "	" " 2.5.37 to 4.8.37	16.8.37
236 *† <i>Malayan Prince</i> , M.S.	W. Irvine ...	J. A. Reeves, A. A. Spilman, J. A. Taylor.	J. S. Sharp ...	M.L.	Furness Lines ...	" " 21.8.37 to 30.10.37	5.11.37
195 †† <i>Maloja</i> ...	R. C. Dene ...	J. Simms, R. G. Wood, L. J. Cook.	A. Macbeth ...	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 5.9.37 to 15.11.37	22.11.37
009 *† <i>Manchester Brigade</i>	J. Barclay ...	F. Osborne, G. S. Swales, C. Howard.	M. A. Counter ...	S.	Manchester Liners Ltd.	" " 11.6.37 to 14.8.37	21.8.37
060 *† <i>Manchester Citizen</i>	G. M. Mitchell...	W. E. Quireck, O. A. Mayer...	J. J. Hand ...	"	" " "	" " 15.8.37 to 22.10.37	30.10.37
187 *† <i>Manchester Division</i>	E. W. Raper ...	A. Stammer, W. E. Todd, M. E. Bewley.	E. B. Morton ...	"	" " "	{ Fm. 912 24.5.37 to 29.7.37 Fms. 911 & 138 17.9.37 to 22.10.37 Fm. 912 10.9.37 to 23.11.37	5.8.37 27.10.37 25.11.37
179 *† <i>Manchester Port</i>	{ P. Linton ... F. D. Struss ...	W. Hine, H. Hancock, R. Hoffman.	D. O'Leary ...	"	" " "	" " 31.10.37 to 20.11.37	25.11.37
253 *† <i>Manchester Producer</i>	J. Makin ...	W. H. Downing, F. Lewis ...	R. Francis ...	"	" " "	" " 30.8.37 to 27.10.37	18.11.37
197 *† <i>Manchester Regiment</i>	C. H. Stott ...	E. W. Espley, R. O. Venn, W. H. Dorning.	V. R. O'Connor	"	" " "	" " 18.7.37 to 8.10.37	29.10.37
146 *† <i>Mandasor</i> ...	A. G. Dixon, R.D., Capt. R.N.R.	G. McL. Reid, S. Broughton, J. B. Leigh.	G. T. Spears ...	M.	T. & J. Brocklebank, Ltd.	" " 10.7.37 to 14.10.37	16.10.37
213 †† <i>Mashobra</i> ...	S. S. Slightam ...	L. Osborne, A. Baber, C. Elson.	W. N. Holmes ...	M.-S.	British India S.N. Co., Ltd.	" " 10.7.37 to 14.10.37	16.10.37
235 †† <i>Mataroa</i> ...	W. H. Hartman ...	E. B. Macfarren, F. J. Patterson, D. A. Mosley.	J. Harvey ...	S.	Shaw, Savill & Albion Co., Ltd.	" " 10.7.37 to 14.10.37	16.10.37

THE MARINE OBSERVER

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteoro-logical Instrument Equip-ment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37	Date Last Return Received.
023 *† <i>Matheran</i> ...	W. T. King ...	A. L. Austin, R. Penston, W. Spencer.	J. D. Jones ...	M.	T. & J. Brocklebank, Ltd.	Fms. 911 & 138 12.7.37 to 29.9.37	2.10.37
024 *† <i>Matra</i> ...	N. P. Cornish ...	E. L. Jones, H. G. Allan, F. F. Eggleston.	E. R. Capps ...	"	" "	" " 18.5.37 to 3.8.37	4.9.37
126 *† <i>Melmores Head</i> ...	T. M. Heddles ...	A. Montgomery, R. Turner ...	P. Catkill ...	S.	G. Heyn & Son ...	" " 19.9.37 to 15.10.37	22.10.37
278 *† <i>Middlesex</i> ...	H. J. Wilde ...	A. H. Martin, A. Brown, H. A. Porter.	S. H. Jones ...	"	Federal S.N. Co., Ltd.	" " 26.7.37 to 22.8.37	2.11.37
194 †† <i>Moldavia</i> ...	R. R. Burge ...	M. R. Prowse, F. Collinson, P. Haworth.	M. Murphy ...	M.-S.	P. & O. S.N. Co.	" " 22.8.37 to 9.10.37	1.11.37
149 †† <i>Montclare</i> ...	W. S. Brown ...	D. Ewing, J. Roche, A. Trippet.	H. A. Bowman	"	Canadian Pacific Steamships, Ltd.	{ " " 29.8.37 to 23.10.37 Fm. 912 27.5.37 to 15.7.37 Fms. 911 & 138 28.8.37 to 5.11.37 Fm. 912 21.10.37 to 5.11.37	26.10.37 19.7.37 15.11.37 15.11.37
150 †† <i>Montrose</i> ...	A. R. Meikle, R.D., Capt., R.N.R.	E. A. G. Davis, T. E. Sargent, R. Walgate.	H. G. Warren ...	S.	" "	" " 16.8.37 to 5.11.37	10.11.37
164 †† <i>Mooltan</i> ...	C. M. Roche ...	J. D. Strike, R. B. Webster, W. H. C. Wood-Roe.	H. Williamson	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 24.7.37 to 28.10.37	30.10.37
196 *† <i>Mulbera</i> ...	W. A. Grant-Pyves ...	J. L. Richardson ...	M. Prior ...	"	British India S.N. Co., Ltd.	" " 16.8.37 to 5.11.37	10.11.37
078 *† <i>Myrtlebank</i> , M.S.	C. S. Holbrook ...	G. E. Linfield, T. H. Welton, D. C. Brown.	A. W. Mosley ...	S.	A. Weir & Co. ...	" " 25.7.37 to 18.9.37	15.11.37
*† <i>Nankin</i> ...	T. J. Mills ...	J. L. Plant, G. N. Reed, W.N. Swan.	... ..	M.L.	Eastern and Australasian S.S. Co., Ltd.	Fm. 915 11.5.37 to 7.8.37	20.10.37
227 *† <i>Nardana</i> ...	C. Dorkin-White ...	T. Braidwood, H. Goater, H. J. Wright.	S. V. Knight ...	M.	British India S.N. Co., Ltd.	Fms. 911 & 138 30.4.37 to 18.7.37	11.10.37
202 †† <i>Narkunda</i> ...	H. G. M. Williams, Lt. Comr., R.N.R.	W. W. Gow, W. N. Eade, R. D. W. Mackay.	C. W. Herbert ...	M.-S.	P. & O. S.N. Co.	" " 27.6.37 to 29.9.37	7.10.37
†† <i>Nascopie</i> ...	T. F. Smellie ...	T. N. Stanley ...	... ..	S.	Hudson's Bay Co.	Fm. 911 11.7.37 to 27.9.37	16.10.37
257 *† <i>Natia</i> ...	J. W. Carr ...	R. T. Clark ...	... ..	M.	Royal Mail Lines, Ltd.	Fms. 911 & 138 7.9.37 to 25.10.37	29.11.37
*† <i>Nellore</i> ...	T. H. Scott-White ...	K. L. Dawson, B. McNeil, H. G. Rose.	F. R. Snape ...	M.L.	Eastern and Australasian S.S. Co., Ltd.	Fm. 915 12.6.37 to 6.9.37	16.11.37
162 *† <i>Nestor</i> ...	J. J. Power ...	V. L. Edwards, I. Skurray, H. Skinnis.	J. A. Nightingale	S.	A. Holt & Co. ...	Fms. 911 & 138 2.8.37 to 21.11.37	25.11.37
136 *† <i>Newfoundland</i> ...	T. H. Webber ...	J. E. Wilson, J. L. Macklin, C. H. Kenyon.	W. C. Brock ...	"	Furness Lines ...	{ " " 21.8.37 to 22.11.37 Fm. 912 21.8.37 to 22.11.37 Fms. 911 & 138 13.7.37 to 20.10.37	1.12.37 1.12.37 25.10.37
102 *† <i>New Zealand Star</i> , M.S.	J. B. Hall ...	J. J. Dickson, J. Mortimer, A. Wilson.	J. A. Bradley ...	M.	Blue Star Line, Ltd.	Fms. 911 & 138 13.7.37 to 20.10.37	25.10.37
210 *† <i>Niagara</i> ...	W. Martin ...	A. H. S. Gell, A. J. McKenzie, F. S. Bowman.	G. M. Power ...	M.L.	Canadian-Australasian Line, Ltd.	Fm. 915 19.3.37 to 3.7.37	1.9.37
*† <i>Northern Coast</i> ...	H. Cameron ...	P. Miller, E. Greenall, W. Grogan.	... ..	"	Coast Lines, Ltd.	" 26.1.37 to 28.6.37	6.7.37
181 *† <i>Nova Scotia</i> ...	J. W. Murphy ...	W. Lutyens, R. Handley, J. Warren ...	T. O'Regan ...	S.	Furness Lines ...	{ Fms. 911 & 138 4.9.37 to 3.11.37 Fm. 912 4.9.37 to 3.11.37 Fms. 911 & 138 17.2.37 to 4.6.37	6.11.37 6.11.37 26.7.37
243 *† <i>Opawa</i> , M.S.	H. G. B. Field ...	S. Jarvis, J. McCulloch, J. Montcrief.	W. Jackson ...	M.	New Zealand Shipping Co., Ltd.	Fms. 911 & 138 17.2.37 to 4.6.37	26.7.37
172 †† <i>Orama</i> ...	E. P. Cameron, R.D., Capt., R.N.R.	H. R. Treseder, W. H. Barker, P. G. A. King.	F. W. Helman ...	S.	Orient S.N. Co., Ltd.	" " 24.5.37 to 24.8.37	4.9.37
080 *† <i>Orari</i> , M.S.	J. G. Almond ...	C. J. Cordran, C. Calleut, H. H. Mackillean.	A. Stenning ...	M.	New Zealand Shipping Co., Ltd.	" " 5.4.37 to 23.8.37	1.10.37
246 †† <i>Orbita</i> ...	J. Sutherland, R.D., Capt. R.N.R.	W. H. Bowen, D. W. Hutcheson, J. E. Evans.	D. H. Sinclair ...	M.-S.	Pacific S.N. Co.	" " 4.7.37 to 18.10.37	8.11.37
087 †† <i>Orduna</i> ...	E. H. Large, R.D., Commr., R.N.R.	E. C. Hicks, J. Lumpner, T. J. Naylor.	W. G. Sutherland	"	" "	{ " " 25.7.37 to 1.10.37 Fm. 912 14.5.37 to 9.7.37 Fm. 911 22.8.37 to 13.9.37	6.10.37 12.7.37 11.9.37
081 †† <i>Orcades</i> ...	F. R. O'Sullivan ...	J. C. Stratford, R. J. Brittain	T. Edwards ...	"	Orient S.N. Co. ...	" " 22.8.37 to 13.9.37	11.9.37
148 †† <i>Orford</i> ...	M. J. Sarson ...	J. N. Hulse, G. R. Grandage, R. J. Craddock.	J. Macdonald ...	"	" "	Fms. 911 & 138 21.6.37 to 21.9.37	24.9.37
019 †† <i>Orion</i> ...	A. L. Owens, R.D., A.D.C. Capt. R.N.R.	P. Sargent, E. M. Mackay, G. M. Croghan.	A. F. Edwards	"	" "	" " 14.1.37 to 7.5.37	7.6.37
174 †† <i>Ormonde</i> ...	A. E. Nicholls ...	W. Stannard, T. S. Hardy, L. Sly.	A. Seaton ...	"	" "	" " 16.8.37 to 16.11.37	22.11.37
055 †† <i>Oronsay</i> ...	C. G. Matheson, D.S.O., R.D., Commodore, R.N.R.	J. K. Johnson, C. Pinckney, T. S. Hardy.	P. T. Darby ...	"	" "	" " 26.4.37 to 27.7.37	4.8.37
085 †† <i>Orontes</i> ...	G. G. Thorne, R.D., Capt., R.N.R.	R. W. Roberts, D. Williams, E. B. Rhead.	R. B. Knights ...	"	" "	" " 27.6.37 to 26.8.37	30.8.37
095 *† <i>Oropesa</i> ...	R. E. Dunn, O.B.E. ...	G. Gerrety, F. J. Leicester, R. H. Sissons.	G. Penketh ...	M.	" "	Fm. 911 12.9.37 to 18.11.37	23.11.37
156 †† <i>Otranto</i> ...	L. V. James, D.S.C. ...	J. D. Kirkwood, W. T. Rice, P. Sargeant.	... ..	M.-S.	" "	Fms. 911 & 138 19.7.37 to 19.10.37	28.10.37
070 *† <i>Oxfordshire</i> ...	P. S. Cooper ...	G. W. Dobson ...	... ..	S.	Bibby Bros. & Co.	Fm. 911 1.8.37 to 7.10.37	11.10.37
044 *† <i>Pacific Exporter</i> , M.S.	H. Reavley ...	S. J. Hardy, E. Jones, S. Lavis	A. W. Hearnden	"	Furness Lines ...	Fms. 911 & 138 20.6.37 to 23.9.37	28.9.37
*† <i>Paris</i> ...	C. G. G. Munton ...	E. W. Smith ...	C. Kelley ...	"	Southern Rly. ...	" " 20.9.37 to 19.10.37	5.11.37
238 *† <i>Port Alma</i> , M.S.	J. Jack ...	G. Puttick, T. L. Kidwell, F. W. Elgar.	J. Ballance ...	"	Port Line Ltd. ...	" " 2.4.37 to 17.7.37	28.7.37
128 *† <i>Port Auckland</i>	C. A. Robinson ...	A. G. Walton, J. A. Sutton, J. G. Thorn.	C. K. Holmes ...	"	" " "	{ " " 22.7.37 to 14.11.37 Fm. 912 21.1.37 to 24.5.37	27.11.37 2.6.37
131 *† <i>Port Darwin</i> ...	T. H. Rigden ...	L. B. Philpott, J. L. Porter, P. Stansbury.	A. S. Bassi ...	"	" " "	{ Fms. 911 & 138 15.7.37 to 16.10.37 Fm. 912 11.6.37 to 14.7.37	16.11.37 4.8.37
163 *† <i>Port Giborne</i> , M.S.	W. G. Higgs ...	T. B. Milburn, H. Clinch, H. G. Chesterman.	E. Mooney ...	"	" " "	{ Fms. 911 & 138 10.6.37 to 25.9.37 Fm. 912 23.8.37 to 5.9.37	7.10.37 6.10.37
124 *† <i>Port Jackson</i> , M.S.	S. W. Hayter ...	L. W. Cady, F. J. Lavers, F. Punter.	P. M. Edwards	"	" " "	Fms. 911 & 138 24.6.37 to 10.10.37	15.10.37

FLEET LIST

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37.	Date Last Return Received.
177 *† Port Wellington	R. Needham ...	W. D. Henderson, G. F. Pannett, R. A. Wight.	R. D. Waterhouse	S.	Port Line Ld. ...	Fms. 911 & 138 29.4.37 to 18.8.37	26.8.37
003 *† Port Wyndham, M.S.	W. Gillling ...	C. J. Gorley, D. F. Morgan, C. Stone.	R. Colbourne ...	"	" " " "	" " 9.7.37 to 5.11.37	30.11.37
*† Prague ...	F. E. Beeching, D.S.C.	W. A. Breenham ...	A. Potter ...	"	L. & N.E. Rly. ...	" " 2.9.37 to 30.11.37	3.12.37
063 *† Queen City ...	J. C. Cornwell ...	M. Williams, D. Beynon ...	J. Moore ...	"	Sir Wm. Reardon Smith & Partners, Ld.	Fm. 911 5.5.37 to 12.7.37	30.7.37
183 †† Queen Mary ...	R. B. Irving, O.B.E., R.D., Capt., R.N.R.	W. K. Hunter, E. A. Divers, H. V. Clarke.	A. H. Farman ...	"	Cunard White Star, Ld.	Fms. 911 & 138 2.9.37 to 21.11.37	24.11.37
165 *† Radnorshire, M.S.	D. E. Evans ...	H. D. Hayes, J. A. A. Evans, H. Andrews.	I. T. Davies ...	"	A. Holt & Co. ...	" " 13.8.37 to 23.10.37	30.10.37
205 †† Rajputana ...	W. A. Cotching ...	J. Green, A. B. E. Bishop, E. D. Kerridge.	W. Banbury ...	M.-S.	P. & O. S.N. Co.	" " 20.6.37 to 24.9.37	27.9.37
228 †† Ranchi ...	J. A. Smith ...	G. M. Farniloe, J. MacArthur	W. Stevenson ...	"	" " "	" " 25.9.37 to 2.11.37	27.11.37
224 †† Rangitane, M.S.	A. W. McKellar, R.D., Capt., R.N.R.	M. L. Warren, E. O. Quick, D. Newman.	T. G. Bedford ...	"	New Zealand Shipping Co., Ld.	" " 24.7.37 to 24.10.37	3.11.37
217 †† Rangitata, M.S.	E. Holland ...	P. M. Church, R. A. Belfield, A. McD. Hannah.	H. R. Dedman ...	"	" " "	" " 27.6.37 to 26.9.37	12.10.37
105 †† Rangitiki, M.S.	H. Barnett ...	H. C. R. Dell, J. Ormsby, I. B. Rose.	L. Horn ...	"	" " "	" " 31.5.37 to 2.9.37	16.9.37
207 †† Ranpura ...	J. M. Legg ...	J. Collingwood, C. H. Stokes, G. Randall.	" " " "	"	P. & O. S.N. Co.	" " 6.7.37 to 6.10.37	25.10.37
071 †† Rawalpindi ...	M. G. Draper, R.D., Commr., R.N.R.	L. A. Hill, M. G. Morris, A. P. Godfrey.	S. W. Sharp ...	"	" " "	" " 8.8.37 to 22.10.37	23.10.37
247 *† Recorder ...	W. Baird ...	G. M. Jones, L. Seddon ...	J. Hallgall ...	M.	T. & J. Harrison	" " 19.8.37 to 21.10.37	1.11.37
132 *† Reina del Pacifico, M.S.	A. Ridyard, O.B.E. ...	H. Matthews, J. K. Campbell, A. P. Powell.	J. B. Stone ...	"	Pacific S.N. Co. ...	" " 20.6.37 to 14.8.37	21.8.37
276 †† Remuera ...	F. W. Robinson, R.D., Commr., R.N.R.	J. D. Bennett, R. S. Warren, J. D. Paterson.	E. Lawrence ...	S.	New Zealand Shipping Co., Ld.	" " 15.4.37 to 21.7.37	4.8.37
*† Rhexenor ...	J. P. Williams	W. Ross, P. Dusine, T. Arch	C. G. Brawny ...	M.L.	A. Holt & Co. ...	Fm. 915 8.4.37 to 9.8.37	20.10.37
*† Robert F. Hand (tank).	J. A. Collie ...	" " " " " " " "	" " " " " " " "	S.	Anglo - American Oil Co., Ltd.	" " " " " " " "	" " " " " " " "
*† Rockflower S.T.	L. D. Romyne ...	" " " " " " " "	J. H. Senior ...	"	Yorkshire Steam Fishing Co., Ld.	Fms. 911 & 138 20.8.37 to 21.11.37	22.11.37
032 *† Rotorua ...	A. E. Lettington ...	E. J. Ormsby ...	" " " " " " " "	M.	New Zealand Shipping Co., Ld.	Fm. 915 7.5.37 to 19.8.37	16.9.37
231 *† Ruahine ...	G. Kinnell ...	J. E. Clarke, C. W. Roberts, J. A. Matthews.	" " " " " " " "	S.	" " "	Fm. 911 28.2.37 to 13.6.37	22.7.37
*† St. Cathan, S.T.	J. Ellis ...	" " " " " " " "	" " " " " " " "	"	Thos. Hamling & Co. Ltd.	" " " " " " " "	" " " " " " " "
*† St. Helier ...	R. Pitman ...	V. Newton, W. B. Williams	L. Wilmot ...	"	G.W. Railway ...	Fms. 911 & 138 2.9.37 to 30.9.37	1.10.37
*† St. Julien ...	L. Richardson ...	J. D. Thomas ...	E. Trapnell ...	"	" " "	" " 28.9.37 to 28.9.37	2.10.37
*† St. Patrick ...	H. C. Bond ...	T. D. Thomas ...	L. M. Wilmott ...	"	" " "	" " 1.6.37 to 12.8.37	4.9.37
100 †† Samaria ...	C. H. Bate, R.O., Capt., R.N.R.	W. J. Law, J. C. Dawson, H. Hudson.	R. A. J. Owlett ...	"	Cunard White Star, Ld.	" " 22.8.37 to 6.11.37	10.11.37
*† San Adolfo, M.S. (tank)	L. G. Emmott ...	D. Skinner ...	" " " " " " " "	M.-S.	Eagle Oil & Shipping Co., Ld.	Fm. 912 21.8.37 to 23.10.37	10.11.37
108 *† San Alberto, M.S. (tank)	C. Vidot ...	E. A. Holloway, R. E. Kirkley, C. W. Baker.	S. Shelley ...	M.	" " "	Fms. 911 & 138 22.8.37 to 17.10.37	21.10.37
*† San Alvaro, M.S. (tank)	F. A. Kennett ...	H. Harrington, C. H. Munday, R. K. Griffiths.	A. Rankin ...	M.-S.	" " "	Fm. 911 8.8.37 to 7.10.37	12.10.37
073 *† San Arcadio, M.S. (tank)	S. Perry ...	J. H. Gay, M. A. Comel, J. Byers.	J. McManus ...	M.	" " "	Fms. 911 & 138 7.8.37 to 5.11.37	25.11.37
*† San Casimiro M.S. (tank)	H. Paterson ...	" " " " " " " "	" " " " " " " "	"	" " "	" " " " " " " "	" " " " " " " "
*† San Cirilo ...	A. Riddell, R.D., Capt., R.N.R.	" " " " " " " "	" " " " " " " "	"	Eagle Oil & Shipping Co., Ld.	Fm. 911 11.10.37 to 23.11.37	1.12.37
*† Scotia ...	W. T. Griffith ...	N. Lloyd Williams ...	J. H. Rockey ...	S.	L.M. & S. Railway	Fms. 911 & 138 13.9.37 to 29.10.37	2.11.37
170 †† Scythia ...	E. Edkin, O.B.E., R.D., Capt., R.N.R.	J. A. S. Halcrow, R. E. Patchett, R. G. Roberts.	R. Greenall ...	"	Cunard White Star, Ld.	Fms. 911 & 138 30.8.37 to 4.11.37	18.11.37
211 *† Shropshire, M.S.	R. S. Evans, O.B.E. ...	A. E. Young, A. E. Evans, G. Washington.	G. C. Talbot ...	"	Bibby Bros. & Co.	Fm. 912 8.6.37 to 22.8.37	25.8.37
121 *† Siamese Prince, M.S.	E. Hardcastle ...	R. Jones, E. A. Parfitt, C. Blakey.	A. Frazer ...	M.L.	Furness Lines ...	Fm. 915 23.3.37 to 19.6.37	5.8.37
*† Silversandal ...	R. H. Woodrow ...	R. W. Cherry, Bonnywell, Whiston.	H. Williams ...	"	S. & J. Thompson, Ltd.	" " " " " " " "	" " " " " " " "
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Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 10.9.37 to 4.12.37.	Date Last Return Received.
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