



REMARKS

EXPLANATORY OF THE

METEOROLOGICAL CHARTS

OF THE

OCEAN DISTRICT

ADJACENT TO

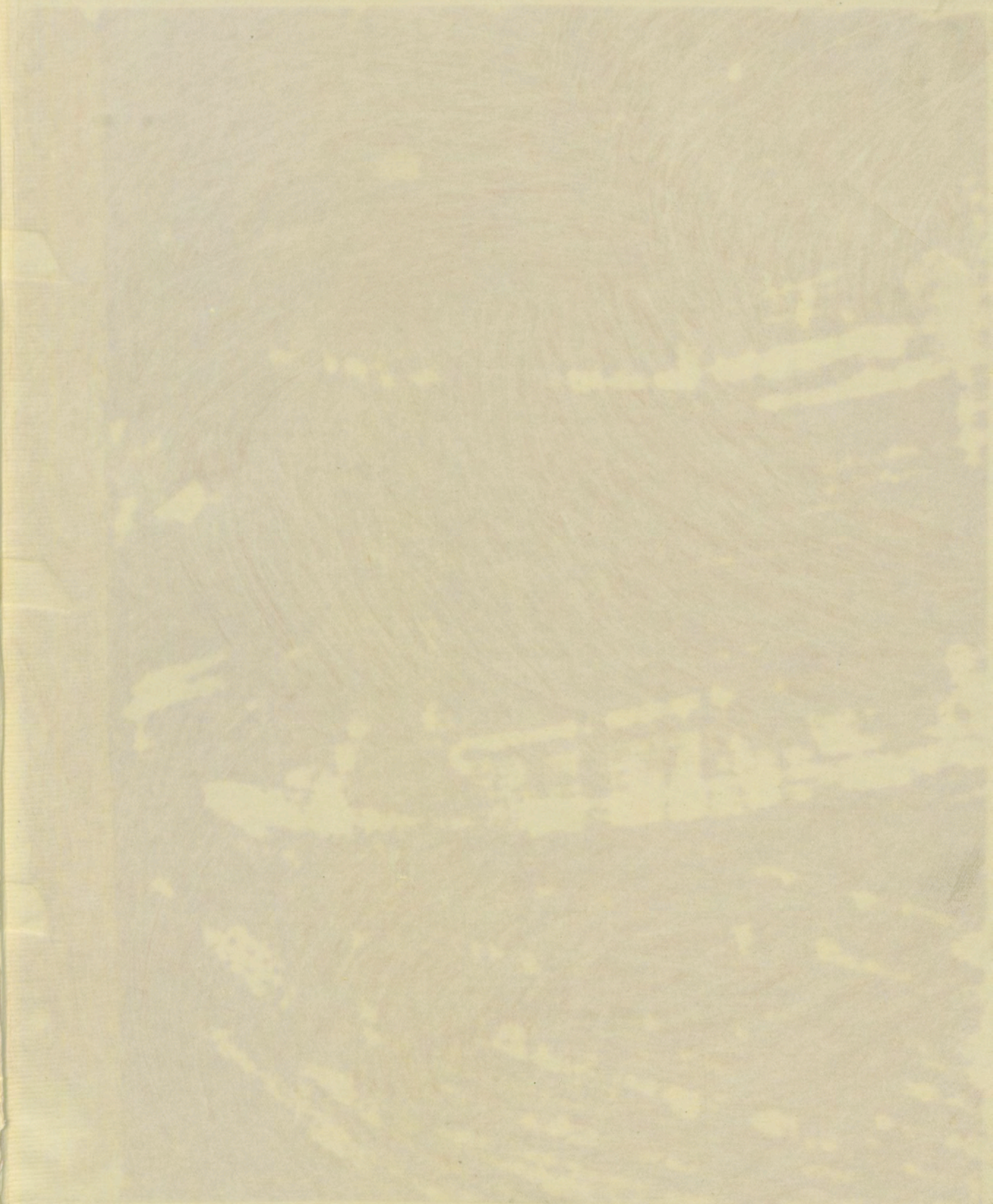
THE CAPE OF GOOD HOPE.

PUBLISHED UNDER THE AUTHORITY

OF

The Meteorological Council.

MET 12/1/3/43



Official, No. 43.



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EXPLANATORY OF THE

CHARTS OF METEOROLOGICAL DATA

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LONDON:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,

AND SOLD BY

J. D. POTTER, 31, POULTRY; AND EDWARD STANFORD, 55, CHARING CROSS.

1882.

Price Seven Shillings.

Q 7176. +

PREFACE.

THE discussion of the Ocean District adjacent to the Cape of Good Hope, of which the results are now published in these Remarks, and in the Charts accompanying them, has been carried on during the last five years in the Marine Department of the Meteorological Office under the direction of Captain Toynbee, Marine Superintendent.

The Meteorological Council take this opportunity of expressing their thanks to one of their members, Mr. Francis Galton, F.R.S., with whom what is new in the methods employed originated, and to whom they are indebted not only for the general plan of the work, as it actually appears, but also for a constant and careful supervision of all its details.

Meteorological Office,
January 1882.

By Order

ROBERT H. SCOTT,
Secretary.

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REMARKS

EXPLANATORY OF THE

CHARTS OF METEOROLOGICAL DATA

FOR THE

OCEAN DISTRICT ADJACENT TO THE CAPE OF GOOD HOPE.

THE Meteorological Office having completed in the year 1875 the discussion of the Equatorial Region of the North Atlantic Ocean, commenced in the same year an investigation of the district immediately adjacent to the Cape of Good Hope, and comprised between the tenth and fortieth meridians of E. longitude, and the thirtieth and fiftieth parallels of S. latitude.

The choice of this district by the Meteorological Committee of the Royal Society, the predecessors of the present Council in the management of the Office, was no doubt determined by the comparative abundance of the information relating to it, and by its importance to the navigator. The ordinary track of vessels bound by the "long sea" route to Australia, and to or from India and China, passes through it; it is traversed by strong, and in some places conflicting, ocean currents, causing great irregularities of sea surface temperature; it is subject to sudden and dangerous changes of wind and weather; and in certain months of the year floating ice is of frequent occurrence in its southern parts.

The results of the investigation are now published in the accompanying charts. In these Explanatory Remarks it is proposed to give (I.) an enumeration of the principal works or memoirs which have already appeared relating to the district; (II.) an account of the observations upon which the present work is founded; (III.) an explanation of the mode in which the observations have been treated; (IV.) a description of the charts themselves; and (V.) a statement of some of the chief results relating to the physical characteristics of the district which are suggested by an examination of the charts. The Remarks are followed by two Appendices, containing respectively, 1, the data from which the wind-roses in the charts have been constructed, and 2, summaries of the observations of the weather, of the clouds, and of the state of the sea.

I.

LIST OF THE PRINCIPAL WORKS OR MEMOIRS RELATING TO THE DISTRICT WHICH HAVE ALREADY APPEARED.

Authorities.	Name and Nature of the Work.
Rennell, Major James, R.E., F.R.S.	Investigation of the currents of the Atlantic Ocean, and of those which prevail between the Indian Ocean and the Atlantic.—London, 1832.
Maury, Commodore M. F.	Wind and Current Charts.—Washington, U.S., 1845–51.
„ „	- Explanations and Sailing Directions to accompany the Wind and Current Charts, 8th edition, 2 vols.—Washington, U.S., 1858.
Horsburgh, James, F.R.S.	India Directory, 8th edition, 2 vols.—London, 1864.
Hydrographic Department, Admiralty.	Australian Directory, vol. I., 7th edition, 1876.
„ „	- Africa Pilot, Part II., 2nd edition, 1875.
„ „	- „ Part III., 3rd edition, 1878.
„ „	- Wind and Current Charts for each Quarter of the year. 1879.
„ „	- Ice Chart of the Southern Hemisphere. 1874.
Meteorological Department of the Board of Trade.	The Board of Trade Wind Charts.—London, 1855–56.
„ „	- The Twelfth number of Meteorological Papers.—London, 1865. (Containing fragmentary papers on the Specific Gravity of the Ocean and Sea Temperature, and on Icebergs in the Southern Ocean.)
Meteorological Office	- Charts showing the Surface Temperature of the South Atlantic Ocean in each month of the year.—London, 1869.
Meldrum, Charles, LL.D., F.R.S.	Synoptic Weather Charts of the Indian Ocean, for the month of February 1861.—Published by the Meteorological Society of Mauritius.
Towson, J. T., F.R.G.S.	- Icebergs in the Southern Ocean (reprinted for the Meteorological Department, Board of Trade).—Liverpool, 1859.
Finlay, A. G., F.R.G.S.	- A Directory for the Navigation of the Indian Ocean. 1876.
Royal Meteorological Institute of the Netherlands, Utrecht.	“Results of Science and Experience as regards Winds and Currents in some parts of the Ocean.”* This is a serial publication, parts of which have been

* Uitkomsten van Wetenschap en Ervaring aangaande Winden en Zeestroomingen in sommige gedeelten van den Oceaan.

Authorities.	Name and Nature of the Work.
Royal Meteorological Institute of the Netherlands, Utrecht—(continued)	issued in various years commencing with 1855, papers which appeared in the earlier volumes being also occasionally reprinted with additions in subsequent years. The following are specially important for the meteorology of the district now under consideration.
„ „	- In 1857. The Agulhas Current as deduced from the Temperature of the Sea.
„ „	In 1858. Wind charts of the South Atlantic to lat. 50° S. and long. 15° E., in 5° squares for each month. Storm and Rain charts for vicinity of Cape of Good Hope.
„ „	- In 1859. Wind charts of Indian Ocean to lat. 50° S. and eastwards from 15° E., in 5° squares for each month. Sea Temperature means from lat. 30° to 50° S., and long. 0° to 45° E.; in single degree squares, for the months of April and June.
„ „	- The Mean Barometric Pressure in the Indian Ocean.
„ „	- In 1861. A special volume entitled Investigations with the Marine Thermometer (“Onderzoekingen met den Zeethermometer”). This work contains <i>inter alia</i> the following papers:— Monthly Charts of Sea Temperature in the South Atlantic and the Indian Oceans. The Influence which the Agulhas Current exerts on the Atmosphere. On the occurrence of Ice in the Southern Hemisphere.
„ „	- In 1862. A Collection of Charts containing percentages of Storms, Rain, Thunder, and Mist.*
„ „	- In 1868. On the Temperature of the Sea at the surface near the South point of Africa.—By J. E. Cornelissen. (Containing Charts of the mean sea temperature in single degree squares for the year and for each quarter.)
„ „	- In 1874. On the mean height of Barometer and Storms round the South point of Africa.†
„ „	- In various years. Sailing Directions from Java to the English Channel and back. The Storms in the vicinity of the Cape of Good Hope

* Verzameling van Kaarten inhoudende eene procentsgewijze opgave omtrent Storm, Reger, Donder, en Mist, grootendeels getrokken uit de jongste waarnemingen onzer Nederlandsche zeelieden.

† Gemiddelde Barometerstand en Stormen rond Afrika's Zuidpunt.

Authorities.	Name and Nature of the Work.
	considered in connection with the Temperature of the Sea.*—By Lieut. J. van Gogh.
Dépot des Cartes et Plans de la Marine, Paris.	Atlas des Routes, Vents et Courants généraux.—By Capt. C. P. de Kerhallet.
" "	- Vents et Courants. Routes générales. Extrait des Sailing Directions de Maury et des travaux les plus récents.—By MM. Charles Ploix and Caspari, Paris, 1847.
" "	- Atlantique Sud. Cartes de la Direction et de l'Intensité probables des Vents.—By Lieutenant L. Brault, 1876.

II.

OBSERVATIONS ON WHICH THE CHARTS ARE FOUNDED.

The number of sets of observations† employed in the preparation of the charts is about 147,000, giving an average of 12,250 for each of the 12 months. They are, however, unequally distributed among the different months, ranging from about 8,200 in April, to 15,000 in August. The observations extend over a period of 24 years, from 1855 to 1878 inclusively. They are for the most part four-hourly; so that the 147,000 (complete or incomplete) sets are equivalent to those of 24,500 days. This number cannot be considered unduly large when the object is to obtain results, sufficiently well established to satisfy practical requirements, throughout a district measuring 30 degrees of longitude by 20 of latitude. Indeed, the distribution of the observations is so far from uniform over the whole district, as will be seen on a reference to any one of the wind or current charts, that *lacunæ* of considerable extent exist for which there are no observations; and, besides this, in the mode of discussion employed in the Office, the number of four-hourly sets has been reduced by nearly one half, owing to the adoption (as will presently be explained) of a peculiar system of weighting.

Of the 147,000 sets of observations, 94,000 are taken from meteorological logs preserved in the Office, and furnished chiefly by merchant ships, but partly also by ships of the Royal Navy; 10,000 are from the logs and remark books of Her Majesty's ships preserved at the Admiralty; 40,000 are from the logs of Dutch ships, communicated to the Office by the Royal Meteorological Institute of Holland, and 3,000 are from miscellaneous sources. In addition to the complete sets of observations the logs preserved at the Admiralty have yielded about 1,400 observations of currents.

The 40,000 observations from Dutch ships relate entirely to the region south of the parallel of 40°; for the region north of that parallel the Dutch data were not required.

* De Stormen nabij de Kaap de Goede Hoop in verband beschouwd met de Temperatuur der Zee. Amsterdam, Verslag. Akad. viii., 1858.

† A set of observations comprises all that are taken at one time, viz., those of barometer, wind, temperature of air and sea, specific gravity of sea surface, weather, and clouds. The record of current is usually made only once in 24 hours (*vide* footnote, p. 9). In many cases the set of observations is not complete, but the reading of the barometer and a record of the wind are almost invariably given.

The Dutch ships usually follow a more southern course than the British; and the information derived from them is of great value, because it relates to a part of the ocean in which the data from other sources are comparatively scanty.

The logs from Her Majesty's ships are of especial importance for another reason of the same kind. In rounding the Cape of Good Hope from the westward, the ships of the Royal Navy generally call at Simon's Bay; whereas merchant ships, when outward bound, (*i.e.*, to Australia, or ports in the Indian or China Seas,) seldom call at the Cape, and therefore rarely pass through the part of the sea, lying to the south-eastward of the Cape of Good Hope, which is traversed by ships bound to India or Australia from Simon's Bay or Table Bay.

The meteorological instruments employed in the observations taken on board Her Majesty's ships and British merchant ships were supplied by this Office, and were duly verified before issue. The instruments employed on the Dutch ships were verified by the Meteorological Institute of Holland.

III.

MODE OF TREATING THE OBSERVATIONS.

WIND.

Weighted Observations.—In the Cape District the tracks of outward and of homeward bound ships are different; if therefore every observation were made use of in the preparation of the charts the winds that were in either case opposed to the ship's course would be too frequently recorded. Head winds would delay the ship, and there would in consequence be too many observations of them. In order to ascertain whether the inequality thus arising is of any practical importance, an examination was made of the winds in certain parts of the district which are frequented by both homeward and outward-bound ships; and a comparison was instituted between the relative prevalence of a given wind as derived from the logs of ships passing in the two opposite directions. The results were found to differ to a considerable extent (see p. 6); and it became necessary to adopt some mode of adjustment. As a ready, though only approximate, method, the plan was adopted of admitting no more than a single observation from the same ship on the same day and in the same one-degree square; the mean being taken when the ship had made many observations on the same day in the same one-degree square. The observations, as has been already stated, are made at four-hourly intervals; and it is only with unfavourable or adverse winds that a ship would record more than two or three observations in a single-degree square.

The process actually employed was as follows. The weight 10 was assigned to all the observations taken in twenty-four hours by each ship in each single-degree square. When these observations (whether one or more than one) were all of the same wind, say of a North wind, 10 was tabulated under N.; when there were two observations of different

winds, say North and East, 5 was entered under N., and 5 under E.; if there were three or more observations, 10 was divided among them, preserving the true ratio as nearly as possible, without using a decimal. After all the figures referring, say, to the N. wind, had been added together, a decimal point was placed before the last figure. This process of revision or “weighting” was found to introduce very little additional labour into the discussion.

The total number of recorded observations of wind direction was, as already stated, about 147,000, but the number of weighted observations was only 76,000.

The following table of the percentage of winds from the different points of the compass may serve as an example of the difference between the indications of weighted and unweighted observations made by vessels sailing in the same direction. It is founded on the data of a wind-rose referring to an area of the sea frequented by homeward-bound ships only. (The wind-rose will be found at S. lat. 35° 15' and E. long. 24° 0', in the July chart.) It will be observed that the weighted observations testify to the existence of a much larger proportion of Easterly or favourable winds, and conversely to a much smaller proportion of Westerly or unfavourable winds, than would have been inferred from the unweighted observations.

		EASTERLY WINDS.															
		N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.N.E.	E. by N.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.
Weighted observations	- - -	1.8	3.2	1.3	3.3	4.3	4.0	3.6	3.3	2.3	2.3	1.2	1.1	1.1	2.2	0.9	1.7
Unweighted observations	- - -	1.2	3.0	0.6	1.8	2.6	2.6	1.6	3.2	1.4	1.2	0.8	0.8	0.4	1.2	1.2	0.8
Ratio of weighted to unweighted, the latter being taken in each case as = 10 - }		15	11	21	18	17	15	23	10	16	19	15	14	28	18	8	21

		WESTERLY WINDS.															
		S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.
Weighted observations	- - -	—	1.1	0.6	1.2	1.7	5.0	3.5	15.3	6.9	9.8	2.2	2.2	1.7	1.0	0.9	0.9
Unweighted observations	- - -	—	1.6	0.8	2.4	1.6	6.5	3.6	19.6	8.9	11.9	2.6	3.0	2.0	1.2	1.4	1.0
Ratio of weighted to unweighted, the latter being taken in each case as = 10 - }		—	7	8	5	11	8	10	8	8	8	8	7	9	8	6	9

The necessity for weighting is much greater in the northern part of the Cape district than in the southern, for the observations in the northern part are almost exclusively derived from homeward-bound vessels; and owing to the great prevalence of Westerly winds in this part ships are often held in one spot for a considerable time.

Homogeneous Areas.—The method hitherto generally adopted of obtaining mean results for meteorological charts has been to divide the charts into spaces of an uniform size and to group together all the observations made in the same space, treating it as if it were homogeneous in its meteorological conditions. An arithmetical mean was then taken of all the observations and this mean was referred to the centre of the space.

If the spaces employed are small enough, say one degree of longitude and latitude in their length and width, no great error can arise from the adoption of this method; but it is impossible in the case of winds, owing to the paucity of the observations and their irregular distribution, to obtain trustworthy results of frequency and direction for these small ocean spaces. Meteorologists have therefore been often obliged to employ large spaces, measuring, for example, 5° of longitude by 2° of latitude, even when there was no evidence that the conditions were similar over so extensive an area.

This method of dividing the ocean into spaces of considerable size, and taking the mean of all the observations in each space as a central value, is open to well-founded objections,* and it has accordingly been abandoned in the preparation of the present charts. Instead of it, the principle of “homogeneous areas” has been adopted; no area being accepted as suitable for a single mean result until fair evidence had been found that its meteorological conditions are uniform throughout.

The mode in which the homogeneous areas were selected was the following:—

The weighted wind results for each single-degree square, and for each month, were arranged in a tabular form, and the sheets containing these tables for an extensive region, say three ten-degree squares, were laid out in geographical order. At the same time a chart was prepared showing for each single-degree square the number of weighted observations which it contained. By ocular inspection the single-degree squares, which appeared to agree in their results, were grouped together into areas of varying extent, but bounded by parallels and meridians, so as to ensure that the whole region under discussion should fall into the areas without omission or overlapping.

* Professor Buys Ballot (“Sequel to the Suggestions on a Uniform System of Meteorological Observations,” Utrecht, 1873, p. 43,) has expressed his opinion in the following terms: “I do not see any safer means of knowing the average indication of the instruments, for every time of the year and every place, than to note in our registers every observation on a different page according to the place in the ocean, and separately for every day of the year, that we may be able to make a graphic table of these observations, and to see if any districts of the sea have some phenomena in common, and what are the boundaries of these districts.

“Unhappily it is not sufficient to form squares of five degrees side *à priori*; for it will often be the case that one half of such a square shows a digression from the mean opposite to that of the other half. For instance we seek the limits of the trade winds; shall we find them by studying only large squares, viz., from 15° to 20° lat., and from 20° to 25° long., etc.? Are they at the same latitude in different longitudes? It is impossible to determine them, if we do not know what passes at every square degree, at every square minute of a degree. Sooner or later therefore someone will come to the system of giving separately what has been observed at separate points of space and time.”

See also “Maandelijksche Windkaarten van den Noord-Atlantischen Oceaan, Utrecht,” 1878.

As soon as this first selection was made, the chart of the number of weighted observations was consulted in order to see that each area contained at least 50 of them, and in general not more than 150. Any smaller number than 50 was regarded as insufficient, but in parts of the sea rarely visited it was not possible to adhere to this limit.

The area having been selected by the above rough procedure, the data for the several single-degree squares which it contained were arranged in a tabular form and carefully compared with one another, in order to judge whether they harmonised sufficiently to justify the belief that they belonged to the same natural area. If they did so harmonise the selection was held to have been rightly made; if not, a different distribution was tried.

The number of homogeneous areas finally adopted averages about 46 in each of the monthly charts.

Wind-Roses.—Trials were made of plotting each observation of wind in its proper place in the chart, but the effect was too confused to be serviceable. When a number of arrows run more or less parallel to one another, the eye is able with facility and accuracy to judge of their mean direction, but when they cross at various angles the judgment becomes bewildered, and the relative frequency with which the arrows point in different directions does not admit of being rightly estimated. Practical experience showed that the fallibility of the judgment of the eye under these conditions is considerable. It, therefore, became advisable to have recourse to wind-roses, and to draw one of them in each of the homogeneous areas.

The form of wind-rose employed, and the mode in which the wind-roses were constructed from the data, are described at pages 11, 12.

Generalised Wind-Arrows.—According to the ordinary methods of obtaining mean monthly results, the observations are in effect treated as if they had all been made on the middle day of the month; every observation made on any day in February of any year being utilised to obtain a mean value for February, and similarly for January and March. Thus each month stands wholly alone, and an observation made on the 29th February is accepted as of equal weight in determining the mean value for February as one made on February 15, but an observation made on March 1 is allowed no weight at all. Under the stress of the practical limitations to which statistical methods are subject, this plan has been adopted in obtaining the mean results for the several months, but in drawing generalisations from them some weight has always been allowed to the mean results of the previous and subsequent months. The following method was used: Lines of arrows were in the first place drawn on each chart separately as faithfully as possible from the wind-roses in that chart, and then some very slight adjustment was permitted to make the directions of the arrows flow consistently in the same chart. After this the lines of arrows for a month, as well as those similarly drawn for the previous and following months, were traced in different colours on the same sheet of thin paper, and from this an average set of lines

of arrows was obtained for each month by giving most weight to the middle month, but some weight to those of the previous and following months. This was done for each of the twelve months. A further slight adjustment of the lines was permitted to bring the sequence of the months into harmony, and the generalized arrows were then finally drawn.

GALES.

Frequency.—The percentage of recorded winds whose force exceeded 7 has been tabulated for the various parts of the district in the several months, and the results are shown on the index charts (*vide* page 14) by degrees of shading which indicate the greater or less tendency to stormy weather independently of the direction in which the wind may blow.

Classification.—The classification of the gales in the neighbourhood of the Cape of Good Hope has been entrusted to Captain Toynbee, and will form the subject of a separate publication.

AIR TEMPERATURE.

The data for each single-degree square were meaned and charted, and isothermal lines were drawn from them in the usual manner.

BAROMETER.

The number of times at which the mercury was observed to stand at each tenth of an inch of the barometric scale was tabulated; and the relative frequency of each reading was determined. The results are given for spaces of 5° of latitude by 10° of longitude, and are represented by diagrams (see page 13) placed in the mean position of the observations to which they respectively refer. The mean height of the barometer for each of these spaces was also computed.

OCEAN CURRENTS.

Direction and Rate of Currents.—The data for estimating the direction and rate of ocean currents are as a rule the positions of the ship at noon each day (1) by dead reckoning, and (2) by astronomical observation.*

The difference between these is partly due to errors of dead reckoning and observation, and partly to the effect of current. As the errors cannot be eliminated, the whole of the difference has to be accepted as a rough measure of the set and force of the current. This method of determining the movement of the water is not strictly

* Occasionally currents are recorded for parts of a day, suitable astronomical observations of latitude and time being made at different hours, with the view of apportioning in the most probable manner the whole error of the day's work between the different parts of the day. When this is done advantage is usually taken of the clear horizon an hour before sunrise and after sunset. Formerly observations of the surface set or drift were not unfrequently made in calm weather by detaching a boat from the ship. The pitch kettle, weighted and attached to a rope 60 or 80 fathoms long, served to anchor the boat, more or less securely, to the deep water below, and the direction and rate of the surface current, as it drifted past the boat, was then determined by the compass and the log. This method obviously affords only a differential measure of the surface current, and not one of its absolute direction and rate.

accurate, but it is the best available, and furnishes results which approximate sufficiently to the truth where the currents are strong, and where their directions fairly concur.

The actual movements of the water, in some parts at least of the Cape district, appear to be nearly as complicated as those of the wind; the seaman in a single day's sail occasionally passing through successive bands of water of different temperatures, probably implying different currents. The record at intervals of 24 hours of the difference between the positions of the ship by dead reckoning, and by astronomical observation, can of course give no adequate account of these variations.

When the method adopted gave a result of 5 miles or less in the 24 hours it has been considered as "no current," and is shown as such on the charts.

SEA SURFACE TEMPERATURE.

The data for each single-degree square were meaned and charted, and isotherms were drawn from them in the usual manner.

The highest and lowest temperatures in each single-degree square were also charted and from these the areas in which the temperature of the surface water has a wide range were determined.

SPECIFIC GRAVITY.

The mean reading and the frequency of the various readings were obtained in the same way as in the case of the barometer, and the results are similarly exhibited by diagrams. The diagrams (which are placed in their proper geographical positions) have, however, been worked for homogeneous areas and not for conventional spaces, as in the case of the barometer.

FLOATING ICE.

The data furnished by the observations described on page 4 have alone been employed, and no use has been made of any results already published.

PASSAGES.

The data contained in the meteorological logs preserved in this Office have alone been used for determining the duration of passages across the district comprised in the charts.

In the charts only the outward passages have been dealt with; a comparison of homeward passages, with the object of showing the relative lengths of passages in the various months, is given at page 25.

TABLES OF WEATHER, CLOUD, AND STATE OF SEA.

In Appendix B. the mean results relating to Weather, Cloud (form and amount), and State of Sea are given for spaces of 5° of lat. by 10° of long. in a tabular form. An epitome of some of the most important results will be found in a Table on page 26.

IV.

DESCRIPTION OF THE CHARTS.

The series of Charts in the accompanying volume consists of—

A. Twenty-four large monthly charts, in twelve pairs, one pair for each month. These contain the original observations in as much detail as is practicable. They also contain generalized results. Each pair of charts lies face to face in the volume; the chart to the left, when the book is opened, refers to Wind, Air-temperature, and Barometric pressure; the chart to the right refers to Ocean Currents and Sea Surface Temperature.

B. Two index charts for the whole year, face to face, to match with the above-mentioned set. They are divided into compartments, each of which contains on a small scale the generalized results only.

C. Quarterly charts of the Specific Gravity of sea water, of the distribution of floating ice, and of the times taken by outward-bound ships to traverse the district.

SERIES A.—LARGE MONTHLY CHARTS.

An explanation of the contents and of the symbols employed is inserted at the bottom of each of these charts. By the side of every chart will be found a statement of the main differences between it and those of the preceding and succeeding months.

I.—WIND, AIR TEMPERATURE, AND BAROMETRIC PRESSURE.

Wind-roses.—In each natural area, whose rectangular boundaries are faintly outlined in black, is placed a wind-rose. Its actual position is decided by the distribution of the observations within the area. The form of the wind-rose is new; a specimen is given in Fig. 1, but the principle of its construction will be better understood by the help of Figs. 2 and 3.



FIG. 1.

The shaded portions of Fig. 2 refer to Wind Direction and to Calms.

They consist of a central circular speck, C, which is proportional to the frequency of calms, and of a large irregularly shaped figure, A, consisting of truncated sectors of varying outer radii, disposed round the unshaded circle, and showing the Frequency with which the winds blow towards the centre from different directions.

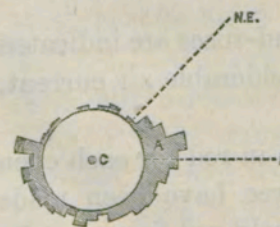


FIG. 2.

The shaded portions are so drawn that (1) the sum of the areas of A and of C is the same in every wind-rose*; (2) the area of C as compared to the sum of the areas of A and C, is as the number of calms observed to the total number of observations; and (3) the area of that part of A which is intercepted between any two compass bearings, say N.E. and E., is to the sum of the

* In the lithographed Charts, and consequently in Fig. 1, the circular speck (C) has not been shaded.

areas of A and C, as the number of times in which the wind has been observed to blow between N.E. and E. is to the total number of observations.

The scale used in drawing the wind-roses was constructed on the following principle: 32 radiating lines, including as many equal sectors, were so drawn that the middle line of each sector was directed towards one of the 32 points of the compass. A series of concentric circles was then drawn, dividing the sectors into compartments of uniform area, each equal to two hundredth parts (0.02) of the entire area of a wind-rose. The relative frequency of the different winds was calculated in percentages, and the results were plotted to scale, taking each compartment as the equivalent of two per cent.

As regards the force of the wind, the cases in which it reached a gale (that is, exceeded force 7 on Beaufort's scale) have been separated from the rest. The frequency of the gales from each point of the compass is shown by the darkly shaded tips to the wind-rose (see Fig. 1), the gales bearing the same proportion to the other winds that the darkly shaded part of the rose bears to the less darkly shaded part. The frequency of gales, irrespective of direction, is shown on the index charts, as has been already said (page 9) by shading. The mean force of the winds from each point of the compass that fall short of gales is shown by the length of the lines radiating inwards from that point, Fig. 3. The scale on which they are drawn is such that a line reaching the whole way from the circumference of the circle to the centre would have the value of force 10, and one reaching to the half-way circle would have the value of force 5. As all winds exceeding force 7 have been dealt with as gales, the mean force of the remainder can never exceed 7, and will usually fall much short of that amount.



FIG. 3.

The number of weighted observations is indicated roughly by a mark, or the absence of a mark, in the middle of the rose, just outside the central circle of calms. A star (*) indicates that the number of observations on which the rose is founded exceeds 100. A cross (+) signifies that it lies between 50 and 100; and the absence of any mark at all shows that it is less than 50. In Fig. 1 is seen the combination of a star with the circular speck that refers to calms.

The data upon which each wind-rose is founded are printed in a tabular form in Appendix 1.

Generalised Wind-Arrows.—The prevalent winds shown by the wind-roses are indicated in the charts by black arrows. Where there is more than one considerable air current, the less important one is shown by a fainter and smaller arrow.

Air Temperature.—Isotherms of mean air temperature are drawn in red for each even degree, Fahrenheit, of air temperature; those for each tenth degree have been made thicker than the others. The value of each isotherm is given in bold red figures at its two ends, where it enters and leaves the map. The isotherms are drawn as broken lines wherever the data appeared insufficient to determine their course with certainty.

The mean air temperature for Cape Town and for Port Elizabeth is inserted on the charts.

Barometric Pressure.—The barometric results are not given in the ordinary form of isobaric lines, which would fail to show the striking increase of barometric range and variability with increasing latitude in the district under discussion. Diagrams of Barometric Frequency are used in their place, as shown in Fig. 4. The scale on the left represents that of the barometer, and the ordinate of the curve at any scale reading is proportional to the frequency with which the barometer has been observed to stand at that height. The area enclosed by the curve is the same in all the diagrams, so that the ordinates of the different curves are comparable with one another, and the relative frequency with which the barometer stands at the same height in different parts of the district can be learnt from them. The ordinate corresponding to the mean barometric height is dotted, and the value of that height is given in red figures.

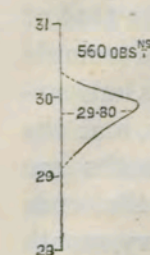


FIG. 4.

The diagrams have been calculated for spaces of 5° of latitude by 10° of longitude, and each diagram has been drawn in the space to which it refers, its position in that space being determined by the distribution of the observations.

The mean barometer reading for Cape Town and for Port Elizabeth is inserted on the charts.

II.—OCEAN CURRENTS AND SEA-SURFACE TEMPERATURE.

Current-Arrows.—The direction of Ocean Currents in the same district being much more uniform than that of the winds, it was found unnecessary to have recourse to roses; the observations have therefore been plotted individually on the charts.

The arrows indicate observations of the current made by each ship in each 24 hours. The point of the arrow is placed midway between the noon positions from which the current is deduced, and the length of the arrow is proportional to the strength of the current on the scale of one-tenth of an inch for 20 miles in 24 hours.

Generalised Current-Arrows.—The general direction and rate of the currents is shown by bolder arrows in blue, whose scale is three times that of the ordinary arrows.

Sea-Surface Temperature.—Isotherms of mean Sea-Surface Temperature* are drawn in black for each even degree Fahrenheit of sea-surface temperature; those for each tenth degree have been made thicker than the others. The value of each isotherm is given in bold black figures at its two ends where it enters and leaves the map. The isotherms are drawn as broken lines wherever the data appeared insufficient to determine them with certainty.

As a large range of temperature accompanies the intermingling of the warm Agulhas current with the cold current from the south, outlines have been drawn in blue to show where that intermingling chiefly takes place. A single contour line encloses all districts in which the observed range of sea-surface temperature equals or exceeds 15°, a double contour line encloses those in which the observed range equals or exceeds 20°.

* The diurnal range of sea-surface temperature is usually small, but in parts of the sea affected by varying currents of hot and cold water considerable changes may take place in the course of the twenty-four hours.

SERIES B.—INDEX CHARTS FOR THE WHOLE YEAR.

A set of small index charts to the whole of the Series A I., and another to that of

January.	February.	March.	April.
April.	May.	June.	July.
July.	August.	September.	October.
October.	November.	December.	January.

A II., are given respectively upon a single page. In each case the charts are arranged in four horizontal rows, and the charts of four consecutive months are arranged in each row, the chart that ends

each row being repeated at the beginning of the next, so that the chart of every month can be easily compared with that both of its predecessor and successor.

I.—WIND, AIR TEMPERATURE, AND BAROMETRIC PRESSURE.

Wind.—The generalised wind-arrows already described in Series A are here reproduced on a smaller scale in black. The wind-roses are omitted.

Gales.—The shaded areas indicate the regions where not less than 10 per cent. of the recorded winds had the force of a gale. The lightest of the three shades shows where the proportion of gales was between 10 and 20 per cent. The second shade shows where it was between 20 and 30 per cent., and the darkest where it exceeded 30 per cent.

Air Temperature.—The isotherms described in Series A are here reproduced on a smaller scale in red. Their values are written at the ends only of those that refer to each tenth degree, except in a few cases where otherwise there might have been uncertainty.

Barometric Pressure.—This is indicated by the vertical rows of red figures on the 15th, 25th, and 35th meridians. They are placed at the points where the corresponding isobars, drawn from the mean values given with the barometric diagrams in the larger charts, cut those meridians. The isobars themselves are not printed, as they were found to confuse the map, but their general course may be readily inferred from the figures. The barometric diagrams in Series A are omitted.

II.—CURRENTS AND SEA-SURFACE TEMPERATURE.

Currents.—The generalised current-arrows described in Series A are here reproduced on a smaller scale in blue. The individual observations are omitted.

Sea-Surface Temperature.—The isotherms described in Series A are reproduced on a smaller scale in black. The values are written only at the ends of those that refer to each tenth degree, except in a few cases where otherwise there might have been uncertainty.

The blue contour lines, showing the wide range of sea-surface temperature in certain districts, are reduced to scale from those in Series A.

SERIES C.—SPECIFIC GRAVITY, ICE, AND PASSAGE CHARTS.

Four charts are given in the same page, one for each quarter of the year.

Specific Gravity.—The specific gravity of the sea water is shown by diagrams constructed from those observations only which were made during the middle month of the quarter. They represent the relative frequency of the various readings of the hydrometer, and correspond in the principle of their construction to the barometric diagrams in the large wind-charts (*see* description and diagram, p. 13). The scale on the left of each diagram represents the scale of the hydrometer, and the ordinate at any point of the scale is proportional to the frequency with which the specific gravity was observed to have the value indicated by that point. The ordinate corresponding to the mean value is dotted; the mean value is given in figures, and the number of observations is recorded.



Floating Ice.—The position in which floating ice has been observed at any time during the quarter is shown by small circles, within which are written the month and year of observation. A dotted circle signifies loose ice; a plain circle, an iceberg of moderate size; a double circle, a large iceberg. The circles that refer to ice seen on the same voyage are connected by a broken line. The number of ships that recorded observations along the several degrees of latitude is entered in a vertical column, a little to the right of the 30th meridian, so that the proportion of passages between any desired limits of latitude, in which ice was seen, to those in which it was not seen, may be readily estimated.

Passages Outward.—Diagrams are given to show the time occupied in sailing from longitude 10° E. to longitude 40° E., by outward-bound ships that cross the meridian of 20° E. in various latitudes. A pair of diagrams is drawn for each two degrees of latitude, one for the Indian and the other for the Australian voyages, those for the Indian voyages being placed to the left of the meridian of 20° E., and those for the Australian voyages to the right of it. The horizontal scale below each of the diagrams refers to the number of days occupied in the passage, and the ordinate at any point of the scale is proportional to the frequency with which the passage has been made in the corresponding number of days. The ordinate corresponding to the mean time of passage is dotted; the mean time of passage is given in figures, and the number of ships that recorded observations is also registered. The scale readings of each pair of diagrams start from the meridian of 20° E., and commence with the value of four days; they increase as they proceed outwards on either side of the common starting point. These diagrams correspond in the principle of their construction to those of the barometer in the large wind-charts (*see* diagram, p. 13) and to those of the specific gravity of the sea water.

CHIEF RESULTS.

WINDS, TEMPERATURE OF THE AIR, AND BAROMETER.

Winds.—A chart of mean results affords little information about the actual stream lines of the aerial currents, such as are portrayed in synoptic charts. It can show no more than the relative frequency of the various surface winds at different localities, leaving it to be inferred from other data how far its indications of air currents represent actual movements of the air in those directions, as in the case of the Trade Winds, or how far they represent a line along which different systems concur in having the same direction, as in the case of the prevailing south-westerly winds of the English Channel, which are for the most part the southern limbs of successive cyclonic systems, whose centres cross the meridians of the Channel, to the northward of it.

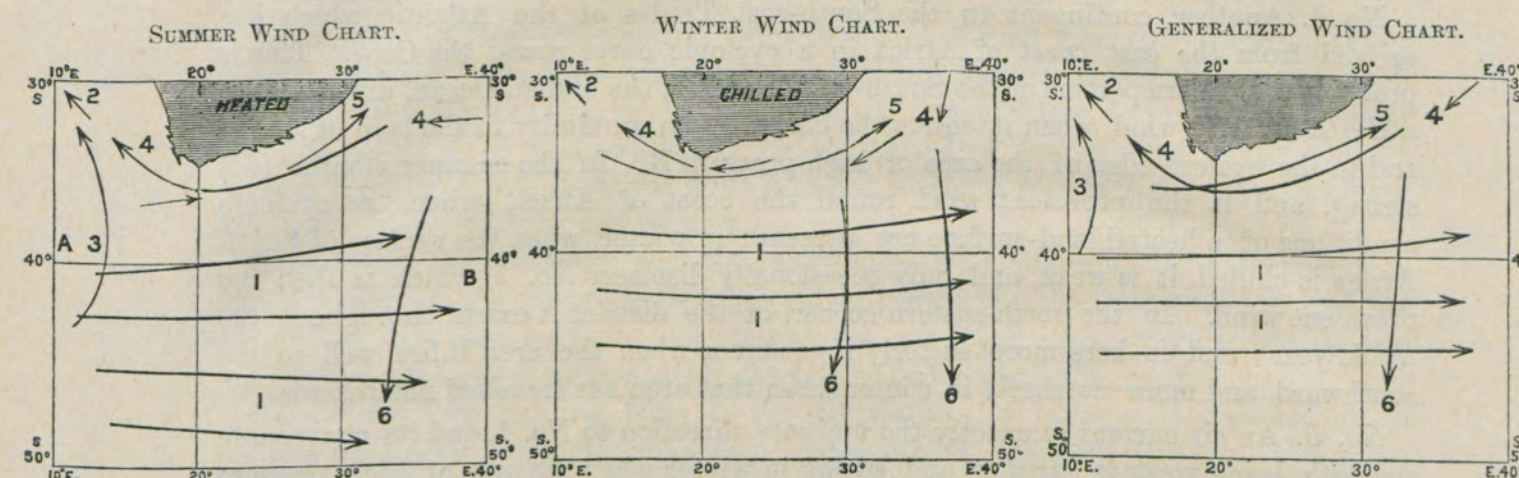
The sequence of weather experienced by the same ship, the comparison of simultaneous observations made by ships and at certain land stations in the Cape Colony, and the Synoptic Charts of the Indian Ocean for the month of February 1861, published by Mr. Meldrum, concur in showing that the weather off the Cape of Good Hope is dependent on cyclonic and anticyclonic movements, precisely as it is in Europe, over the Atlantic, and in the United States; and also, that the rate of progress of the cyclonic systems is usually from 20 to 30 miles per hour. It must of course be borne in mind that the directions of cyclonic and anticyclonic rotation which are respectively left handed  and right handed  in the Northern Hemisphere are reversed in the Southern.

The conditions under which atmospheric disturbances are produced exist in singular force in the district under discussion. It will be shown in the section relating to Ocean Currents and Sea-Surface Temperature that large volumes of hot and cold water intermingle to the south of the Cape, causing a wide range of sea temperature in adjacent localities, and that the sea-surface isotherms are in some places crowded more closely together than perhaps in any other part of the globe, except between the Gulf Stream and the Labrador, or Arctic, Currents, and the Japan Stream and its counter cold current. In addition to this, a notable disturbance is produced by the excessive heating and cooling, by day and by night, in summer and in winter, of the arid and high table-land of South Africa, whose mountainous rampart, especially on its eastern side, probably concurs with the heat of the interior in the one case and with its cold in the other in impressing a cyclonic or anticyclonic character, as the case may be, on the motion of the air round the southern coasts of the African continent.

There are yet two other permanent conditions that are closely related to the prevalent winds in this district. Areas of high pressure, of which the limits do not

extend as far as the coast of Africa, exist on either side of it, where the Anti-Trade winds of the Atlantic and Indian Oceans respectively descend, and from which the corresponding Trade winds flow. These areas move with the sun, travelling to the northward in winter and to the southward in summer. Between each of them and the southern coast of Africa, the winds have an anticyclonic drift which is very apparent in the charts.

The prevalent wind-systems appear to be six in number, and are shown and numbered in the accompanying diagrams.



No. 1. A West wind that prevails over the whole of the lower half of the district and part of the upper. The barometric conditions with which it is associated are those of diminishing mean pressure as we proceed southward, accompanied by a great increase of variability in the pressure. The first condition taken by itself might be construed as indicating nothing more than the existence of a large permanent Antarctic depression, along the northern edge of which a broad belt of air travels permanently from the west in a great cyclonic curve; but the second condition suggests an additional interpretation. It shows that the mean low pressure is in part due to the pressure being sometimes low and sometimes high, but frequently very low; that is to say, it testifies to the existence of an area across which barometric depressions travel along paths lying more commonly in the southern than in the northern part of the area comprised in the chart, or, it may be, altogether beyond its southern limit, the prevalent westerly winds being the northern limbs of these successive cyclonic systems. In the highest latitudes reached by Sir J. Ross in the Antarctic voyage of H.M. Ships "Erebus" and "Terror," 1839-43, the prevalence of westerly winds had ceased, whence it may be inferred that the usual paths of the cyclonic centres lay to the north of him. There are no data from which it would be possible to construct even approximately a diagram showing the relative frequency with which different points in the same meridian are crossed by the storm centres.

No. 2. The South-east Trade wind of the Atlantic. It is plainly seen at the upper

left-hand corner of the summer charts, and indications of its commencement may be traced in all of them.

No. 3. A contingent to the Atlantic Trade winds from the western part of the district. It enters the chart at the lower part of its left-hand margin and sweeps anticyclonically round A (shown only in the diagram of the winds in summer), which represents the edge of the area of high pressure above mentioned, at the place where the Atlantic Anti-Trades descend. It becomes a South-east wind just before its confluence with the South-east Trades of the Atlantic Ocean.

No. 4. Another contingent to the South-east Trades of the Atlantic, which has arrived from the east coast of Africa in a cyclonic curve round the Cape. This is probably a southern portion of the South-east Trades of the Indian Ocean, diverted into a North-easterly wind, when it enters the chart, by its proximity to the land of Africa and to the western edge of the area of high pressure B. In the summer months it is strong, and is the prevalent wind round the coast of Africa, when the cyclonic conditions of a heated land-surface are present; in winter, when the surface of South Africa is chilled, it is weak, and only occasionally displaces No. 5, which is then the prevalent wind. In the north-eastern corner of the district it exists throughout the whole year; and is here more easterly in summer when the area B lies well to the southward, and more northerly in winter when that area has travelled northwards.

No. 5. An air current in exactly the opposite direction to No. 4, and its converse in strength, being weak in summer, and strong in winter when the area of high pressure A has moved to the northward, and when the anticyclonic condition of a chilled land-surface in South Africa is also present.

No. 6. A Northerly air current over the eastern part of the district. In the summer it is anticyclonic round B (shown only in the diagram of the winds in summer), which represents the edge of the area of high pressure at the place where the Anti-Trade Winds of the Indian Ocean descend. In the spring and autumn its course is straight, and in winter its curvature is slightly cyclonic towards a centre in the west, which probably then lies over the place of intermingling of the hot and cold ocean-currents.

In the neighbourhood of the centre of the chart [lat. 37° S., long. 25° E.] the different wind-systems are in close proximity. The consequence is a confusion of winds in that area amidst which no one of them is prevalent.

Variation of the Winds in different Seasons—In summer the confluence of Nos. 3 and 4 is clearly seen. No. 4 is strongly marked, being cyclonic round the heated land of South Africa. The areas of high pressure which exist in the regions where the Anti-Trades descend move to and fro with the sun, and are now at their southern limit, A and B lying within the latitudes of the chart, and the place of the confluence of Nos. 3 and 4 with the Trades of the Atlantic falling well within it. The belt of Westerly winds No. 1 is displaced to the south; it barely reaches latitude 40° S. No. 6 is faintly marked, and anti-cyclonically disposed to B towards the east. In winter No. 3 disappears, No. 4

is secondary, and No. 5 becomes the prevalent wind. The place where the Atlantic Trades are first felt is now to the north of the chart, and the northern edge of the belt of Westerly winds No. 1 has also travelled so far northwards as to become confused with No. 5. No. 6 is well marked, but is now cyclonically disposed towards a centre lying westwards.

Gales.—Gales are most frequent in July; least frequent in February. The areas of their greatest frequency approximate roughly, at least in the winter months, to those of wide range in sea surface temperature.

Temperature of Air.—The normal temperature of the air due to latitude is greatly disturbed by the ocean currents described in the next section, p. 20; the general result being that the Agulhas Current brings a body of warm water from tropical regions down to nearly 40° S. in a position to the southward of the Agulhas Bank; whilst a current running north-eastwards flows into the southern part of the district bringing cold water from the Antarctic regions.

The effect of the temperature of the sea in causing an abnormal air temperature in different parts of the district is clearly seen on comparing the isothermal lines of the air and of the sea surface. As might be expected, the irregularities of sea temperature are defined more sharply than those of the air. (See p. 22.)

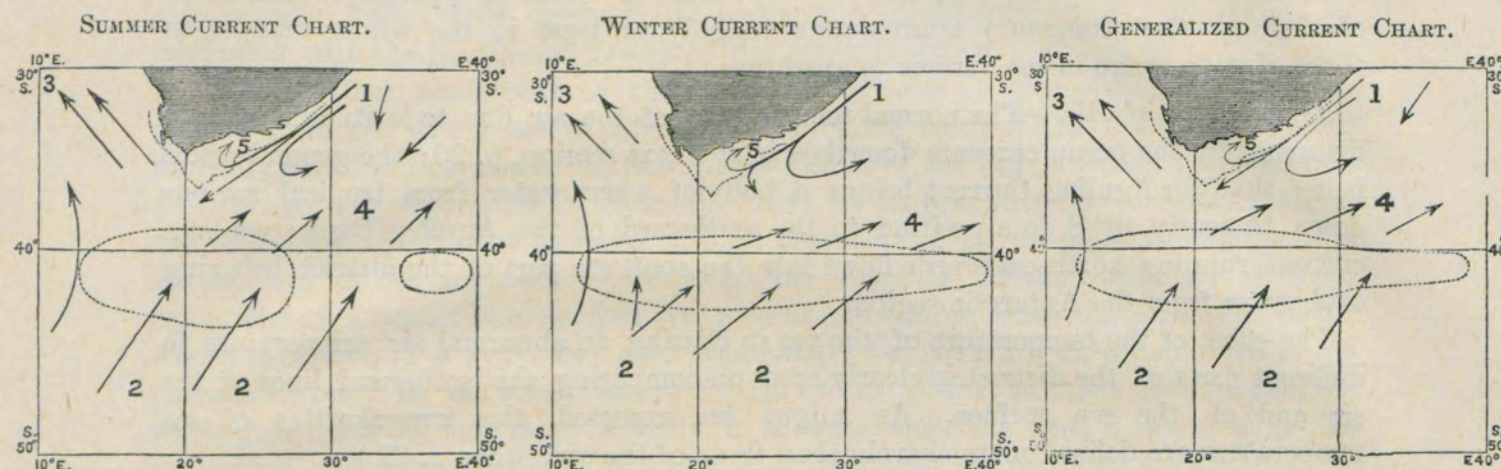
Barometer.—Two striking facts in the distribution of barometric pressure, as we proceed from north to south, are shown by the charts. The one is a steady decrease in its mean value at the rate of 0.1 inch in 3 degrees, and the other is a great increase of barometric range, as is seen by the diagrams of barometric frequency (page 13) becoming broader and flatter and of very irregular shapes. This has already been remarked and commented on in page 17.

The charts for the summer months show still less Easterly wind in the southern part of the district than those for winter, indicating that the track of the centres of the cyclonic systems lies further to the south in summer, just as the polar limit of the Trade winds is further from the Equator in summer than in winter.

Variation of the Barometer in different Seasons.—The above-mentioned decrease in pressure from north to south extends with much uniformity over the whole district during the winter, but during the summer it is confined to that part of it which lies below latitude 40° S. To the northward of that parallel and to the eastward of South Africa there is even a slight reversal of the conditions. This shows that in summer there is no prevalent tendency towards westerly winds north of latitude 40° S., but that there is then some tendency to easterly winds off the eastern coast of South Africa. These facts are already well known to navigators and may be inferred directly from the wind diagrams given above. They are of importance in determining the best tracks for homeward- and outward-bound ships.

CURRENTS AND SEA-SURFACE TEMPERATURE.

General Remarks.—The ocean currents in the district to which the Charts refer may be resolved into two primary and three secondary ones. They are shown and numbered in the accompanying diagrams, of which one relates to the summer, one to the winter, and the third is generalised for the whole year.



The primary currents are:—

No. 1. The narrow "Agulhas current," running strongly to the south-west off the south-eastern coast of South Africa and along the edge of the well-known Agulhas Bank, which stretches to the south of the cape that bears the same name. It is warmer by some 8° than the neighbouring water in the same latitude, its temperature being in February as high as 70° in the 39th parallel of latitude.

No. 2. A current running north-eastwards, and covering the whole of the southern portion of the Chart. In S. lat. 46° to 50° its temperature is as low as 40° throughout the year, being nearly 10° lower than the surface temperature of the sea in the same latitudes in the Pacific Ocean.

These two currents travelling, the one to the south-west and the other to the north-east, come into direct opposition in and about S. lat. 40° , and especially in the neighbourhood of E. long. 20° . There they check, and intermingle with, one another; facts which are respectively shown by the crowded isotherms, and by the wide range of sea surface temperature.

From the region in which the two primary currents meet, the secondary currents (3) and (4) proceed.

No. 3 is a cool current running north-westwards along the western coast of South Africa.

No. 4 is a warm current running eastwards a little to the north of S. lat. 40° , and to the east of E. long. 20° .

No. 5 is a back drift of the Agulhas current, running north and north-eastwards between it and the coast.

No. 1. The Agulhas current appears to be the result of the large body of water which is drifted by the S.E. Trades of the Indian Ocean against the shores of Africa, the greater portion of which escapes to the S.W. in a narrow stream, parallel to the coast.

No. 2. The broad current running to the north-east has a somewhat obscure origin so far as its northward component is concerned, but its coldness, its low specific gravity, and its greater strength during the summer months seem to connect it with the melting of the vast masses of ice known to exist in the Antarctic regions. The easterly component of the current is probably due to drift caused by the prevalent westerly winds.

The region in which the currents (1) and (2) meet is exposed to the influence of the same eastward drift. Under the combined action of this drift and of the two currents the water escapes laterally, in part to the north-west and in part to the east, forming the first beginnings of the currents (3) and (4). These secondary currents are subsequently strengthened by the drift caused by the prevalent winds in the regions through which they run. The current (4) remains under the influence of the eastward drift, but the current (3) falls under that of the South-east Trade winds of the Atlantic Ocean. The arrow on the western side of the generalized Current Chart, which curves from a north-easterly to a north-westerly direction, indicates how in that part of the district the north-easterly drift of No. 2, as well as the easterly drift caused by the prevailing westerly winds, are checked and diverted to the north-westward, and help to supply the demand created by the S.E. Trades.

The generalized current arrows on the charts might suggest at first sight that the current No. 4 is only a continuation of No. 2; but it will be observed that the temperatures of these two currents are very different. The high temperature of No. 4 appears to show that it is partly due to the recurving of the Agulhas current,* of which the charts offer abundant evidence.

No. 3 replaces the surface water that is drifted from the west coast of South Africa by the S.E. Trades of the Atlantic. This drift is greatest during the summer months, at which time the Trades begin to be felt even in the neighbourhood of the Cape, and the surface water that is then carried away is in part supplied by colder water from below. It has happened in the summer time that a ship in Table Bay has recorded a sea surface temperature of only 51° , after experiencing one of 78° in nearly the same latitude in the Agulhas current to the eastward of the African continent.

No. 4 similarly replaces the drift caused by the prevalent westerly winds in the region where it is found.

No. 5 is, as has been said, a back drift of the Agulhas current. Its position, and its direction inwards towards the coast, make it dangerous to navigators. It is considerably weaker than the Agulhas current, which runs in the opposite direction, so

* This recurving of the main body of the Agulhas current is described in the Africa Pilot, Part III., p. 3, as the "Agulhas counter-current."

that a ship which has really experienced both currents for about the same time would record the stronger only. (See the remark on page 9 as to the method by which currents are usually determined.)*

The stream-lines in the region where the primary currents (1) and (2) intermingle, as they would appear in a synoptic chart for any given moment, are no doubt far more complicated than those indicated in a chart containing only mean results. Ships, in traversing that region, cross many alternate bands of hot and cold water, disposed, as it has been phrased, like the fingers of the two hands laid flat upon the table, the fingers of each being thrust in between those of the other.

The region in which the range of sea-temperature is the greatest is enclosed by a dotted line. It coincides, as might have been anticipated, with that in which the intermingling of the currents Nos. 1 and 2 chiefly takes place, and also with that in which the sea surface isotherms are most crowded together.

Variations of the Ocean Currents in different Seasons.—No. 1. The portion of the main stream of the Agulhas current that is included within the district under discussion has a mean speed of 51 miles in 24 hours in the hot month of February, and of 46 miles in 24 hours in the cold month of July; the maximum speed recorded in each of the two months being 108 miles. These results are derived from 89 and 100 observations respectively.

No. 2. The current running to the North-eastward is more northerly in direction and stronger in summer (December, January, and February), than in winter (June, July, and August). This is well shown by comparing the index charts of currents for January and July.

No. 3. This current is stronger in summer, when the S.E. Trades are at their southern limit, than in the winter, when North-westerly winds are common in the North-western corner of the district.

No. 4. This current extends less far to the north and is less northerly in direction in winter than in summer, probably owing to the Westerly winds, which extend further north in winter than in summer.

No. 5. No seasonal differences have been discovered, but they may have escaped observation owing to the special difficulties already referred to as affecting the estimation of this current.

* A proof of the existence of this current, free from the difficulty stated in the text, is afforded by the following remark extracted from the Admiralty Chart of the Cape of Good Hope and adjacent coasts (No. 2095):—

“H.M.S. ‘Petrel,’ Capt. W. E. Gordon, anchored in 100 fathoms on the S.E. edge of the Agulhas Bank and found a counter current setting to the N.E., following the edge of the bank, at the rate of about 1 knot an hour. 20 miles to the southward the usual S.W. current was experienced.”

Much evidence of its existence close inshore from observations made by local observers at various parts along the coast is collected in the “Africa Pilot,” Part III., South and East coasts, 1878. (See the references given to various entries in that volume in a footnote to its fourth page.)

The shape and position of the region where the hot and cold currents intermingle depend on the variations just described. When the current No. 2 prevails and No. 1 is shrunken and well-defined, the latter is arrested at once, and the region in question is small and compact. This is well seen in the charts of January and February, in which months a range of 20° in the surface temperature of the sea is observed near the land. On the other hand, when the current No. 2 does not extend so far to the north, and when No. 1 is broad and strong, the region of intermingling is wider. Moreover, the current No. 1 is not arrested with the same abruptness, as its waters recurve more gently than in other seasons to combine in forming No. 4, and they flow for some time alongside of those of No. 2, in and about the parallel of S. lat. 40° , without complete intermingling. This is well seen in the August chart, in which month, and also in the months of September and October, the range in the surface temperature near the land does not reach even 15° .

Difference between Sea and Air-Temperatures.—A comparison has been made between the temperatures of the sea and air in each month of the year, at the meridians of 10° , 20° , 30° , and 40° E.; and it has been found that the sea is warmer than the air in the northern part of the district, and colder in the southern. The line of “no difference” lies in about S. lat. 41° on either margin of the chart, and in about 42° or 43° in its middle part. Both to the north and to the south of this line the difference between the temperatures of the sea and of the air increases rapidly at first, but more slowly afterwards; the rate of increase averaging nearly 1° Fahr. for each degree of latitude, and rising in one instance to $1^{\circ} \cdot 5$ Fahr.

The differences between sea and air-temperature on the eastern and western coasts of South Africa are not the same in the same latitudes. In the Agulhas current the sea is from 1° to 4° warmer than the air, being on an average 3° warmer. Over the north-western corner of the district taken as a whole the mean monthly temperature of the sea ranges from $0^{\circ} \cdot 5$ below to $1^{\circ} \cdot 8$ above the air temperature, the sea being on an average 1° warmer than the air. In the immediate neighbourhood of the south-west coast of Africa the conditions are peculiar, as there the temperature of the sea is much lower in summer than that of the air, the difference sometimes exceeding 10° . In all parts of the district the difference between sea and air temperature is greatest in the winter months of the Southern Hemisphere.

SPECIFIC GRAVITY, ICE, AND PASSAGE CHARTS.

Specific Gravity.—The specific gravity of the surface water of the sea varies in different parts of the district, and at different seasons. Its variations depend in part on the conditions of the region where the observation is made, in part on the conditions of other, and possibly remote, regions through which the several portions of water have travelled in the various ocean currents, before arriving at the point of observation. Where the currents are strong the influence of local conditions is of secondary importance.

In the Agulhas current the specific gravity is lowest in July and highest in October, being probably influenced by the alternations of rainy and dry seasons off the eastern coast of Africa, along which the water has travelled.

In the current No. 2 the specific gravity is lowest, not in the autumn, which is the period of the greatest rainfall in those parts, but in midsummer, when it is probable that a still larger contingent of fresh water is contributed to the sea by the melting of the Antarctic ice.

In the north-western corner of the district where the currents are feeble, the specific gravity is lowest in winter and highest in summer, and appears to be mainly influenced by the rainfall at and near the place of observation.

Ice.—The observations of ice recorded in these charts are extracted from the English and Dutch logs that were discussed for the general purposes of the inquiry. They are far less numerous than those upon which the Admiralty ice chart of the Southern Hemisphere has been constructed. The present charts are, however, of corroborative value, as giving the results of some additional evidence. They agree with the Admiralty ice-chart in showing that during the spring, summer, and autumn months the danger to ships of meeting ice is greatly increased when they make their passages south of the forty-fifth parallel. It is the more important to call attention to this fact as emigrant ships not unfrequently make their passages in high southern latitudes during the seasons in which floating ice abounds. In the winter the risk from ice is much smaller, but at that season the winds to the south of the forty-fifth parallel are less favourable for sailing to the eastward, and the weather is more severe.

The Admiralty ice chart shows that in certain years ice has been met with near to the land of South Africa; so that a look-out for ice should be kept at all times when passing round the Cape.

Passage Diagrams.—These have been compiled to enable us to learn the relative rate of sailing in different parts of the district now under discussion, by comparing the

breadth of the district at different parallels with the mean number of days occupied by ships crossing it on or near those parallels. It has been thought sufficient for this purpose to classify the passages according to the latitude in which the 20th East meridian was crossed. The result is shown in the last column of the accompanying Table, whence it appears that the rate of sailing is fastest along the forty-third parallel, and much faster there than anywhere to the north of it; also that the rate is little less in any of the more southern latitudes within the limits of the chart. It should, however, be stated that some of the passages in latitudes south of the forty-third parallel were made by Australian “clippers” noted for their speed.

Number of Ships.	Latitudes between which the 20th East Meridian was crossed.	Breadth of District at Middle Latitude.	Average Number of Days occupied in passing between East Longitudes 10° and 40°.	Average Easting made per Day, in Nautical Miles.
54	- - 36°—38°	- - 1438	- - 10·1	- - 142
220	- - 38°—40°	- - 1399	- - 8·8	- - 159
147	- - 40°—42°	- - 1359	- - 8·3	- - 164
116	- - 42°—44°	- - 1316	- - 7·3	- - 180
38	- - 44°—46°	- - 1273	- - 7·3	- - 174
15	- - 46°—48°	- - 1228	- - 6·9	- - 178
4	- - 48°—50°	- - 1181	- - 6·8	- - 174

No similar attempt has been made to classify the passages of homeward-bound vessels, as they follow the same routes in all seasons. Their object is to keep near to the land, where they have the benefit of the Agulhas current and a greater probability of easterly winds than if they kept further off. The average duration of the homeward passage in the different months of the years between the East meridians of 40° and 10° differs greatly; it is given in line A:—

Number of Days.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
A. By observation	14	13	14	16	21	22	20	17	16	14	14	14
B. By estimate	14	14	16	17	19	21	21	20	18	17	15	16

By means of the wind-roses an estimate was made of the probable relative duration of the homeward passages in different months; the results are given in line B. The general agreement of the two sets of figures tends to show, on the one hand, that the averages given in line A are not materially affected by accidental differences in the sailing powers of the observing ships; and, on the other hand, that wind-roses may be employed to estimate, with a certain amount of accuracy, the probable relative duration of passages.

WEATHER, CLOUD, AND STATE OF SEA.

The data concerning these are printed in a tabular form in Appendix 2.
A brief epitome is given in the following Table:—

PERCENTAGES OF CASES in which LIGHTNING, SQUALLS, &c. were severally recorded in DIFFERENT DIVISIONS of the DISTRICT, and in DIFFERENT SEASONS of the YEAR.

	LIGHTNING.			SQUALLS.			RAIN.			MIST.			FOG.			NIMBUS.			SWELL OR SEA. Prevalent Direction from which it set.		
SPRING— Sept., Oct., and Nov.	1	7	11	13	19	12	2	10	10	17	17	20	—	2	1	13	20	17	SW	SW	SW
	2	7	4	22	25	27	9	10	8	10	11	9	1	—	—	19	23	16	SW	SW	SW
	—	4	2	22	27	22	11	12	11	11	13	13	2	3	7	28	28	25	{SW W	{SW W	}SW
	—	1	—	9	15	29	16	15	19	22	16	13	18	17	9	32	33	39	{SW NW	}W	W
SUMMER— Dec., Jan., and Feb.	1	8	8	6	14	11	2	10	8	17	20	13	2	1	1	6	20	13	SW	SW	SW
	1	3	4	15	23	23	6	9	9	12	14	9	2	1	1	20	18	25	SW	SW	SW
	—	1	2	15	21	15	11	11	11	13	11	17	4	3	7	26	31	27	SW	SW	SW
	1	1	1	10	17	11	24	23	25	20	21	20	13	7	17	39	38	39	W	W	{SW W
AUTUMN— Mar., Apr., and May.	2	12	14	10	16	13	4	8	9	13	20	14	3	2	—	13	24	16	SW	SW	SW
	3	8	9	21	21	26	9	11	12	8	11	11	2	2	1	23	19	26	SW	SW	SW
	2	6	5	16	22	17	16	13	13	14	13	13	7	5	5	41	33	33	{SW W	{SW W	SW W
	2	6	1	17	21	20	24	25	27	8	17	14	11	12	4	55	39	47	W	W	W
WINTER— June, July, and Aug.	2	10	13	17	16	19	7	7	7	15	24	17	2	1	—	18	24	17	SW	SW	SW
	6	11	10	30	31	32	14	13	12	12	13	13	1	1	1	30	25	25	SW	SW	SW
	4	7	8	33	23	19	13	18	11	10	17	19	4	4	5	42	36	36	W	{SW W	SW W
	8	3	3	21	6	9	23	14	23	20	19	16	16	8	6	42	49	51	W	W	W
YEAR.	2	9	12	12	16	14	4	9	9	16	20	16	2	2	1	13	22	16	SW	SW	SW
	3	7	7	22	25	27	10	11	10	11	12	11	2	1	1	23	21	23	SW	SW	SW
	2	5	4	22	23	18	13	14	12	12	14	16	4	4	6	34	32	30	{SW W	{SW W	}W
	3	3	1	14	15	17	22	19	24	18	18	16	15	11	9	42	40	44	W	W	W

In this Table each square that is bounded above and below by thick lines, and on its sides by thin double lines, must be understood as representing a blank map of the

district. The two vertical lines by which the square is intersected are the East meridians of 20° and 30°, and the three horizontal lines are the South parallels of 35°, 40°, and 45°. Thus the map is divided into 12 sub-squares, each of which is of five degrees of latitude in depth and of ten degrees of longitude in width. The entry in each sub-square gives the percentage of cases in which the fact to which it refers was noted in the observations made in that sub-square.

It appears from this summary that in the different seasons the distribution of the weather, generally and throughout the district, is as follows:—

Maxima.—In *winter*, of lightning, squalls, mist, and nimbus; in *spring*, of fog and cloud generally; in *summer*, of fog; in *autumn*, of rain.

Minima.—In *winter*, of fog; in *spring*, of rain and nimbus; in *summer*, of lightning, squalls, nimbus, and cloud generally; in *autumn*, of mist and cloud generally.

As regard the separate elements of the weather, it appears that *lightning* is most frequent in the north-eastern corner of the district, in the neighbourhood and over the course of the Agulhas current.

*Squalls** are very general, but somewhat more frequent at the place of intermingling of the hot and cold currents than elsewhere. The smaller percentage of squalls observed in the south may be due to the fact that in the printed headings to the logs of the Dutch navigators, who are the chief contributors of observations in the southern part of the district, the record of squalls is not specially asked for.

Rain is most frequent in the southern, least frequent in the northern part of the district. Although the north-eastern and north-western corners of the district are in the same latitude and lie near the southern verge of the South-east Trades, the rainfall is more than twice as great on the north-eastern corner as on the north-western, the difference probably arising from the opposite conditions of the two regions, the one lying on the western side of an anticyclonic area (see A, page 18), and the other on the eastern side of a similar area, B.

Snow falls only in the southern parts of the district; it has been experienced even to the northward of 50° S. all the year round.

Mist is pretty equally distributed, but is most frequent in the neighbourhood of the Agulhas Bank, where cold and warm water are in contact.

Fog is much more prevalent to the south, adding greatly to the danger of the navigator in a region where at certain seasons floating ice abounds. More than 60 per cent. of the recorded fogs were met with south of 45°.

Nimbus is very abundant about the Agulhas current.

Amount of Cloud.—The data as to the proportion of sky covered with cloud are not included in the Table on page 26, but it appears from Appendix 2 that 62 per cent. of the whole sky is on the average covered with cloud. The clouds are distributed with remarkable uniformity both as to place and season, but are distinctly less prevalent in the western than in the middle and eastern portions of the district.

* The word "squall" is to be interpreted as a sudden increase of brief duration in the force of the wind.

Swell or Sea.—The prevalent direction of its course, or set, is from the south-west in the northern and central parts of the district, and from the west in its southern parts. The prevalent winds in the north-eastern part of the district blow from the north-east, and are of moderate force; therefore the south-westerly swell experienced there must be ascribed to the strong south-westerly winds which prevail in the south-western part of the district, but which do not blow home to its north-eastern part.

Weather Characteristics of certain Regions in the District.—There are four natural areas in the district that have well-marked peculiarities of weather:—

- 1. The Agulhas current and its neighbourhood, where lightning and mist are abundant.
- 2. The region of intermingling of hot and cold water in the neighbourhood of 40° S. lat., where “squalls,” as well as gales, are most frequently recorded.
- 3. The north-eastern corner of the district, where the warm wind from the Indian Ocean meets the cold winds of more southern latitudes. Here more lightning has been observed than in any other part of the district, and the gales, though less frequent than in some other parts, are exceptionally liable to sudden shifts of direction, and are therefore dangerous.
- 4. The western side of the district, to which the warm Agulhas current does not penetrate and which is consequently less liable to disturbed weather. Settled weather is especially found in its northern part, where the drift caused by the S.E. Trade of the Atlantic commences. Here the sea is exceptionally cool, because the surface water carried northward by the drift is apparently replaced by cooler water rising from below as well as from the south.

The great climatic differences between (3) and the northern part of (4), that is, between the north-east and north-west corners of the district, notwithstanding their being in the same latitude, are mainly dependent upon their situations with regard to the areas of high barometric pressure A and B, p. 18, which lie to the south of the Trades in the South Atlantic and Indian Oceans respectively.

The anticyclonic winds which blow round A in the north-west corner of the district are southerly and cold; the anticyclonic winds which blow round B in the north-east corner, are northerly and warm. These climatic differences are further intensified by the ocean currents in the two regions respectively; the north-west corner being characterised by a cold current setting to the northward, the north-east corner by a warm current (the Agulhas) setting to the southward.

APPENDIX I.

WINDS.

This Appendix gives in a tabular form the position of the several wind roses, and the data comprised in them.

FIGURES USED TO INDICATE THE FORCE OF THE WIND.
(BEAUFORT SCALE).

0	Calm.			
1	Light air	-	Just sufficient to give steerage way.	
2	Light breeze	-	With which a well conditioned ship-of-war* with all sail set would go in smooth water. and “clean full,” from	1 to 2 knots.
3	Gentle breeze	-		3 to 4 knots.
4	Moderate breeze	-		5 to 6 knots.
5	Fresh breeze	-	To which she could just carry in chase, “full and by”	Royals, &c.
6	Strong breeze	-		Single-reefed topsails and topgallant sails.
7	Moderate gale	-		Double reefed topsails, jib, &c.
8	Fresh gale	-		Triple-reefed topsails, &c.
9	Strong gale	-		Close-reefed topsails and courses.
10	Whole gale	-	With which she could scarcely bear close reefed maintopsail and reefed foresail.	10 Lower maintopsail and reefed foresail.
11	Storm	-	Which would reduce her to storm-stay-sails.	
12	Hurricane	-	Which no canvas could withstand.	

* Of Admiral Beaufort’s time (1800–1850).
† These modifications are made to meet the requirements of double topsails, introduced since Admiral Beaufort’s time.

WINDS.

JANUARY.

JANUARY—WINDS.—LAT. 30° to 40° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.																Variables.	Calms.									
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.			W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.
31 30 11 30 Obs. 123 5																											
32 30 14 30 Obs. 152 2																											
34 30 12 30 Obs. 70 0																											
34 30 16 30 Obs. 185 7																											
35 0 19 30 Obs. 154 2																											
38 0 13 0 Obs. 87 5																											
38 0 18 0 Obs. 83 5																											

JANUARY—WINDS.—LAT. 30° to 40° S. LONG. 20° to 30° E.

35 30 21 30 Obs. 219 5	0.2	0.1	1.1	1.8	5.6	6.1	11.8	6.0	3.0	1.8	1.3	3.3	2.2	3.0	2.9	4.0	5.1	3.8	6.2	4.3	3.3	4.2	1.2	0.1	1.3	0.8	0.1	0.7	1.2	1.5
35 15 24 0 Obs. 123 8	0.2	0.7	1.3	0.2	1.1	4.1	6.5	3.7	5.0	4.3	2.7	2.4	0.5	1.8	1.8	3.3	1.1	2.2	4.0	4.6	4.6	4.2	0.7	0.3	0.7	0.3	0.7	0.6	1.2	2.2
35 0 26 0 Obs. 110 8	1.9	1.9	1.1	1.7	0.4	6.1	6.6	8.2	5.0	5.2	2.7	1.9	1.1	3.7	3.4	3.3	3.6	3.6	4.2	4.2	4.3	3.3	3.3	3.5	3.5	3.5	3.5	1.5	2.0	1.9
34 0 25 30 Obs. 176 5	1.1	2.4	2.4	2.1	6.8	9.8	7.2	3.5	5.1	3.7	2.2	0.7	0.9	3.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	2.8
36 0 28 30 Obs. 217	1.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.6
38 30 21 30 Obs. 48 0	3.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	0.4
38 0 25 0 Obs. 94 2	1.4	5.2	0.5	4.7	0.5	1.8	2.1	2.9	2.4	4.0	3.5	3.2	1.9	2.6	5.5	4.5	9.0	7.4	5.9	4.8	8.2	7.4	1.6	0.5	2.1	2.1	2.1	2.1	2.1	0.6
38 30 28 30 Obs. 66 0	1.7	2.8	0.8	9.2	2.5	1.7	0.8	1.0	1.7	0.3	3.8	3.3	4.2	5.8	4.8	3.3	4.2	2.5	4.3	6.7	12.5	0.8	8.0	4.3	0.8	0.8	0.8	0.8	0.8	0.6

WINDS.—JANUARY.

JANUARY—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

[illegible]

JANUARY.

JANUARY—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. S.	Lat. E.	Percentage of all Winds.																Variables.	Calms.					
			Mean of Forces below 8.																						
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	
41 30 11 30 Obs. 159 0	5.2 (0.6)	2.8 4.6	2.8	1.3	0.8	4.0	1.9	0.3	0.6	1.8	3.8 (1.3)	1.8	5.4	5.8	3.5	5.4 (0.1)	3.5 (3.2)	7.7 (2.5)	6.0	8.2 (1.3)	4.7 (3.8)	0.7 (1.6)	3.6 (1.0)	3.7 (0.6)	3.7 (0.6)
41 0 15 0 Obs. 129 0	4.7	4.7	2.5	2.3	1.0	4.0	0.2	0.8	0.8	4.0	5.0	5.0	4.4	6.4 (0.5)	4.8 (3.2)	3.5 (2.9)	7.0 (2.9)	7.0	8.8 (1.0)	3.5 (1.6)	3.9 (3.0)	5.5 (1.6)	4.7 (3.2)	3.9 (2.4)	
41 0 18 30 Obs. 99 2	2.8	4.0	2.2	1.3	0.4	1.6	0.2	3.5	0.2	5.0	1.5	5.0	3.7 (0.5)	8.6 (3.0)	12.2 (5.0)	13.4 (4.0)	8.3 (1.8)	9.1 (3.0)	5.1 (2.5)	3.0 (2.5)	4.5 (1.5)	1.5	1.0	1.5	
44 30 11 30 Obs. 104 0	3.7 (1.1)	1.6	2.8	2.3	1.1	2.6	0.5	2.8 (0.8)	0.5	5.0	0.5	2.7	7.4 (1.1)	4.8 (3.2)	6.1 (3.2)	6.1 (3.2)	9.0 (3.2)	9.0 (3.2)	9.6 (3.2)	13.3 (5.1)	3.2 (1.1)	0.5 (0.5)	2.1 (0.5)	9.6	
43 0 14 30 Obs. 109 0	8.5	6	5.5	2.5	1.1	1.0	0.5	2.0	1.0	3.4 (0.9)	2.6 (0.9)	3.6 (0.9)	6.7 (2.3)	2.3 (0.8)	10.6 (3.4)	10.4 (3.4)	10.4 (3.4)	9.1 (3.4)	8.3 (1.4)	13.3 (5.1)	7.0 (0.5)	4.0 (0.5)	6.4	4.2	
43 45 18 0 Obs. 239 4	3.6	1.7	2.9	0.8	2.3	1.0 (0.4)	0.5	0.1	0.2	1.7	0.8	4.6	3.5 (1.2)	4.9 (3.2)	12.4 (3.2)	6.3 (1.5)	14.1 (3.4)	8.2 (3.4)	6.9 (2.1)	3.1 (0.4)	5.4 (0.5)	2.5 (0.5)	4.2 (1.1)	7.1	
44 45 14 30 Obs. 56 0	3.0	1.8	5.2	4.5	1.8	2.0	1.8	1.5	0.9	0.9	0.9	4.5	0.9	4.5	6.3 (0.9)	10.8 (3.6)	6.3 (3.6)	6.3 (3.6)	6.2 (0.9)	0.9	10.7 (5.4)	3.6 (1.8)	6.8 (4.1)	11.6	
47 45 12 30 Obs. 64 0	3.9 (0.8)	0.8 (0.8)	1.6 (0.8)	1.6 (0.8)	2.7 (0.8)	2.0	0.9	1.9	0.6	3.0	3.1	2.3	7.8	3.1	5.5	5.5 (2.3)	8.6 (2.3)	7.8	18.0 (1.6)	6.2 (1.6)	11.0 (4.0)	4.0 (0.8)	0.8 (0.8)	7.0	
47 30 17 30 Obs. 75 0	6.3	6.3	5.0	2.0	1.0	4.0	2.1	0.7	1.4	3.0	5.0	5.0	8.9	5.0	4.8	1.1	8	8	5.4 (1.0)	5.6 (0.8)	6.2 (0.8)	2.1 (0.8)	4.1	6.3	

Q 7176.

JANUARY—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

41.30	22.2	All winds	1.0	0.5	1.6	3.4	1.4	0.1	1.0	0.4	0.4	0.7	1.0	1.6	3.1	3.3	4.2	3.6	5.6	5.3	6.0	9.3	9.6	7.7	4.3	5.3	2.1	2.3	4.2	2.0	0.2
Obs. 214	2	Gales	-	4.9	5.0	4.0	2.1		4.8	0.6	0.1	5.0	0.6	0.2	0.0	0.2	0.2	4.7	5.2	5.2	3.0	3.3	5.0	0.5	0.5	0.9	3.9	4.8	2.0	0.6	
41.0	25.30	All winds	0.9		3.6	2.1	1.5		0.6	0.9	0.9	0.3	0.2	0.3	0.3	0.3	0.3	1.1	5.8	4.7	13.0	2.7	9.2	11.3	9.7	5.0	5.8	2.8		0.6	
Obs. 109	0	Gales	-	4.0	3.8	0.6	0.3		3.5	3.9	0.9	2.0	3.5	3.9	4.6	4.6	5.1	5.1	4.8	3.7	6.5	3.2	4.3	4.3	5.0	5.1	4.0				
41.0	28.30	All winds	1.2	1.3	3.4	2.5	5.7	0.7	0.5	0.5	0.5	2.0	1.4	1.0	2.3	5.0	2.5	6.0	3.5	3.6	6.0	1.2	5.1	9.0	9.0	3.9	1.0	5.9	1.8	2.3	
Obs. 100	0	Gales	-	3.2	4.8	4.6			5.0	3.0	0.2	2.0	3.2	4.8	5.6	5.6	8.7	6.0	5.1	4.5	4.1	3.7	1.0	3.9	1.0	5.9	1.0	4.2			
44.30	22.0	All winds	4.2	2.7	4.4	0.9	2.0		0.2	0.2	0.5	0.8	1.7	3.0	2.1	1.3		2.9	4.7	4.7	5.2	11.4	12.2	11.1	4.8	6.2	0.9	4.5	2.1		
Obs. 05	0	Gales	-	5.3	5.3	2.8			2.0	2.0	0.2	3.0	4.6	0.3	0.3	0.3	4.6	2.9	4.7	5.2	3.3	3.4	4.0	3.4	3.4	0.9	4.5	4.5	5.5		
44.0	25.30	All winds	7.1	3.6	4.3	1.0	1.3	0.8	0.8	0.5	0.3	0.5	0.6	0.3	0.6	2.0	1.7	4.3	3.5	3.8	2.5	6.4	16.0	11.9	6.0	2.6	5.3	4.5	4.5	0.4	
Obs. 189	0	Gales	-	5.0	5.1	4.4	2.3	1.3	0.5	0.3	0.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.7	3.0	3.0	3.0	3.0	3.0	2.6	5.3	4.5	4.5		
44.0	28.30	All winds	9.4	4.6	2.5	1.6	2.3	1.3	0.5	0.3	0.3	3.0	1.6	0.6	0.6	2.0	1.7	4.3	3.5	3.8	2.5	6.4	16.0	11.9	6.0	2.6	5.3	4.5	4.5	0.4	
Obs. 101	2	Gales	-	5.5	5.1				0.5	0.3	0.3	3.0	1.6	0.6	0.6	2.0	1.7	4.3	3.5	3.8	2.5	6.4	16.0	11.9	6.0	2.6	5.3	4.5	4.5	0.4	
48.0	22.30	All winds	2.9	1.5					1.5	0.5	0.5	2.5	2.2			2.9	7.4	2.9	0.7	1.5	2.2	8.8	2.3	12.5	17.0	4.4	6.7	5.9	0.7	2.9	
Obs. 68	0	Gales	-	5.3					5.0	0.5	0.5	3.7	2.2			2.9	7.4	2.9	0.7	1.5	2.2	8.8	2.3	12.5	17.0	4.4	6.7	5.9	0.7	2.9	
48.0	27.30	All winds	1.7	5.7	2.5				5.0	0.5	0.5	3.7	2.2			2.9	7.4	2.9	0.7	1.5	2.2	8.8	2.3	12.5	17.0	4.4	6.7	5.9	0.7	2.9	
Obs. 75	4	Gales	-	4.7					5.0	0.5	0.5	3.7	2.2			2.9	7.4	2.9	0.7	1.5	2.2	8.8	2.3	12.5	17.0	4.4	6.7	5.9	0.7	2.9	
		Force	-																												

E

WINDS

JANUARY—WINDS.—LAT. 40° to 50° S. LONG. 30° to 40° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.			Percentage of all Winds.	Mean of Forces below 8.	N.	N. by E.	N.E.	N.E. by E.	E.N.E.	E. by N.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calm.	
Lat.	Long.	E.																																		
42° 0' 32' 0"	Obs. 272 5		All winds Gales Force	5.2 (0.4) 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1	5.2 5.0 5.1		
41° 30' 35' 0"	Obs. 99 0		All winds Gales Force	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9	10.0 (1.1) 4.9		
41° 30' 38' 0"	Obs. 160 0		All winds Gales Force	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7	5.5 (1.1) 4.7		
45° 0' 31' 0"	Obs. 64 0		All winds Gales Force	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0	1.6 (3.1) 5.0		
44° 45' 34' 0"	Obs. 215 0		All winds Gales Force	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3	6.1 (0.7) 3.3		
44° 45' 38' 0"	Obs. 239 0		All winds Gales Force	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2	11.1 (2.2) 3.2		
48° 0' 32' 0"	Obs. 51 3		All winds Gales Force	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5	2.5 (0.5) 3.5		
48° 15' 35' 30"	Obs. 35 0		All winds Gales Force	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0	3.5 (0.5) 5.0		
8° 0' 38' 30"	Obs. 36 0		All winds Gales Force	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	2.2 (2.8) 5.0	

FEBRUARY.

FEBRUARY—WINDS.—LAT. 30° to 40° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. S.	Long. E.	Percentage of all Winds.	Mean of Forces below S.	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.N.E.	E. by S.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calm.			
31 15 11 0 Obs. 124 7			All winds Gales Force																																					
31 45 13 30 Obs. 198 2			All winds Gales Force																																					
33 0 16 0 Obs. 113 4			All winds Gales Force																																					
34 15 18 0 Obs. 190 0			All winds Gales Force																																					
35 15 11 30 Obs. 65 7			All winds Gales Force																																					
34 30 14 0 Obs. 81 0			All winds Gales Force																																					
34 45 16 0 Obs. 80 3			All winds Gales Force																																					
35 45 18 45 Obs. 124 2			All winds Gales Force																																					
39 0 12 30 Obs. 105 2			All winds Gales Force																																					
38 45 17 30 Obs. 135 4			All winds Gales Force																																					

Position of Centre of Vortex, Latitude and Longitude, and Number of Observations.	Percentage of all Winds.		Mean of Forces below 8.																											
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variabls.	Calm.	
41° 30' 31° 30' Obs. 182° 0	5.6 (2.5)	4.4 (2.2)	6.2 (1.1)	5.3 (1.1)	2.0 (0.3)	1.6 (0.3)	1.8 (0.3)	0.6	0.8	0.9	2.1 (0.7)	4.2 (1.1)	2.2 (0.6)	5.4 (0.6)	4.5 (1.1)	1.9 (0.3)	8.5 (0.8)	3.1 (0.6)	2.2 (0.3)	3.3 (0.3)	3.3	4.1	4.9	3.2	3.8	2.9	3.3	4.7	0.3	1.0
41° 30' 35° 0' Obs. 261° 4	7.5 (1.5)	8.8 (0.8)	7.1 (0.0)	4.1 (0.2)	3.7 (0.1)	1.1 (0.4)	1.1 (0.4)	0.7	0.8	0.8	1.7 (0.3)	1.4 (0.4)	1.0 (0.3)	3.7 (0.2)	2.7 (0.2)	1.9 (0.5)	5.7 (1.5)	1.9 (0.6)	2.6 (0.4)	6.5 (0.3)	4.5 (1.1)	3.1 (0.4)	3.0 (0.4)	4.6	2.1	4.3	4.4 (0.2)	0.5	0.6	
41° 30' 38° 30' Obs. 193° 3	7.9 (0.1)	8.3 (0.1)	9.1 (0.1)	4.1 (0.1)	4.7	4.8	3.0	0.3	0.5	0.8	2.1 (0.3)	1.7 (0.4)	3.6 (0.2)	3.2 (0.2)	4.1 (0.2)	4.0 (0.2)	4.1 (0.2)	4.3 (0.2)	4.1 (0.3)	2.5 (0.5)	3.0 (0.5)	2.7 (0.5)	4.4 (0.5)	5.0	1.8 (0.2)	1.8 (0.2)	5.3 (0.5)	0.2	0.9	
44° 30' 31° 30' Obs. 148° 0	7.0 (0.1)	3.0 (0.1)	5.1 (1.4)	5.7 (1.4)	3.7	3.4	3.0	4.0	0.3	0.3	1.6 (0.5)	0.5 (0.2)	2.2 (0.4)	1.7 (0.4)	2.4 (0.5)	2.9 (0.5)	5.4 (1.4)	3.6 (0.7)	3.6 (0.7)	4.7 (1.4)	12.1 (3.0)	5.3 (1.7)	4.7 (1.7)	6.3 (2.0)	3.0 (0.9)	4.7 (1.8)	1.8 (0.5)	1.0 (0.4)	0.4	
44° 30' 35° 0' Obs. 215° 1	4.7 (0.7)	4.1 (0.7)	5.9 (0.7)	4.2 (0.7)	3.7	1.4 (0.2)	0.5 (0.1)	4.0	0.8	0.2	0.4 (0.5)	0.2 (0.5)	4.1 (0.5)	2.8 (0.5)	2.1 (0.5)	1.8 (0.5)	2.2 (0.5)	4.0 (0.5)	8.3 (0.5)	8.3 (0.5)	4.1 (0.5)	4.1 (0.5)	4.7 (0.5)	4.4 (0.5)	5.0 (0.5)	5.8 (0.4)	0.4	0.6		
44° 30' 38° 30' Obs. 171° 2	11.2 (0.9)	6.8 (0.9)	5.6 (0.9)	3.9 (0.9)	1.8 (0.2)	2.3 (0.4)	0.6	0.1	1.5	2.2 (0.6)	0.6 (0.6)	0.9 (0.6)	0.9 (0.6)	1.5 (0.6)	2.9 (0.6)	2.3 (0.6)	4.6 (0.6)	4.1 (0.6)	4.1 (0.6)	8.8 (3.0)	5.5 (0.6)	6.9 (1.2)	4.5 (1.2)	4.1 (0.9)	4.4 (0.9)	4.4 (0.9)	0.4	0.6	0.6	
48° 0' 32° 30' Obs. 61° 0	5.7 (0.8)	8.2 (0.8)	1.6 (0.8)	0.8 (0.8)	8.2 (1.6)	3.4	0.8	0.8	1.0	2.2 (0.6)	2.0 (0.6)	4.2 (0.6)	4.8 (0.6)	5.6 (0.6)	5.6 (0.6)	6.6 (0.6)	4.4 (0.6)	4.1 (0.6)	4.1 (0.6)	6.6 (0.6)	6.6 (0.6)	1.6 (0.6)	6.2 (0.6)	5.2 (0.6)	14.8 (8.2)	7.1 (4.1)	3.8 (0.5)	2.0	0.8	
48° 0' 37° 30' Obs. 61° 0	4.9 (0.8)	4.1 (0.8)	2.5 (0.8)	5.0 (0.8)	4.0	0.8	0.8	4.0	1.6	2.0 (0.8)	4.2 (0.8)	7.4 (4.9)	6.0 (0.8)	0.8 (0.8)	0.9 (0.8)	2.5 (0.8)	5.0 (0.8)	4.6 (0.8)	3.3 (0.8)	13.1 (3.3)	8.2 (3.3)	14.0 (3.3)	0.8 (0.8)	7.4 (1.6)	4.1 (0.8)	0.8 (0.8)	7.4 (2.5)	0.8		

[illegible]

MARCH—WINDS.—LAT. 30° to 40° S. LONG. 20° to 30° E.

[illegible]

MARCH—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

32	6	32	0	All winds	8.7	3.5	7.1	5.8	11.0	3.7	4.7	4.2	5.0	0.8	2.5	0.6	2.9	1.0	3.0	1.4	7.3	2.9	4.4	3.0	5.2	1.6	0.8	0.1	0.7	0.2	0.4	0.6	0.3	1.8	2.6	1.4	1.2
		Obs.	64	Gales Force	3.4		4.6		4.2	3.6	3.6	3.4	3.4	3.5	3.5	3.5	3.2	4.1	1	4.4	4.4	4.7	4.7	4.9	3.5	3.3	2.7	3.3	2.8	3.8	2.0	3.8	2.0				
31	45	35	30	All winds	5.1	2.2	11.0	5.3	6.2	6.5	5.9	2.9	4.3	1.0	2.4	2.5	5.2	3.0	6.8	2.5	2.8	1.1	6.2	1.8	2.8	0.7	1.0	0.2	0.7	1.1	1.2	1.4	1.8	2.6	1.4	0.3	
		Obs.	447	Gales Force	3.7		4.6		3.5	3.7	3.7	3.3	3.3	3.5	3.5	4.2	4.2	4.2	3.6	4.2	4.2	4.4	4.4	4.4	5.3	1.0	2.8	3.3	2.8	4.5	1.0	4.5	1.0	0.3			
31	15	38	30	All winds	3.6	1.6	7.8	2.9	7.1	5.7	14.4	7.8	13.4	1.3	3.3	3.5	4.3	1.2	3.0	4.0	4.3	0.9	2.3	0.3	2.2	0.2	0.2	0.2	0.2	0.2	1.2	2.1	1.6	0.3	1.0		
		Obs.	128	Gales Force	3.5		3.9		3.6	3.7	3.7	3.7	3.2	3.2	3.2	3.2	4.3	4.3	4.6	4.6	3.2	3.2	3.8	3.0	2.5	4.0	2.0	2.0	6.0	4.2	2.0	4.2	2.0	1.0			
34	30	32	30	All winds	1.4	12.9	6.9	3.9	7.4	3.7	4.2	1.2	3.4	3.8	1.2		1.4	0.4	3.3	4.5	8.5	3.6	1.7	5.1	1.6	5.5	0.3	1.9	0.4	0.7	0.5	2.2	3.9	3.5	1.0		
		Obs.	164	Gales Force	5.3		5.2		5.1	3.0	3.0	3.0	3.5	3.9	3.9	5.8	5.8	3.4	3.4	4.2	4.2	4.1	4.1	4.9	5.5	5.5	7.0	4.5	3.6	3.6	4.5	3.5	3.5	0.2			
35	0	37	30	All winds	0.7	1.2	3.1	1.2	2.4	5.4	4.7	6.6	2.8	5.9			2.4	2.4	3.5	2.4	4.7	14.5	4.0	4.0	3.1	2.2	9.1	0.7	0.5	3.1	1.7	8.1	3.4				
		Obs.	42	Gales Force	4.0		3.8		3.6	3.6	3.6	3.6	3.0	2.7	3.5	2.0	3.5	2.0	2.0	6.5	6.5	5.4	5.4	4.3	3.9	3.9	2.0	5.0	3.4	3.4	3.4	3.4	3.4				
39	0	31	30	All winds	13.9	2.4	5.6	2.9	6.6	0.5	1.9	0.8	1.3	0.6	5.8		3.2	6.0	1.6	13.0	8.1	3.2	2.4	2.1	3.1	1.1	6.7	4.8	1.6	3.0	1.1	1.1	1.1				
		Obs.	62	Gales Force	5.1		5.0		3.7	3.3	3.3	1.3	1.3	4.5	4.5	5.0	5.0	5.4	5.4	5.3	4.8	4.8	4.8	4.0	4.6	3.3	3.3	3.6	3.0	1.0	1.0	1.0					
39	0	34	30	All winds	4.5	8.0	5.3	0.9	1.4		1.2	1.8					3.2	2.3	8.4	5.0	1.8	5.4	5.4	3.6	12.9	2.7	0.9	3.6									
		Obs.	56	Gales Force	5.7		5.8		5.9				6.0	5.7	5.7	7	5.7	5.7	4.7	6.7	4.8	5.6	5.6	4.0	4.7	4.7	4.5	5.0	5.0	5.0	5.0	5.0	5.0				
39	0	38	0	All winds	1.3	1.9	1.5	2.6	1.4	4.2	1.7	3.7	2.3	4.5			2.2	8.7	5.6	6.0	4.5	5.5	3.5	5.8	7.1	3.2	1.3	1.3	0.6	1.9	1.3	5.4	0.6	0.4			
		Obs.	78	Gales Force	4.3		3.5		3.1	3.5	3.5	3.5	4.1	6.7	6.7	4.6	4.6	4.0	4.0	3.1	3.1	4.4	4.4	5.0	4.3	4.3	2.0	5.7	5.0	5.0	5.0	5.0	5.0	5.5			

WINDS

MARCH—WINDS,—LAT. 40° to 50° S. LONG. 10° to 20° E.

[illegible]

MARCH—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

41° 0' 22° 0' { Obs. 124° 5'	All winds Gales - Force -	2.1 (0.3)	4.7 (1.8)	2.2 (0.6)	1.3 (0.2)	1.6 (0.4)	1.2 (0.3)	2.5 (0.8)	4.8 (1.2)	1.2 (0.3)	3.5 (0.9)	3.2 (0.8)	1.6 (0.4)	3.8 (1.0)	9.4 (2.6)	5.6 (1.5)	7.8 (2.1)	11.6 (3.2)	7.9 (2.2)	2.8 (0.7)	3.4 (0.9)	2.6 (0.7)	2.8 (0.8)	5.2 (1.4)	1.6 (0.4)
41° 30' 25° 30' { Obs. 130° 2'	All winds Gales - Force -	4.5 (0.8)	3.5 (0.8)	2.9 (0.2)	1.2 (0.3)	0.8 (0.2)	1.2 (0.3)	1.2 (0.3)	3.8 (0.8)	0.8 (0.2)	3.6 (0.9)	4.1 (1.1)	5.0 (1.4)	6.9 (1.9)	2.1 (0.6)	5.2 (1.4)	4.2 (1.2)	12.8 (3.5)	7.1 (2.0)	5.5 (1.5)	5.8 (1.6)	3.7 (1.0)	4.1 (1.1)	2.2 (0.6)	0.4 (0.1)
41° 30' 28° 30' { Obs. 142° 2'	All winds Gales - Force -	5.2 (0.8)	7.9 (2.1)	3.9 (0.8)	2.9 (0.7)	0.7 (0.2)	0.5 (0.1)	1.4 (0.3)	1.4 (0.3)	0.4 (0.1)	0.4 (0.1)	0.2 (0.1)	2.0 (0.6)	0.6 (0.2)	3.1 (0.8)	3.2 (0.9)	5.0 (1.4)	7.4 (2.1)	6.0 (1.7)	8.2 (2.3)	3.7 (1.0)	3.9 (1.1)	5.2 (1.4)	4.6 (1.2)	0.1 (0.1)
43° 30' 22° 0' { Obs. 156° 7'	All winds Gales - Force -	7.0 (0.3)	2.1 (0.5)	1.5 (0.4)	1.0 (0.3)	0.6 (0.2)	2.2 (0.6)	1.0 (0.3)	4.0 (1.1)	0.5 (0.1)	0.3 (0.1)	0.6 (0.2)	5.0 (1.4)	3.5 (0.9)	3.7 (1.0)	10.0 (2.8)	9.5 (2.6)	15.7 (4.3)	11.5 (3.2)	6.5 (1.8)	5.7 (1.6)	5.4 (1.5)	1.0 (0.3)	2.2 (0.6)	0.5 (0.1)
44° 0' 25° 30' { Obs. 74° 2'	All winds Gales - Force -	2.7 (0.3)	7.8 (2.1)	2.0 (0.6)	2.7 (0.8)	1.4 (0.4)	2.7 (0.7)	4.0 (1.1)	4.0 (1.1)	0.7 (0.2)	0.6 (0.2)	4.3 (1.2)	2.7 (0.7)	3.4 (0.9)	1.3 (0.4)	5.0 (1.4)	3.6 (1.0)	9.6 (2.6)	12.7 (3.5)	10.9 (3.0)	5.4 (1.5)	2.4 (0.7)	2.7 (0.8)	5.5 (1.5)	
45° 45' 28° 30' { Obs. 72° 6'	All winds Gales - Force -	7.6 (1.4)	9.0 (2.1)	5.5 (1.5)	2.1 (0.7)	0.7 (0.2)	0.7 (0.2)	1.4 (0.4)	2.8 (0.8)	0.7 (0.2)	4.6 (1.2)	0.7 (0.2)	4.3 (1.2)	0.7 (0.2)	4.8 (1.3)	4.9 (1.4)	6.9 (1.9)	11.2 (3.1)	10.9 (3.0)	5.6 (1.6)	3.5 (0.9)	4.2 (1.1)	0.7 (0.2)	3.5 (0.9)	4.2 (1.1)
46° 30' 22° 30' { Obs. 71° 6'	All winds Gales - Force -	5.6 (0.7)	1.7 (0.3)	2.8 (0.8)	0.7 (0.2)	5.6 (1.4)	1.4 (0.4)	5.0 (1.4)	5.0 (1.4)	7.0 (1.9)	3.0 (0.8)	5.2 (1.4)	3.0 (0.8)	0.7 (0.2)	0.7 (0.2)	2.1 (0.6)	0.7 (0.2)	24.7 (6.8)	19.1 (5.3)	9.9 (2.8)	8.9 (2.5)	4.9 (1.3)	0.3 (0.1)	3.9 (1.0)	6.1 (1.6)
46° 45' 27° 30' { Obs. 70° 6'	All winds Gales - Force -	10.0 (1.4)	2.1 (0.5)	7.2 (2.0)	2.9 (0.8)	4.8 (1.2)	4.8 (1.2)	4.8 (1.2)	6.0 (1.6)	1.4 (0.4)	0.7 (0.2)	4.3 (1.2)	2.8 (0.7)	1.4 (0.4)	3.6 (1.0)	1.4 (0.4)	17.1 (4.8)	11.4 (3.1)	15.0 (4.3)	7.1 (2.0)	6.4 (1.7)	1.4 (0.4)	7.2 (2.0)	2.2 (0.6)	6.1 (1.6)

MARCH and APRIL.

MARCH—WINDS.—LAT. 40° to 50° S. LONG. 30° to 40° E.

Position of Centre of Wind-rose, and Number of W. called Observations.	Lat. Long.		Mean of Forces below 8.															Percentage of all Winds.		Variables.	Calms.											
	'S	E.	N.	N.E.	N.E. by E.	E.N.E.	E. by N.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by E.			S.W.	S.W. by S.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.
41° 30' 31° 30'			6.3	8.3	5.3	3.8	3.0	1.0	1.5	0.3	1.2	0.1	1.7	0.1	3.8	1.0	2.4	0.8	2.6	6.9	3.8	6.8	3.5	7.8	4.2	3.3	1.3	4.1	3.0	3.3	6.1	1.2
Obs. 152.3			4.8		4.8		3.5	4.3	4.0	4.5	4.5	4.7	3.3	3.3	4.9	4.9	5.9	5.9	5.3	5.3	5.0	5.3	5.3	5.3	5.0	5.0	5.0	5.0	4.9	5.1	5.1	5.1
41° 30' 34° 30'			5.6	5.0	10.5	4.5	3.5	0.9	0.8	1.3	1.3	1.1	2.6	1.1	3.6	3.7	2.9	1.5	2.9	2.8	3.9	2.9	5.2	3.1	4.4	4.2	2.0	1.1	1.6	7.7	3.2	0.3
Obs. 152.6			5.1	5.0	4.5	4.5	4.2	4.3	3.6	3.4	3.4	3.8	3.0	4.0	4.0	4.9	4.4	4.4	3.0	3.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	3.9	4.4	4.4	4.4	4.4
41° 30' 38° 0'			2.4	4.9	3.4	4.9	6.4	0.6	0.2	1.4	0.6	0.8	1.9	1.5	0.7	3.2	4.4	4.6	2.1	4.4	5.2	1.9	5.2	6.9	4.5	4.9	1.9	4.1	0.7	5.0	3.4	0.6
Obs. 201.5			4.4	4.4	4.4	4.4	4.4	4.4	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
43° 45' 32° 30'			5.6	4.4	6.4	0.8	1.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Obs. 152.2			5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
44° 0' 37° 30'			8.2	3.2	3.7	1.5	5.1	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Obs. 100.5			3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
46° 45' 32° 30'			6.9	1.3	1.2	0.4	4.0	1.3	0.2	1.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Obs. 80.0			6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
46° 30' 37° 30'			0.9	2.9	0.5	3.6	3.2	0.2	1.1	1.1	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Obs. 93.0			5.3	5.8	5.8	5.8	3.0	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

APRIL—WINDS.—LAT. 30° to 40° S. LONG. 10° to 20° E.

[illegible]

[illegible]

APRIL—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

[illegible]

APRIL—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

[illegible]

APRIL—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

[illegible]

WINDS

MAY—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.															
	N.	N. by E.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by N.	N. by N.	N.E. by N.	N.E.	N.E. by E.	N.E.	N. by E.	N.	Mean of Forces below 8.
40 45 12 0 Obs. 151 0	12 4 (1 7)	2 5 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
41 0 15 30 Obs. 116 4	6 1 (0 4)	2 7 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)
41 0 18 30 Obs. 154 1	7 1 (0 4)	2 3 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)	3 2 (0 4)
42 45 12 30 Obs. 153 0	9 7 (0 7)	4 7 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
43 0 17 30 Obs. 151 0	9 7 (0 7)	4 7 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
45 0 12 30 Obs. 71 0	8 5 (0 7)	4 7 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
45 0 17 30 Obs. 91 0	8 5 (0 7)	4 7 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)

MAY—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.															
	N.	N. by E.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by N.	N. by N.	N.E. by N.	N.E.	N.E. by E.	N.E.	N. by E.	N.	Mean of Forces below 8.
41 15 31 30 Obs. 218 7	4 4 (0 7)	1 4 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
41 30 24 30 Obs. 218 2	3 5 (0 7)	3 9 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
41 0 28 0 Obs. 227 6	4 6 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
43 45 23 0 Obs. 165 0	5 7 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
43 15 28 0 Obs. 185 0	8 0 (0 7)	4 1 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
46 0 22 30 Obs. 61 0	3 6 (0 7)	6 5 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)
46 15 27 30 Obs. 65 0	1 1 (0 7)	5 8 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)	3 2 (0 7)

MAY—WINDS.—LAT. 40° to 50° S. LONG. 30° to 40° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.															
	N.	N. by E.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by N.	N. by N.	N.E. by N.	N.E.	N.E. by E.	N.E.	N. by E.	N.	Mean of Forces below 8.
40 45 12 0 Obs. 101 0	5 2 (0 6)	3 6 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)	4 3 (0 6)
41 0 34 30 Obs. 154 7	5 7 (0 6)	2 5 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)
41 0 38 0 Obs. 188 0	5 9 (0 6)	5 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)
43 15 32 30 Obs. 221 2	6 4 (0 6)	4 0 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)
43 15 37 30 Obs. 220 0	6 4 (0 6)	4 0 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)	3 7 (0 6)
46 30 32 30 Obs. 80 2	8 5 (0 6)	1 0 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)
46 30 37 30 Obs. 86 0	8 5 (0 6)	1 0 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)	3 6 (0 6)

MAY and JUNE.

JUNE—WINDS.—LAT. 30° to 40° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.															
	N.	N. by E.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by N.	N. by N.	N.E. by N.	N.E.	N.E. by E.	N.E.	N. by E.	N.	Mean of Forces below 8.
31 15 11 30 Obs. 110 9	2 3 (0 2)	2 3 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
31 45 14 45 Obs. 148 8	1 7 (0 2)	1 7 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
34 30 12 15 Obs. 70 2	7 9 (0 2)	6 4 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
34 45 15 30 Obs. 187 3	8 8 (0 2)	4 2 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
35 0 18 30 Obs. 245 3	2 6 (0 2)	2 4 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
38 15 11 30 Obs. 107 3	9 9 (0 2)	4 2 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
38 30 15 0 Obs. 136 0	2 4 (0 2)	6 2 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)
38 0 18 30 Obs. 126 7	1 3 (0 2)	5 4 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)	3 8 (0 2)

WINDS

JUNE—WINDS.—LAT. 30° to 40° S. LONG. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		N.	N. by E.	N. by N.	E.	E. by S.	S. E.	S. E. by E.	S. E.	S. by E.	S. W.	S. W. by S.	S. W.	S. W. by W.	W. S. W.	W. by S.	W.	W. by N.	N. W. N. W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Variables.	Calms.	
	Lat.	Long.																									
35 15 21 30 Obs. 212 5	35° 15'	21° 30'	3.0	4.3	1.8	2.3	2.1	3.0	4.6	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0
35 15 21 30 Obs. 212 5	35° 15'	21° 30'	2.8	4.0	1.8	2.3	2.1	3.0	4.6	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0
35 15 21 30 Obs. 212 5	35° 15'	21° 30'	3.3	4.1	1.1	2.3	2.1	3.0	4.6	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0	2.1	3.0
33 15 28 45 Obs. 164 8	33° 15'	28° 45'	4.0	4.5	2.0	4.3	3.5	7.8	3.9	3.0	3.0	3.9	3.0	3.0	3.9	3.0	3.0	3.9	3.0	3.0	3.9	3.0	3.0	3.9	3.0	3.0	3.9
34 45 27 45 Obs. 266 1	34° 45'	27° 45'	3.8	4.9	1.9	1.2	2.3	2.3	3.0	2.3	3.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
37 45 21 30 Obs. 176 2	37° 45'	21° 30'	2.2	4.3	2.0	1.6	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2	1.7	0.2
38 0 25 0 Obs. 196 8	38° 0'	25° 0'	4.5	4.4	0.3	1.5	0.4	0.7	0.8	0.6	0.4	1.4	1.3	1.0	0.7	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
38 15 28 30 Obs. 128 2	38° 15'	28° 30'	1.6	3.5	1.6	1.2	0.6	0.6	1.0	0.6	0.6	1.0	0.6	0.6	1.0	0.6	0.6	1.0	0.6	0.6	1.0	0.6	0.6	1.0	0.6	0.6	1.0

JUNE—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

31 45 31 30 Obs. 212 5	{ All winds Gales - Force -	7.6	4.8	7.1	4.6	7.9	2.1	3.1	2.0	0.7	1.5	1.2	0.3	0.8	2.1	1.3	2.3	2.8	6.8	6.1	5.5	4.1	3.5	1.8	1.2	0.6	1.7	1.0	1.4	2.2	2.9	3.0	0.1
		4.6	(0.7)	5.0	(0.7)	4.0	(0.7)	4.0	(0.7)	3.2	(0.7)	3.3	(0.7)	2.4	(0.7)	2.3	(0.7)	3.3	(0.7)	4.2	(0.7)	4.6	(0.7)	4.7	(0.7)	3.1	(0.7)	4.7	(0.7)	3.7	(0.7)	4.2	(0.7)
31 30 34 30 Obs. 178 8	{ All winds Gales - Force -	10.7	0.9	10.3	2.3	4.8	2.9	4.1	0.6	0.7	0.5	0.9	1.3	0.5	2.0	4.1	2.0	4.5	5.1	3.2	3.0	1.0	3.8	0.4	0.7	1.0	1.5	0.9	3.3	4.2	7.7	5.5	0.1
		4.7	(0.7)	5.0	(0.7)	3.6	(0.7)	3.6	(0.7)	2.0	(0.7)	2.4	(0.7)	3.3	(0.7)	4.3	(0.7)	4.4	(0.7)	4.4	(0.7)	4.0	(0.7)	4.5	(0.7)	2.6	(0.7)	3.3	(0.7)	4.0	(0.7)	7.7	(0.7)
31 15 38 0 Obs. 179 4	{ All winds Gales - Force -	9.4	2.5	7.1	2.0	4.7	3.7	9.3	1.2	2.6	1.0	4.6	1.1	1.2	3.2	1.3	1.7	1.8	2.7	5.1	2.8	2.3	4.5	0.3	1.0	0.8	2.2	1.6	4.2	1.6	5.4	0.6	2.0
		4.9	(0.7)	4.2	(0.7)	3.6	(0.7)	3.1	(0.7)	3.0	(0.7)	3.5	(0.7)	3.3	(0.7)	3.3	(0.7)	4.3	(0.7)	4.7	(0.7)	4.9	(0.7)	3.9	(0.7)	2.5	(0.7)	3.7	(0.7)	4.3	(0.7)	4.0	(0.7)
34 45 32 30 Obs. 199 3	{ All winds Gales - Force -	6.7	4.4	9.1	2.9	1.8	3.7	0.3	0.3	0.3	0.6	1.6	2.0	2.0	3.5	0.4	0.8	0.9	0.9	0.2	3.8	1.2	4.1	1.3	1.6	7.0	3.4	4.0	4.8	6.7	5.8	6.3	0.5
		5.0	(0.4)	4.9	(0.4)	4.6	(0.4)	4.5	(0.4)	7.0	(0.4)	8.4	(0.4)	5.0	(0.4)	5.0	(0.4)	5.3	(0.4)	4.1	(0.4)	3.8	(0.4)	5.5	(0.4)	4.7	(0.4)	5.7	(0.4)	6.0	(0.4)	5.2	(0.4)
35 0 37 30 Obs. 51 0	{ All winds Gales - Force -	10.4	6.2	12.5	2.8	1.4	2.8	2.0	0.6	2.0	0.6	2.4	3.9	3.3	3.3	2.8	2.8	2.0	3.9	8.2	2.0	3.9	8.6	8.6	2.0	2.0	8.0	1.0	1.0	10.6	10.6	10.6	10.6
		5.0	(0.4)	4.3	(0.4)	3.7	(0.4)	2.0	(0.4)	2.5	(0.4)	2.5	(0.4)	3.3	(0.4)	3.3	(0.4)	4.5	(0.4)	5.1	(0.4)	5.7	(0.4)	3.2	(0.4)	3.5	(0.4)	4.3	(0.4)	5.0	(0.4)	4.5	(0.4)
38 45 32 30 Obs. 174 2	{ All winds Gales - Force -	0.9	4.6	1.5	3.1	1.5	1.4	0.4	0.5	0.3	0.3	0.3	0.5	0.8	1.6	0.6	10.0	0.6	10.0	2.2	6.2	3.4	6.4	2.1	2.8	11.3	1.7	4.7	3.5	5.2	4.5	5.0	0.3
		4.4	(0.7)	4.2	(0.7)	4.4	(0.7)	3.3	(0.7)	3.3	(0.7)	2.0	(0.7)	4.0	(0.7)	4.7	(0.7)	4.7	(0.7)	4.7	(0.7)	4.8	(0.7)	5.7	(0.7)	5.0	(0.7)	4.7	(0.7)	4.3	(0.7)	5.4	(0.7)
38 45 37 30 Obs. 147 0	{ All winds Gales - Force -	0.4	1.6	2.0	4.2	0.7	0.7	0.4	0.4	0.4	0.4	0.4	0.8	0.9	1.7	0.2	3.2	3.2	3.2	4.3	3.5	8.0	3.5	5.1	2.8	9.4	5.6	7.4	11.1	3.2	11.2	0.7	0.2
		3.8	(0.7)	3.8	(0.7)	2.7	(0.7)	2.7	(0.7)	4.0	(0.7)	3.4	(0.7)	3.0	(0.7)	3.2	(0.7)	3.0	(0.7)	3.0	(0.7)	4.3	(0.7)	5.7	(0.7)	5.2	(0.7)	5.4	(0.7)	5.1	(0.7)	4.1	(0.7)

JUNE—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		N.	N. by E.	N. by N.	E.	E. by S.	S. E.	S. E. by E.	S. E.	S. by E.	S. W.	S. W. by S.	S. W.	S. W. by W.	W. S. W.	W. by S.	W.	W. by N.	N. W. N. W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Variables.	Calms.
	Lat.	Long.																								
40 45 12 0 Obs. 186 0	40° 45'	12° 0'	8.6	2.8	3.2	0.8	3.9	1.2	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
40 45 12 0 Obs. 186 0	40° 45'	12° 0'	7.3	3.6	3.1	1.7	3.5	0.9	3.7	1.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
40 45 12 0 Obs. 186 0	40° 45'	12° 0'	6.3	3.6	5.3	0.4	3.8	2.2	1.4	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
43 0 12 30 Obs. 120 0	43° 0'	12° 30'	5.4	0.8	2.1	3.3	1.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
43 0 12 30 Obs. 120 0	43° 0'	12° 30'	7.2	2.9	1.1	0.3	2.3	1.2	2.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
46 0 15 0 Obs. 54 0	46° 0'	15° 0'	14.0	5.1	5.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

JUNE—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		N.	N. by E.	N. by N.	E.	E. by S.	S. E.	S. E. by E.	S. E.	S. by E.	S. W.	S. W. by S.	S. W.	S. W. by W.	W. S. W.	W. by S.	W.	W. by N.	N. W. N. W.	N. W.	N. W. by N.	N. N. W.	N. by W.	Variables.	Calms.
	Lat.	Long.																								
40 45 12 0 Obs. 141 0	40° 45'	12° 0'	5.7	1.7	1.7	1.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
40 45 12 0 Obs. 141 0	40° 45'	12° 0'	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
42 45 21 30 Obs. 119 8	42° 45'	21° 30'	7.5	7.6	4.9	1.7	1.8	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
43 15 24 30 Obs. 111 6	43° 15'	24° 30'	6.3	5.0	1.4	2.7	2.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
43 30 28 0 Obs. 168 5	43° 30'	28° 0'	8.6	3.5	5.6	1.5	0.8	1.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
46 0 22 30 Obs. 33 0	46° 0'	22° 30'	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
46 0 27 30 Obs. 27 0	46° 0'	27° 30'	5.6	17.7	5.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

JUNE.

WINDS

JUNE—WINDS.—LAT. 40° to 50° S. Long. 30° to 40° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.														Percentage of Forces below S.																	
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.
40° 45' 31.30 Obs. 121.9	6.84 (1.2)	5.1	4.4 (0.2)	4.4 (0.4)	5.3 (0.4)	3.0 (0.4)	0.2 (0.4)	5.0 (0.8)	2.2 (0.4)	0.6 (0.4)	0.5 (0.4)	0.2 (0.4)	5.7 (0.8)	0.5 (0.8)	1.4 (0.4)	2.0 (0.4)	1.2 (0.4)	2.0 (0.4)	1.6 (0.4)	6.7 (0.2)	6.4 (1.2)	8.5 (0.8)	1.6 (0.8)	7.0 (0.8)	4.9 (0.8)	5.4 (0.2)	6.4 (0.2)	0.2 (0.2)	2.4 (0.2)	5.9 (0.2)	0.2 (0.2)	0.2
41° 0' 34.30 Obs. 110.2	6.8 (2.3)	5.5 (1.0)	4.1 (0.9)	4.0 (0.9)	5.3 (0.9)	3.8 (0.9)	0.2 (0.9)	5.0 (0.9)	2.0 (0.9)	1.4 (0.9)	0.5 (0.9)	0.2 (0.9)	5.7 (0.9)	0.5 (0.9)	1.4 (0.9)	2.0 (0.9)	1.2 (0.9)	2.0 (0.9)	1.6 (0.9)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2
41° 0' 38.0 Obs. 155.2	7.4 (1.6)	5.2 (0.7)	5.5 (1.2)	5.7 (1.2)	5.1 (0.3)	2.5 (0.3)	0.2 (0.3)	5.0 (0.3)	0.6 (0.3)	1.4 (0.3)	0.5 (0.3)	0.2 (0.3)	5.7 (0.3)	0.5 (0.3)	1.4 (0.3)	2.0 (0.3)	1.2 (0.3)	2.0 (0.3)	1.6 (0.3)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2
43° 30' 51.30 Obs. 134.0	13.1 (1.2)	6.6 (1.9)	8.4 (1.4)	8.4 (1.4)	5.4 (0.7)	2.5 (0.7)	0.2 (0.7)	5.0 (0.7)	0.6 (0.7)	1.4 (0.7)	0.5 (0.7)	0.2 (0.7)	5.7 (0.7)	0.5 (0.7)	1.4 (0.7)	2.0 (0.7)	1.2 (0.7)	2.0 (0.7)	1.6 (0.7)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2
43° 30' 35.0 Obs. 181.3	19.3 (4.9)	4.7 (0.6)	3.1 (0.6)	3.1 (0.6)	5.4 (0.7)	2.0 (0.7)	1.0 (0.7)	5.0 (0.7)	0.6 (0.7)	1.4 (0.7)	0.5 (0.7)	0.2 (0.7)	5.7 (0.7)	0.5 (0.7)	1.4 (0.7)	2.0 (0.7)	1.2 (0.7)	2.0 (0.7)	1.6 (0.7)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2
43° 30' 38.30 Obs. 113.0	14.6 (3.6)	3.0 (0.8)	3.9 (0.8)	3.4 (0.8)	5.4 (0.7)	6.0 (0.7)	0.4 (0.7)	5.0 (0.7)	0.6 (0.7)	1.4 (0.7)	0.5 (0.7)	0.2 (0.7)	5.7 (0.7)	0.5 (0.7)	1.4 (0.7)	2.0 (0.7)	1.2 (0.7)	2.0 (0.7)	1.6 (0.7)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2
45° 45' 35.0 Obs. 60.0	8.4 (3.0)	8.7 (1.5)	2.1 (1.5)	2.0 (1.5)	1.5 (1.5)	6.0 (1.5)	1.5 (1.5)	5.0 (1.5)	0.8 (1.5)	1.4 (1.5)	0.5 (1.5)	0.2 (1.5)	5.7 (1.5)	0.5 (1.5)	1.4 (1.5)	2.0 (1.5)	1.2 (1.5)	2.0 (1.5)	1.6 (1.5)	8.5 (0.2)	8.1 (0.2)	6.1 (0.2)	0.9 (0.2)	4.8 (0.2)	5.7 (0.2)	5.7 (0.2)	2.1 (0.2)	4.7 (0.2)	5.9 (0.2)	5.0 (0.2)	0.2 (0.2)	0.2

JULY—WINDS.—LAT. 30° to 40° S. Long. 10° to 20° E.

31° 30' 12.0 Obs. 101.4	All winds Gales Force	0.7 (0.2)	2.5 7	0.1 3.2	0.8 3.2	0.3 3.0	0.9 4.0	0.4 3.9	1.1 3.9	6.8 4.4	19.1 4.4	5.2 4.0	8.3 3.7	3.5 3.7	3.5 3.7	1.9 4.1	7.0 4.6	1.1 4.6	2.3 3.5	3.8 3.5	2.1 3.1	2.3 3.1	0.6 4.1	3.6 3.6	1.8 (0.2)	3.5 3.6	1.4 3.6	0.9 (0.3)	1.5 3.6	0.8 (0.4)	2.2 1.4	0.7 1.4
31° 0' 15.15 Obs. 44.9	All winds Gales Force	0.5 (0.5)	-	-	-	-	-	-	-	-	6.0 3.2	0.7 4.3	0.7 4.5	3.8 4.5	3.8 4.5	5.3 2.8	3.3 3.0	5.3 3.0	2.2 3.4	9.3 2.6	4.0 2.6	5.8 (1.1)	6.2 2.7	14.5 3.4	4.0 (1.1)	5.6 3.4	3.8 3.6	4.7 (0.5)	1.6 2.0	0.9 (0.5)	1.1 2.0	6.7
35° 0' 12.0 Obs. 108.8	All winds Gales Force	6.8 (1.6)	1.3 (0.5)	3.2 4.0	0.5 (0.5)	1.8 5.0	0.5 (0.5)	0.9 4.0	1.1 4.0	0.9 4.0	2.1 (0.9)	0.6 3.9	6.9 4.4	5.7 (1.0)	4.8 (0.5)	4.1 4.2	2.6 3.4	1.0 3.4	3.4 3.9	2.0 3.9	3.1 2.9	8.0 (1.1)	5.0 4.4	1.3 (0.5)	4.9 4.4	6.6 (1.1)	6.6 4.4	8.0 (0.3)	0.5			
35° 30' 15.0 Obs. 139.5	All winds Gales Force	1.4 (0.1)	1.1 (0.1)	1.1 3.7	0.9 3.7	1.8 5.6	0.2 3.7	1.2 3.3	1.1 3.8	3.4 4.0	2.5 4.0	9.5 3.8	3.3 (1.1)	3.8 (0.4)	3.8 3.9	0.6 3.8	3.6 3.8	1.8 (0.2)	4.0 3.6	0.6 4.1	2.5 2.9	2.4 4.6	4.0 (0.7)	4.4 4.5	4.4 3.9	2.9 (0.6)	4.5 3.9	2.9 (0.5)	1.9 4.6	1.1 1.0		
35° 15' 17.0 Obs. 180.1	All winds Gales Force	1.1 (0.2)	1.6 3.0	0.4 2.7	1.2 3.0	0.5 3.0	2.2 3.0	1.8 3.5	0.9 3.8	0.9 3.8	1.9 3.5	3.4 4.5	2.5 3.9	6.0 (0.6)	0.5 3.9	1.7 3.6	4.7 3.6	3.9 3.6	4.8 3.7	1.9 4.5	3.3 (0.4)	3.3 (1.1)	5.4 (1.2)	2.3 3.1	1.8 (0.4)	3.8 3.1	4.3 (0.6)	3.6 (0.9)	1.1 4.3	3.1 1.0		
35° 0' 19.0 Obs. 105.3	All winds Gales Force	1.0 (0.2)	1.6 3.0	0.4 2.7	0.8 3.0	0.8 3.0	1.9 3.0	1.6 3.5	4.2 3.8	3.1 3.8	3.0 3.5	5.2 4.3	0.8 3.2	2.5 3.2	0.8 3.2	1.8 4.0	3.5 3.6	3.1 3.4	4.8 5.2	2.3 4.0	1.6 4.6	3.3 (1.6)	6.7 (3.9)	2.9 3.6	6.1 (1.3)	2.9 3.1	5.6 5.0	3.6 (0.3)	1.3 3.9	1.0 4.5		
38° 45' 12.0 Obs. 107.1	All winds Gales Force	3.0 (0.8)	5.8 (0.8)	1.8 4.6	0.9 4.6	0.6 4.0	0.6 4.0	0.3 1.5	0.3 1.0	0.6 1.0	0.9 3.6	0.6 4.3	0.6 3.3	0.6 3.3	0.6 3.3	0.7 3.8	3.6 5.0	1.1 5.0	4.2 5.2	3.4 5.2	4.0 5.2	8.1 (3.5)	14.0 (1.3)	7.5 (0.6)	8.4 (1.4)	2.2 3.9	5.8 (0.8)	0.3 (0.8)	0.5			
36° 30' 15.30 Obs. 50.0	All winds Gales Force	1.8 (0.5)	1.8 4.5	1.8 4.0	1.8 4.0	1.8 4.0	1.8 4.0	4.3 3.3	1.5 3.3	1.5 3.3	0.2 4.0	0.5 3.3	0.9 3.3	3.0 4.7	3.0 4.7	0.9 3.7	2.7 3.7	1.8 3.5	4.5 3.3	3.6 3.3	3.0 3.3	6.4 3.3	10.5 3.3	8.8 (1.8)	13.3 (3.0)	1.8 5.6	4.8 (1.3)	4.0 3.8	0.6			
39° 0' 15.30 Obs. 107.0	All winds Gales Force	0.5 (0.5)	1.9 5.7	0.5 4.5	1.9 4.5	1.5 4.5	0.9 4.5	1.5 4.5	0.9 4.5	0.9 4.5	0.9 4.5	1.9 3.3	1.5 3.3	0.5 3.3	0.5 3.3	1.5 3.3	2.3 3.3	1.9 3.3	3.3 3.3	11.8 (3.4)	0.8 (3.4)	0.8 (3.4)	0.8 (3.4)	6.5 (1.9)	7.5 5.1	7.5 5.1	0.9 (0.9)	5.0 3.6	0.2			
38° 0' 18.30 Obs. 183.1	All winds Gales Force	1.7 (0.4)	2.0 3.4	0.3 2.7	0.5 2.7	0.7 3.7	1.4 3.7	0.6 3.0	0.6 3.0	2.2 3.0	0.4 3.0	0.6 3.0	1.2 3.0	0.3 3.0	0.3 3.0	0.7 3.0	5.2 5.0	3.6 6.1	3.0 6.1	4.0 3.3	8.8 (1.2)	5.5 3.3	5.5 3.3	10.7 (5.2)	4.0 (1.1)	11.5 (3.9)	4.8 3.6	4.5 (1.1)	0.2 1.0			

JULY—WINDS.—LAT. 30° to 40° S. Long. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. S.	Long. E.	Percentage of all Winds.														Variables.	Calms.																
			N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.S.E.	E. by E.	E.	E. by S.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
35° 30' 21.30 Obs. 138.9	1.5	3.7	1.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
35° 15' 24.0 Obs. 139.9	1.8	3.2	1.8	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
35° 0' 26.0 Obs. 148.9	0.7	5.8	0.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
34° 0' 48.30 Obs. 208.2	1.7	2.2	1.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
38° 30' 21.30 Obs. 88.2	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
37° 0' 25.0 Obs. 45.8	0.6	4.8	0.6	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
39° 0' 25.0 Obs. 101.5	0.7	3.1	0.7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
36° 30' 28.30 Obs. 149.7	5.0	9.8	5.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
39° 0' 28.30 Obs. 115.0	1.7	5.2	1.7	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2

JULY.

JULY—WINDS.—LAT. 30° to 40° S. Long. 30° to 40° E.

32° 0' 32.0 Obs. 251.3	All winds Gales - Force	5.2 (1.1) 4.6	2.8 (0.2) 4.6	6.1 (0.3) 4.6	5.9 (0.3) 4.6	4.0 (0.3) 4.6	0.7 (0.3) 4.6	1.0 (0.3) 4.6	1.7 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.1 (0.3) 4.6	3.2 (0.3) 4.6	1.1 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.7 (0.3) 4.6	1.0 (0.3) 4.6	1.7 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.1 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1.7 (0.3) 4.6	3.2 (0.3) 4.6	0.4 (0.3) 4.6	0.5 (0.3) 4.6	1
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WINDS

JULY—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

[illegible]

JULY—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

[illegible]

JULY.

JULY.—WINDS.—LAT. 40° to 50° S. Long. 30° to 40° E.

[illegible]

Position of Centre of Wind-rose, and Number of Weighted Observations.	Percentage of all Winds.																			Mean of Forces below 8.																
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.		W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.					
5 1/2 35 15 11 30 Obs. 115 7	0.2	0.4	0.5	0.3	0.5	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.6					
31 30 14 0 Obs. 98 0	0.9	2.0	1.2	0.3	0.5	1.5	0.9	2.8	5.6	8.8	2.9	4.9	2.6	5.3	2.4	1.2	2.0	6.7	3.6	4.5	3.9	3.7	3.9	3.9	3.9	3.9	3.7	0.4	4.8	1.0	0.9					
32 15 16 0 Obs. 46 7	6.2	3.0	3.3	0.4	3.0	0.4	3.4	10.7	2.8	7.8	2.4	4.9	4.2	4.3	4.2	4.2	4.1	14.4	7.5	3.0	2.2	1.1	1.2	3.9	2.1	1.7	2.4	6.9	3.0	0.4	0.9	3.4				
34 30 11 30 Obs. 62 5	1.6	1.0	0.8	0.6	1.0	0.6	2.9	4.0	5.8	6.6	3.6	4.9	6.6	4.5	6.6	4.8	3.5	6.6	4.8	3.5	0.3	1.6	2.4	1.3	5.9	4.0	5.0	6.2	2.4	2.1	5.7	8.6	2.3			
34 0 14 30 Obs. 115 7	1.0	1.3	2.5	3.5	3.5	1.4	2.6	8.4	3.7	12.8	4.5	12.3	4.5	4.3	4.3	5.0	4.1	6.6	4.8	3.5	0.3	1.6	2.4	3.5	2.2	4.4	1.5	4.7	2.0	3.5	1.7	4.2	0.6	2.3		
34 15 17 45 Obs. 202 5	0.2	0.6	0.1	0.0	0.3	1.9	2.2	0.6	7.4	5.5	4.6	7.8	4.1	4.0	4.1	5.0	4.7	0.8	4.8	3.5	2.2	2.4	2.9	3.5	2.2	4.4	1.5	6.1	1.4	4.7	2.0	3.5	1.7	4.2	0.6	2.3
38 30 11 30 Obs. 157 0	1.1	3.4	3.5	3.1	3.1	1.2	0.7	1.5	1.0	0.3	0.8	2.9	4.6	4.0	4.1	5.0	4.7	5.1	4.3	3.8	4.0	3.5	2.4	3.5	2.2	4.4	1.5	6.1	1.4	4.7	2.0	3.5	1.7	4.2	0.6	2.3
36 30 15 0 Obs. 70 0	4.0	2.0	3.0	4.5	4.5	1.0	1.2	2.1	2.4	6.0	6.0	0.4	0.4	4.0	4.7	7.4	1.4	9.7	7.3	2.0	9.7	1.4	2.4	3.8	3.2	11.9	0.7	3.4	3.9	5.4	4.1	2.2	0.6	0.6		
35 45 18 30 Obs. 170 4	0.4	2.0	0.7	0.5	0.3	1.8	2.7	0.3	0.8	1.5	1.3	5.8	3.8	3.9	4.5	3.8	1.6	3.5	5.2	2.5	2.0	4.9	4.7	4.9	4.9	4.9	1.8	8.3	1.9	8.8	3.1	2.5	2.2	2.3	0.3	2.0
39 0 15 0 Obs. 168 2	1.8	1.2	0.8	1.6	0.6	0.5	0.4	0.3	1.0	0.2	1.4	2.3	5.5	3.6	4.2	3.0	3.9	9.3	3.8	0.9	3.9	2.1	4.5	5.1	6.6	4.6	13.4	3.3	4.2	1.8	4.5	1.8	3.3	0.3	1.1	
39 0 18 30 Obs. 116 7	0.4	3.9	0.7	0.9	0.2	2.1	0.1	0.7	1.5	0.6	1.7	3.5	5.0	3.9	3.9	5.3	0.7	8.3	6.6	11.2	11.7	3.1	3.7	2.0	4.7	11.2	11.7	3.1	3.7	2.0	4.7	0.8	0.7	1.2	2.4	

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		Percentage of all Winds.		Mean of Forces below 8.		Direction																Variables.							
	N.	E.	N. by E.	N.N.E.	N.E. by N.	N.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Calms.		
53° 21' 30" Obs. 227.4	0.7	1.9	3.4	3.3	1.9	1.4	2.2	1.4	3.5	1.4	5.3	1.4	5.3	1.0	3.8	1.5	7.5	3.8	7.7	4.1	7.6	4.3	4.1	4.1	1.1	2.0	1.0	1.5	1.0	2.9
35 15 24 30 Obs. 166.6	2.3	5.7	3.8	4.0	3.4	3.6	0.2	1.9	3.7	0.8	3.1	3.2	1.9	3.8	2.4	7.0	3.2	8.2	3.7	6.7	2.5	2.0	4.9	4.9	2.2	0.9	0.5	3.1	0.9	2.1
34 0 28 0 Obs. 184.1	3.3	5.4	4.4	4.0	4.9	4.8	1.1	1.4	2.1	1.8	1.0	2.7	1.2	4.6	2.4	3.4	2.8	6.8	1.6	3.0	1.2	1.7	3.5	3.5	1.6	2.2	2.3	1.8	0.4	2.1
38 45 21 30 Obs. 166.6	0.4	3.4	5.3	3.8	0.2	1.8	1.3	1.4	5.3	1.5	4.3	1.5	4.4	4.9	1.7	4.8	2.1	6.5	7.1	4.1	4.1	4.3	4.8	4.8	3.0	3.2	3.0	0.4	1.5	
38 30 24 30 Obs. 164.1	3.7	0.8	3.9	4.0	3.2	0.7	2.3	2.8	3.4	4.3	3.2	2.6	4.3	3.9	4.0	5.1	5.1	6.0	4.1	4.1	7.6	3.8	3.8	3.0	1.8	1.2	1.2	1.5	1.0	0.8
36 45 28 0 Obs. 84.5	1.2	4.4	4.8	4.8	2.0	3.6	3.3	1.9	3.8	1.8	2.0	0.4	3.5	4.5	7.5	4.5	3.2	8.6	6.4	9.1	2.4	2.4	4.4	4.4	1.7	2.2	3.5	3.7	0.9	1.0
39 0 28 0 Obs. 164.1	2.1	4.6	5.1	5.0	0.6	1.3	0.6	1.7	2.8	4.6	11.6	3.2	4.8	4.2	4.9	5.3	0.9	13.0	2.8	11.1	2.3	3.7	4.7	4.7	0.6	5.3	5.1	4.6	1.3	1.3

AUGUST—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

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WINDS

[illegible]

OCTOBER.

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WINDS

OCTOBER—WINDS.—LAT. 30° to 40° S. LONG. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	N. by E.		N.N.E.	N.E. by N.	N.E.	E.S.E.	E. by S.	E.	E.S.E.	S.E. by E.	S.E.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
	Lat.	Long.																											
35 15 21 30 Obs. 165 3	35° 15'	21° 30'	4.0	3.9	3.9	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
35 0 24 30 Obs. 148 4	35° 0'	24° 30'	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
34 30 27 0 Obs. 111 0	34° 30'	27° 0'	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
33 30 29 0 Obs. 123 5	33° 30'	29° 0'	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
38 0 22 0 Obs. 190 3	38° 0'	22° 0'	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
38 15 25 30 Obs. 160 6	38° 15'	25° 30'	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
38 15 28 30 Obs. 163 4	38° 15'	28° 30'	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

OCTOBER—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

All winds Gales Force	32 0 31 30 Obs. 115 3	1 2	5 9	12 6	5 0	13 6	3 7	6 4	1 5	4 7	0 3	3 0	0 4	4 2	1 6	2 0	2 0	4 5	3 7	2 4	3 0	2 9	1 5	0 3	1 0	0 4	1 3	1 5	1 7	1 6	0 2	1 2
		0 4	5 3	1 6	1 3	1 9	4 8	3 3	3 3	3 6	3 6	4 3	3 8	3 5	3 8	4 8	3 2	3 2	3 5	0 8	0 9	0 3	0 3	0 3	0 3	4 5	2 2	0 2	0 2	4 2	1 0	
All winds Gales Force	31 30 34 30 Obs. 135 8	4 0	1 8	7 6	2 9	7 9	6 0	9 0	4 3	1 5	1 2	3 7	1 8	2 4	1 8	8 7	3 2	6 2	1 5	5 4	1 3	0 8	0 2	0 2	1 5	0 2	1 2	0 7	3 9	1 5	0 1	
		0 2	4 9	1 4	9	4 5	4 5	3 7	3 4	3 4	3 1	4 5	3 1	4 5	4 5	4 5	4 5	4 5	4 6	1 0	1 0	0 5	0 5	0 5	0 5	0 5	0 4	0 4	0 4	0 4	20	
All winds Gales Force	31 15 38 0 Obs. 148 0	10 7	1 1	6 6	0 7	6 1	2 7	8 8	2 8	3 0	0 8	5 3	1 4	4 5	2 4	7 8	3 3	3 1	1 2	6 4	1 8	2 4	0 8	1 4	0 3	0 7	1 0	0 7	5 4	3 0	0 3	
		1 0	4 5	5 1	0 7	0 3	2 6	1 1	1 1	0 3	3 4	4 5	4 5	4 6	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	4 5	
All winds Gales Force	34 30 32 30 Obs. 85 4	3 4	7 3	5 9	7 9	9 8	3 5	8 2	4 1	0 5	0 9	4 5	2 3	4 4	4 8	5 8	0 8	0 5	1 4	1 2	0 8	2 7	2 4	1 1	5 9	0 4	2 7	3 0	2 5	3 0	1 4	0 7
		4 5	4 9	4 9	4 9	4 9	4 8	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	4 1	
All winds Gales Force	35 0 37 30 Obs. 34 3	4 4	6 7	3 8	2 9	4 1	1 5	5 2	0 9	3 8	0 6	1 5	1 5	1 5	3 5	3 8	1 5	2 6	3 2	4 4	5 8	2 9	2 0	8 7	3 2	2 9	12 8	1 5	2 9	1 5	1 5	
		3 2	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	
All winds Gales Force	38 30 31 30 Obs. 79 0	4 1	0 6	5 4	3 3	2 7	1 3	2 2	1 8	2 4	2 4	1 0	1 8	1 3	5 6	2 5	1 0	2 5	2 5	5 7	6 3	8 6	10 8	3 2	2 9	0 6	1 3	0 6	4 4	0 6	1 9	1 9
		4 5	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
All winds Gales Force	38 45 35 0 Obs. 113 0	2 2	5 8	0 6	1 8	0 7	1 8	2 3	1 2	1 4	0 3	2 0	0 4	2 1	1 6	4 9	4 5	6 8	1 3	2 1	4 4	5 4	3 1	16 0	2 2	5 6	3 4	2 2	2 2	4 1	0 2	3 2
		4 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8	3 8
All winds Gales Force	39 0 38 30 Obs. 84 9	1 2	4 1	5 9	0 6	1 8	2 0	2 1	3 2	0 2	0 9	0 8	1 1	3 3	6 1	1 2	4 4	2 6	9 4	6 3	5 9	12 2	2 4	3 2	4 5	1 8	1 0	1 8	0 6	0 6	5 1	4 0
		4 6	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3	4 3

OCTOBER—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		Percentage of all Winds.																Mean of Forces below 8.														
	N.	N. by E.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.	
41° 0' 11 30 Obs. 175.5	5.7 (0.3)	4.6 (0.3)	6.2 (1.4)	2.3 (.4)	0.7	0.6	0.2	0.8	0.2	0.2	0.2	0.6	0.7	1.1	0.6	0.4	1.1	5.6 (0.6)	2.0 (.4)	5.7 (1.7)	8.4 (1.7)	5.5 (.9)	5.1 (0.3)	3.7 (.5)	3.3 (.6)	2.4 (.6)	3.2 (.6)	2.9 (.6)	5.6 (1.1)	2.9 (.6)	2.5 (.4)	3.4 (.8)	9.0
41° 0' 14 30 Obs. 175.5	1.3	0.5	2.8	0.2	0.2	0.9	1.0	0.0	1.1	0.2	0.2	0.4	0.2	0.8	6.0	0.8	2.0 (0.8)	5.0 (1.7)	3.5 (.8)	12.9 (0.8)	10.6 (1.1)	10.6 (1.1)	8.3 (2.0)	4.7 (1.1)	4.7 (2.3)	5.0 (3.7)	4.1 (3.6)	4.3 (2.8)	2.5 (0.6)	7.0 (1.4)	1.2	0.4	
41° 0' 18 0 Obs. 201.0	2.7	2.1	1.5	0.2	0.8	1.0	0.4	0.4	1.1	0.4	0.1	0.1	1.5	2.1	1.8	1.8	5.1 (1.5)	5.5 (1.6)	5.4 (0.8)	11.7 (3.8)	6.2 (1.9)	6.2 (3.8)	9.1 (3.8)	3.0 (.9)	13.2 (4.4)	6.9 (2.3)	5.8 (3.5)	2.9 (1.0)	4.0 (1.5)	2.3 (0.1)	0.2 (.7)	0.4	
43° 15' 11 30 Obs. 97.0	4.1	3.1	3.3	5.2	2.6	4.0	3.7	0.4	4.8	0.4	0.4	0.4	0.7	0.3	5.9	5.9	4.5 (1.0)	1.6 (.3)	3.1 (.9)	3.6 (.9)	3.6 (.9)	5.9 (2.1)	6.7 (2.1)	6.5 (1.5)	4.3 (.9)	15.4 (5.2)	3.8 (.5)	6.7 (1.5)	5.6 (.9)	6.7 (1.0)	7.0 (.5)	1.2	
43° 15' 15 0 Obs. 168.7	2.3 (.6)	2.2 (.6)	3.4 (.6)	1.6 (.4)	1.5	0.5	0.3	1.3	0.3	0.6	1.0	0.6	0.3	1.3	1.6	2.3	1.8 (.8)	5.5 (1.8)	3.6 (.6)	12.0 (3.2)	5.2 (.6)	5.2 (.6)	5.1 (.8)	4.4 (.8)	9.2 (3.7)	7.0 (2.7)	6.1 (1.2)	5.3 (.6)	2.8 (.6)	2.5 (.3)	3.4	0.2	
43° 15' 18 30 Obs. 140.0	2.1	0.4	5.2 (0.4)	1.3 (.3)	0.7 (.5)	1.4	0.1	0.4	1.1	0.4	0.4	0.4	1.6 (1.4)	1.9 (.4)	2.4 (.4)	2.4	3.6 (.4)	5.0 (.6)	5.0 (.6)	2.2 (.8)	9.9 (.7)	9.9 (.7)	2.9 (1.6)	5.6 (.7)	12.4 (4.6)	11.6 (5.2)	9.7 (3.0)	3.0 (.7)	2.9 (.6)	2.7 (.6)	0.4	0.2	
47° 0' 15 0 Obs. 87.0	4.6	0.6	4.6	6.3	1.2	6.9	1.4	0.9	1.3	0.2	0.0	0.0	1.0	4.4	1.2	1.7	3.5 (.7)	6.1 (.5)	5.0 (.8)	5.9 (2.3)	5.9 (2.3)	5.5 (.5)	5.5 (.5)	5.6 (.7)	4.0 (.7)	15.1 (5.1)	16.7 (6.7)	4.0 (.7)	10.3 (2.1)	2.1	1.1		
	5.2	4.2	4.2	3.5	3.5	4.0	4.6	0.9	4.0	0.0	0.0	0.0	3.5	5.0	4.3	4.3	6.5 (.7)	6.5 (.7)	2.3 (.3)	2.3 (.3)	2.3 (.3)	5.5 (.5)	5.5 (.5)	5.0 (.5)	5.0 (.5)	4.8 (.4)	4.8 (.4)	4.0 (.4)	3.8	4.0			

OCTOBER.

OCTOBER—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

41° 0' 22 0 Obs. 253 3	All winds Gales Force	11.2	11.6	21	0.9	3.4	0.5	3.6	0.7	1.6	0.6	1.1	0.3	1.7	0.9	2.1	4.5	2.0	3.5	4.9	3.6	1.9	4.0	2.5	2.8	7.6	3.0	11.7	4.8	5.5	3.4	5.2	2.4	1.4	1.2	0.6
		5.3	4.5	4.8	1.1	0.4	0.9	3.8	4.7	4.5	2.1	4.7	3.9	3.8	2.7	5.1	4.5	4.5	3.8	5.3	4.2	3.5	2.7	2.9	1.9	0.5	3.5	2.4	5.2	2.1	5.1	0.7	0.5			
41° 0' 25 30 Obs. 195 9	All winds Gales Force	3.6	2.8	5.0	1.5	4.6	1.6	1.1	0.6	0.7	1.6	1.7	2.5	3.1	3.9	2.5	3.8	3.3	3.6	5.1	5.4	2.6	10.0	4.2	7.1	10.0	4.2	7.1	5.6	5.9	2.4	2.7	2.9	1.9	0.5	1.7
		4.7	4.6	4.6	3.8	3.5	2.8	3.4	3.9	4.2	4.2	3.9	3.9	3.9	3.9	3.9	4.2	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
41° 0' 28 30 Obs. 200 9	All winds Gales Force	5.3	0.4	4.9	2.2	3.3	2.7	1.1	0.8	0.9	0.4	2.2	1.4	5.0	1.9	3.2	0.9	6.3	3.4	3.6	3.5	6.2	1.1	8.3	1.3	1.6	4.2	5.1	4.2	5.0	2.2	3.5	2.2	1.8	2.8	0.8
		4.6	5.3	4.9	4.4	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
43° 0' 21 30 Obs. 110 0	All winds Gales Force	2.2	1.5	1.2	0.8	3.6	0.8	0.4	0.4	1.1	1.1	0.2	0.7	0.3	0.4	1.5	1.3	4.0	3.4	5.9	1.4	0.2	5.6	5.0	13.7	12.5	6.2	4.1	2.7	4.5	4.7	0.7	4.9	0.7	4.9	0.7
		5.3	6.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43° 0' 24 30 Obs. 128 5	All winds Gales Force	0.2	2.6	0.8	2.3	5.3	1.2	1.4	0.8	1.4	0.9	2.3	0.9	3.0	2.2	2.9	3.6	3.7	4.5	5.3	6.4	6.3	6.7	13.1	6.1	4.0	3.3	3.1	3.3	5.1	4.8	3.5	1.2	2.5	0.4	0.3
		6.2	5.3	4.8	2.8	2.7	3.0	2.5	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7	4.1	4.7
43° 0' 28 0 Obs. 196 4	All winds Gales Force	1.6	2.4	2.1	2.0	2.7	2.9	1.7	1.1	0.8	1.5	1.6	0.1	0.8	1.5	1.9	1.6	6.7	5.1	4.2	6.3	7.0	4.1	3.9	7.7	3.5	6.0	4.6	4.6	1.9	1.5	1.3	0.1	0.4	0.4	
		3.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
45° 0' 22 30 Obs. 91 2	All winds Gales Force	5.0	3.3	4.4	2.7	0.3	1.5	1.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
		4.5	5.5	4.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
45° 0' 27 30 Obs. 120 2	All winds Gales Force	3.9	5.6	3.7	5.0	2.8	0.6	0.2	0.6	0.7	0.4	1.2	0.8	3.2	1.1	1.3	2.6	4.3	8.3	2.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
47° 30' 25 0 Obs. 90 0	All winds Gales Force	1.1	2.2	1.7	2.6	0.6	0.5	0.8	0.8	7.0	7.0	4.6	0.8	3.9	1.7	1.3	1.1	2.8	1.1	1.1	7.2	2.2	5.6	6.1	10.5	10.8	1.3	4.8	2.2	0.6	2.1	8.9	0.2	1.2	1.2	
		1.7	3.8	3.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

WINDS

OCTOBER—WINDS.—LAT. 40° to 50° S. Long. 30° to 40° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long.		Percentage of all Winds.																Variables.		Calms.												
	Lat.	Long.	Mean of Forces below S.																Variables.		Calms.												
	N.	E.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.	E. by S.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
41° 30' 32° 30' Obs. 433.3	4.0 (.1)	4.8 (.2)	4.7 (.1)	3.4 (.2)	1.3 (.1)	2.3 (.1)	1.4 (.1)	2.0 (.1)	0.4 (.1)	0.7 (.2)	0.5 (.1)	2.3 (.2)	1.0 (.2)	1.5 (.2)	2.6 (.3)	4.3 (.6)	4.8 (.9)	4.3 (.8)	5.8 (.4)	5.4 (.3)	3.2 (.1)	4.1 (.1)	4.0 (.1)	7.0 (.3)	4.3 (.2)	6.0 (.2)	4.1 (.2)	3.7 (.2)	2.9 (.2)	3.0 (.1)	0.6 (.1)	0.6	9.0
41° 0' 37° 30' Obs. 272.2	6.0 (.3)	4.5 (.2)	4.7 (.1)	1.1 (.1)	0.5 (.1)	1.5 (.1)	0.6 (.1)	1.4 (.1)	1.2 (.1)	2.2 (.1)	0.4 (.1)	3.1 (.1)	0.4 (.1)	2.2 (.1)	3.9 (.2)	4.9 (.2)	4.0 (.1)	4.9 (.2)	4.2 (.1)	7.2 (.2)	2.0 (.1)	3.8 (.2)	4.0 (.1)	7.5 (.3)	4.0 (.1)	4.8 (.2)	7.1 (.3)	6.0 (.2)	5.1 (.2)	4.4 (.2)	0.5 (.1)	0.5	0.5
41° 0' 32° 30' Obs. 219.7	5.0 (.1)	4.6 (.2)	6.4 (.3)	4.6 (.2)	3.4 (.2)	3.1 (.1)	2.8 (.1)	5.8 (.2)	0.8 (.1)	0.2 (.1)	0.5 (.1)	3.1 (.1)	0.5 (.1)	4.2 (.2)	2.5 (.1)	0.8 (.1)	4.8 (.2)	1.7 (.1)	4.7 (.2)	4.2 (.1)	6.4 (.3)	3.0 (.1)	4.0 (.1)	5.6 (.2)	4.4 (.2)	5.4 (.2)	8.3 (.3)	3.6 (.2)	5.6 (.2)	4.3 (.2)	0.1 (.1)	0.2	0.2
43° 30' 37° 30' Obs. 324.0	7.0 (.3)	2.3 (.1)	5.5 (.2)	5.8 (.2)	2.5 (.1)	3.0 (.1)	0.6 (.1)	0.4 (.1)	0.3 (.1)	0.9 (.2)	0.3 (.1)	4.7 (.2)	0.9 (.2)	2.0 (.1)	0.2 (.1)	0.5 (.1)	6.0 (.2)	3.0 (.1)	3.7 (.2)	7.7 (.3)	5.7 (.2)	3.2 (.1)	4.3 (.2)	8.6 (.3)	6.0 (.2)	5.2 (.2)	6.9 (.3)	3.4 (.2)	6.1 (.2)	2.7 (.1)	0.1 (.1)	0.1	0.1
46° 30' 32° 30' Obs. 102.6	1.3 (.1)	4.4 (.2)	1.3 (.1)	2.2 (.1)	0.9 (.1)	1.8 (.1)	3.4 (.2)	0.9 (.1)	1.4 (.1)	0.5 (.1)	0.6 (.1)	4.7 (.2)	0.3 (.1)	2.0 (.1)	4.7 (.2)	1.0 (.1)	6.6 (.2)	6.0 (.2)	5.2 (.2)	1.0 (.1)	4.7 (.2)	3.9 (.2)	4.0 (.1)	6.1 (.2)	17.9 (.3)	4.3 (.2)	9.1 (.3)	3.4 (.2)	4.4 (.2)	4.1 (.1)	1.0 (.1)	1.0	0.5
47° 0' 37° 30' Obs. 103.0	1.0 (.1)	6.8 (.3)	1.0 (.1)	3.8 (.2)	2.0 (.1)	3.5 (.2)	1.7 (.1)	1.0 (.1)	0.4 (.1)	3.5 (.2)	1.0 (.1)	4.0 (.1)	1.0 (.1)	7.0 (.3)	5.8 (.2)	6.0 (.2)	4.4 (.2)	2.9 (.1)	5.3 (.2)	1.0 (.1)	3.0 (.1)	4.9 (.2)	6.3 (.2)	10.2 (.3)	8.7 (.3)	4.1 (.1)	1.0 (.1)	6.8 (.3)	6.3 (.2)	5.7 (.2)	2.0	2.0	

NOVEMBER—WINDS.—LAT. 30° to 40° S. Long. 10° to 20° E.

Lat. Long. S. E.		Percentage of all Winds.																Variables.		Calms.											
Lat.	Long.	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.S.E.	E. by S.	E.	E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
31 30 11 30 Obs. 103 0	31° 30'	11° 30'	2.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.4	
31 45 14 0 Obs. 72 2	31° 45'	14° 0'	3.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
32 0 16 0 Obs. 37 5	32° 0'	16° 0'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
36 0 11 30 Obs. 85 0	36° 0'	11° 30'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
34 0 14 30 Obs. 73 0	34° 0'	14° 30'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
36 30 14 30 Obs. 62 0	36° 30'	14° 30'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
34 30 17 0 Obs. 140 2	34° 30'	17° 0'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
35 0 19 0 Obs. 123 6	35° 0'	19° 0'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
39 0 11 30 Obs. 76 2	39° 0'	11° 30'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
39 0 14 30 Obs. 89 0	39° 0'	14° 30'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
38 30 18 0 Obs. 159 5	38° 30'	18° 0'	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	

NOVEMBER.

NOVEMBER—WINDS.—LAT. 30° to 40° S. Long. 20° to 30° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.	Lat. Long. E.		Percentage of all Winds.																								Variables.		Calms.				
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	N.E. by E.	E.S.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.			
35 15 21 30 Obs. 121 6	3.5	0.8	0.2	1.0	0.8	1.8	2.2	8.9	5.2	11.6	4.4	3.5	3.8	0.5	0.9	3.0	6.2	2.9	1.7	1.6	4.3	3.3	2.8	3.4	4.8	3.3	2.4	0.6	0.8	0.6	3.7		
All winds																																	
Gales																																	
Force																																	
35 0 24 0 Obs. 149 8	4.3	3.0	0.9	3.7	0.3	4.5	2.7	8.5	6.4	7.6	4.5	4.3	2.0	2.6	1.3	1.4	2.5	1.7	5.0	3.3	2.4	4.4	5.1	0.0	2.6	5.8	2.0	1.6	1.1	1.0	0.6	0.9	
All winds																																	
Gales																																	
Force																																	
33 45 28 0 Obs. 205 7	4.2	1.8	1.5	3.4	4.9	8.0	10.4	4.9	3.7	2.3	3.8	1.9	1.2	3.5	4.1	3.7	5.9	4.1	2.9	3.5	6.1	3.8	2.7	1.5	1.7	0.8	1.0	0.2	0.1	0.6	0.7	0.9	
All winds																																	
Gales																																	
Force																																	
37 0 22 30 Obs. 205 7	2.0	0.7	0.2	0.4	3.5	0.5	1.3	2.6	2.1	10.3	3.4	3.6	2.6	4.7	1.7	4.7	2.6	7.7	3.2	4.6	2.6	8.0	1.5	5.7	1.0	15.7	2.3	1.0	0.5	1.0	0.2	0.7	3.1
All winds																																	
Gales																																	
Force																																	
36 30 27 30 Obs. 72 9	2.0	2.1	1.4	2.1	3.5	0.7	7.5	2.7	2.1	4.4	4.0	0.7	18.3	1.4	4.5	3.7	7.4	0.4	3.0	1.4	5.2	1.1	8.2	1.8	7.7	1.4	2.5	1.8	3.7	0.4	3.6	3.9	
All winds																																	
Gales																																	
Force																																	
39 0 22 30 Obs. 141 7	3.9	0.4	3.3	0.2	4.5	0.5	4.6	1.8	4.9	1.8	5.4	1.8	2.1	2.8	3.0	2.4	4.4	4.6	8.5	3.2	4.3	3.0	2.0	1.4	2.7	1.5	11.7	1.2	3.6	1.4	1.8	0.4	3.5
All winds																																	
Gales																																	
Force																																	
39 0 27 30 Obs. 101 0	4.5	0.4	6.1	1.9	3.7	3.5	2.1	0.5	1.0	0.3	1.0	0.2	0.7	0.8	2.5	3.5	3.1	8.7	8.2	7.7	1.3	4.7	4.2	6.1	0.7	8.2	3.0	6.4	1.3	0.5	0.7	0.7	
All winds																																	
Gales																																	
Force																																	

NOVEMBER—WINDS.—LAT. 30° to 40° S. Long. 30° to 40° E.

° / ° / 32 ° 31' 30" Obs. 122 3	All winds Gales - Force -	23	22	5.6 (0.8)	2.0	7.7	5.4 (1.2)	11.3 (1.2)	2.7	4.2	0.8	3.1	1.6	4.7	2.7 (0.8)	3.7	2.5	6.3	2.2 (0.4)	11.5 (2.1)	3.9	5.2 (0.2)	3.8	1.2	0.3	0.6	1.2	0.6*	1.5	0.9	0.4					
		3.6	0.5	3.6	3.9	3.1	3.2	3.7	4.1	3.7	4.5	0	3.5	0.4	4.0	3.5	5.0	3.0	1.3	0.7	1.2	0.7	3.5	0.8	0.3	0.4	4.0	3.5	5.0	3.0	1.3					
31 30 34 30 Obs. 145 6	All winds Gales - Force -	6.0	1.0	11.6 (0.7)	3.7	11.3	3.2 (0.7)	6.0 (1.1)	0.5	4.2	1.8	5.9	0.2	1.2	3.2 (1.1)	4.9	3.2	3.0	1.8	5.8	2.2	7.9 (0.5)	0.8	2.0	0.3	0.4	3.0	3.3	4.6	5.0	1.0					
		4.2	0.7	5.1	4.1	3.7	3.4	3.7	3.2	3.6	3.9	3.5	2.0	0.3	3.0	3.3	0.3	3.0	3.6	0.4	0.8	0.5	0.3	0.4	0.3	0.6	1.2	0.7	1.7	0.6	2.3	2.6				
31 15 38 0 Obs. 141 3	All winds Gales - Force -	6.4	2.0	6.8	1.1	8.2	3.0	10.9	1.8	3.8	0.1	5.3	0.2	4.7	1.6	6.1 (0.1)	2.0	3.5	1.8	3.3	2.5	2.4	0.8	2.7	0.3	0.9	0.3	0.4	2.5	2.7	8.2	2.1	1.0	1.4		
		3.5	0.3	3.3	3.6	3.6	3.5	4.3	4.1	4.0	3.9	5.0	5.2	5.0	4.1	3.0	3.3	4.0	3.2	9.5 (0.1)	2.5 (0.5)	1.8 (0.2)	4.4 (2.8)	1.8 (2.6)	3.0	1.1	2.8	0.3	4.0	1.2	1.4	0.5	1.3	1.8	3.7	1.6
34 0 32 30 Obs. 93 3	All winds Gales - Force -	3.9	5.9	3.8 (1.1)	1.6	0.5	6.8 (1.1)	3.5	1.8	4.3	1.3	2.7	0.2	3.0	2.4 (0.5)	3.3	4.0	3.2	9.5 (0.1)	2.5 (0.5)	1.8 (0.2)	4.4 (2.8)	1.8 (2.6)	3.0	1.1	2.8	0.3	4.0	1.2	1.4	0.5	1.3	1.8	3.7	1.6	2.0
		3.3	4.1	4.2	3.0	4.1	3.3	3.8	3.0	3.2	3.5	3.2	3.0	4.1	3.3	4.1	3.3	4.0	3.2	9.5 (0.1)	2.5 (0.5)	1.8 (0.2)	4.4 (2.8)	1.8 (2.6)	3.0	1.1	2.8	0.3	4.0	1.2	1.4	0.5	1.3	1.8	3.7	1.6
35 0 37 30 Obs. 30 2	All winds Gales - Force -	1.1	10.5	2.8	4.7	0.6	2.2	1.1	1.4	4.7	2.8	4.1	1.4	12.4	4.1	1.7	2.0	5.5	2.5	2.8	2.7	2.3	2.7	2.5	2.8	2.5	2.8	2.7	3.9	0.1	8.0	5.6	5.6			
		4.6	4.8	5.0	4.0	3.3	2.0	3.0	3.5	3.0	4.5	2.3	4.1	4.5	2.7	3.6	2.7	5.8	4.2	2.3	9.7 (1.9)	3.6 (1.0)	5.0	3.2	1.0	5.2	0.3	3.2	1.0	5.2	0.3	1.5	1.5	1.5		
39 0 32 0 Obs. 103 3	All winds Gales - Force -	1.0	8.5	1.0	3.2	1.9	2.6	0.8	1.7	2.8	0.6	1.8	3.1	8.3 (1.8)	3.8	5.7 (3.7)	2.7	5.8	4.2	2.3	9.7 (1.9)	3.6 (1.0)	5.0	3.2	1.0	5.2	0.3	3.2	1.0	5.2	0.3	1.5	1.5	1.5		
		4.8	4.8	6.0	4.8	2.8	2.5	3.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8		
39 15 35 30 Obs. 74 0	All winds Gales - Force -	2.7	9.2	5.4	3.4	2.0	1.0	2.0	1.0	2.0	1.0	1.5	0.1	4.7	4.7	2.0	8.0	4.7	3.7	1.6	9.5	2.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	
		5.0	6.3	3.6	3.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
39 15 38 30 Obs. 76 0	All winds Gales - Force -	0.4	5.7	0.7	3.2	0.7	0.7	0.7	0.7	0.7	0.7	1.4	2.9	0.7	5.6	2.1	3.2	12.9	3.9	6.4	3.2	10.0	3.6	14.3	1.0	5.0	3.6	14.3	1.0	5.0	3.6	14.3	1.0	5.0	3.6	14.3
		4.7	3.3	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

[illegible]

NOVEMBER—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

41° 0' 21 30	All winds	2'9	2'8	0'5	2'0	1'1	1'1	1'2	3'2	0'9	0'4	0'9	0'3	5'0	1'6	5'3	6'0	9'7	3'0	7'1	6'1	16'9	4'4	2'4	2'8	6'3	1'8	2'4	1'6	0'1
Obs. 188'6	Gales - Force	(0'5)	(0'3)	(0'5)	3'3	3'8	3'8	3'8	3'5	4'0	4'3	3'0	4'3	(1'1)	(1'0)	(1'0)	(3'1)	(1'5)	(1'2)	(2'1)	(4'9)	(1'9)	5'2	5'2	(2'0)	4	5'5	1'3		
41° 0' 24 30	All winds	2'6	3'0	0'3	1'3	1'3	1'7	1'8	1'1	0'1	0'1	0'9	0'1	4'8	4'9	6'8	3'6	4'4	11'4	6'2	9'1	8'0	3'1	1'5	4'5	2'6	3'0	0'4	2'4	
Obs. 172'2	Gales - Force	(1'2)	(1'2)	(0'3)	4'4	4'4	4'4	4'4	3'3	4'0	4'8	4'8	4'8	(1'2)	(1'2)	(1'5)	(1'9)	(1'3)	(2'9)	(3'0)	(3'0)	(4'9)	(1'2)	5'0	(2'3)	6	4'9	2'5		
41° 0' 28 0	All winds	1'8	1'3	1'3	2'6	1'6	2'3	1'0	0'1	0'2	0'5	0'8	1'3	2'1	7'2	7'6	8'8	2'3	8'0	5'3	8'1	7'1	5'2	3'1	0'8	2'8	3'5	1'5	0'4	
Obs. 229'5	Gales - Force	4'6	3'8	(0'4)	4'7	4'7	4'0	4'0	2'6	4'0	2'5	4'4	4'4	5'2	(1'2)	(1'5)	(4'1)	(0'4)	(1'1)	(1'5)	(4'3)	(2'8)	(1'5)	1	(1'5)	4	8	4'0		
43 15 21 30	All winds	5'5	1'4	2'7	3'4	2'7	0'4	1'9	0'1	1'2	0'1	0'7	1'9	2'0	3'0	6'0	1'4	4'5	1'1	13'7	10'3	8'8	6'7	5'0	1'9	4'1	3'9	4'1	0'3	
Obs. 146'0	Gales - Force	(4'9)	4'2	4'7	3'4	3'4	3'4	3'4	3'0	5'3	6'0	6'0	6'0	(1'2)	(1'4)	(0'7)	(2'3)	(2'3)	(6'2)	(2'8)	(3'4)	(2'4)	4	4	(0'1)	2	9	1'0	0'5	
43 15 24 30	All winds	4'1	1'9	2'6	4'1	0'7	1'5	1'1	0'2	0'3	0'7	0'3	0'7	1'4	2'0	7'2	2'3	7'7	12'0	12'0	3'4	5'0	1'5	6'1	4'0	4'8	1'7	0'5		
Obs. 151'6	Gales - Force	(5'2)	4'5	4'4	4'4	4'5	4'5	4'5	3'5	6'0	6'0	6'0	6'0	3'5	(1'3)	(1'3)	(2'0)	(0'3)	(3'1)	(6'4)	(2'2)	(5'2)	4'4	4'4	4'7	(0'4)	4	1'0	0'5	
43 15 28 0	All winds	2'7	3'8	8'1	1'7	4'5	2'9	0'5	0'5	0'5	0'5	0'2	0'2	2'3	1'4	6'0	4'2	8'8	7'5	10'0	5'4	7'5	4'9	3'5	3'2	2'5	0'7	2'6	1'9	
Obs. 209'8	Gales - Force	(0'3)	5'5	(0'5)	5'1	5'1	5'1	5'1	5'2	5'0	5'0	5'0	5'0	5'2	(0'5)	(0'5)	(2'3)	(2'1)	(4'4)	(1'0)	(0'7)	(0'8)	(0'5)	5'0	5'3	5'2	4'7	1'9		
46 30 23 30	All winds	3'3	5'0	7'9	2'6	2'1	0'6	1'0	1'4	0'4	3'4	3'4	3'4	1'4	0'4	10'0	2'4	8'6	2'9	5'7	18'1	6'9	7'9	0'7	4'3	2'1	1'4	0'9		
Obs. 70'0	Gales - Force	4'7	5'1	4'0	4'0	4'0	4'0	4'0	3'5	3'0	3'5	3'5	3'5	3'5	3'5	(0'7)	(1'1)	(2'9)	(1'4)	5'2	4'5	5'2	5'2	4'8	6'7	10	1'4	0'9		
46 30 27 30	All winds	4'2	6'5	3'6	5'3	5'4	0'6	0'6	0'6	0'6	0'6	0'6	0'6	1'8	1'8	2'6	1'2	3'6	1'8	3'0	6'5	8'3	3'9	2'7	3'6	1'8	3'0	0'5		
Obs. 84'0	Gales - Force	(4'7)	4'8	(1'2)	4'3	4'3	4'3	4'3	1'5	4'5	4'5	4'5	4'5	4'0	4'0	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	5'8	0'5	

NOVEMBER—WINDS.—LAT. 40° to 50° S. LONG. 30° to 40° E.

Position of Centre of Wind-rose, and Number of Weighted Observations.		Percentage of all Winds.														Mean of Forces below 8.													
Lat.	Long. E.	N.	N. by E.	N.N.E.	N.E. by E.	N.E.	S.E. by E.	S.E.	S.E. by S.	S.S.E.	S. by E.	S.	S. by W.	S.S.W.	S.W. by S.	S.W.	S.W. by W.	S.W.S.W.	W. by S.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
41° 0' 31.30"	170° 0'	1.8	0.6	3.4	0.6	1.8	0.9	0.3	0.9	1.2	2.9	3.1	8.1	8.0	6.0	8.5	5.0	4.4	5.6	6.5	8.2	3.2	6.8	3.0	2.1	1.7	1.5	9.6	9.0
41° 0' 34.30"	164.3	2.6	3.4	1.8	1.3	0.6	1.0	0.6	0.6	0.2	0.4	1.3	5.1	3.7	6.6	8.6	4.9	8.5	4.4	4.2	4.0	5.7	4.8	2.1	3.7	1.5	2.4	0.9	5.0
41° 0' 38.0"	168.0	4.3	4.4	3.6	4.0	3.5	3.5	3.7	3.0	2.3	4.4	4.4	4.4	5.1	5.1	4.3	4.3	5.8	4.1	4.1	4.3	4.3	4.5	4.5	4.9	2.3	2.3	2.3	2.3
43° 30' 31.30"	167.7	2.1	3.9	6.6	1.8	4.6	0.9	0.2	0.4	4.3	0.7	4.5	7.9	7.9	2.5	8.1	4.8	4.5	5.7	4.8	3.5	6.4	1.6	1.6	3.7	2.0	3.2	0.9	0.9
43° 30' 34.30"	166.2	5.9	3.0	1.8	1.2	3.6	4.5	5.5	4.0	4.7	0.6	0.2	6.5	5.9	4.2	6.6	1.7	6.7	5.8	5.8	4.2	4.5	4.5	1.5	1.5	1.1	2.4	2.3	2.3
43° 30' 38.0"	212.0	5.7	0.7	4.1	1.5	1.1	1.6	0.2	0.6	4.1	1.2	3.1	8.7	8.7	2.7	4.6	4.2	4.5	7.1	14.8	4.8	3.9	3.6	1.8	2.1	1.6	2.3	0.4	0.4
47° 0' 32.30"	99.7	1.5	0.5	0.5	2.0	3.0	6.5	0.2	0.2	4.0	0.4	0.9	4.4	4.4	4.2	4.6	4.0	7.0	8.8	9.0	9.8	8.6	3.4	5.9	3.2	3.9	1.8	0.2	1.1
47° 0' 37.30"	115.0	7.5	3.5	1.8	1.8	1.2	0.9	0.4	0.4	4.0	2.2	3.9	2.0	2.0	3.0	3.5	5.0	5.0	9.0	10.1	14.6	5.0	5.0	9.6	1.0	6.5	6.5	1.0	1.0
47° 0' 37.30"	115.0	7.5	3.5	1.8	1.8	1.2	0.9	0.4	0.4	4.0	2.2	3.9	2.0	2.0	3.0	3.5	5.0	5.0	9.0	10.1	14.6	5.0	5.0	9.6	1.0	6.5	6.5	1.0	1.0

DECEMBER—WINDS.—LAT. 30° to 40° S. LONG. 10° to 20° E.

[illegible]

[illegible]

DECEMBER—WINDS.—LAT. 30° to 40° S. LONG. 30° to 40° E.

[illegible]

DECEMBER—WINDS.—LAT. 40° to 50° S. LONG. 10° to 20° E.

Position of Centre of Wind-rose, and Number of Weig. Fed Observations.	Percentage of all Winds.		Mean of Forces below S.																										
	N.	N. by E.	N.N.E.	N.E. by N.	N.E.	S.E. by S.	S.E.	S.E. by E.	S.S.W.	S.W. by W.	S.W.	S.W. by S.	S.	S. by E.	S.S.E.	S. by W.	S.S.W.	S.W. by W.	S.W.	W.	W. by N.	W.N.W.	N.W. by W.	N.W.	N.W. by N.	N.N.W.	N. by W.	Variables.	Calms.
41 30 11 30 Obs. 250 9	3.8 (0.9)	4.1	3.9	1.4	0.3	0.1	2.0	0.2	1.3	0.9	1.0 (0.2)	2.6	1.7	7.6 (0.4)	3.4	5.8 (1.2)	3.2 (0.7)	12.4 (4.0)	11.9 (3.7)	10.0 (2.7)	4.7 (1.4)	7.8 (2.0)	2.4 (0.6)	6.9 (1.8)	2.3 (0.6)	0.2	0.2	0.2	0.2
41 30 14 30 Obs. 252 4	1.5 (0.6)	1.8	0.7	0.3	0.6	0.2	0.1	0.2	1.3	0.8	1.1	2.2	1.8	11.0 (0.7)	2.9	5.5 (1.2)	4.6 (1.1)	13.5 (3.8)	9.7 (2.8)	12.9 (3.6)	4.6 (1.4)	7.7 (1.8)	2.4 (0.6)	2.0 (0.5)	0.5	0.4	0.4	0.4	
41 30 18 0 Obs. 338 2	2.0 (0.3)	1.6	1.9	0.5	0.4	0.4	0.4	0.2	1.8 (0.4)	1.2 (0.3)	3.3 (0.8)	5.5 (1.2)	3.4 (0.9)	4.7 (1.1)	5.2 (1.2)	6.9 (1.9)	5.5 (1.2)	13.5 (3.8)	12.8 (3.6)	8.7 (2.4)	3.0 (0.8)	7.5 (2.0)	1.9 (0.5)	1.7 (0.4)	1.0	0.2	0.2	0.2	
44 15 12 0 Obs. 141 3	4.3 (1.0)	5.4	2.0	4.0	0.7	0.5	0.5	0.7	1.8 (0.4)	4.3	0.9	2.3 (0.6)	3.3 (0.8)	4.0 (1.1)	1.3	3.2 (0.8)	5.9 (1.5)	9.5 (2.6)	8.3 (2.3)	13.7 (3.7)	9.1 (2.4)	9.4 (2.5)	3.5 (0.9)	3.8 (1.0)	0.7	0.6	0.3	0.3	
44 30 15 30 Obs. 136 4	2.9 (0.4)	2.6	5.0	4.0	0.9	0.1	1.5	5.0	0.7	0.4	2.2	3.3 (0.8)	4.7 (1.2)	6.6 (1.7)	3.7 (0.9)	4.4 (1.1)	5.7 (1.5)	13.2 (3.7)	9.6 (2.6)	4.4 (1.2)	4.4 (1.1)	5.9 (1.5)	3.7 (0.9)	3.4 (0.8)	1.1	1.5	1.5	1.5	
44 30 18 30 Obs. 149 3	5.0	4.5	4.7	4.7	0.3	0.7	2.3	3.8	3.5	3.4	3.4	1.9	2.9 (0.7)	5.4 (1.3)	2.3 (0.6)	4.6 (1.2)	9.9 (2.7)	12.0 (3.2)	6.6 (1.7)	4.6 (1.1)	5.7 (1.5)	1.0 (0.3)	4.0 (1.0)	2.6 (0.7)	0.1	0.1	0.1	0.1	
47 30 12 30 Obs. 61 9	5.0	2.9	1.4	0.7	2.8	3.7	6.0	4.7	3.3	5.5	4.8	5.0	4.9	4.1	2.4	12.8 (4.9)	6.6 (1.8)	14.0 (3.8)	10.7 (2.8)	4.9 (1.3)	7.4 (1.9)	4.9 (1.3)	2.4 (0.6)	6.0	4.4	0.3	0.3		
47 30 17 30 Obs. 69 1	4.3 (0.7)	6.5	2.0	2.9	1.4	0.7	2.8	4.0	5.8 (1.2)	0.7 (0.2)	1.2 (0.3)	7.2 (1.8)	5.1 (1.3)	4.6 (1.2)	9.4 (2.5)	7.1 (1.9)	2.2 (0.6)	8.0 (2.2)	6.5 (1.7)	4.1 (1.1)	6.5 (1.7)	5.0 (1.4)	4.4 (1.1)	4.5	4.4	0.3	0.3		

DECEMBER.—WINDS.—LAT. 40° to 50° S. LONG. 20° to 30° E.

[illegible]

[illegible]

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.

MEANING OF SYMBOLS.

- b** Blue Sky.
- c** Clouds (detached).
- d** Drizzling Rain.
- f** Foggy.
- g** Gloomy.
- h** Hail.
- l** Lightning.
- m** Misty (hazy).
- o** Overcast.

p Passing Showers.
q Squally.
r Rain.
s Snow.
t Thunder.
u Ugly (threatening appearance of Weather).
v Visibility. Objects at a distance unusually visible.
w Dew.

FIGURES TO INDICATE THE DISTURBANCE OF THE SEA.

0 Calm.	5 Rather rough.
1 Very smooth.	6 Rough.
2 Smooth.	7 High.
3 Slight.	8 Very high.
4 Moderate.	9 Tremendous.

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—JANUARY.

10° E.	20°	30°	E. 40°
PERCENTAGE OF			
WEATHER.	CLOUDS.	SWELL OF SEA.	Mean Sea Disturbance.
Obs. 235.	Obs. 153.	Obs. 186.	
Stormy. Sky.	Form.	Direction.	
t b 25	cir 11	Nly	
l 1 c 56	cir-c 11	NEly 1	6
q 6 o 19	cir-s 5	Ely 3	6
u g 8	cum 67	SEly 12	7
	cum-s 15	Sly 37	5
Wet. Air.	str 18	SWly 25	6
r 2 v 2	nim 6	Wly 14	5
p 5 w 4		NWly 1	3
d 1 m 17	Obs. 129.	Confused 3	7
s f 2	Amount of Sky clouded 50.	Smooth 16	
h			
Obs. 275.	Obs. 220.	Obs. 130.	
Stormy. Sky.	Form.	Direction.	
t 3 b 22	cir 17	Nly 5	7
l 10 c 51	cir-c 26	NEly 12	6
q 17 o 27	cir-s 13	Ely 6	5
u 3 g 10	cum 60	SEly 6	4
	cum-s 21	Sly 20	7
Wet. Air.	str 22	SWly 37	6
r 12 v 1	nim 22	Wly 10	6
p 7 w 7		NWly	
d 3 m 19	Obs. 139.	Confused 19	7
s f 3	Amount of Sky clouded 55.	Smooth 6	
h			
Obs. 263.	Obs. 163.	Obs. 138.	
Stormy. Sky.	Form.	Direction.	
t 6 b 29	cir 16	Nly 8	4
l 10 c 48	cir-c 27	NEly 18	6
q 9 o 23	cir-s 7	Ely 15	5
u 1 g 5	cum 70	SEly 8	5
	cum-s 17	Sly 13	6
Wet. Air.	str 24	SWly 27	6
r 8 v 2	nim 12	Wly 9	7
p 7 w 7		NWly 4	4
d 1 m 14	Obs. 151.	Confused 12	7
s f	Amount of Sky clouded 52.	Smooth 13	
h			
Obs. 243.	Obs. 157.	Obs. 122.	
Stormy. Sky.	Form.	Direction.	
t b 26	cir 11	Nly 1	4
l 2 c 54	cir-c 19	NEly 2	
q 18 o 20	cir-s 12	Ely 6	4
u 1 g 5	cum 61	SEly 8	7
	cum-s 15	Sly 23	6
Wet. Air.	str 23	SWly 33	6
r 4 v 2	nim 19	Wly 29	6
p 5 w 3		NWly 2	6
d 5 m 12	Obs. 142.	Confused 7	6
s f	Amount of Sky clouded 61.	Smooth 8	
h			
Obs. 289.	Obs. 185.	Obs. 155.	
Stormy. Sky.	Form.	Direction.	
t b 25	cir 13	Nly 1	4
l 2 c 58	cir-c 19	NEly 4	7
q 18 o 17	cir-s 13	Ely 8	5
u 3 g 6	cum 62	SEly 9	4
	cum-s 19	Sly 22	6
Wet. Air.	str 29	SWly 40	6
r 5 v	nim 14	Wly 8	6
p 10 w 5		NWly 2	7
d 2 m 14	Obs. 175.	Confused 11	7
s f 1	Amount of Sky clouded 53.	Smooth 9	
h			
Obs. 155.	Obs. 75.	Obs. 58.	
Stormy. Sky.	Form.	Direction.	
t 1 b 16	cir 23	Nly	
l 4 c 63	cir-c 12	NEly 2	
q 21 o 21	cir-s 3	Ely 11	7
u 1 g 5	cum 71	SEly 11	6
	cum-s 10	Sly 18	5
Wet. Air.	str 15	SWly 24	6
r 7 v 2	nim 19	Wly 25	6
p 15 w 4		NWly 4	4
d 4 m 9	Obs. 90.	Confused 6	6
s f 1	Amount of Sky clouded 57.	Smooth 7	
h 1			
Obs. 253.	Obs. 139.	Obs. 157.	
Stormy. Sky.	Form.	Direction.	
t b 6	cir 5	Nly 4	5
l c 48	cir-c 16	NEly 2	
q 13 o 46	cir-s 11	Ely 3	
u 1 g 11	cum 46	SEly 1	
	cum-s 19	Sly 7	6
Wet. Air.	str 26	SWly 42	6
r 11 v	nim 37	Wly 25	7
p 9 w 2		NWly 17	7
d 8 m 13	Obs. 207.	Confused 15	7
s f 5	Amount of Sky clouded 72.	Smooth 5	
h 1			
Obs. 259.	Obs. 147.	Obs. 149.	
Stormy. Sky.	Form.	Direction.	
t b 13	cir 9	Nly 6	7
l 1 c 61	cir-c 18	NEly 2	7
q 20 o 26	cir-s 29	Ely 4	8
u 2 g 7	cum 45	SEly 2	7
	cum-s 18	Sly 4	8
Wet. Air.	str 22	SWly 29	6
r 10 v	nim 31	Wly 39	7
p 8 w 2		NWly 18	7
d 4 m 11	Obs. 139.	Confused 12	7
s f 4	Amount of Sky clouded 64.	Smooth 2	
h 1			
Obs. 292.	Obs. 136.	Obs. 157.	
Stormy. Sky.	Form.	Direction.	
t 1 b 15	cir 14	Nly 7	7
l 2 c 45	cir-c 26	NEly 9	6
q 15 o 40	cir-s 26	Ely 1	7
u 1 g 13	cum 39	SEly 2	7
	cum-s 14	Sly 5	6
Wet. Air.	str 27	SWly 39	7
r 9 v 1	nim 33	Wly 23	7
p 7 w 4		NWly 9	7
d 7 m 17	Obs. 150.	Confused 13	7
s f 4	Amount of Sky clouded 66.	Smooth 15	
h			
Obs. 211.	Obs. 140.	Obs. 110.	
Stormy. Sky.	Form.	Direction.	
t b 8	cir 5	Nly 1	7
l c 37	cir-c 10	NEly 10	
q 13 o 55	cir-s 22	Ely 3	3
u 1 g 7	cum 44	SEly 10	7
	cum-s 22	Sly 4	7
Wet. Air.	str 24	SWly 18	3
r 25 v	nim 33	Wly 29	6
p 14 w		NWly 26	6
d 7 m 19	Obs. 151.	Confused 8	7
s f 9	Amount of Sky clouded 74.	Smooth 7	
h 2			
Obs. 239.	Obs. 188.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 12	cir 7	Nly 6	8
l 1 c 33	cir-c 16	NEly 7	7
q 16 o 55	cir-s 26	Ely 7	7
u 1 g 11	cum 33	SEly 4	7
	cum-s 15	Sly 11	7
Wet. Air.	str 34	SWly 24	6
r 27 v	nim 38	Wly 44	6
p 13 w 2		NWly 16	7
d 6 m 17	Obs. 113.	Confused 6	8
s f 12	Amount of Sky clouded 72.	Smooth 1	
h 6			
Obs. 232.	Obs. 168.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 10	cir 17	Nly 6	7
l 1 c 46	cir-c 18	NEly 4	7
q 5 o 44	cir-s 10	Ely 3	7
u g 2	cum 43	SEly 3	7
	cum-s 15	Sly 3	7
Wet. Air.	str 26	SWly 18	7
r 29 v	nim 41	Wly 49	7
p 4 w 1		NWly 25	6
d 3 m 18	Obs. 124.	Confused 8	7
s f 18	Amount of Sky clouded 67.	Smooth 5	
h 3			
Obs. 211.	Obs. 140.	Obs. 110.	
Stormy. Sky.	Form.	Direction.	
t b 8	cir 5	Nly 1	7
l c 37	cir-c 10	NEly 10	
q 13 o 55	cir-s 22	Ely 3	3
u 1 g 7	cum 44	SEly 10	7
	cum-s 22	Sly 4	7
Wet. Air.	str 24	SWly 18	3
r 25 v	nim 33	Wly 29	6
p 14 w		NWly 26	6
d 7 m 19	Obs. 151.	Confused 8	7
s f 9	Amount of Sky clouded 74.	Smooth 7	
h 2			
Obs. 239.	Obs. 188.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 12	cir 7	Nly 6	8
l 1 c 33	cir-c 16	NEly 7	7
q 16 o 55	cir-s 26	Ely 7	7
u 1 g 11	cum 33	SEly 4	7
	cum-s 15	Sly 11	7
Wet. Air.	str 34	SWly 24	6
r 27 v	nim 38	Wly 44	6
p 13 w 2		NWly 16	7
d 6 m 17	Obs. 113.	Confused 6	8
s f 12	Amount of Sky clouded 72.	Smooth 1	
h 6			
Obs. 232.	Obs. 168.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 10	cir 17	Nly 6	7
l 1 c 46	cir-c 18	NEly 4	7
q 5 o 44	cir-s 10	Ely 3	7
u g 2	cum 43	SEly 3	7
	cum-s 15	Sly 3	7
Wet. Air.	str 26	SWly 18	7
r 29 v	nim 41	Wly 49	7
p 4 w 1		NWly 25	6
d 3 m 18	Obs. 124.	Confused 8	7
s f 18	Amount of Sky clouded 67.	Smooth 5	
h 3			
Obs. 211.	Obs. 140.	Obs. 110.	
Stormy. Sky.	Form.	Direction.	
t b 8	cir 5	Nly 1	7
l c 37	cir-c 10	NEly 10	
q 13 o 55	cir-s 22	Ely 3	3
u 1 g 7	cum 44	SEly 10	7
	cum-s 22	Sly 4	7
Wet. Air.	str 24	SWly 18	3
r 25 v	nim 33	Wly 29	6
p 14 w		NWly 26	6
d 7 m 19	Obs. 151.	Confused 8	7
s f 9	Amount of Sky clouded 74.	Smooth 7	
h 2			
Obs. 239.	Obs. 188.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 12	cir 7	Nly 6	8
l 1 c 33	cir-c 16	NEly 7	7
q 16 o 55	cir-s 26	Ely 7	7
u 1 g 11	cum 33	SEly 4	7
	cum-s 15	Sly 11	7
Wet. Air.	str 34	SWly 24	6
r 27 v	nim 38	Wly 44	6
p 13 w 2		NWly 16	7
d 6 m 17	Obs. 113.	Confused 6	8
s f 12	Amount of Sky clouded 72.	Smooth 1	
h 6			
Obs. 232.	Obs. 168.	Obs. 139.	
Stormy. Sky.	Form.	Direction.	
t b 10	cir 17	Nly 6	7
l 1 c 46	cir-c 18	NEly 4	7
q 5 o 44	cir-s 10	Ely 3	7
u g 2	cum 43	SEly 3	7
	cum-s 15	Sly 3	7
Wet. Air.	str 26	SWly 18	7
r 29 v	nim 41	Wly 49	7
p 4 w 1		NWly 25	6
d 3 m 18	Obs. 124.	Confused 8	7
s f 18	Amount of Sky clouded 67.	Smooth 5	
h 3			

Q 7176.

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WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—FEBRUARY.

10° E.		20°		30°		E. 40°							
PERCENTAGE OF			Mean Sea Disturbance.	PERCENTAGE OF			Mean Sea Disturbance.	PERCENTAGE OF			Mean Sea Disturbance.		
WEATHER.	CLOUDS.	SWELL OF SEA.		WEATHER.	CLOUDS.	SWELL OF SEA.		WEATHER.	CLOUDS.	SWELL OF SEA.			
S. 30°												30° S.	
Obs. 254.		Obs. 187.	Obs. 155.		Obs. 301.	Obs. 155.	Obs. 147.		Obs. 244.	Obs. 206.	Obs. 160.		
Stormy.	Sky.	Form.	Direction.		Stormy.	Sky.	Form.	Direction.	Stormy.	Sky.	Form.	Direction.	
t 1	b 35	cir 13	Nly		t 1	b 25	cir 19	Nly 1	7	t 1	b 29	cir 12	Nly 6
l 2	c 47	cir-c 20	NEly		l 7	c 48	cir-c 12	NEly 7	4	l 5	c 49	cir-c 18	NEly 11
q 8	o 18	cir-s 9	Ely 6	6	q 13	o 27	cir-s 10	Ely 12	5	q 14	o 22	cir-s 13	Ely 16
u	g 2	cum 61	SEly 19	6	u 2	g 6	cum 61	SEly 6	6	u 2	g 7	cum 65	SEly 14
		cum-s 13	Sly 22	4			cum-s 19	Sly 16	5			cum-s 19	Sly 12
Wet.	Air.	str 32	SWly 32	6	Wet.	Air.	str 33	SWly 42	6	Wet.	Air.	str 27	SWly 26
r 2	v 1	nim 8	Wly 6	5	r 9	v 2	nim 19	Wly 4	4	r 8	v 1	nim 17	Wly 6
p 4	w 11		NWly 1	4	p 8	w 7		NWly 1	8	p 6	w 3		NWly 2
d 1	m 15	Obs. 205.	Confused 3	3	d 3	m 21	Obs. 175.	Confused 18	7	d 2	m 11	Obs. 144.	Confused 13
s	f 2	Amount of Sky clouded 47.	Smooth 13		s	f 1	Amount of Sky clouded 56.	Smooth 8		s	f	Amount of Sky clouded 53.	Smooth 14
h					h					h			
35°												35°	
Obs. 278.		Obs. 145.	Obs. 153.		Obs. 287.	Obs. 181.	Obs. 167.		Obs. 182.	Obs. 96.	Obs. 65.		
Stormy.	Sky.	Form.	Direction.		Stormy.	Sky.	Form.	Direction.	Stormy.	Sky.	Form.	Direction.	
t	b 16	cir 11	Nly		t	b 24	cir 15	Nly 2	1	t 1	b 21	cir 15	Nly 10
l 2	c 60	cir-c 22	NEly 6	7	l 4	c 62	cir-c 18	NEly 5	6	l 4	c 58	cir-c 15	NEly 10
q 20	o 24	cir-s 9	Ely 13	5	q 25	o 14	cir-s 12	Ely 6	7	q 28	o 21	cir-s 8	Ely 21
u	g 5	cum 64	SEly 13	5	u 1	g 5	cum 56	SEly 6	5	u 2	g 7	cum 65	SEly 15
		cum-s 17	Sly 17	5			cum-s 24	Sly 17	6			cum-s 9	Sly 10
Wet.	Air.	str 13	SWly 39	6	Wet.	Air.	str 25	SWly 33	6	Wet.	Air.	str 24	SWly 9
r 7	v 1	nim 24	Wly 16	7	r 9	v 3	nim 17	Wly 14	6	r 7	v 1	nim 36	Wly 5
p 7	w 4		NWly 3	7	p 11	w 5		NWly 5	5	p 9	w 3		NWly 5
d 6	m 15	Obs. 146.	Confused 7	7	d 1	m 16	Obs. 197.	Confused 15	6	d 3	m 11	Obs. 100.	Confused 11
s	f 3	Amount of Sky clouded 60.	Smooth 8		s	f	Amount of Sky clouded 50.	Smooth 7		s	f 1	Amount of Sky clouded 56.	Smooth 2
h					h					h			
40°												40°	
Obs. 259.		Obs. 171.	Obs. 150.		Obs. 266.	Obs. 161.	Obs. 169.		Obs. 329.	Obs. 164.	Obs. 145.		
Stormy.	Sky.	Form.	Direction.		Stormy.	Sky.	Form.	Direction.	Stormy.	Sky.	Form.	Direction.	
t	b 7	cir 10	Nly 4	6	t	b 15	cir 11	Nly 5	6	t 1	b 14	cir 11	Nly 10
l	c 52	cir-c 16	NEly 10	5	l	c 49	cir-c 13	NEly 9	4	l 2	c 47	cir-c 15	NEly 6
q 15	o 41	cir-s 8	Ely 6	7	q 20	o 36	cir-s 9	Ely 1	7	q 17	o 39	cir-s 15	Ely 4
u	g 9	cum 51	SEly 6	7	u 3	g 6	cum 44	SEly 3	7	u	g 5	cum 45	SEly 1
		cum-s 21	Sly 9	5			cum-s 19	Sly 1	7			cum-s 16	Sly 7
Wet.	Air.	str 24	SWly 28	5	Wet.	Air.	str 23	SWly 34	7	Wet.	Air.	str 26	SWly 42
r 10	v 2	nim 21	Wly 24	5	r 11	v	nim 39	Wly 27	6	r 13	v 1	nim 29	Wly 18
p 7	w 1		NWly 4	4	p 10	w 2		NWly 11	7	p 3	w 3		NWly 13
d 5	m 15	Obs. 179.	Confused 14	6	d 5	m 14	Obs. 135.	Confused 16	6	d 6	m 17	Obs. 140.	Confused 8
s	f	Amount of Sky clouded 71.	Smooth 7		s	f 5	Amount of Sky clouded 63.	Smooth 5		s 1	f 8	Amount of Sky clouded 61.	Smooth 8
h 2					h 2					h 1			
45°												45°	
Obs. 94.		Obs. 60.	Obs. 27.		Obs. 166.	Obs. 104.	Obs. 70.		Obs. 272.	Obs. 148.	Obs. 132.		
Stormy.	Sky.	Form.	Direction.		Stormy.	Sky.	Form.	Direction.	Stormy.	Sky.	Form.	Direction.	
t	b 5	cir 10	Nly 4		t	b 18	cir 13	Nly 3		t 1	b 12	cir 4	Nly 7
l	c 43	cir-c 6	NEly		l 2	c 39	cir-c 12	NEly 3		l 2	c 34	cir-c 4	NEly 12
q 8	o 52	cir-s 38	Ely 15	3	q 29	o 43	cir-s 15	Ely		q 18	o 54	cir-s 10	Ely 2
u	g 4	cum 43	SEly		u	g 7	cum 41	SEly 7	8	u 2	g 4	cum 47	SEly 6
		cum-s	Sly 26	7			cum-s 8	Sly 7				cum-s 16	Sly 2
Wet.	Air.	str 22	SWly 26		Wet.	Air.	str 21	SWly 47	7	Wet.	Air.	str 19	SWly 31
r 32	v	nim 38	Wly 37	4	r 21	v 2	nim 36	Wly 16	6	r 25	v 6	nim 49	Wly 26
p 8	w		NWly 19	7	p 14	w		NWly 25	8	p 13	w 1		NWly 21
d	m 12	Obs. 89.	Confused 4		d 2	m 17	Obs. 158.	Confused 7	7	d 2	m 20	Obs. 154.	Confused 6
s	f 15	Amount of Sky clouded 74.	Smooth		s	f	Amount of Sky clouded 66.	Smooth 6		s 1	f 15	Amount of Sky clouded 70.	Smooth 2
h 2					h 3					h 4			
S. 50°												50° S.	
10° E.		20°		30°		E. 40°							

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—MARCH.

10° E.	20°	30°	E. 40°							
PERCENTAGE OF	PERCENTAGE OF	PERCENTAGE OF	Mean Sea Disturbance.							
WEATHER.	CLOUDS.	SWELL OF SEA.	WEATHER.	CLOUDS.	SWELL OF SEA.	WEATHER.	CLOUDS.	SWELL OF SEA.	Mean Sea Disturbance.	
Obs. 257. Stormy. Sky. t b 30 l 1 c 55 q 6 o 15 u g 2 Wet. Air. r 1 v 3 p 5 w 7 d 1 m 15 s f 2 h	Obs. 191. Form. cir 16 cir-c 16 cir-s 7 cum 70 cum-s 13 str 20 nim 7 [Obs. 155. Amount of Sky clouded 48.	Obs. 151. Direction. Nly NEly Ely 8 SEly 11 Sly 20 SWly 34 Wly 6 NWly 1 Confused 7 Smooth 16	Obs. 230. Stormy. Sky. t 1 b 19 l 11 c 50 q 17 o 31 u 1 g 6 Wet. Air. r 11 v 1 p 9 w 7 d 4 m 15 s f 1 h	Obs. 163. Form. cir 17 cir-c 27 cir-s 18 cum 59 cum-s 14 str 29 nim 27 Obs. 150. Amount of Sky clouded 58.	Obs. 140. Direction. Nly 1 NEly 10 Ely 7 SEly 6 Sly 15 SWly 45 Wly 13 NWly Confused 11 Smooth 9	Obs. 266. Stormy. Sky. t 5 b 35 l 16 c 43 q 11 o 22 u 2 g 6 Wet. Air. r 13 v 2 p 6 w 7 d 1 m 14 s f h	Obs. 186. Form. cir 23 cir-c 21 cir-s 17 cum 57 cum-s 15 str 15 nim 16 Obs. 141. Amount of Sky clouded 52.	Obs. 159. Direction. Nly 3 NEly 15 Ely 16 SEly 7 Sly 13 SWly 28 Wly 6 NWly 3 Confused 9 Smooth 14	Mean Sea Disturbance.	
35°	Obs. 279. Stormy. Sky. t b 17 l 1 c 51 q 18 o 32 u 1 g 10 Wet. Air. r 4 v 2 p 8 w 4 d 4 m 12 s f 2 h	Obs. 184. Form. cir 14 cir-c 12 cir-s 12 cum 64 cum-s 18 str 14 nim 16 Obs. 142. Amount of Sky clouded 64.	Obs. 118. Direction. Nly 1 NEly 1 Ely 8 SEly 3 Sly 13 SWly 35 Wly 22 NWly 8 Confused 7 Smooth 7	Obs. 297. Stormy. Sky. t 1 b 25 l 4 c 52 q 18 o 23 u 1 g 7 Wet. Air. r 8 v 1 p 13 w 3 d 3 m 11 s f 2 h	Obs. 154. Form. cir 13 cir-c 14 cir-s 12 cum 62 cum-s 19 str 18 nim 15 Obs. 168. Amount of Sky clouded 52.	Obs. 151. Direction. Nly 1 NEly 3 Ely 7 SEly 6 Sly 22 SWly 29 Wly 9 NWly 2 Confused 15 Smooth 14	Obs. 237. Stormy. Sky. t 1 b 9 l 5 c 52 q 22 o 30 u g 9 Wet. Air. r 8 v p 11 w 2 d 6 m 10 s f 1 h	Obs. 120. Form. cir 8 cir-c 21 cir-s 8 cum 47 cum-s 33 str 19 nim 23 Obs. 131. Amount of Sky clouded 71.	Obs. 58. Direction. Nly 6 NEly 4 Ely 19 SEly 4 Sly 18 SWly 25 Wly 4 NWly 6 Confused 26 Smooth 2	Mean Sea Disturbance.
40°	Obs. 262. Stormy. Sky. t b 7 l c 40 q 17 o 53 u 1 g 11 Wet. Air. r 12 v p 13 w 12 d 13 m 18 s f 7 h 2	Obs. 155. Form. cir 10 cir-c 13 cir-s 10 cum 44 cum-s 23 str 29 nim 41 Obs. 184. Amount of Sky clouded 70.	Obs. 163. Direction. Nly 6 NEly 1 Ely 3 SEly 4 Sly 7 SWly 42 Wly 30 NWly 12 Confused 7 Smooth 8	Obs. 228. Stormy. Sky. t b 11 l 4 c 44 q 18 o 45 u g 10 Wet. Air. r 11 v 1 p 13 w d 7 m 15 s f 6 h 1	Obs. 142. Form. cir 14 cir-c 10 cir-s 15 cum 55 cum-s 19 str 18 nim 35 Obs. 178. Amount of Sky clouded 62.	Obs. 162. Direction. Nly 6 NEly 5 Ely SEly 1 Sly 1 SWly 33 Wly 30 NWly 7 Confused 15 Smooth 6	Obs. 243. Stormy. Sky. t b 17 l 2 c 40 q 9 o 43 u g 8 Wet. Air. r 9 v 1 p 5 w 2 d 5 m 17 s f 6 h	Obs. 146. Form. cir 12 cir-c 18 cir-s 8 cum 46 cum-s 19 str 25 nim 28 Obs. 179. Amount of Sky clouded 61.	Obs. 141. Direction. Nly 6 NEly 4 Ely 4 SEly 1 Sly 4 SWly 33 Wly 30 NWly 11 Confused 10 Smooth 6	Mean Sea Disturbance.
45°	Obs. 127. Stormy. Sky. t b 13 l 5 c 40 q 20 o 47 u g Wet. Air. r 29 v p w d 7 m 11 s 2 f 5 h 7	Obs. 76. Form. cir 4 cir-c 25 cir-s 24 cum 8 cum-s 33 str 57 Obs. 110. Amount of Sky clouded 71.	Obs. 56. Direction. Nly 2 NEly Ely SEly 2 Sly 14 SWly 11 Wly 23 NWly 18 Confused 30 Smooth 5	Obs. 131. Stormy. Sky. t b 21 l c 29 q 13 o 50 u g 13 Wet. Air. r 27 v 5 p 5 w d 3 m 17 s f 11 h 4	Obs. 80. Form. cir 8 cir-c cir-s 48 cum 25 cum-s 28 nim 34 Obs. 115. Amount of Sky clouded 69.	Obs. 80. Direction. Nly 8 NEly 1 Ely SEly Sly 2 SWly 39 Wly 26 NWly 26 Confused 26 Smooth	Obs. 165. Stormy. Sky. t b 16 l 3 c 38 q 9 o 46 u g 4 Wet. Air. r 29 v 2 p 12 w 5 d 9 m 19 s 2 f 5 h 13	Obs. 136. Form. cir 7 cir-c 12 cir-s 20 cum 46 cum-s 27 str 17 nim 38 Obs. 152. Amount of Sky clouded 66.	Obs. 93. Direction. Nly 9 NEly 7 Ely SEly Sly SWly 13 Wly 31 NWly 29 Confused 11 Smooth 2	Mean Sea Disturbance.
S. 50°	10° E.	20°	30°	E. 40°						

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—APRIL.

10° E.	20°	30°	E. 40°
PERCENTAGE OF			
WEATHER.	CLOUDS.	SWELL or SEA.	Mean Sea Disturbance.
S. 30°	Obs. 236. Stormy. Sky. t 1 b 35 cir 19 Nly 2	Obs. 214. Form. cir-e 15 NEly 6	Obs. 121. Direction. Ely 8
	l 2 c 52	q 9 o 13	u 1 g 8
	q 9 o 13	cum-s 15	Wly 33
	Wet. Air. str 29	SWly 33	Wly 1
	p 3 v 1	nim 15	NWly 4
	d 2 m 9	Obs. 187. Confused 3	Smooth 11
	s f 3	Amount of Sky clouded 47.	
35°	Obs. 254. Stormy. Sky. t 1 b 12 cir 11 Nly 4	Obs. 204. Form. cir-e 13 NEly 1	Obs. 141. Direction. Ely 4
	l 4 c 60	q 23 o 28	u 2 g 6
	q 23 o 28	cum-s 22	Sly 9
	Wet. Air. str 25	SWly 24	Wly 14
	p 12 w 2	nim 24	NWly 5
	d 3 m 4	Obs. 179. Confused 16	Smooth 9
	s f 2	Amount of Sky clouded 64.	
40°	Obs. 257. Stormy. Sky. t 1 b 5 cir 8 Nly 4	Obs. 141. Form. cir-e 13 NEly 5	Obs. 162. Direction. Ely 11
	l 2 c 35	q 16 o 60	u 1 g 12
	q 16 o 60	cum-s 24	Sly 6
	Wet. Air. str 24	SWly 22	Wly 29
	p 8 v 2	nim 38	NWly 11
	d 16 m 16	Obs. 136. Confused 13	Smooth 4
	s f 5	Amount of Sky clouded 74.	
45°	Obs. 41. Stormy. Sky. t 1 b 5 cir 7 Nly 12	Obs. 30. Form. cir-e 5 NEly 6	Obs. 17. Direction. Ely 6
	l 1 c 48	q 11 o 47	u 17 g 28
	q 11 o 47	cum-s 37	Sly 3
	Wet. Air. str 27	SWly 41	Wly 18
	p 17 w	nim 40	NWly 6
	d 11 m 12	Obs. 38. Confused 6	Smooth 18
	s 2 f	Amount of Sky clouded 72.	
S. 40°	Obs. 55. Stormy. Sky. t 1 b 8 cir 12 Nly 11	Obs. 25. Form. cir-e 30 NEly 5	Obs. 19. Direction. Ely 2
	l 4 c 40	q 33 o 52	u 4 g 4
	q 33 o 52	cum-s 62	Sly 9
	Wet. Air. str 38	SWly 29	Wly 41
	p 13 w	nim 38	NWly 29
	d 8 m 10	Obs. 45. Confused 11	Smooth 5
	s f	Amount of Sky clouded 73.	
50° S.	Obs. 101. Stormy. Sky. t 1 b 17 cir 12 Nly 4	Obs. 66. Form. cir-e 18 NEly 6	Obs. 59. Direction. Ely 2
	l 1 c 44	q 39 o 39	u 1 g 10
	q 39 o 39	cum-s 47	Sly 9
	Wet. Air. str 29	SWly 29	Wly 41
	p 18 w 2	nim 56	NWly 29
	d 6 m 6	Obs. 90. Confused 2	Smooth
	s 7 f 2	Amount of Sky clouded 64.	

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—MAY.

E. 10°	20°	30°	40° E.
PERCENTAGE OF			
WEATHER.	CLOUDS.	SWELL or SEA.	Mean Sea Disturbance.
S. 30°	Obs. 307. Stormy. Sky. t 1 b 27 cir 10 Nly 2	Obs. 166. Form. cir-e 16 NEly 5	Obs. 156. Direction. Ely 8
	l 2 c 51	q 16 o 22	u 1 g 5
	q 16 o 22	cum-s 20	Sly 21
	Wet. Air. str 24	SWly 46	Wly 11
	p 9 w 6	nim 16	NWly 2
	d 2 m 15	Obs. 178. Confused 3	Smooth 12
	s f 5	Amount of Sky clouded 53.	
35°	Obs. 250. Stormy. Sky. t 1 b 7 cir 11 Nly 5	Obs. 162. Form. cir-e 12 NEly 4	Obs. 156. Direction. Ely 3
	l 4 c 40	q 21 o 44	u 4 g 10
	q 21 o 44	cum-s 25	Sly 8
	Wet. Air. str 24	SWly 26	Wly 21
	p 15 w 3	nim 30	NWly 8
	d 5 m 9	Obs. 177. Confused 22	Smooth 7
	s f 1	Amount of Sky clouded 68.	
40°	Obs. 277. Stormy. Sky. t 1 b 7 cir 7 Nly 4	Obs. 178. Form. cir-e 8 NEly 1	Obs. 145. Direction. Ely 1
	l 3 c 38	q 16 o 55	u 1 g 7
	q 16 o 55	cum-s 11	Sly 6
	Wet. Air. str 35	SWly 27	Wly 24
	p 19 v	nim 43	NWly 17
	d 8 m 9	Obs. 156. Confused 15	Smooth 12
	s 1 f 8	Amount of Sky clouded 72.	
45°	Obs. 53. Stormy. Sky. t 1 b 8 cir 13 Nly 11	Obs. 27. Form. cir-e 13 NEly 11	Obs. 32. Direction. Ely 3
	l 1 c 20	q 18 o 55	u 3 g
	q 18 o 55	cum-s 33	Sly 9
	Wet. Air. str 31	SWly 15	Wly 30
	p 3 w	nim 44	NWly 24
	d 10 m 25	Obs. 93. Confused 7	Smooth 11
	s 5 f 26	Amount of Sky clouded 71.	
S. 50°	Obs. 108. Stormy. Sky. t 1 b 10 cir 13 Nly 11	Obs. 55. Form. cir-e 7 Ely 3	Obs. 46. Direction. Ely 3
	l 13 c 35	q 18 o 55	u 3 g
	q 18 o 55	cum-s 33	Sly 9
	Wet. Air. str 31	SWly 15	Wly 30
	p 3 w	nim 44	NWly 24
	d 10 m 25	Obs. 93. Confused 7	Smooth 11
	s 5 f 26	Amount of Sky clouded 71.	
50° S.	Obs. 143. Stormy. Sky. t 1 b 15 cir 3 Nly 11	Obs. 93. Form. cir-e 2 Ely 3	Obs. 62. Direction. Ely 3
	l 1 c 39	q 11 o 46	u 3 g
	q 11 o 46	cum-s 35	Sly 5
	Wet. Air. str 29	SWly 8	Wly 45
	p 4 w	nim 47	NWly 23
	d 4 m 16	Obs. 141. Confused 5	Smooth 10
	s 8 f 5	Amount of Sky clouded 66.	

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—JUNE.

10° E.

20°

30°

E. 40°

PERCENTAGE OF

WEATHER.

CLOUDS.

SWELL
OR
SEA.

Mean Sea
Disturbance.

PERCENTAGE OF

WEATHER.

CLOUDS.

SWELL
OR
SEA.

Mean Sea
Disturbance.

PERCENTAGE OF

WEATHER.

CLOUDS.

SWELL
OR
SEA.

Mean Sea
Disturbance.

S. 30°

Obs. 239.
Stormy. Sky.
t 1 b 27
l 3 c 54
q 15 o 19
u 1 g 6
Wet. Air.
r 6 v 4
p 10 w 12
d 4 m 14
s f 3
h

Obs. 143.
Form.
cir 15
cir-c 15
cir-s 22
cum 57
cum-s 22
str 21
nim 20
Obs. 152.
Amount of
Sky clouded
52.

Obs. 149.
Direction.
Nly 1
NEly
Ely 1
SEly 7
Sly 20
SWly 36
Wly 15
NWly 3
Confused 7
Smooth 17

3

Obs. 249.
Stormy. Sky.
t 3 b 43
l 11 c 44
q 18 o 13
u 8 g 11
Wet. Air.
r 7 v 1
p 10 w 13
d 1 m 28
s f
h 2

Obs. 153.
Form.
cir 18
cir-c 25
cir-s 24
cum 50
cum-s 22
str 25
nim 25
Obs. 181.
Amount of
Sky clouded
43.

Obs. 156.
Direction.
Nly 1
NEly 3
Ely 4
SEly 3
Sly 5
SWly 43
Wly 13
NWly 1
Confused 17
Smooth 18

4

Obs. 267.
Stormy. Sky.
t 2 b 38
l 12 c 50
q 21 o 12
u 3 g 9
Wet. Air.
r 5 v 1
p 12 w 8
d m 18
s f
h 1

Obs. 154.
Form.
cir 12
cir-c 17
cir-s 12
cum 57
cum-s 16
str 22
nim 17
Obs. 178.
Amount of
Sky clouded
42.

Obs. 157.
Direction.
Nly 1
NEly 11
Ely 1
SEly 4
Sly 11
SWly 35
Wly 15
NWly 4
Confused 17
Smooth 13

5

4

5

7

4

6

7

35°

Obs. 237.
Stormy. Sky.
t b 13
l 7 c 50
q 27 o 37
u g 11
Wet. Air.
r 16 v 1
p 15 w 3
d 8 m 15
s f 1
h 4

Obs. 170.
Form.
cir 8
cir-c 10
cir-s 12
cum 42
cum-s 28
str 21
nim 32
Obs. 142.
Amount of
Sky clouded
65.

Obs. 154.
Direction.
Nly 4
NEly 3
Ely 5
SEly 5
Sly 11
SWly 31
Wly 23
NWly 8
Confused 13
Smooth 10

6

Obs. 281.
Stormy. Sky.
t 1 b 22
l 14 c 52
q 32 o 26
u 3 g 9
Wet. Air.
r 16 v 1
p 19 w 5
d 4 m 16
s 1 f 2
h 3

Obs. 141.
Form.
cir 21
cir-c 11
cir-s 23
cum 44
cum-s 21
str 26
nim 31
Obs. 152.
Amount of
Sky clouded
54.

Obs. 142.
Direction.
Nly 2
NEly 3
Ely 3
SEly 4
Sly 6
SWly 30
Wly 25
NWly 5
Confused 19
Smooth 9

4

Obs. 283.
Stormy. Sky.
t 4 b 16
l 14 c 57
q 29 o 27
u 2 g 7
Wet. Air.
r 13 v 1
p 14 w 2
d 2 m 17
s 1 f
h 5

Obs. 167.
Form.
cir 14
cir-c 7
cir-s 7
cum 57
cum-s 26
str 21
nim 20
Obs. 153.
Amount of
Sky clouded
68.

Obs. 157.
Direction.
Nly 3
NEly
Ely 7
SEly 1
Sly 12
SWly 28
Wly 16
NWly 14
Confused 22
Smooth 6

7

5

4

6

7

6

7

40°

Obs. 260.
Stormy. Sky.
t b 7
l 5 c 54
q 41 o 39
u 1 g 7
Wet. Air.
r 19 v
p 23 w 2
d 4 m 8
s 3 f
h 11

Obs. 161.
Form.
cir 3
cir-c 7
cir-s 4
cum 50
cum-s 24
str 33
nim 35
Obs. 213.
Amount of
Sky clouded
64.

Obs. 167.
Direction.
Nly 4
NEly 5
Ely 8
SEly 5
Sly 6
SWly 26
Wly 33
NWly 9
Confused 15
Smooth 1

4

Obs. 244.
Stormy. Sky.
t 1 b 8
l 9 c 54
q 27 o 38
u 2 g 12
Wet. Air.
r 11 v
p 13 w 3
d 7 m 20
s 1 f
h 7

Obs. 145.
Form.
cir 3
cir-c 12
cir-s 5
cum 55
cum-s 17
str 24
nim 41
Obs. 160.
Amount of
Sky clouded
61.

Obs. 149.
Direction.
Nly 3
NEly 5
Ely 7
SEly 1
Sly 7
SWly 27
Wly 30
NWly 12
Confused 14
Smooth 7

6

Obs. 216.
Stormy. Sky.
t 1 b 15
l 9 c 51
q 19 o 34
u 1 g 7
Wet. Air.
r 10 v
p 11 w 5
d 7 m 28
s 1 f 2
h 1

Obs. 153.
Form.
cir 10
cir-c 9
cir-s 11
cum 41
cum-s 15
str 28
nim 30
Obs. 152.
Amount of
Sky clouded
63.

Obs. 146.
Direction.
Nly 11
NEly 6
Ely 3
SEly 3
Sly 3
SWly 28
Wly 23
NWly 16
Confused 10
Smooth 8

6

6

4

5

7

5

6

6

45°

Obs. 51.
Stormy. Sky.
t b 8
l 12 c 33
q 33 o 59
u g
Wet. Air.
r 43 v
p w 14
d 20 m 22
s 20 f 20
h 20

Obs. 38.
Form.
cir
cir-c
cir-s
cum
cum-s
str
nim
Obs. 46.
Amount of
Sky clouded
77.

Obs. 14.
Direction.
Nly 43
NEly 15
Ely
SEly
Sly
SWly
Wly 58
NWly 15
Confused
Smooth

8

Obs. 57.
Stormy. Sky.
t b 18
l c 35
q o 47
u g
Wet. Air.
r 16 v
p 6 w
d 10 m 29
s 25 f 5
h 16

Obs. 47.
Form.
cir 6
cir-c
cir-s 6
cum 36
cum-s 6
str 26
nim 55
Obs. 56.
Amount of
Sky clouded
68.

Obs. 16.
Direction.
Nly
NEly 6
Ely 19
SEly
Sly
SWly 56
Wly 6
NWly 31
Confused
Smooth

5

Obs. 59.
Stormy. Sky.
t b 14
l c 39
q 18 o 47
u g 18
Wet. Air.
r 32 v
p 9 w
d m 15
s 17 f
h 20

Obs. 42.
Form.
cir 8
cir-c
cir-s
cum 31
cum-s
str 22
nim 53
Obs. 57.
Amount of
Sky clouded
68.

Obs. 24.
Dire ion.
Nly 29
NEly 8
Ely
SEly
Sly 8
SWly 25
Wly 8
NWly 21
Confused
Smooth

7

8

7

7

8

7

7

7

S. 50°

10° E.

20°

30°

E. 40°

50° S.

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—JULY.

10° E.		20°		30°		E. 40°								
PERCENTAGE OF			Mean Sea Disturbance	PERCENTAGE OF			Mean Sea Disturbance	PERCENTAGE OF			Mean Sea Disturbance			
WEATHER.	CLOUDS.	SWELL OF SEA.		WEATHER.	CLOUDS.	SWELL OF SEA.		WEATHER.	CLOUDS.	SWELL OF SEA.				
S. 30°												30° S.		
Obs. 291. Stormy. Sky.		Obs. 192. Form.	Obs. 149. Direction.	7	Obs. 260. Stormy. Sky.		Obs. 135. Form.	Obs. 143. Direction.	4	Obs. 249. Stormy. Sky.		Obs. 217. Form.	Obs. 126. Direction.	5
t 1 b 29	cir 21	Nly 1	t 1 b 39		cir 21	Nly 1	t 5 b 33	cir 17		Nly 10	l 14 c 51	cir-c 21	NEly 3	
l 1 c 55	cir-c 13	NEly 5	l 12 c 43	cir-c 18	NEly 5	q 20 o 14	cir-s 12	Ely 7	3	q 20 o 14	cir-s 12	Ely 7	3	
q 16 o 16	cir-s 9	Ely 5	q 19 o 18	cir-s 7	Ely 3	u 3 g 4	cum 55	SEly 6	4	u 3 g 4	cum 55	SEly 6	4	
u 1 g 8	cum 55	SEly 5	u 2 g 7	cum 56	SEly 6		cum-s 19	Sly 21	5		cum-s 19	Sly 21	5	
	cum-s 20	Sly 15		cum-s 17	Sly 34		str 27	SWly 35	7		str 27	SWly 35	7	
Wet. Air.	str 28	SWly 33	Wet. Air.	str 31	SWly 34		nim 19	Wly 8	7		nim 19	Wly 8	7	
r 9 v 2	nim 16	Wly 16	r 6 v 1	nim 25	Wly 7			NWly 3	6			NWly 3	6	
p 8 w 8		NWly 9	p 10 w 9		NWly 3			Confused 12	6			Confused 12	6	
d 3 m 16	Obs. 146. Amount of Sky clouded 50.	Confused 8	d 4 m 22	Obs. 149. Amount of Sky clouded 44.	Confused 11			Smooth 14	7			Smooth 14	7	
s f 2		Smooth 13	s f 1		Smooth 11									
h 2			h 2											
35°												35°		
Obs. 270. Stormy. Sky.		Obs. 162. Form.	Obs. 119. Direction.	7	Obs. 262. Stormy. Sky.		Obs. 194. Form.	Obs. 135. Direction.	7	Obs. 237. Stormy. Sky.		Obs. 155. Form.	Obs. 139. Direction.	5
t 1 b 11	cir 9	Nly 3	t 2 b 22		cir 16	Nly 2	t 2 b 13	cir 7		Nly 8	5	l 12 c 55	cir-c 11	
l 5 c 54	cir-c 12	NEly 1	l 9 c 54	cir-c 15	NEly 6	q 20 o 32	cir-s 8	Ely 1	4	q 20 o 32	cir-s 8	Ely 1	4	
q 33 o 35	cir-s 12	Ely 3	q 31 o 24	cir-s 9	Ely 3	u 2 g 5	cum 45	SEly 13	6	u 2 g 5	cum 45	SEly 13	6	
u 4 g 8	cum 54	SEly 7	u 6 g 6	cum 55	SEly 3		cum-s 27	Sly 14	7		cum-s 27	Sly 14	7	
	cum-s 25	Sly 13		cum-s 20	Sly 17		str 30	SWly 29	7		str 30	SWly 29	7	
Wet. Air.	str 24	SWly 24	Wet. Air.	str 22	SWly 31		nim 27	Wly 12	6		nim 27	Wly 12	6	
r 17 v	nim 35	Wly 34	r 13 v 3	nim 16	Wly 24			NWly 9	6			NWly 9	6	
p 19 w 3		NWly 7	p 13 w 4		NWly 7			Confused 20	7			Confused 20	7	
d 4 m 10	Obs. 176. Amount of Sky clouded 65.	Confused 14	d 2 m 11	Obs. 145. Amount of Sky clouded 56.	Confused 11			Smooth 5				Smooth 5		
s f 1		Smooth 8	s f		Smooth 9									
h 3			h 3											
40°												40°		
Obs. 235. Stormy. Sky.		Obs. 147. Form.	Obs. 181. Direction.	6	Obs. 230. Stormy. Sky.		Obs. 160. Form.	Obs. 137. Direction.	8	Obs. 238. Stormy. Sky.		Obs. 167. Form.	Obs. 136. Direction.	7
t b 6	cir 7	Nly 4	t 1 b 14		cir 9	Nly 6	t 2 b 19	cir 10		Nly 5	8	l 11 c 43	cir-c 16	
l 4 c 48	cir-c 8	NEly 4	l 8 c 51	cir-c 10	NEly 5	q 16 o 38	cir-s 7	Ely 1	7	q 16 o 38	cir-s 7	Ely 1	7	
q 27 o 46	cir-s 6	Ely 6	q 15 o 35	cir-s 12	Ely 3	u 3 g 6	cum 47	SEly 4	7	u 3 g 6	cum 47	SEly 4	7	
u g 5	cum 44	SEly 2	u 5 g 9	cum 45	SEly 3		cum-s 11	Sly 4	7		cum-s 11	Sly 4	7	
	cum-s 12	Sly 4		cum-s 15	Sly 9		str 28	SWly 29	6		str 28	SWly 29	6	
Wet. Air.	str 22	SWly 23	Wet. Air.	str 35	SWly 23		nim 48	Wly 28	7		nim 48	Wly 28	7	
r 8 v	nim 52	Wly 32	r 24 v	nim 26	Wly 26			NWly 16	6			NWly 16	6	
p 16 w 1		NWly 17	p 8 w 1		NWly 20			Confused 11	7			Confused 11	7	
d 6 m 10	Obs. 189. Amount of Sky clouded 65.	Confused 12	d 5 m 15	Obs. 209. Amount of Sky clouded 64.	Confused 13			Smooth 5				Smooth 5		
s f 5		Smooth 10	s 3 f 7		Smooth 8									
h 6			h 5											
45°												45°		
Obs. 16. Stormy. Sky.		Obs. 0. Form.	Obs. 11. Direction.	7	Obs. 31. Stormy. Sky.		Obs. 4. Form.	Obs. 26. Direction.	7	Obs. 46. Stormy. Sky.		Obs. 10. Form.	Obs. 36. Direction.	7
t b	cir	Nly 46	t 10 b 3		cir	Nly	t b 2	cir		30	7	l 8 c 28	cir-c 30	
l 11 c 44	cir-c	NEly	l 10 c 36	cir-c	NEly	q 10 o 61	cir-s	Ely	7	q 10 o 61	cir-s	Ely	Ely	7
q o 56	cir-s	Ely	q 10 o 61	cir-s	Ely	u g	cum	50	SEly	u 8 g 8	cum	20	SEly	6
u g	cum	SEly	u g	cum	SEly		cum-s	31	3		cum-s	33	Sly	6
	cum-s	Sly 28		cum-s	Sly 31		str	SWly 8	7		str	20	SWly	50
Wet. Air.	str	SWly	Wet. Air.	str	SWly		nim	31	7		nim	40	Wly	50
r 13 v	nim	Wly 55	r 7 v	nim	Wly 31			NWly 23	7			NWly	11	7
p d 78 m 31		NWly 46	p d 10 m 10		NWly 23			Confused	7			Confused	3	
s 13 f	Obs. 5. Amount of Sky clouded 84.	Confused	s 42 f	Obs. 18. Amount of Sky clouded 83.	Confused			Smooth 8				Smooth	31	
h 31		Smooth	h 26		Smooth 8									
S. 50°												50° S.		
10° E.		20°		30°		E. 40°								

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—AUGUST.

E. 10°			20°			30°			E. 40°		
PERCENTAGE OF			PERCENTAGE OF			PERCENTAGE OF			PERCENTAGE OF		
WEATHER.	CLOUDS.	SWELL OF SEA.	WEATHER.	CLOUDS.	SWELL OF SEA.	WEATHER.	CLOUDS.	SWELL OF SEA.	WEATHER.	CLOUDS.	SWELL OF SEA.
Obs. 279. Stormy. Sky. Form.			Obs. 252. Stormy. Sky. Form.			Obs. 131. Stormy. Sky. Form.			Obs. 275. Stormy. Sky. Form.		
t 1 b 28	cir 22	Nly	t 2 b 36	cir 15	Nly	t 4 b 28	cir 14	Nly	t 4 b 28	cir 14	Nly
l 3 c 53	cir-c 17	NEly	l 8 c 44	cir-c 14	NEly	l 12 c 55	cir-c 15	NEly	l 12 c 55	cir-c 15	NEly
q 19 o 19	cir-s 11	Ely	q 12 o 20	cir-s 10	Ely	q 17 o 17	cir-s 10	Ely	q 17 o 17	cir-s 10	Ely
u g 5	cum 47	SEly	u 1 g 8	cum 54	SEly	u 1 g 8	cum 56	SEly	u 1 g 8	cum 56	SEly
	cum-s 17	Sly		cum-s 14	Sly		cum-s 18	Sly		cum-s 18	Sly
	str 29	SWly		str 32	SWly		str 14	SWly		str 14	SWly
	nim 17	Wly		nim 23	Wly		nim 16	Wly		nim 16	Wly
r 7 v 3		NWly	r 8 v 3		NWly	r 7 v 3		NWly	r 7 v 3		NWly
p 14 w 8		Confused	p 6 w 8		Confused	p 12 w 7		Confused	p 12 w 7		Confused
d 2 m 15		Smooth	d 4 m 21		Smooth	d 2 m 19		Smooth	d 2 m 19		Smooth
s f 1			s f 1			s f 1			s f 1		
h 1			h 1			h 1			h 1		
Obs. 142. Amount of Sky clouded 49.			Obs. 149. Amount of Sky clouded 46.			Obs. 151. Amount of Sky clouded 49.			Obs. 151. Amount of Sky clouded 49.		
Obs. 244. Stormy. Sky. Form.			Obs. 268. Stormy. Sky. Form.			Obs. 166. Stormy. Sky. Form.			Obs. 296. Stormy. Sky. Form.		
t 1 b 11	cir 11	Nly	t 2 b 22	cir 12	Nly	t 1 b 11	cir 7	Nly	t 1 b 11	cir 7	Nly
l 5 c 56	cir-c 16	NEly	l 9 c 51	cir-c 12	NEly	l 5 c 59	cir-c 14	NEly	l 5 c 59	cir-c 14	NEly
q 30 o 33	cir-s 10	Ely	q 30 o 27	cir-s 13	Ely	q 39 o 30	cir-s 5	Ely	q 39 o 30	cir-s 5	Ely
u 1 g 8	cum 55	SEly	u 2 g 8	cum 50	SEly	u 1 g 6	cum 62	SEly	u 1 g 6	cum 62	SEly
	cum-s 19	Sly		cum-s 24	Sly		cum-s 17	Sly		cum-s 17	Sly
	str 27	SWly		str 23	SWly		str 20	SWly		str 20	SWly
	nim 23	Wly		nim 27	Wly		nim 28	Wly		nim 28	Wly
r 9 v 1		NWly	r 10 v 2		NWly	r 6 v 1		NWly	r 6 v 1		NWly
p 23 w 2		Confused	p 17 w 5		Confused	p 21 w 12		Confused	p 21 w 12		Confused
d 3 m 12		Smooth	d 3 m 12		Smooth	d 3 m 12		Smooth	d 3 m 12		Smooth
s 1 f 2			s f 1			s f 1			s f 1		
h 3			h 4			h 2			h 2		
Obs. 166. Amount of Sky clouded 64.			Obs. 133. Amount of Sky clouded 58.			Obs. 140. Amount of Sky clouded 63.			Obs. 140. Amount of Sky clouded 63.		
Obs. 260. Stormy. Sky. Form.			Obs. 275. Stormy. Sky. Form.			Obs. 154. Stormy. Sky. Form.			Obs. 234. Stormy. Sky. Form.		
t 1 b 8	cir 7	Nly	t 1 b 13	cir 9	Nly	t 1 b 9	cir 6	Nly	t 1 b 9	cir 6	Nly
l 3 c 46	cir-c 13	NEly	l 4 c 52	cir-c 20	NEly	l 3 c 42	cir-c 9	NEly	l 3 c 42	cir-c 9	NEly
q 30 o 46	cir-s 11	Ely	q 26 o 35	cir-s 14	Ely	q 22 o 49	cir-s 9	Ely	q 22 o 49	cir-s 9	Ely
u 4 g 4	cum 42	SEly	u 2 g 5	cum 52	SEly	u 3 g 7	cum 44	SEly	u 3 g 7	cum 44	SEly
	cum-s 16	Sly		cum-s 20	Sly		cum-s 22	Sly		cum-s 22	Sly
	str 19	SWly		str 31	SWly		str 22	SWly		str 22	SWly
	nim 40	Wly		nim 40	Wly		nim 29	Wly		nim 29	Wly
r 11 v		NWly	r 20 v 1		NWly	r 12 v 2		NWly	r 12 v 2		NWly
p 12 w		Confused	p 7 w 2		Confused	p 9 w 2		Confused	p 9 w 2		Confused
d 6 m 13		Smooth	d 4 m 15		Smooth	d 7 m 18		Smooth	d 7 m 18		Smooth
s 2 f 6			s 3 f 4			s 6 f 8			s 6 f 8		
h 6			h 8			h 4			h 4		
Obs. 236. Amount of Sky clouded 67.			Obs. 233. Amount of Sky clouded 63.			Obs. 132. Amount of Sky clouded 69.			Obs. 132. Amount of Sky clouded 69.		
Obs. 54. Stormy. Sky. Form.			Obs. 112. Stormy. Sky. Form.			Obs. 54. Stormy. Sky. Form.			Obs. 99. Stormy. Sky. Form.		
t 1 b 7	cir 13	Nly	t 1 b 10	cir 11	Nly	t 1 b 2	cir 7	Nly	t 1 b 2	cir 7	Nly
l 3 c 28	cir-c 21	NEly	l 10 c 20	cir-c 13	NEly	l 10 c 29	cir-c 2	NEly	l 10 c 29	cir-c 2	NEly
q 30 o 65	cir-s 60	Ely	q 9 o 70	cir-s 2	Ely	q 10 o 69	cir-s 11	Ely	q 10 o 69	cir-s 11	Ely
u g 6	cum 60	SEly	u g 13	cum 48	SEly	u 1 g 10	cum 38	SEly	u 1 g 10	cum 38	SEly
	cum-s 13	Sly		cum-s 10	Sly		cum-s 11	Sly		cum-s 11	Sly
	str 3	SWly		str 25	SWly		str 5	SWly		str 5	SWly
	nim 49	Wly		nim 43	Wly		nim 61	Wly		nim 61	Wly
r 13 v		NWly	r 18 v 4		NWly	r 14 v		NWly	r 14 v		NWly
p 4 w		Confused	p 4 w 1		Confused	p 4 w		Confused	p 4 w		Confused
d 6 m 7		Smooth	d 6 m 18		Smooth	d 4 m 20		Smooth	d 4 m 20		Smooth
s 22 f 27			s 9 f 19			s 12 f 19			s 12 f 19		
h 4			h 4			h 9			h 9		
Obs. 41. Amount of Sky clouded 76.			Obs. 91. Amount of Sky clouded 81.			Obs. 82. Amount of Sky clouded 82.			Obs. 82. Amount of Sky clouded 82.		

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—SEPTEMBER.

10° E.	20°	30°	E. 40°									
PERCENTAGE OF			PERCENTAGE OF	PERCENTAGE OF	PERCENTAGE OF							
WEATHER.		CLOUDS.	SWELL or SEA.	WEATHER.	CLOUDS.	SWELL or SEA.	WEATHER.	CLOUDS.	SWELL or SEA.	WEATHER.	CLOUDS.	SWELL or SEA.
Obs. 298.		Obs. 195.	Obs. 112.	Obs. 254.		Obs. 181.	Obs. 154.	Obs. 267.		Obs. 164.	Obs. 151.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 19	cir 8	Nly 1	6	t 1 b 23	cir 14	Nly 1	5	t 3 b 31	cir 17	Nly 8	7	
l 1 c 58	cir-c 17	NEly		l 5 c 47	cir-c 16	NEly 7	7	l 11 c 43	cir-c 33	NEly 7	6	
q 15 o 23	cir-s 12	Ely 14	6	q 23 o 30	cir-s 15	Ely 9	6	q 18 o 26	cir-s 16	Ely 2	6	
u 1 g 11	cum 55	SEly 6	3	u 1 g 16	cum 53	SEly 4	6	u 5 g 14	cum 41	SEly 2		
	cum-s 21	Sly 21	5		cum-s 25	Sly 15	6		cum-s 29	Sly 8	5	
	str 24	SWly 17	5		str 34	SWly 38	7		str 30	SWly 26	6	
	nim 19	Wly 16	6		nim 22	Wly 12	6		nim 18	Wly 15	6	
		NWly 4				NWly 1	7			NWly 3		
		Confused 4	6			Confused 15	7			Confused 25	7	
		Smooth 22				Smooth 9				Smooth 15		
		Amount of Sky clouded 58.				Amount of Sky clouded 54.				Amount of Sky clouded 54.		
Obs. 273.		Obs. 142.	Obs. 101.	Obs. 271.		Obs. 211.	Obs. 152.	Obs. 249.		Obs. 184.	Obs. 153.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 11	cir 11	Nly 3	6	t 1 b 21	cir 11	Nly 3	6	t 1 b 16	cir 9	Nly 3	8	
l 3 c 53	cir-c 8	NEly 4	6	l 9 c 52	cir-c 11	NEly 6	6	l 6 c 51	cir-c 15	NEly 10	7	
q 25 o 36	cir-s 8	Ely 8	6	q 28 o 27	cir-s 13	Ely 11	6	q 29 o 33	cir-s 8	Ely 3	9	
u 2 g 11	cum 53	SEly 4	5	u 4 g 9	cum 57	SEly 1	6	u 3 g 8	cum 56	SEly 1		
	cum-s 29	Sly 15	7		cum-s 20	Sly 21	5		cum-s 27	Sly 16	6	
	str 23	SWly 30	6		str 26	SWly 32	6		str 23	SWly 30	6	
	nim 20	Wly 16	7		nim 24	Wly 11	7		nim 21	Wly 15	7	
		NWly 6	7			NWly 4	7			NWly 9	7	
		Confused 16	6			Confused 16	7			Confused 15	7	
		Smooth 4				Smooth 4				Smooth 9		
		Amount of Sky clouded 67.				Amount of Sky clouded 57.				Amount of Sky clouded 60.		
Obs. 261.		Obs. 165.	Obs. 152.	Obs. 267.		Obs. 126.	Obs. 121.	Obs. 259.		Obs. 123.	Obs. 148.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 10	cir 9	Nly 3	3	t 1 b 10	cir 9	Nly 9	5	t 1 b 13	cir 12	Nly 2	8	
l 3 c 48	cir-c 17	NEly 6	3	l 5 c 46	cir-c 11	NEly 12	6	l 3 c 48	cir-c 13	NEly 7	7	
q 20 o 42	cir-s 12	Ely 2	7	q 23 o 44	cir-s 11	Ely 2	6	q 28 o 39	cir-s 12	Ely 2	3	
u 2 g 4	cum 58	SEly 3	8	u 3 g 10	cum 55	SEly 8	7	u 2 g 5	cum 55	SEly 1	8	
	cum-s 10	Sly 7	7		cum-s 23	Sly 8	7		cum-s 21	Sly 5	7	
	str 15	SWly 22	7		str 31	SWly 28	6		str 30	SWly 23	6	
	nim 22	Wly 20	7		nim 25	Wly 23	5		nim 27	Wly 31	7	
		NWly 15	7			NWly 4	6			NWly 8	7	
		Confused 16	7			Confused 12	5			Confused 19	7	
		Smooth 8				Smooth 10				Smooth 7		
		Amount of Sky clouded 66.				Amount of Sky clouded 67.				Amount of Sky clouded 63.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3				Smooth 5		
		Amount of Sky clouded 76.				Amount of Sky clouded 72.				Amount of Sky clouded 68.		
Obs. 79.		Obs. 57.	Obs. 47.	Obs. 139.		Obs. 82.	Obs. 64.	Obs. 145.		Obs. 84.	Obs. 67.	
Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	Stormy. Sky.		Form.	Direction.	
t 1 b 4	cir 9	Nly 15	6	t 1 b 9	cir 6	Nly 11	6	t 1 b 9	cir 11	Nly 6		
l 10 c 39	cir-c 13	Ely 2	7	l 2 c 38	cir-c 7	NEly 11	3	l 10 c 48	cir-c 3	NEly 2		
q 5 o 57	cir-s 47	SEly 4	5	q 10 o 53	cir-s 10	Ely 2	8	q 41 o 43	cir-s 8	Ely 2		
u 2 g 9	cum 13	Sly 9	5	u g 7	cum 40	SEly 2	8	u g 2	cum 38	SEly 12	4	
	cum-s 33	SWly 19	7		cum-s 24	Sly 5	8		cum-s 14	Sly 12		
	str 33	SWly 19	7		str 35	SWly 9	6		str 43	SWly 5		
	nim 35	Wly 6	7		nim 38	Wly 17	8		nim 32	Wly 45	7	
		NWly 19	7			NWly 34	8			NWly 22	7	
		Confused 9	5			Confused 23	7			Confused 12	7	
		Smooth 9				Smooth 3		</				

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—NOVEMBER.

10° E.											20°											30°											E. 40°		
PERCENTAGE OF											Mean Sea Disturbance.	PERCENTAGE OF											Mean Sea Disturbance.	PERCENTAGE OF											Mean Sea Disturbance.
WEATHER.			CLOUDS.			SWELL OR SEA.		WEATHER.				CLOUDS.			SWELL OR SEA.		WEATHER.			CLOUDS.				SWELL OR SEA.											
S. 30°	Obs. 241. Stormy. Sky.			Obs. 165. Form.			Obs. 180. Direction.		Obs. 242. Stormy. Sky.			Obs. 147. Form.			Obs. 180. Direction.		Obs. 246. Stormy. Sky.			Obs. 157. Form.			Obs. 147. Direction.												
	t	b	25	cir	22	Nly		t	2	b	21	cir	21	Nly		t	4	b	24	cir	12	Nly	10	3											
	l	c	52	cir-c	24	NEly		l	7	c	51	cir-c	22	NEly	9	l	12	c	48	cir-c	29	NEly	12	4											
	q	14	o	23	cir-s	13	Ely	2	q	12	o	28	cir-s	17	Ely	11	q	10	o	28	cir-s	17	Ely	6	5										
	u	1	g	3	cum	53	SEly	14	u	2	g	8	cum	72	SEly	3	u	2	g	14	cum	50	SEly	8	4										
				cum-s	19	Sly	13					cum-s	20	Sly	18					cum-s	23	Sly	9	6											
	Wet.	Air.	str	19	SWly	43		Wet.	Air.	str	16	SWly	36		Wet.	Air.	str	31	SWly	41		5	5												
	r	3	v	1	nim	10	Wly	11	r	8	v	6	nim	17	Wly	12	r	12	v	3	nim	17	Wly	10	6										
	p	6	w	7			NWly	7	p	6	w	6			NWly	1	p	7	w	6			NWly	2	7										
	d	3	m	15	Obs. 140. Amount of Sky clouded 51.	Confused	3	d	3	m	16	Obs. 156. Amount of Sky clouded 56.	Confused	12	d	2	m	16	Obs. 165. Amount of Sky clouded 60.	Confused	7	5	5												
	s		f		Smooth	13		s		f	5	Smooth	6		s		f	1	Smooth	9															
	h							h							h																				
35°	Obs. 244. Stormy. Sky.			Obs. 135. Form.			Obs. 151. Direction.		Obs. 233. Stormy. Sky.			Obs. 165. Form.			Obs. 159. Direction.		Obs. 246. Stormy. Sky.			Obs. 140. Form.			Obs. 101. Direction.												
	t	b	13	cir	17	Nly	1	t	1	b	19	cir	16	Nly	3	t	5	b	19	cir	8	Nly	3	5											
	l	c	62	cir-c	13	NEly	1	l	5	c	65	cir-c	19	NEly	5	l	2	c	60	cir-c	12	NEly	8	7											
	q	19	o	25	cir-s	6	Ely	3	q	17	o	16	cir-s	19	Ely	8	q	22	o	21	cir-s	4	Ely												
	u		g	9	cum	55	SEly	6	u	1	g	7	cum	61	SEly	6	u	2	g	10	cum	52	SEly	1											
				cum-s	22	Sly	17					cum-s	21	Sly	19					cum-s	13	Sly	11	7											
	Wet.	Air.	str	21	SWly	38		Wet.	Air.	str	22	SWly	33		Wet.	Air.	str	37	SWly	35		6													
	r	8	v	5	nim	19	Wly	18	r	9	v	1	nim	18	Wly	11	r	7	v		nim	14	Wly	10	4										
	p	10	w	2			NWly	2	p	7	w	4			NWly		p	12	w	2			NWly	3	4										
	d	5	m	9	Obs. 144. Amount of Sky clouded 65.	Confused	9	d	3	m	10	Obs. 174. Amount of Sky clouded 53.	Confused	14	d	2	m	8	Obs. 133. Amount of Sky clouded 61.	Confused	16	7													
	s		f	1	Smooth	10		s		f		Smooth	11		s		f		Smooth	16															
	h	2						h	2						h																				
40°	Obs. 268. Stormy. Sky.			Obs. 141. Form.			Obs. 145. Direction.		Obs. 234. Stormy. Sky.			Obs. 168. Form.			Obs. 159. Direction.		Obs. 266. Stormy. Sky.			Obs. 148. Form.			Obs. 148. Direction.												
	t	b	6	cir	6	Nly		t	1	b	9	cir	8	Nly	3	t	5	b	11	cir	10	Nly	5	4											
	l	c	52	cir-c	12	NEly	4	l	3	c	55	cir-c	11	NEly	6	l	7	c	47	cir-c	10	NEly	2	4											
	q	21	o	42	cir-s	11	Ely	3	q	30	o	36	cir-s	13	Ely	5	q	19	o	42	cir-s	9	Ely	2	4										
	u	2	g	6	cum	51	SEly	1	u	1	g	4	cum	44	SEly	3	u	4	g	10	cum	57	SEly	1	7										
				cum-s	19	Sly	7					cum-s	20	Sly	9					cum-s	16	Sly	13	6											
	Wet.	Air.	str	28	SWly	35		Wet.	Air.	str	23	SWly	41		Wet.	Air.	str	22	SWly	45		7													
	r	11	v	2	nim	25	Wly	31	r	13	v	2	nim	27	Wly	21	r	11	v	1	nim	24	Wly	23	5										
	p	12	w	2			NWly	4	p	12	w	3			NWly	2	p	4	w	2			NWly	2	6										
	d	9	m	14	Obs. 156. Amount of Sky clouded 68.	Confused	11	d	2	m	12	Obs. 172. Amount of Sky clouded 67.	Confused	12	d	8	m	14	Obs. 158. Amount of Sky clouded 67.	Confused	7	7													
	s		f	2	Smooth	11		s	1	f	1	Smooth	5		s	2	f	6	Smooth	7															
	h	3						h	3						h	5																			
45°	Obs. 134. Stormy. Sky.			Obs. 70. Form.			Obs. 64. Direction.		Obs. 154. Stormy. Sky.			Obs. 84. Form.			Obs. 67. Direction.		Obs. 267. Stormy. Sky.			Obs. 97. Form.			Obs. 74. Direction.												
	t	b	8	cir	6	Nly	3	t	1	b	11	cir	11	Nly		t	1	b	5	cir	8	Nly	6												
	l	c	24	cir-c	6	NEly	15	l	1	c	40	cir-c	2	NEly		l	1	c	36	cir-c	7	NEly	1	7											
	q	12	o	68	cir-s	6	Ely	5	q	14	o	49	cir-s	4	Ely		q	23	o	59	cir-s	16	Ely	3											
	u	1	g	15	cum	37	SEly		u	3	g	5	cum	30	SEly		u	3	g	9	cum	28	SEly												
				cum-s	25	Sly						cum-s	13	Sly	1					cum-s	35	Sly	3												
	Wet.	Air.	str	36	SWly	18		Wet.	Air.	str	39	SWly	21		Wet.	Air.	str	18	SWly	19		6													
	r	11	v		Wly	10		r	18	v	3	nim	28	Wly	34	r	24	v	6	nim	48	Wly	38	7											
	p	w			NWly	28		p	3	w				NWly	10	p	16	w				NWly	14	7											
	d	9	m	30	Obs. 107. Amount of Sky clouded 79.	Confused	2	d	9	m	22	Obs. 135. Amount of Sky clouded 71.	Confused	13	d	7	m	19	Obs. 178. Amount of Sky clouded 75.	Confused	21	7													
	s	4	f	31	Smooth	22		s	5	f	23	Smooth	24		s	14	f	6	Smooth	1															
	h	3						h	5						h	8																			
S. 50°											20°											30°											50° S.		
10° E.											20°											30°											E. 40°		

WEATHER, CLOUD (FORM AND AMOUNT), AND STATE OF SEA.—DECEMBER.

10° E.			20°			30°			E. 40°				
PERCENTAGE OF			Mean Sea Disturbance.	PERCENTAGE OF			Mean Sea Disturbance.	PERCENTAGE OF			Mean Sea Disturbance.		
WEATHER.	CLOUDS.	SWELL or SEA.		WEATHER.	CLOUDS.	SWELL or SEA.		WEATHER.	CLOUDS.	SWELL or SEA.			
S. 30°												30° S.	
Obs. 262.			Mean Sea Disturbance.	Obs. 263.			Mean Sea Disturbance.	Obs. 271.			Mean Sea Disturbance.		
Stormy.	Sky.	Obs. 174.		Stormy.	Sky.	Obs. 166.		Stormy.	Sky.	Obs. 173.			
t	b 33	cir 20		Nly	t	b 25		cir 26	Nly 3	t		b 34	cir 21
l	1 c 49	cir-c 18		NEly	l	6 c 51		cir-c 14	NEly 10	l		10 c 43	cir-c 17
q	5 o 18	cir-s 9		Ely 4	q	12 o 24		cir-s 12	Ely 10	q		10 o 23	cir-s 12
u	g 2	cum 53		SEly 10	u	2 g 11		cum 56	SEly 8	u		g 7	cum 50
		cum-s 14		Sly 19				cum-s 22	Sly 10				cum-s 19
Wet.	Air.	str 29		SWly 40	Wet.	Air.		str 37	SWly 44	Wet.		Air.	str 28
r	1 v 5	nim 3		Wly 8	r	9 v 9		nim 19	Wly 13	r		9 v 4	nim 11
p	3 w 9			NWly 4	p	9 w 8			NWly 2	p		5 w 4	
d	2 m 19	Obs. 146.		Confused 1	d	4 m 20		Obs. 154.	Confused 12	d		1 m 15	Obs. 154.
s	f 1	Amount of Sky clouded 46.		Smooth 20	s	f		Amount of Sky clouded 53.	Smooth 5	s		f 2	Amount of Sky clouded 50.
h				h				h					
36°												35°	
Obs. 248.			Mean Sea Disturbance.	Obs. 244.			Mean Sea Disturbance.	Obs. 270.			Mean Sea Disturbance.		
Stormy.	Sky.	Obs. 165.		Stormy.	Sky.	Obs. 195.		Stormy.	Sky.	Obs. 145.			
t	b 16	cir 12		Nly 1	t	1 b 23		cir 21	Nly 6	t		1 b 16	cir 17
l	e 48	cir-c 18		NEly 3	l	4 c 53		cir-c 17	NEly 3	l		3 c 51	cir-c 15
q	7 o 36	cir-s 12		Ely 4	q	25 o 24		cir-s 7	Ely 8	q		21 o 33	cir-s 8
u	g 7	cum 43		SEly 3	u	1 g 7		cum 61	SEly 7	u		g 6	cum 59
		cum-s 27		Sly 11				cum-s 19	Sly 14				cum-s 6
Wet.	Air.	str 18		SWly 40	Wet.	Air.		str 21	SWly 27	Wet.		Air.	str 15
r	7 v 2	nim 16		Wly	r	12 v 2		nim 24	Wly 18	r		12 v 3	nim 21
p	8 w 2			NWly 1	p	8 w 4			NWly	p		4 w	
d	4 m 8	Obs. 140.		Confused 21	d	2 m 11		Obs. 153.	Confused 17	d		2 m 8	Obs. 159.
s	f 2	Amount of Sky clouded 63.		Smooth 9	s	f 2		Amount of Sky clouded 54.	Smooth 12	s		f 1	Amount of Sky clouded 65.
h				h				h	1				
40°												40°	
Obs. 269.			Mean Sea Disturbance.	Obs. 284.			Mean Sea Disturbance.	Obs. 268.			Mean Sea Disturbance.		
Stormy.	Sky.	Obs. 145.		Stormy.	Sky.	Obs. 138.		Stormy.	Sky.	Obs. 166.			
t	b 9	cir 8		Nly 1	t	b 7		cir 12	Nly 5	t		b 13	cir 14
l	1 c 35	cir-c 16		NEly 2	l	1 c 43		cir-c 16	NEly 2	l		1 c 44	cir-c 15
q	16 o 56	cir-s 15		Ely 3	q	24 o 50		cir-s 12	Ely 1	q		12 o 43	cir-s 11
u	1 g 9	cum 36		SEly	u	1 g 63		cum 41	SEly 3	u		1 g 8	cum 34
		cum-s 21		Sly 5				cum-s 30	Sly 12				cum-s 16
Wet.	Air.	str 45		SWly 44	Wet.	Air.		str 30	SWly 43	Wet.		Air.	str 39
r	12 v	nim 19		Wly 29	r	11 v		nim 23	Wly 22	r		11 v 3	nim 20
p	14 w 2			NWly 5	p	14 w 1			NWly 3	p		10 w 2	
d	7 m 11	Obs. 174.		Confused 6	d	4 m 8		Obs. 152.	Confused 14	d		8 m 17	Obs. 177.
s	f 7	Amount of Sky clouded 74.		Smooth 9	s	f 1		Amount of Sky clouded 72.	Smooth 5	s		f 8	Amount of Sky clouded 67.
h	2			h	4			h	1				
45°												45°	
Obs. 233.			Mean Sea Disturbance.	Obs. 242.			Mean Sea Disturbance.	Obs. 251.			Mean Sea Disturbance.		
Stormy.	Sky.	Obs. 158.		Stormy.	Sky.	Obs. 163.		Stormy.	Sky.	Obs. 168.			
t	b 7	cir 3		Nly	t	b 8		cir 5	Nly 12	t		b 7	cir 9
l	2 c 33	cir-c 17		NEly 5	l	c 33		cir-c 12	NEly 9	l		c 42	cir-c 22
q	10 o 69	cir-s 9		Ely	q	5 o 59		cir-s 16	Ely 2	q		10 o 51	cir-s 20
u	3 g 18	cum 50		SEly 3	u	g 7		cum 43	SEly 1	u		g 9	cum 43
		cum-s 13		Sly 4				cum-s 20	Sly 2				cum-s 19
Wet.	Air.	str 28		SWly 37	Wet.	Air.		str 25	SWly 20	Wet.		Air.	str 29
r	16 v	nim 41		Wly 32	r	21 v		nim 40	Wly 35	r		20 v 1	nim 28
p	10 w 1			NWly 8	p	5 w			NWly 17	p		7 w	
d	14 m 28	Obs. 161.		Confused 1	d	2 m 28		Obs. 142.	Confused 4	d		7 m 22	Obs. 144.
s	4 f 14	Amount of Sky clouded 77.		Smooth 16	s	5 f 9		Amount of Sky clouded 72.	Smooth 11	s		5 f 18	Amount of Sky clouded 70.
h	6			h	3			h	6				
S. 50°												50° S.	
10° E.			20°			30°			E. 40				

