SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.

WINDS

OF THE

NORTHERN HEMISPHERE.

BY

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INTRODUCTION.

THIS memoir is an expansion of a report on the winds of North America and the North Atlantic Ocean, prepared in obedience to a request of the American Association for the Advancement of Science, and read at its meeting in Philadelphia in 1848. Although the northern portion of the eastern continent did not properly fall within the limits of the report, yet it was thought that it would be more complete if it could be made to include the entire northern hemisphere; and this has been done partly through the aid of American missionaries and others residing abroad, who kindly sent manuscript records of their observations, and partly through meteorological registers published in different European journals, &c. In this way, I have been enabled to obtain a large amount of material from Europe, Asia, Northern and Western Africa, and several islands in the Atlantic and Pacific Oceans. With a view to obtain more full data at sea, I made arrangements, through the aid of a friend in New York, to procure from shipowners in that city the loan of a number of log-books kept during voyages in the Atlantic and elsewhere. From these, and other sources, I had collected records of observations at sea for periods amounting in the aggregate to between six and seven years, when, learning that Lieut. Maury, of the National Observatory, was successfully prosecuting the same work under far greater advantages, I relinquished that field, and confined myself to observations on land.

An interval of several years which has elapsed since the memoir was first presented to the Smithsonian Institution, while it may have rendered some parts less valuable, has enabled me to improve others by the addition of new matter derived from the Smithsonian operations, and those of the National Observatory. Among the materials obtained from the latter may be mentioned, a collection of observations at sea, amounting in the aggregate to a period of more than one hundred and twenty years. I may also mention, as an important addition, the discovery of systems of deflecting forces on both sides of the Atlantic.

My acknowledgments are due to the following gentlemen for the aid they have rendered me in obtaining the data necessary for the investigation, either by contributing their own observations, or affording facilities for procuring those of others:—

Duncan Finlayson, Resident Agent of Hudson's Bay Company, British Amer.
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J. L. Hendrick, Litchfield, Conn.
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Prof. Denison Olmsted, Yale Coll., Conn.
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Dr. T. Romeyn Beck, Albany, N. Y.
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Dr. Azariah Smith, Erzeroom, Asia Min.
Rev. P. O. Powers, Broosa, Asia Minor.
Rev. S. H. Calhoun, Mount Lebanon, Syria.
Dr. H. A. De Forest, Beirut, Lebanon, Syria.
Rev. John F. Lanneau, Jerusalem, Palestine.
Rev. Justin Perkins, Ooroomiah, Persia.
Wm. T. Thompson, Secretary of British Embassy, Tehran, Persia.
Joseph Reed, Tehran, Persia.
George A. Stevens, Tabreez, Persia.
Solon Albee, Langdon, N. H.

I have also made free use of the published papers of Prof. Dové, and others, whenever I could obtain them.

La Fayette College, August, 1849.

WINDS

OF THE

NORTHERN HEMISPHERE.

THE design of this memoir is to answer, as far as practicable, the following questions, viz:—

1. What is the *mean direction* in which the lower strata of the air move over different portions of the Northern Hemisphere; including in the term *lower* strata all that part of the atmosphere on which direct observations can be made, whether by the motion of the clouds, or by means of a vane?

2. What is the *rate of progress* in this mean direction, as compared with the total distance travelled by the wind?

3. What *modifications* does this mean direction, and rate of progress, undergo in *the different months of the year?*

4. What is the direction and amount of the *deflecting forces* that cause these modifications?

5. What is the average *relative velocity* of winds from the several points of compass?

6. How will the introduction or omission of this latter element affect the answers to the preceding questions?

The data which I use for elucidating the questions here proposed, consist of series of observations on winds taken at nearly 600 different stations on land, and during numerous voyages at sea, extending from the equator nearly to the parallel of 83° of latitude (the most northerly point ever reached by man), and embracing an aggregate period of over 2,800 years. Were these stations distributed uniformly over the entire Northern Hemisphere, we should have about one in every 418 miles square, which would afford us tolerably fair data for the investigation. But, unfortunately, this is not the case, as may be seen by inspecting Plate I., which shows by dots their position. In the United States, and in several of the countries of Europe, the materials are abundant, and, through the operations of the National Observatory, under the direction of Lieut. Maury, we have very satis-

factory means for studying the winds of the North Atlantic, from the equator to the parallel of 55° of latitude. Over the remaining four-fifths of the Northern Hemisphere, the data are more deficient, though not entirely wanting. It was apprehended that they must be very meagre in the high northern latitudes, dependent as we are for them entirely upon the reports of the different arctic expeditions, and considering the difficulty of taking meteorological observations through the entire year in those frozen and inhospitable regions. Yet they were found to be more satisfactory than was anticipated; and I have been able to embody in this memoir the results of 38½ years' observations, taken at twenty different stations north of lat. 60°, nine of which are within the Polar Circle. Indeed, so far as information is to be obtained from regular and published series of observations, Plate I. shows that we are better informed in regard to the winds about the north pole than on the Pacific Ocean; although the latter is constantly traversed by ships, and the former never, unless for the purpose of scientific research.[1]

There is a considerable gap in the interior of British America, which would have been still greater, but for the politeness of several of the officers of the Hudson's Bay Company, who kindly contributed collections of observations taken at their respective stations.

In Asia, the stations are few in number, compared with the vast extent of territory; and yet they are as numerous, perhaps, as could reasonably be expected. In the southwestern part, there are twelve places from which I have obtained observations, chiefly through the kindness of American missionaries residing there. Kupffer's voluminous collections,[2] published by the Russian government, also afforded me a number in Siberia and the Ural Mountains. Throughout the wide area of the Chinese empire, embracing the whole of Central and Southeastern Asia, we have records only from Pekin,[3] nor is there, so far as I know, a prospect of obtaining others. Some observations that I was encouraged to expect from the southern part of China Proper, have not yet come to hand. In Southern Asia, the

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[1] I am happy to learn that the National Observatory, under the direction of Lieut. Maury—to whose labors we are so much indebted for the publication of the Charts of the Winds of the North Atlantic—has prepared, and will shortly publish, similar charts of the North Pacific. When this is done, and when returns shall have been received of the observations taken under the direction of the Smithsonian Institution, in Oregon, California, and New Mexico, we shall be more fully prepared for the study of the winds of the Northern Hemisphere.

[2] I exceedingly regret my inability to avail myself, to the extent I desired, of the fund of information contained in these important volumes. The original hourly or bi-hourly records of the directions of the wind are published in full, and without abstracts or condensation, so that the labor of reducing them is very great; and as I had no access to the volumes, except by resorting to distant libraries for the purpose, want of time compelled me to content myself with imperfect abstracts of one or two years only at each station, counting in some cases only every fourth observation. The reduction of the entire series, by some one more favorably situated, would be a valuable service toward developing the meteorology of those comparatively unknown regions.

[3] Two separate series of observations were obtained from this station; one taken by the French missionaries, if I mistake not, in the last century, and the other quite recently, under the direction of the Russian Government.

only stations from which I have been able to obtain observations, are the few marked on Plate I. in Hindoostan, though other collections, taken at Aden, in Arabia, at Singapore, and at several other stations in Hindoostan, are known to exist.

Our information in regard to the winds of Africa, is confined to a few stations on the northern and western borders, embracing in the aggregate a period of only eleven months. I am aware of no series of observations ever taken in the interior, except for three months only by the Niger expedition, and that still remains unpublished, I believe, in the possession of the Royal Society of London. The series taken by Mr. Aimé, at Algiers, and by Mr. Lambert, at Cairo, must be valuable, but I have not been able to obtain them.

There is reason to believe that most of the observations which form the basis of this memoir, were taken with such accuracy that reliance may be safely placed on the results, though there is, doubtless, considerable difference among them in this respect. At nearly every station, the direction of the wind was recorded for at least eight points of compass; at many, for sixteen points or more, together with estimates of the force; and at several,[1] either the direction, or force, or both, were accurately measured and recorded by means of self-registering anemometers.

The method of applying these data to determine the mean direction of the wind consists, as has already been remarked, not simply in finding from what point of compass it has blown most frequently, and rejecting all the rest, but in resolving the traverse of all the different courses. A ship at sea, having sailed on different tacks, would find itself sadly out of its reckoning, if it were to take into account merely the tack upon which it had sailed most frequently, or for the longest time. The same would be the case if a balloon were set afloat in the air, and we wished to know its *course* and *distance* after a given time, which is what is intended by the terms *mean direction* and *rate of progress*, or *percentage of resultant*, as used in this memoir. May not the imperfect manner in which the subject has generally been studied, account for the belief so commonly entertained, that the winds in the temperate zones are subject to no fixed laws; the prevailing direction being so dependent upon the local features of the surrounding country, as often to furnish next to no indication of the direction in which the air as a whole moves? In any well-defined valley of considerable extent, it is a familiar fact that the winds incline to take the direction of the valley, marked examples of which the reader may see in the stations on Hudson River, in the State of New York, as exhibited in Plate III. Half the winds, or more, follow the course of the river, either up or down, and yet the mean direction of the whole is nearly at right angles to it.

The questions already enumerated will serve as a general index to the plan of the work. It consists mainly of tabular statements, the different series being designated by the capital letters, A, B, C, &c.

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[1] Toronto, Ogdensburg, and Girard College, on this continent; probably the three stations in Boothia Felix; and Greenwich, Devonport, and Sturbington, in England.

Series A, contains a list of the stations, or places of observation, with their latitudes and longitudes from Greenwich, and the names of the observers as far as known.[1]

Series B, contains abstracts of the observations on the direction of the wind at the different stations. With a view to greater condensation, months of the same name in different years are often united, so as to make but a single table of monthly abstracts, even though the observations extend through a number of years. The wind-roses, in the Plate of this series, exhibit to the eye the relative predominance of the different winds, the width of the shading at the different points of compass being proportional to the time during which the winds prevailed from those points.

Series C, shows the mean direction and rate of progress of the wind at the different stations, computed in the manner already described, from the data contained in series B. Besides the general results for the whole time, there is given also, at a few places, the separate results for each year. I undertook, at first, to do the same for all the stations, but the labor was so great that it became questionable whether the results would be worth the cost, and the idea was relinquished. Accompanying the tabular statements is a series of maps, on which the mean direction and rate of progress of the wind at the different stations is exhibited to the eye by means of straight arrows. The length of the arrow, exclusive of the point, shows the ratio of the progressive motion of the wind to the whole distance travelled, the unit being one inch. That is to say, if the wind were to blow uniformly in one direction, it would be represented by an arrow one inch long; if the progressive motion were fifty miles, for every hundred miles travelled, the length of the arrow would be half an inch, and so on.

Series D, shows the deflections of the wind from its mean annual course in the different months of the year, together with the direction and amount of the forces which produce these deflections. For a more full description of the process employed, the reader is referred to the Introduction to this series. The tabular statements are illustrated by two series of plates, one showing the monthly direction of the wind, and the other the deflecting forces. The former are shown by means of curves, divided into 12 parts, each part showing the mean path of the wind for one month, and, consequently, the whole the annual curve. The latter are represented by means of arrows, twelve for each station, corresponding to the months of the year. The direction and length of the arrow for any given month shows the direction and amount of the deflecting force in that month, the scale being the same as in the plates following Series C.

Series E, shows the average relative force, or velocity, or both, of winds from the several points of compass, and is accompanied by wind-roses exhibiting the same facts to the eye, the width of the shading at each point of compass being proportional to the average velocity of the wind at that point.

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[1] When this investigation was first undertaken, the author had no idea of ever publishing the results, and proper care was not taken to preserve the name of the person by whom, or under whose direction, the observations were taken, so that in many cases, particularly on the Eastern Continent, I am not able now to give appropriate credit.

Series F is deduced from Series E, and shows the effect of combining the element of *force* with that of *time*, in computing the mean direction of the wind. A more full and particular description of the process is given in the Introduction to the series, further on.

That no errors have been committed in reducing so great a mass of observations, and making the numerous calculations growing out of them, is more than I dare to assert. I can only hope that they are not so serious as materially to affect the general results.

SERIES A.

List of places of observation, with their latitudes and longitudes from Greenwich, the length of time embraced, and the name of the observer.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
1. Within the Arctic Circle.				
Spitzbergen and vicinity	79° 55′	16° 49′ E.	5 months	Parry.
Baffin's Bay			13 do.	Parry and Ross.
Melville Island and vicinity	74 45	110 48 W.	1 year	Parry.
Port Bowen and vicinity	73 14	88 55	1 do.	Do.
Igloolik and vicinity	69 21	81 42	1 do.	Do.
Winter Island and vicinity[1]	66 11	83 10	1 do.	Do.
Felix Harbor	70 0	91 53	1 do.	Jas. Ross.
Sheriff's Harbor	70 2	91 52	1 do.	Do.
Victoria Harbor	70 9	91 34	6 months	Do.
2. Iceland and Greenland.				
Eyafiord, Iceland	65° 50′	20° 0′ W.	2 years	Van Scheels.
Reikiavik, do.	64 40	22 0	7 months	Gladstone and Park.
New Herrnhutt, Greenland	64 50	49 10	1 year	
Frederichthal, do.	60 1	44 45	7 months	
3. British and Russian America.				
Fort Enterprise	64° 28′	113° 6′ W.	1 year	Franklin.
Great Bear Lake	65 11	123 7	20 months	Do.
Great Slave Lake	62 46	109 1	8 do.	Back.
Nain, Labrador	56 0	61 0	1 year	
Norway House, Hudson's Bay Ter.	55 0	98 0	7 do.	Donald Ross.
Michipicoten, Lake Superior	47 56	84 50	1 do.	Swanston.
St. John's, Newfoundland	47 35	52 38	4 do.	Templeman.
Quebec, Canada	46 49	71 16	6 do.	Watt and others.
Montreal, do.	45 31	73 35	8 do.	McCord.
Toronto, do.	43 39	79 22	5 do.	Lefroy.
Wilberforce, do.	43 20	81 36	1 month	
Windsor, Nova Scotia	44 57	64 35	1 year	
Sitka, Russian America	57 3	135 25	1 do.	Homann and Ivanoff.
Iluluk, Aleutian Islands	53 0	167 46	1¼ do.	Sproull.
4. Maine.				
Fort Kent	47° 15′	68° 46′ W.	1 year	Surg. U. S. Army.
Fort Fairfield	46 50	67 59	1 do.	Do.
Hancock Barracks	46 10	67 50	14 years	Sprague.
Addison	44 31	67 34	5 months	Wafs.
Bangor	44 48	68 47	6 do.	Young.
Biddeford	43 31	70 26	1 year	Garland.
Bremen	44 45	68 44	8 months	Blake.
Bath	43 55	69 45	11 years	Hayden.
Eastport	44 44	67 4	12 do.	Surg. U. S. Army.
Gardiner	44 10	69 48	4 months	Gardiner.
Hampden	44 42	68 56	8¾ years	Herrick.
Machias	44 40	67 24	1 month	Stearns.

[1] This station is just without the Arctic Circle.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
4. Maine.—*Continued.*				
Manhegin Island	44° 0′	69° 17′ W.	3 months	
Owl's Head	44 2	68 56	6 do.	
Portland	43 39	70 20	10 years	Surg. U. S. Army.
Saco	43 31	70 26	3½ do.	Batchelder.
Steuben	44 29	67 47	3 months	Parker.
South West Harbor	44 0	68 39	1 month	Howes.
Vinal Haven	44 2	68 48	2 months	Calderwood.
Winthrop	44 19	69 59	2 do.	Maine Farmer.
South Thomaston	44 6	69 0	9 do.	Bartlett.
5. Vermont and New Hampshire.				
Bennington, Vt.	42° 52′	73° 20′ W.	4 months	Hunt.
Burlington, Vt.	44 29	73 11	1 year	Thompson.
Charlestown, N. H.	43 15	72 25	7 months	
Dartmouth College, N. H.	43 43	72 19	8 years	Adams and Young.
Dover, N. H.	43 13	70 54	6 do.	Tufts.
Fayetteville, Vt.	42 56	72 40	2 do.	Field.
Grafton, Vt.	43 13	72 34	3 months	Putnam.
Keene, N. H.	42 57	72 14	5 do.	Wheelock.
Newbury, Vt.	44 6	72 7	27 years	Johnson.
Peterborough, N. H.	42 52	71 38	1 month	Youngman.
Portsmouth, N. H.	43 4	70 46	14 years	Surg. U. S. Army.
Middlebury, Vt.	44 3	73 12	1 month	Keith.
White Island, N. H.			1 do.	
6. Massachusetts, Rhode Island, and Connecticut.				
Amherst, Mass.	42° 22′	72° 31′ W.	5 years	Snell.
Boston, Mass.	42 21	71 4	5½ do.	Paine and others.
Cambridge, Mass.	42 22	71 8	11 months	Bond.
Cabotville, Mass.	42 9	72 37	3 do.	Huntington.
Dartmouth, Mass.	41 31	70 58	8 do.	Bailey.
Edgartown, Mass.	41 23	70 28	1 month	
Dumplin Rock, Mass.	41 31	70 58		Levi Smith.
Framingham, Mass.	42 18	71 39	8 months	Hyde.
Ipswich, Mass.	42 41	70 46	1 year	Cutler.
Little Compton, R. I.	41 30	71 15	1 month	
Litchfield, Conn.	41 46	73 12	3 years	Hendrick.
Medfield, Mass.	42 28	71 14	2 months	
Mendon, Mass.	42 4	71 38	4 years	Metcalf.
Middletown, Ct.	41 33	72 39	2¼ do.	Prof. Smith.
New Haven, Ct.	41 18	72 57	4 do.	Connecticut Academy.
New London, Ct.	41 22	72 9	7 do.	Surg. U. S. Army.
Nantucket, Mass.	41 17	70 6	4½ do.	Mitchell.
New Bedford, Mass.	41 38	70 56	16 do.	Rodman.
Northampton, Mass.	42 19	72 38	4 months	Plant.
Newport, R. I.	41 29	71 19	1 year	
Newburyport, Mass.	42 49	70 53	5 months	Perkins.
North Yarmouth, Mass.	42 37	70 11	1 month	Bailey.
Provincetown, Mass.	42 2	70 11	16 months	Graham.
Providence, R. I.	41 49	71 25	5 years	Caswell and others.
Point Judith, R. I.	41 23	71 31	1 month	Hadwer.
Salem, Mass.	42 31	70 54		Holyoke.
Stafford, Ct.	42 0	72 18	1 do.	Linsley.
Salisbury, Ct.	42 0	73 24	2 years	Plumb.
Worcester, Mass.	42 16	71 48	7 do.	

Name of Station.	Latitude.	Longitude.	Time.	Authority.
6. Massachusetts, Rhode Island, and Connecticut.—*Continued.*				
Williams College, Mass.	42° 43′	73° 13′ W.	23 years	Dewey and Kellogg.
Waltham, Mass.	42 24	71 14	1 do.	Fisk.
Fort Adams, R. I.	41 30	71 19	1 do.	Surg. U. S. Army.
Fort Wolcott, R. I.	41 30	71 18	14 do.	Do.
Race Point, Mass.	42 4	70 15	3 months	Graham.
7. State of New York.				
Adams	43° 52′	75° 50′ W.	1 month	Webb.
Albany	42 39	73 44	24 years	Beck and Ten Eyck.
Amenia	41 48	73 36	1 year	Winchell.
Auburn	42 55	76 28	22 years	Hopkins.
Bridgewater	42 55	75 17	4 do.	
Bloomingdale	40 48	74 4	1 year	Morris.
Buffalo	42 51	79 5	2 years	
Buffalo Barracks	42 53	78 55	2 do.	Surg. U. S. Army.
Brooklyn	40 42	73 59½	1 month	
Cambridge	43 1	73 23	14 years	Beattie and others.
Canajoharie	42 53	74 35	3 do.	
Canandaigua	42 50	77 15	11 do.	Howe.
Cayuga (Aurora)	42 43	76 37	13 do.	Foster and others.
Cherry Valley	42 48	74 47	15 do.	Dixon and others.
Clinton (East Hampton)	41 0	72 19	17 do.	Dayton.
Cordtlandt (Homer)	42 38	76 11	17 do.	Bradford.
Cuba	42 7	78 14	3 do.	Talcott.
Chatham	42 25	73 30	4 months	
Delaware (Delhi)	42 16	74 58	2 years	Shepard and others.
Deaf and Dumb Inst., N. Y. City			3 do.	Morris.
Dutchess (Poughkeepsie)	41 41	73 57	17 do.	Burchan and others.
Erasmus Hall (Flatbush)	40 37	73 58	24 do.	Strong.
Franklin (Prattsburg)	42 34	77 20	13 do.	Gaylord and others.
Fairfield	43 5	74 55	20 do.	Blanchard and others.
Franklin (Malone)	44 50	74 23	3 do.	Coburn and others.
Farmers' Hall (Goshen)	41 20	74 11	13 do.	Crane, Webb, and others.
Fredonia	42 26	79 24	18 do.	Redington and others.
Gouverneur	44 25	75 35	13 do.	Grant and others.
Fort Columbus	40 41	74 1	19 do.	Surg. U. S. Army.
Granville	43 20	73 17	15 do.	Parker and others.
Fort Wood	40 43	74 11	2 do.	
Greenville	42 22	74 4	3 do.	
Gaines	43 17	78 15	4 do.	Gilbert and others.
Gallop's Island	43 53	76 25	1 month	Gill.
Hamilton College	43 5	75 6	1 do.	Eaton.
Hamilton	42 49	75 34	20 years	Weed and others.
Hartwick	42 38	75 1	16 do.	Miller.
Hudson	42 15	73 45	18 do.	Ford.
Ithaca	42 27	76 30	16 do.	Wetherell and others.
Johnstown	43 0	74 23	16 do.	Burke and others.
Kinderhook	42 18	73 40	17 do.	Metcalf.
Kingston	41 55	74 2	20 do.	Wells.
Lansingburgh	42 47	73 43	20 do.	Pease and others.
Lewiston	43 9	79 10	18 do.	Fitts.
Leonardsville	42 46	75 23	1 month	Hope.
Lowville	43 47	75 33	19 years	Mayhew and others.
Lockport	43 11	78 46	4 months	Giddins.
Monroe (Henrietta)	43 0	77 51	3 years	Ransom.
Middlebury	42 49	78 10	19 do.	Sanford and others.
Mexico	43 27	76 14	12 do.	Gillespie and others.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
7. State of New York.—*Continued.*				
Montgomery	41° 32′	74° 0′ W.	14 years	Harmon and others.
Mount Pleasant	41 9	73 47	13 do.	Merrill and others.
Millville	43 8	78 20	7 do.	Brooks and others.
Nassau	42 37	73 35	1 month	Bullard.
New York City	40 42	74 1	14 years	Redfield, Fisher, and others.
Newburgh	41 30	74 5	19 do.	Lyon and others.
North Salem	41 20	73 37	18 do.	Jenkins.
Ogdensburg	44 43	75 26	1 year	Coffin.
Oneida Conference (Cazenovia)	42 57	75 46	19 years	Bannister and others.
Oneida Institute (Whitesborough)	43 7	75 14	7 do.	
Onondaga	42 59	76 6	16 do.	Runkle.
Oxford	42 28	75 32	18 do.	Douglass and others.
Oyster Bay	40 50	73 49	2 do.	
Palmyra	43 5	77 16	1 year	
Penn Yan	42 42	77 7	1 month	Sartwell.
Plattsburg	44 42	73 25	3 years	Taylor and others.
Plattsburg Barracks	44 41	73 26	2 do.	Surg. U. S. Army.
Pompey	42 56	76 5	17 do.	Stebbins.
Redhook	42 2	73 56	12 do.	Cook and others.
Rhinebeck	41 55	73 55	1 month	Platt.
Rochester	43 8	77 51	18 years	Dewey.
Rouse's Point	45 0	73 21	1 year	Surg. U. S. Army.
Syracuse	43 1	76 15	1 do.	Conkey.
Sackett's Harbor	43 55	76 10	2 years	Surg. U. S. Army.
Springville	42 30	78 50	5 do.	Earle.
Sand's Point	41 11	73 49	2 months	Calkins.
St. Lawrence (Potsdam)	44 40	75 1	22 years	Barnes and others.
Somerville	44 11	75 25	1 year	Hough.
Schenectady	42 48	73 55	11 years	
Seneca Falls	42 54	76 51	1 year	Fairchild.
Troy	42 44	73 35	2 years	Cook.
Watertown	43 58	76 0	5 do?	Surg. U. S. Army.
Watervliet	42 44	73 41	11 do.	Do.
West Point	41 22	73 57	16 do.	Wheaton.
White Plains	41 2	73 47	4 months	
Washington (Salem)	43 45	73 30	10 years	Butler and others.
Union (Ellisburgh)	43 45	76 10	9 do.	Littlefield and others.
Union Hall (Jamaica)	40 41	73 56	24 do.	Kelsey.
Utica	43 7	75 13	22 do.	Sheldon and Aylesworth.
Youngstown	43 15	79 5	6 do.	Surg. U. S. Army.
8. New Jersey.				
Bloomfield	40° 49′	74° 11′ W.	2 months	Cook.
Burlington	40 6	74 55	3 do.	Smith.
Cape May (Five Fathom Bank)	38 52	74 42	1 month	Merrill.
Haddonfield	39 54	75 8	1 do.	Clement.
Middletown	40 26	73 59	4 years	Jenkins.
Newark	40 45	74 10	2 do.	
Trenton	40 14	74 30	6 do.	Ewing.
9. Pennsylvania.				
Armstrong	40° 40′	79° 17′ W.	2 months	Peelor.
Alleghany Arsenal	40 26	80 2	7 years	
Beaver	40 44	80 20	10 months	W. and J. Allison.
Butler	40 52	79 56	2 years	Mechling.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
9. Pennsylvania.—*Continued.*				
Bellefonte	40° 55′	77° 49′ W.	11 months	Harris.
Bedford	40 1	78 30	1 year	Brown.
Bethlehem	40 33	75 28	2 months	Kummer.
Cochranville	39 52	76 0	2 do.	Linton.
Coudersport	41 45	78 19	5 do.	S. Ross.
Carlisle	40 12	77 12	2¼ years	Allen and others.
Canonsburg	41 17	80 14	3 months	Campbell.
Chambersburg	39 56	77 43	1 month	Thompson.
Danville	40 58	76 39	2 months	Frick.
Easton	40 43	75 16	3¼ years	Elliot, Green, and others.
Ebensburg	40 31	78 45	1 year	Lewis.
Erie	42 7	80 10	3 months	Park and Reid.
Franklin	41 25	79 53	1 year	Connelly.
Fort Mifflin	39 51	75 12	2 years	Surg. U. S. Army.
Gettysburg	39 51	77 15	1¼ year	Jacobs.
Girard College	39 58	75 11	5 years	Bache.
Green Hill	40 48	78 30	1 month	Wright.
Germantown	40 8	75 10	8 months	Weister.
Harrisburg	40 16	76 50	1 year	Heisley.
Huntingdon	40 31	78 1	1 do.	Miller.
Haverford	40 0	75 20	10 months	
Indiana	40 40	79 10	9 do.	White.
Lamar	41 2	77 43	1 month	Matthias.
Lancaster	40 8	76 21	2 years	Atlee.
Lewistown	40 35	77 37	5 months	Culbertson.
Meadville	41 39	80 11	1 year	Limber and Dick.
Mifflintown	40 32	77 28	21 months	Kinkead.
Mercersburg	39 50	77 56	4 do.	Green.
Milford	41 18	74 50	1 month	Bull.
Newtown	40 14	74 57	1¼ year	Parsons.
Norristown	40 7	75 18	5 months	Coison.
Northumberland	40 55	76 49	1¼ year	Huston.
Philadelphia	39 57	75 10	5¼ years	Hamilton and others.
Pottsville	40 41	76 9	5 months	Porter.
Port Carbon	40 43	76 6	11 do.	P. C. Lyceum.
Pittsburg	40 32	80 2	1 year	Bakewell and others.
Reading	40 19	75 55	10 months	Egelman.
Rose Cottage	41 7	79 9	3 do.	Gaskell.
Silver Lake	41 55	76 1	1¼ year	Rose.
Somerset	40 1	79 5	2 years	Mowry.
Stroudsburg	40 58	75 16	10 months	Stokes.
Smithport	41 54	78 33	1 year	Atkins and Chadwick.
Uniontown.	39 54	79 42	11 months	Weethee.
Warren	41 51	79 14	8 do.	Brown and King.
West Chester	39 59	75 35	11 months	Jeffries.
West Greenfield				Campbell.
York	39 58	76 40	3 do.	Mason.
Wilkesbarre	41 14	75 56	2 do.	Dennis and Maxwell.
10. Delaware, Maryland, and Virginia.				
Alexandria, Va.	38° 46′	77° 1′ W.	1 month	Mountford.
Annapolis, Md.	38 58	76 27	5 years	Surg. U. S. Army.
Baltimore, Md.	39 17	76 37	1 year	Maryland Academy.
Bellona Arsenal, Va.	37 40	77 41	1 do.	Surg. U. S. Army.
Emmetsburg, Md.	39 41	77 20	3 months	Giraud.
Fort McHenry, Md.	39 17	76 36	12 years	Surg. U. S. Army.
Fort Washington, Md.	38 41	76 58	2 do.	Do.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
10. Delaware, Maryland, and Virginia.—*Continued.*				
Gosport, Va.	36° 47′	78° 15′ W.	8 months	Patton.
Isthmus, Md.	38 45	76 15	10 do.	Banning.
New Castle, Del.	39 40	75 33	1 year	Surg. U. S. Army.
Norfolk, Va.	36 51	76 19	1 month	Do.
Newark, Del.	39 37	75 47	5 months	Norton.
Old Point Comfort, Va.	37 2	76 12	17 years	Surg. U. S. Army.
Washington, D. C.	38 53	77 1	16½ do.	Cranch and others.
West Brunswick, Va.	36 40	77 46	12 months	Astrop.
11. North and South Carolina.				
Abbeville, S. C.	34° 11′	82° 24′ W.	2 years	Parker.
Camden, S. C.	34 17	80 33	1 year	Holbrook.
Charleston, S. C.	32 46	79 57	5 years	Ryan and others.
Fort Moultrie, S. C.	32 42	79 56	10 do.	Surg. U. S. Army.
Chapel Hill, N. C.	35 54	79 17½	2 do.	Phillips.
Beaufort, N. C.	34 44	76 39	2 do.	Surg. U. S. Army.
Florence, N. C.	36	80	1 month	Watkins.
Wake Forest College, N. C.	35 59	78 28	1 do.	White.
Fort Johnston, N. C.	34 0	78 5	10 years	Surg. U. S. Army.
12. Georgia, Alabama, Mississippi, and Louisiana.				
Athens, Ga.	34° 2′	83° 31′ W.	5 years	McCay.
Augusta, Ga.	33 28	81 54	4 do.	Holbrook.
Do. Arsenal, Ga.	33 28	81 53	14 do.	Surg. U. S. Army.
Arendale, Ala.	34 56	86 1	2 months	Jones.
Baton Rouge, La.	30 26	91 18	7 years	Surg. U. S. Army.
Eutaw, Ala.	32 46	87 54	1 year	Winchell.
Glenville, Ala.	32 10	85 1	1 month	Taylor.
Knoxville, Ala.	33 2	87 52	3 months	Adams
La Grange College, Ala.	34 40	87 46	8 do.	Tulwiler.
Mobile, Ala.	30 42	87 59	2½ years	North.
Natchez, Miss.	31 34	91 25	17 do.	Tooley.
New Orleans, La.	29 57	90 0	5½ do.	Barton, Little, and others.
New Orleans Barracks	29 57	89 59	6 do.	Surg. U. S. Army.
Port Gibson, Miss.	31 50	91 0	2 months	Reid.
Oglethorpe Barracks, Ga.	32 6	81 8	2 years	Surg. U. S. Army.
Petite Coquille, La.	30 10	89 38	4 do.	Do.
Savannah, Ga.	32 5	81 8	3 do.	Posey, Oemler, and others.
Summerville, Ga.	34 28	85 34	1 year	Holbrook.
Springfield, Ala.	32 58	87 57	1 month	Adams.
Tuskeegee, Ala.	32 27	85 46	1½ year	Jennings.
Vicksburg, Miss.	32 22	90 56	4 years	Hatch.
Washington, Miss.	31 36	91 20	2 months	A lady.
Whitemarsh Island, Ga.	31 59	80 57	12 do.	Gibson.
Mount Vernon, Ala.	31 6	88 5	10 do.	Surg. U. S. Army.
Spring Hill College, Ala.	30 42	88 1	1 year	Fabre.
Fort Wood, La.	30 2	89 57	3 years	Surg. U. S. Army.
Fort Jesup, La.	31 30	93 37	20 do.	Do.
Fort Jackson, La.	29 27	89 34	1 year	Do.
Fort Pike, La.	30 5	89 54	4 years	Do.
Milledgeville, Ga.	33 7	83 20	2 months	Cotting.
Tuscaloosa, Ala.	33 14	87 38	1 month	Hentz.
Attakepas, La.	29 49	91 35	2 months	
Frank's Island, La.	near	N. Orleans.	2 do.	

Name of Station.	Latitude.	Longitude.	Time.	Authority.
13. Tennessee and Kentucky.				
Greenville, Tenn.	36° 8′	82° 46′ W.	3 months	
Knoxville, Tenn.	35 59	83 54	8 do.	Garvin.
Mt. Atlas, Tenn.	36 0	88 20	6 do.	Travis.
Nashville, Tenn.	36 10	86 49	6 years	Hamilton.
Danville, Ky.	37 40	84 40	5 months	Beatty.
Louisville, Ky.	38 3	85 30	2 do.	Fleming and Peter.
New Concord, Ky.	36 39	88 3	1 month	Williams.
Paris, Ky.	38 16	84 6	2 months	Lyle.
Springdale, Ky.	38 10	85 40	2 do.	
St. Mary's College, Ky.	37 33	85 10	7 do.	Thebaud.
14. Ohio.				
Ashtabula	41° 55′	80° 50′ W.	5 months	
Cambridge	40 5	81 37	1 month	Brown.
Cincinnati	39 6	84 27	7 months	Ray and Williams.
Columbus	39 57	83 3	8 do.	Kennedy.
Conneaut	42 0	80 34	1 month	Dibble.
Chillicothe	39 24	82 56	1½ year	Davis and Williams.
Dayton	39 44	84 11	4 months	Williams.
Granville College	40 4	82 34	5 do.	Carter.
Hudson	41 15	81 24	7 years	Loomis.
Lancaster	39 46	82 36	5 months	Kreider.
Lebanon	39 30	84 7	13 do.	Hatfield.
Marietta	39 27	81 29	1 year	Hildreth.
New Athens	41 10	81 11	7 months	Mason.
Ravenna	41 12	81 16	1 month	
Sandusky	41 27	82 42	9 months	Morton.
Steubenville	40 25	80 42	14 years	Marsh.
Zanesville	40 0	82 1	11 months	Peters.
15. Indiana and Illinois.				
Brockville, Ia.	41° 42′	84° 40′ W.	3 years	Coffin.
Brookville, Ia.	39 25	84 54	4 months	Hayward.
Greencastle, Ia.	39 39	86 46	3 do.	Downey.
Greensburg, Ia.	39 20	85 28	3 do.	Lathrop.
Indianapolis, Ia.	39 48	86 10	3 do.	Wheeler.
Rensselaer, Ia.	40 57	87 9	1 month	Luther.
Winnamac, Ia.	41 7	86 45	3 months	Do.
Chicago, Ill.	42 0	87 35	4½ years	Wilson and others.
Joliet, Ill.	41 30	88 10	6 months	Brownson.
Macomb, Ill.	40 30	90 30	3 do.	Richards.
Jacksonville, Ill.	39 48	90 19	9 do.	Hawley.
Peoria, Ill.	40 35	89 36	1 month	Washburn.
Rock Island	41 28	90 33	8 years	Surg. U. S. Army.
Upper Alton, Ill.	38 57	90 1	2 months	
Shawneetown, Ill.	37 42	88 12	2 do.	Roe.
16. Michigan, Wisconsin, and Iowa.				
Ann Arbor, Mich.	42° 15′	83° 43′ W.	2 months	
Dearbornville, Mich.	42 20	83 1	1 year	Surg. U. S. Army.
Detroit, Mich.	42 24	82 58	3 years	Duffield.
Detroit Barracks, Mich.	42 19	82 58	3 do.	Surg. U. S. Army.
Fort Gratiot, Mich.	42 56	82 18	9 do.	Do.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
16. Michigan, Wisconsin, and Iowa.—*Continued.*				
Mackinac, Mich.	45° 51′	85° 5′ W.	8 years	Surg. U. S. Army.
Fort Winnebago, Wis.	43 35	89 20	10 do.	Do.
Green Bay, Wis.	44 40	87 0	18 do.	Do.
Fort Brady, Mich.	46 39	84 43	18 do.	Do.
Prairie du Chien, Wis.	43 3	90 53	14 do.	Do.
Bloomington, Iowa	41 26	91 2	5 do.	Parvin.
Iowa City, Iowa	41 40	91 37	2 months	Murray.
Fort Atkinson, Iowa	43 0	91 10	2 years	Surg. U. S. Army.
Fort Snelling, Iowa	44 53	93 8	20 do.	Do.
Turkey River, Iowa.	43 6	92 0	1 month	
Presque Isle, Mich.	45 18	83 30	3 months	Woolsey.
Source of the Des Moines, Iowa	44 3	96 1		Nicollet.
Lac qui Parle, Iowa	45 0	95 30	2 do.	Williamson.
East Troy, Wis.	42 50	88 30	1 month	Jennings.
17. Missouri, Arkansas, and Western Territories.				
St. Louis, Mo.	38° 37′	90° 16′ W.	10 years	Surg. U. S. Army.
Washington, Ark.	33 43	93 37	5 months	Slaughter.
Fort Wayne, Ark.	36 4	94 38	2 years	Surg. U. S. Army.
Little Rock, Ark.	34 40	92 12	2 do.	Do. and Goulding.
Council Bluffs	41 45	96 0	5 do.	Surg. U. S. Army.
Fort Gibson	35 47	95 10	15 do.	De Camp and others.
Fort Leavenworth	39 20	95 11	11 do.	Surg. U. S. Army.
Fort Smith	35 30	94 31	3 do.	Do.
Fort Towson	33 33	95 1	10 do.	Do.
Fort Laramie	42 12	104 48		Fremont.
Fort Vancouver	45 37	122 37	1½ year	C. Hall and others.
Fremont's Town			1½ do.	Fremont.
18. Florida, Texas, California, and Mexico.				
St. Augustine, Fa.	29° 48′	81° 35′ W.	13 years	Rodiman and others.
Tampa Bay, Fa.	27 57	82 35	12 do.	Bunce and others.
Pensacola, Fa.	30 24	87 10	8 do.	Surg. U. S. Army.
Key West, Fa.	24 32	81 47	7 do.	Whitehead and others.
Fort King, Fa.	29 8	82 12	5 do.	Surg. U. S. Army.
Cedar Keys, Fa.	29 8	83 9	1 year	Do.
Tortugas Islands, Fa.	24 37	83 0	1 do.	Thompson.
Indian Key, Fa.	24 54	80 43	1 do.	Howe.
Carysford Reef, Fa.	25 2	80 15	1 do.	Whalton.
Cape Florida, Fa.	25 47	79 58	1 do.	Dubose.
Galveston, Texas	29 24	95 4	1 month	
Mazatlan, Mexico	16 0	95 20	1½ do.	
Yucatan	21	83		Purdy.
Monterey, California	36 40	121 40	11 days	
19. West Indies and South America.				
Matanzas, Cuba	23° 3′	81° 30′ W.	4 years	Mallory.
Ponce, Porto Rico	17 57	66 40	1 month	
Turk's Island	21 29	71 5	1 do.	Arthur.
Barbadoes	13 5	59 43	9 months	Dawson.
Chagres, New Grenada	9 10	80 17	1 month	Cobb.
Porto Cabello, Venezuela	10 28	68 17	3 months	Litchfield.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
20. Atlantic Ocean and its Islands.				
Hamilton, Bermudas			3½ years	Reid.
Ireland Isle, Bermudas			4 months	
Canary Islands	28° 43′	17° 46′ W.	1 month	
Funchal, Madeira	32 38	17 6	3 years	
Fayal, Azores	38 32	28 40	2 months	Hunt.
St. Michael's, Azores	37 40	25 50	2 do.	Do.
Terceira, Azores	38 40	27 50	2 do.	Do.
Graciosa, Azores	39 12	27 58	12 days	Do.
St. Mary's, Azores	37 0	24 59	10 do.	Do.
On board ship			115 years	Hamilton, Quintard & others.
21. Great Britain and Ireland.				
Aberavon, Wales	51° 35′	3° 48′ W.	3 months	
Bronxholm, Scotland	55 27	3 0	10 years	
Elgin, Scotland	57 38	3 16	3 do.	
Clunie Manse, Scotland	56 25	3 36	4 do.	
Inchkeith, Scotland	56 8	3 9	10 do.	
Banff Castle, Scotland	57 35	2 45	1 year	
Calton Hill,[1] Scotland			10 years	
Castle Toward, Scotland			2 do.	
Kinfaun's Castle, Scotland	56 55	3 30	12 do.	
Cheltenham, Eng.	51 55	2 21	1 year	
Alderly Rectory, Eng.	52 38	0 52	1 do.	
Thetford, Eng.	52 20	0 40 E.	1 do.	
London, Eng.	51 31	0 7 W.	18 years[2]	Howard.
Liverpool, Eng.	53 22	3 0	7 do.	Abraham.
Greenwich, Eng.	51 29	0 0	11 do.	Royal Society.
High Wycombe, Eng.	51 38	0 50	1 year	
Carlisle, Eng.	55 1	3 13	1 do.	
Keswick, Eng.	54 44	2 46	5 years	
Southwick, Eng.			11 do.	
Kendal, Eng.	54 18	2 46	5 do.[2]	
Mansfield Woodhouse, Eng.	53 8	1 1	10 do.	
Bristol, Eng.	51 27	2 36	2 do.	
Delphen, Eng.	52 0	0 7 E.	1 year	
Devonport, Eng.	50 23	4 9 W.	3 years	
Sturbington, Eng.	near	Portsmouth.	1 year	
Sidmouth, Eng.	50 41	3 13 W.	2 years	
Derby, Eng.	52 58	1 30	2 do.	
Gosport, Eng.	50 48	1 6	5 do.	
Lancaster, Eng.	53 29	2 46	6 do.	
Penzance, Eng.	50 5	5 28	5 do.	
Helston, Eng.	50 7	5 15	2 do.	
Manchester, Eng.	53 25	2 10	4 do.	
Bushy Heath, Eng.	51 38	0 1	7 do.	
New Malton, Eng.	54 10	0 48	6 do.	
Cork, Ireland	51 24	8 23	1 year[3]	
Dublin, Ireland	53 23	6 20	1 month	
Londonderry, Ireland	55 0	7 15	1 year	
Isle of Man	54 8	4 30	9 years	
22. Denmark, Norway, Sweden, and Russia.				
Copenhagen, Denmark	55° 41′	12° 40′ E.	50 years	
Apenrade, Denmark	54 50	9 14	9 do.	

[1] On the Frith of Forth. [2] Probably more. [3] Time not known, but probably more than one year.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
22. Denmark, Norway, Sweden, and Russia.—*Continued.*				
Christianssoe, Denmark	54° 55′	14° 56′ W.	8 years	
Goersdoff, Denmark	54 39	8 24	2 do.	Muller.
Skagen, Denmark	57 38	10 0	9 do.	
Wyburg, Denmark?	56 34?	9 18	1 year	
Spydberg, Norway	59 30	8 58	2 years	
Stockholm, Sweden	59 20	18 9	4 do.	
Cronberg, Sweden	56 0	12 23	1 year	
Holmia, Sweden	63 8	17 23	3 years	
Soendmor, Sweden?			12 do.	
Archangel, Russia	64 34	38 59	18 do.	
Dorpat, Russia	58 23	26 44	1 year	M. Kaempts.
Kazan, Russia	55 48	49 18	1 do.	M. Simonoff.
Kerk, Russia?	45 16?	36 14?	2 years	
Lougan, Russia	48 35	39 21	2 do.	
Moscow, Russia	55 45	37 31	5 do.	
Monachium, Russia	48 2	30 44	4 do.	
St. Petersburg, Russia	59 57	30 20	21 do.[1]	
Schoessl, Russia			2½ do.	
Wilna, Russia	54 41	25 28	1 year	
23. Prussia, Austria, and Turkey.				
Berlin, Prussia	52° 32′	13° 26′ E.	25 years	Beguelin.
Dantzic Prussia	54 22	18 38	15 do.	
Dusseldorf, Prussia	51 12	6 40	1 year	
Braunsberg, Prussia	54 22	20 6	1 do.	
Hofmanngave, Prussia			4 years	
Konigsburg, Prussia	54 42	20 55	1 year[1]	
Pillau, Prussia	54 38	20 20	18 years	
Posen, Prussia	52 24	17 0	8 months	
Sagan, Prussia	51 42	15 22	5 years	
Buda, Austria	47 30	19 5	4 do.	
Divic, Austria?	47 19	22 36?	2 do.	
Gratz, Austria	47 4	15 26	1 year	
Prague, Austria	50 4	14 45	2 years	Kreil.
Schoenthal, Austria	50 5	13 0	1 year	
Vienna, Austria	48 13	16 23	1 do.	M. Littrow.
Constantinople, Turkey	41 1	28 35	1½ do.	Dwight.
24. Germany.				
Anspach, Bavaria	49° 18′	10° 28′ E.	1 year	
Gunzenhausen, Bavaria	49 6	10 32	1 do.	
Erfurth, Saxe	50 50	11 12	5 years	
Hof, Bavaria	50 18	12 30	1 year	
Herbipolis,[2] Bavaria	49 46	10 14	5 years	
Ratisbon, Bavaria	48 58	12 6	4 do.	
Uffenheim, Bavaria	49 30	10 19	1 year	
Munich, Bavaria	48 9	11 37	7 years	
St. Andex, Bavaria			5 do.	
Giengen on the Brenz, Bavaria	48 46	10 34	1 year	
Ingolstadt, Bavaria	48 44	11 15	1 do.	
Wurtzburg, Bavaria	49 46	10 13	5 years	

[1] Probably more.

[2] Intended for Wurtzburg, it is presumed.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
24. Germany.—*Continued.*				
Peissenberg,[1] Bavaria?	47° 47′	10° 42′ E.	4 years	
Tegernsee, Bavaria	47 49	11 47	4 do.	
Manheim, Baden	49 26	8 31	10 do.	
Carlsruhe, Baden	49 4	8 30	3 do.	
Mergentheim, Baden	49 21	9 27	1 year	
Hamburg,	53 34	9 55	30 years	
Gottingen, Brunswick	51 32	9 57	1 year[2]	
Burglengenfield			1 do.	
Stuttgard, Wirtemberg	48 44	9 21	1 do.[2]	
Issny, Wirtemberg	47 42	10 3	1 do.	
Tutlingen, Wirtemberg	47 55	8 40	1 do.	
Luneburg, Hanover	53 15	10 36	15 years?	
Cuxhaven, Hanover	53 53	8 45	15 do.?	
Neustadt[3]	49 38?	10 43?	9 months	
Bedenbach			1 year	
Giengen			1 do.	
Schussenreid			1 do.	
Stone Lighthouse			1 do.[2]	
25. Holland and Belgium.				
Amsterdam, Holland	52° 25′	4° 40′ E.	54 years	
Franeker, Holland	53 10	5 45	18 do.	Van Swinden.
Utrecht	52 6	5 8	1 year	
Alost, Belgium	50 48	3 35	2 years	
Breda, Belgium	51 34	4 40	6 do.	
Brussels, Belgium	50 51	4 22	20 do.	M. Quetelet.
Ghent, Belgium	51 3	3 44	3 do.	
Louvain, Belgium	50 53	4 41	1 year	
Mailand, Belgium	51 57	4 18	1 do.[2]	
26. France, Spain, and Portugal.				
Paris, France	48° 50′	2° 20′ E.	42 years	Royal Society.
Nancy, France	48 45	6 15	6 do.	
Denainvilliers, France	48 12		31 do.	
Marseilles, France	43 18	5 27	20 do.	
Montmorenci, France	49 0	2 20	15 do.	
Hafnia (Havre?), France	49 29?	0 6	3 do.	
Toulouse, France	43 36	1 30	19 do.	Marconelli.
Bordeaux, France	44 50	0 35 W.	2 do.	Abria.
Cambray, France	50 11	3 14 E.	2 do.	Evard.
Dijon, France	47 19	5 2	4 do.	Perry.
La Chapelle, France	49 49	1 3	1 year	Racine and Nell de Bréauté.
Metz, France	49 7	6 10	18 years	Schuster.
Orange, France	44 8	4 48	14 do.	Gasparin.
Rodez, France	44 21	2 34	3 do.	Blondeau.
Rouen, France	49 26	1 5	4 do.	Preisser.
St. Hyppolyte, France	43 54	3 55	13 do.	D'Hombres.
St. Lo, France	49 7	1 4 W.	3 do.	Lamarch.
Syam, France	46 45	5 54 E.	2 do.	Thorel.

[1] This place is described as being situated in "Longitude 28° 34′ E., 1220 feet above the river," but the meridian from which the longitude is reckoned is not stated. I have assumed it to be that of Ferro, which makes its longitude from Greenwich as here given.

[2] Probably more.

[3] There are several places of this name in Germany, and as the latitude and longitude were not given, it is not certain which was intended.

Name of Station.	Latitude.	Longitude.	Time.	Authority.
26. France, Spain, and Portugal.—*Continued.*				
Strasburg, France	48° 35′	7° 45′ E.	20 years	
Valognes, France	49 31	1 28 W.	1 year	Benoist.
Versailles, France	48 48	2 7 E.	2 years	Hueghens, Berigny, and La Croix.
Montpelier, France	43 37	3 58	37 do.?	
Cantabria, Spain?	42 30	2 9 W.	1 year	
Gibraltar, Spain	36 6	5 19	3 months	
Mafra, Portugal?	38 55?	9 11?	4 years	
Oporto, Portugal	41 10	8 22	2 months	
27. Switzerland, Italy, and the Mediterranean Sea.				
Regensburg, Switzerland	47° 47′	8° 20′ E.	7 years	
Mt. St. Gothard, Switzerland	46 36	8 39	4 do.	
Bologna, Italy	44 30	11 21	1 year	
Genoa, Italy	44 25	8 58	1 month	
Naples, Italy	40 55	14 20	1 year	Melloni?
Padua, Italy	45 22	12 1	4 years	
Parma, Italy	44 50	10 30	1 year	
Rome, Italy	41 54	12 29	3 years	
St. Zeno, Italy	44 40?	10 0?	1 year	
Eastern part of the Mediterranean Sea			3 years	
28. Asia.				
Barnoule, Siberia	53° 20′	83° 27′ E.	1 year	Prang 1st.
Catharinenberg, Siberia	56 50	63 35	2 years	Rochkoff.
Bogoslowsk, Siberia	59 45	59 59	1 year	
Nertchinsk, Siberia	51 18	119 21	1 do.	Prang 2d.
Nigne Taguilsk, Siberia			2 years	
Tobolsk, Siberia	58 12	68 18	10 do.	
Yacoutsk, Siberia	62 1	129 44	1 year	Neveroff.
Zlatousts, Siberia	55 8	59 38	1 do.	
Beirut, Syria	33 50	35 29	8 months	De Forest.
Bahmdun, Syria	33 46	35 39	11 do.	Calhoun.
Smyrna, Asia Minor	38 28	27 7	10 do.	Benjamin.
Trebisonde, Asia Minor	40 25	39 45	1 year	
Erzeroom, Armenia	39 57	41 36	1 do.	Smith.
Jerusalem, Palestine	31 47	35 20	15 months	McGowan.
Teflis, Georgia	41 41	44 50	8 do.	Philadelphine.
Tabreez, Persia	38 2	46 16	4 do.	Stevens.
Oorroomiah, Persia	37 30	45 10	19 do.	Perkins.
Tehran, Persia	35 40	50 52	4 do.	Reed.
Bagdad, Turkey	33 20	44 46	1 year	
Bassora, Turkey	30 30	47 25	5 months	
Futtehpore, Hindoostan	27 5	77 40	8 do.	
Patna, Hindoostan	25 40	85 20		
Calcutta, Hindoostan	22 35	88 28	8 years	
Duklam, Hindoostan	18 26	74 41	5 do.	
Pekin, China	39 54	116 27	7 do.	Gachkevitche.
29. Africa.				
Cape Palmas, Liberia	4° 22′	7° 32′ W.	2 months	
Basa Cove, Liberia	5 58	10 1	3 do.	
Coast of Sierra Leone and Liberia			1 month	
Tripoli, Barbary	32 51	13 12 E.	5 do.	

Name of Station.	Latitude.	Longitude.	Time.	Authority.
80. Pacific and Indian Oceans.				
Oahu, Sandwich Islands	21° 20′ N.	158° 22′ W.	1 month	
Waioli, Sandwich Islands	22 15	160 0	1 year	Johnson.
Pago-pago, Navigators' Islands	14 0 S.	170 0	10 months	
Russell, New Zealand			4 do.	
Tananarivou, Madagascar	19 0	45 40 E.	3 do.	

General Summary.

Places of Observation.	No. of stations.	No. of years.
1. Within the Arctic Circle	9	8
2. Iceland and Greenland	4	4$\frac{1}{2}$
3. British and Russian America	14	34$\frac{1}{2}$
4. Maine	21	59$\frac{3}{4}$
5. New Hampshire and Vermont	13	54$\frac{5}{6}$
6. Massachusetts, Rhode Island, and Connecticut	31	111$\frac{1}{2}$
7. New York	88	883$\frac{5}{6}$
8. New Jersey	7	12$\frac{7}{12}$
9. Pennsylvania	52	61$\frac{1}{12}$
10. Delaware, Maryland, and Virginia	15	58$\frac{1}{2}$
11. North and South Carolina	8	32$\frac{1}{2}$
12. Georgia, Alabama, Mississippi, and Louisiana	32	109$\frac{1}{2}$
13. Tennessee and Kentucky	10	9
14. Ohio	17	29$\frac{1}{2}$
15. Indiana and Illinois	15	18$\frac{7}{12}$
16. Michigan, Wisconsin, and Iowa	19	112$\frac{1}{2}$
17. Missouri, Arkansas, and Western Territories	11	61[1]
18. Florida, Texas, California, and Mexico	14	52$\frac{1}{2}$
19. West Indies and South America	6	5$\frac{1}{2}$
20. Atlantic Ocean and its Islands[2]	9	122$\frac{1}{2}$[3]
21. England, Scotland, and Ireland	88	176$\frac{1}{2}$
22. Denmark, Norway, Sweden, and Russia	21	158$\frac{5}{12}$
23. Prussia, Austria, and Turkey	16	83$\frac{1}{2}$
24. Germany (Bavaria and smaller States)	30	128$\frac{3}{4}$
25. Holland and Belgium	9	101
26. France, Spain, and Portugal	26	262$\frac{5}{12}$
27. Switzerland, Italy, and the Mediterranean	10	24$\frac{1}{12}$
28. Asia	25	49$\frac{3}{4}$
29. Africa	4	$\frac{11}{12}$
30. Pacific and Indian Oceans	5	2$\frac{1}{2}$
Total	579	2829$\frac{1}{4}$

It is probable that in the foregoing lists there are some mistakes in the location of places in Europe. Frequently the latitudes and longitudes were not given in the records and works which I consulted, so that I had no guide but the name, which might be common to several places. In some other cases, there was an uncertainty in regard to the meridian from which the longitude was reckoned.

Series of observations, continued only for a few months, may seem of too little importance to be worth preserving; but such collections, though insufficient to de-

[1] Including Fremont's tour. [2] Not including two stations in Iceland. [3] Including voyages.

termine the mean annual direction of the wind, are useful in obtaining monthly results, and hence the annual curve. To determine the latter, with the same accuracy that we do the mean direction for the year, we need much more extensive data; and these monthly collections serve to swell the list, and increase the number of months on which the average is based. More complete series, and also collections of observations from additional places,[1] might, no doubt, have been obtained in many cases by applying directly to the observers; but I had already taxed my friends so far that I felt unwilling to put them to any more trouble; especially as a long time must necessarily intervene between furnishing the data and seeing any fruit of their labor.

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[1] See Appendix A.

SERIES B.

The following abstracts show the proportionate length of time that the winds from each point of compass prevailed at the several stations, as indicated by the number of observations.

Course.	May.[1]	June, July, Aug.[1]	June, July, Aug.[2]	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds within the Arctic Circle.																
Spitsbergen and vicinity.									Melville Island and vicinity.[3]							
North	1	9	6	15	16	28	19	22	18	16	3	12	11	25	6	186
N. by E.			0	0	0	1	0	0	3	2	0	0	0	0	0	6
N. N. E.	9	14	1	2	0	0	3	0	1	6	0	9	0	0	1	22
N. E. by N.			3	0	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	12	5	1	0	0	0	0	2	0	0	2	3	0	0	0	7
N. E. by E.			0	0	0	0	0	0	0	0	1	0	0	0	0	1
E. N. E.	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	3
E. by N.			0	0	0	0	0	0	0	1	0	0	0	0	0	1
East	7	25	9	5	2	0	5	2	1	0	1	0	1	0	9	26
E. by S.			3	0	0	0	0	0	0	0	0	0	0	0	4	4
E. S. E.	0	1	9	2	1	2	4	2	0	0	4	0	1	0	4	20
S. E. by E.			3	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	4	16	18	3	2	0	3	0	7	2	5	0	0	0	2	22
S. E. by S.			0	0	0	0	0	0	1	0	0	0	0	0	0	1
S. S. E.	0	4	4	2	0	1	1	1	2	4	0	0	2	2	0	15
S. by E.			1	0	2	0	0	0	0	0	0	0	0	0	3	5
South	2	2	7	1	0	2	1	3	4	8	0	0	1	0	4	29
S. by W.			3	0	0	0	0	0	2	1	0	0	0	0	0	3
S. S. W.	2	0	0	1	0	0	1	1	4	4	2	0	2	0	0	15
S. W. by S.			0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. W.	9	9	10	0	0	1	0	0	2	3	0	7	6	3	1	23
S. W. by W.			1	0	0	0	0	0	0	0	0	3	0	0	0	3
W. S. W.	0	0	5	1	0	0	0	0	1	0	2	2	0	1	0	7
W. by S.			0	0	1	0	0	0	0	0	0	0	0	0	0	1
West	5	17	3	1	2	4	0	0	3	1	13	0	9	3	2	43
W. by N.			2	0	2	0	0	0	0	0	4	2	0	0	0	8
W. N. W.	2	2	3	5	2	0	0	2	0	7	6	4	2	0	4	32
N. W. by W.			0	0	0	0	0	0	0	0	2	2	0	0	1	5
N. W.	6	14	2	1	0	6	6	10	6	2	0	4	0	2	7	44
N. W. by N.			1	0	0	0	0	0	0	0	0	0	2	0	2	4
N. N. W.	1	8	0	15	18	8	8	6	4	3	2	8	15	14	6	107
N. by W.			0	7	4	6	1	0	1	0	1	2	10	8	4	44
Variable and calm	2	22	3	1	6	3	8	6	0	2	13	2	0	2	2	45

[1] These observations were taken from May 1 to 7, on Parry's voyage from Hammerfest, Norway, to Spitsbergen; from June 20 to August 28, at Hecla Cove, lat. 79° 55′, lon. 16° 49′ E.; and during the remainder of the time, off the north and west coasts of Spitsbergen.

[2] These observations were taken on the ice north of Spitsbergen, between the island and lat. 82° 45′, the most northerly point ever reached by man.

[3] These observations were taken from August 28, 1819, to August 27, 1820; viz.: 314 days at Winter Harbor, lat. 74° 45′, lon. 110° 48′ W., 48 days along the southern shore of the island, and the remaining 4 days a little eastward of the island.

Course.	Felix.	Sheriff's.	Victoria.	AVERAGE FOR THE DIFFERENT MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds within the Arctic Circle.—*Continued.* Felix, Sheriff's, and Victoria Harbors.[1]																
North	1159	891½	498	360	154	145	245½	265½	169½	418½	337½	276	215	334	199	3119½
N. by E.	57	64	4	0	4	0	0	4½	0	34½	13½	60	2	20	24	162½
N. N. E.	852	240	24	44	76	45	225	235½	184½	262½	49½	79½	68	188	54	1461½
N. E. by N.	186	16	0	0	48	1	6	0	13½	12	1½	6	16	111	0	215
N. E.	477	248	40	8	45	69	108½	108½	166½	188	165	60	31	65	26	1025½
N. E. by E.	84	29	0	0	0	2	0	7½	6	0	33	9	0	24	0	81½
E. N. E.	42	76	5	5	18	9	9	12	16½	28½	46½	12	4	9	0	164½
E. by N.	48	7	0	0	0	2	0	3	0	1½	0	33	28	0	0	67½
East	192	307	180	18	36	67	49½	150	81½	111	112½	87½	81	45	104	843
E. by S.	10	37	2	6	1	2	0	12	0	10½	0	15	6	2	7	61½
E. S. E.	24	92	33	0	10	11	4½	33	6	19½	27	21	20	16	18	186
S. E. by E.	3	29	3	3	0	0	0	1½	0	3	0	0	0	29	0	36½
S. E.	121	332	262	65	76	49	34½	88½	81½	96	52½	39	69	111	117	809
S. E. by S.	0	17	12	0	0	1½	4½	0	3	0	0	0	10	7	6	32
S. S. E.	71	155	172	52	18	39	42	40½	19½	46½	30	24	31	77	46	465½
S. by E.	41	71	18	15	0	0	10½	9	6	36	4½	7½	37	30	18½	169
South	580	854	315	133	243	170	138	120	163½	96	160½	204	158	177	230	2043
S. by W.	74	69	10	37	6	20	6	12	24	0	22½	43½	12	2	4	189
S. S. W.	340	178	127	114	84	47	66	39	106½	33	36	49½	64	49	67	755
S. W. by S.	33	13	0	0	0	4	0	4½	6	0	0	15	24	0	0	58½
S. W.	596	681	68	206	162	154	181½	114	288	61½	63	57	137	78	98	1600
S. W. by W.	11	21	0	0	0	0	0	9	10½	0	9	10½	1	5	0	45
W. S. W.	147	219	19	3	27	33	66	55½	60	21	40½	79½	64	12	26	492½
W. by S.	41	35	1	2	4	10	16½	0	0	0	18½	25½	23	0	1	95½
West	463	658	82	70	62	114	121½	174	244½	102	147	106½	150	102	108	1501½
W. by N.	40	67	0	4	3	0	15	9	6	0	39	25½	37	6	0	188½
W. N. W.	187	298	8	13	7	43	67½	105	82½	37½	60	61½	88	44	22	631
N. W. by W.	20	39	0	1	0	2	1½	7½	0	18	16½	15	17	0	0	78½
N. W.	699	892½	192	171	122	157	218½	148½	180	114	231	102	319	143	209	2114½
N. W. by N.	64	156	4	16	0	4	42	18	12	6	48	85½	33	16	14	294½
N. N. W.	697	722	1319	333	455	424	280½	214½	102	96	273	325½	178	90	347	3168½
N. by W.	236	101	187	107	12	8	39	46½	4½	33	46½	150	134	35	15	630½
Calm and variable	1174	1026	802	346	367	595	166½	193½	216	262½	153	124½	175	399	476	3474

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Igloolik and vicinity.[2]													
North	14	8	12	9	4	14	6	3	2	4	2	4	82
N. by E.	0	2	0	0	0	2	0	0	0	0	0	0	4
N. N. E.	0	4	0	0	2	0	2	4	0	0	0	2	14
N. E. by N.	0	0	0	0	0	0	0	0	0	2	0	0	2
N. E.	2	0	2	0	6	2	2	4	0	10	0	2	30
N. E. by E.	0	0	0	0	0	0	1	0	0	0	0	0	1
E. N. E.	6	2	0	0	0	0	0	0	8	4	0	4	24
E. by N.	0	0	0	0	0	0	0	0	0	2	0	0	2

[1] These observations extend from October, 1830, to March, 1832, inclusive.

[2] These observations were taken from August 13, 1822, to August 12, 1823, viz.: 317 days at Igloolik, lat. 69° 21′, lon. 81° 42′ W.; 9 days on the coast of the island, 28 days in the strait of Fury and Hecla, lat. 69° to 70°, lon. 82° to 86° W.; and the remaining 11 days, off the west entrance of the same.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds within the Arctic Circle.—*Continued.*													
Igloolik and vicinity.—*Continued.*													
East	0	0	0	0	0	2	0	6	0	4	0	0	12
E. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0
E. S. E.	0	0	0	0	4	0	2	2	4	4	2	0	18
S. E. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	4	0	0	0	6	2	20	7	4	5	2	0	50
S. E. by S.	0	0	0	0	0	0	1	0	2	1	0	0	4
S. S. E.	2	0	0	0	2	0	6	1	4	2	0	0	17
S. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0
South	2	0	0	0	8	4	0	0	0	5	2	0	21
S. by W.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. W.	0	0	0	0	0	0	0	0	0	0	0	2	2
S. W. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. W.	2	0	4	0	4	6	0	2	0	0	4	0	22
S. W. by W.	0	0	0	0	0	0	0	0	0	1	0	0	1
W. S. W.	0	0	0	6	3	0	0	0	0	0	0	2	11
W. by S.	0	0	0	0	2	0	0	0	0	0	0	0	2
West	2	4	12	6	4	6	2	3	6	0	12	22	99
W. by N.	0	2	0	0	0	0	0	0	2	0	0	0	4
W. N. W.	4	2	4	2	1	2	2	4	6	1	6	0	34
N. W. by W.	0	0	0	0	0	0	0	6	2	0	0	0	8
N. W.	16	26	20	18	8	8	8	7	18	18	18	16	176
N. W. by N.	0	0	2	0	0	0	0	2	0	0	0	0	4
N. N. W.	6	6	6	15	6	10	2	7	2	4	10	6	80
N. by W.	2	0	0	0	2	2	2	0	0	0	0	2	10
Calm or variable	0	0	0	0	0	0	6	2	0	0	2	0	10
Winter Island and vicinity.[1]													
North	6	6	8	6	4	6	6	0	0	4	10	11	67
N. by E.	0	2	2	0	0	0	0	5	0	12	4	0	25
N. N. E.	1	0	4	2	4	4	6	0	0	6	8	2	37
N. E. by N.	0	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	2	0	0	3	8	0	4	3	3	2	2	0	27
N. E. by E.	0	0	0	0	0	0	0	0	2	0	2	0	4
E. N. E.	5	0	0	4	0	4	0	1	0	0	0	0	14
E. by N.	0	0	0	0	0	0	0	0	2	0	2	0	4
East	0	0	0	4	0	2	2	2	2	4	2	0	18
E. by S.	0	0	0	0	0	0	0	0	2	0	0	0	2
E. S. E.	0	0	2	2	2	8	4	0	4	5	0	2	29
S. E. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	0	0	0	2	2	6	4	2	4	4	2	8	34
S. E. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. E.	0	0	0	2	0	0	0	1	3	0	0	0	6
S. by E.	0	0	0	0	0	0	1	0	0	0	0	0	1
South	0	0	0	2	1	1	10	4	6	0	2	0	26
S. by W.	0	0	0	0	0	0	0	2	4	0	0	0	6
S. S. W.	0	0	0	0	0	2	0	6	2	0	0	2	12
S. W. by S.	0	0	0	0	0	1	0	0	1	0	0	0	2
S. W.	0	2	5	6	2	4	0	5	0	4	4	0	32
S. W. by W.	0	0	0	0	0	0	0	1	0	0	0	0	1
W. S. W.	0	0	0	2	3	0	0	2	0	0	0	0	7

[1] These observations were taken from August 1, 1821, to July 31, 1822, viz.: 269 days at Winter Island, lat. 66° 11′, lon. 83° 10′ W.; 66 days in various bays and straits within 100 miles of it; 6 days in the upper part of Hudson's Strait, and the remaining 25 days off the northeast coast of Melville Peninsula. The island itself lies just without the Arctic Circle (21 miles), but some of the observations were taken within.

Winds within the Arctic Circle.—*Continued.*

Winter Island and vicinity—*Continued.*

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
W. by S.	0	0	0	0	0	1	0	4	1	0	0	0	6
West	6	0	2	4	6	5	2	1	1	0	6	0	33
W. by N.	0	0	2	0	2	1	1	2	2	0	0	0	10
W. N. W.	10	3	13	4	2	0	0	12	2	2	2	4	54
N. W. by W.	0	0	0	0	0	0	4	2	4	0	0	0	10
N. W.	18	22	18	7	12	12	10	3	4	4	10	25	145
N. W. by N.	0	2	0	0	0	1	0	0	2	0	0	0	5
N. N. W.	14	17	6	6	14	0	2	4	0	6	4	8	81
N. by W.	0	2	0	0	0	0	4	0	7	9	0	0	22
Calm or variable	0	0	0	4	0	2	2	0	2	0	0	0	10

Baffin's Bay, and the contiguous Bays, Straits, and Inlets.

Course.	June, 1821.	June, 1824.	July, 1824.	July, 1819.	July, 1821.	Aug. 1819-20	Aug. 1822.	Aug. 1823.	Aug. 1824.	Sept. 1824.	Sept. 1819.	Sept. 1822.	Total.
North	0	1	19	4	9	6	0	4	7	2	0	6	
N. by E.	0			0	1	2	0	0			0	0	
N. N. E.	1			4	1	0	0	2			4	6	
N. E. by N.	0			0	3	0	0	0			0	0	
N. E.	0	4	10	0	3	0	0	3	3	5	3	2	
N. E. by E.	0			0	0	1	0	0			2	0	
E. N. E.	0			0	0	0	0	0			0	2	
E. by N.	0			0	2	4	0	0			0	0	
East	0	22	1	4	3	3	0	4	6	7	2	4	
E. by S.	2			1	1	0	0	0			0	2	
E. S. E.	0			0	0	0	2	0			2	2	
S. E. by E.	2			2	0	0	0	0			2	0	
S. E.	3	2	10	2	6	0	0	3	14	13	3	3	
S. E. by S.	0			2	1	0	0	0			2	0	
S. S. E.	4			5	2	0	2	6			2	0	
S. by E.	0			2	0	0	0	0			0	0	
South	0	17	5	0	2	1	2	5	7	11	3	2	
S. by W.	0			0	2	4	0	0			0	0	
S. S. W.	5			0	2	2	1	0			0	4	
S. W. by S.	0			0	2	0	0	0			0	0	
S. W.	2	6	3	5	1	7	3	2	5	2	2	3	
S. W. by W.	2			0	2	3	0	0			0	0	
W. S. W.	4			2	1	4	1	0			4	0	
W. by S.	0			0	2	0	0	0			0	0	
West	6	0	3	7	3	3	1	2	3	6	3	3	
W. by N.	0			0	1	0	2	0			0	0	
W. N. W.	2			0	0	1	5	0			2	3	
N. W. by W.	2			4	4	4	0	0			4	0	
N. W.	1	4	11	2	3	7	2	2	14	14	5	6	
N. W. by N.	0			0	0	0	0	0			0	0	
N. N. W.	2			11	2	2	0	5			5	2	
N. by W.	0			2	0	0	0	0			1	0	
Calm or variable	0	4	0	3	2	6	0	0	3	0	3	0	

NOTE.—The following table shows the latitudes and longitudes in which these observations were taken:—

Date.	Latitude.	Longitude.	Date.	Latitude.	Longitude.	Date.	Latitude.	Longitude.
June, 1821	58° to 62½°	11° to 55°	July, 1824	69° to 71°	52° to 62°	Aug. 1824	71° to 74°	61° to 64°
" 1824	59½ to 60	9½ to 51	Aug. 1819-20	72½ to 75	78 to 101½	Sept. 1819	60 to 67	60 to 64
July, 1819	61 to 64	45 to 76	" 1822	60 to	60 to	" 1822	60 to 67	60 to 64
" 1821	61 to 64	45 to 76	" 1823	64 to 69	62 to 66	" 1824	57 to 74	52 to 66

Winds within the Arctic Circle.—*Continued.*

Port Bowen.[1]

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	6	6	0	5	6	3	8	18	4	8	4	8	76
N. E.	5	4	1	0	6	2	2	17	4	5	0	2	48
E.	36	37	36	36	19	25	0	2	9	21	17	30	268
S. E.	3	0	0	4	2	5	10	0	9	13	16	9	71
S.	0	0	0	0	6	4	4	3	0	2	0	0	19
S. W.	0	0	4	0	2	9	6	5	6	0	5	2	39
W.	0	2	4	8	4	5	24	3	21	1	3	3	78
N. W.	6	5	15	5	15	7	8	14	5	10	11	4	105
Calm	6	2	2	2	2	0	0	0	2	2	4	4	26

Winds in Iceland and Greenland.

Eyafiord, Iceland. Reikiavik, Iceland.

Course.	June 1, 1811, to June 1, 1812.	June, 1812, to June, 1813.	TOTAL FOR THE SEPARATE MONTHS.																	
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
N.	161	148	10	18	27	11	46	44	49	29	20	22	19	19	35	23	18	9	29	78	42
N. E.	62	95	3	6	5	8	16	29	26	37	6	6	13	2	29	26	6	7	5	51	18
E.	86	83	0	2	7	3	10	7	12	20	14	34	9	1	31	4	6	22	54	3	24
S. E.	40	86	0	3	7	4	11	0	7	6	16	13	7	2	35	29	57	57	42	20	12
S.	154	144	36	24	36	23	18	7	16	13	28	24	37	36	9	21	12	12	17	2	0
S. W.	156	121	36	25	31	26	4	31	4	20	30	14	25	31	0	15	6	21	4	7	6
W.	101	133	34	24	27	41	19	6	5	4	20	8	16	30	11	6	6	23	4	9	12
N. W.	141	64	17	37	19	20	22	24	8	4	6	4	15	29	15	26	30	17	19	0	0
Calm	85	103	5	7	9	19	22	12	29	20	22	13	18	12	21	0	27	0	0	16	6

New Herrnhutt, Greenland.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	2	1	1	5	4	5	3	11	5	1	0	6	44
N. E.	9	3	5	5	6	2	2	1	0	2	6	8	49
E.	13	12	24	7	12	8	6	4	16	7	20	15	144
S. E.	0	3	0	0	0	0	1	0	0	1	1	0	6
S.	2	7	0	4	0	0	6	5	5	14	2	2	47
S. W.	2	2	1	4	4	3	3	7	2	2	1	0	31
W.	3	0	0	4	5	12	10	3	2	4	0	0	43
N. W.	0	0	0	1	0	0	0	0	0	0	0	0	1
Calm	0	0	0	0	0	0	0	0	0	0	0	0	0

Frederichthal, Greenland.[2]

N.	28	17	18	1						31	21	0	
N. E.	0	0	0	0						0	0	0	
E.	0	0	0	0						0	0	0	
S. E.	0	0	3	10						0	6	3	

[1] These observations were taken at Port Bowen, from September 28, 1824, to July 19, 1825, 46 days in Prince Regent's Inlet, and the remaining 24 days, to complete the year, between the parallels of latitude 73° 40′ and 74° 24′, and in longitudes ranging from 66° 52′ to 85° 48′; 17 days out of the 24 being spent west of longitude 80°.

[2] These observations were taken from October, 1841, to April, 1842, inclusive.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds in Iceland and Greenland.—*Continued.*													
Frederichthal, Greenland.—*Continued.*													
S.	2	6	10	14						0	0	25	
S. W.	0	0	0	0						0	0	0	
W.	0	0	0	0						0	0	8	
N. W.	0	5	0	5						0	8	0	

Winds in British and Russian America.

Fort Enterprise.[1]

Course.	Jan.	Feb.	Mar.	April.	May.
North	8	9	11	12	0
N. by E.	1	6	1	2	0
N. N. E.	2	15	0	8	0
N. E. by N.	1	1	1	0	1
N. E.	4	19	11	14	2
N. E. by E.	0	1	8	4	0
E. N. E.	4	20	11	23	1
E. by N.	7	7	1	2	1
East	17	12	14	23	2
E. by S.	2	8	6	10	5
E. S. E.	0	1	9	0	5
S. E. by E.	0	0	0	0	3
S. E.	0	2	7	1	5
S. E. by S.	0	1	1	0	3
S. S. E.	0	0	0	1	0
S. by E.	0	1	3	2	1
South	4	6	3	2	0
S. by W.	1	0	2	2	1
S. S. W.	0	4	3	2	0
S. W. by S.	1	0	0	1	1
S. W.	4	6	18	3	0
S. W. by W.	2	0	2	0	0
W. S. W.	13	12	9	3	3
W. by S.	4	5	8	3	3
West	22	4	11	4	2
W. by N.	3	4	5	2	0
W. N. W.	10	2	3	6	0
N. W. by W.	1	2	4	0	0
N. W.	5	14	15	5	0
N. W. by N.	0	0	6	5	0
N. N. W.	0	3	2	10	0
N. by W.	0	2	0	6	0
Calm or variable	3	9	20	21	2

Fort Reliance, Great Slave Lake.

Course.	Jan.	Feb.	Mar.	April.	May.	Part of Oct.	Nov.	Dec.	Total.
North	3	9	14	6	0	0	3	13	48
N. by E.	0	0	0	0	0	0	0	0	0
N. N. E.	0	0	0	0	0	0	0	5	5
N. E. by W.	0	0	0	0	0	0	0	0	0
N. E.	11	38	26	37	27	0	42	42	223
N. E. by E.	0	0	0	0	0	0	0	0	0
E. N. E.	3	6	12	3	12	5	3	9	53
E. by N.	3	0	5	6	6	0	14	6	40
East	6	2	5	25	57	22	21	23	161
E. by S.	0	0	3	0	0	6	6	3	18
E. S. E.	0	0	0	3	9	0	6	0	18
S. E. by E.	0	0	0	0	0	0	0	0	0
S. E.	0	5	2	4	3	3	11	3	31
S. E. by S.	0	0	0	0	0	0	0	0	0
S. S. E.	0	0	0	0	0	0	0	0	0
S. by E.	0	0	0	0	0	0	0	0	0
South	0	4	3	2	0	10	2	2	23
S. by W.	0	0	0	0	0	0	4	6	10
S. S. W.	3	0	0	0	0	0	0	3	6
S. W. by S.	0	0	0	0	0	0	0	0	0
S. W.	34	23	29	6	2	6	23	30	153
S. W. by W.	0	0	0	0	0	0	0	0	0
W. S. W.	8	2	2	2	2	0	0	0	16
W. by S.	3	0	2	0	0	0	0	9	14
West	5	12	7	17	7	0	2	3	53
W. by N.	6	0	3	0	0	0	4	0	13
W. N. W.	2	2	2	2	2	0	0	0	10
N. W. by W.	0	0	0	0	0	0	0	0	0
N. W.	6	3	4	8	4	0	16	2	43
N. W. by N.	0	0	0	0	0	0	0	0	0
N. N. W.	0	0	0	0	0	0	6	0	6
N. by W.	0	0	0	0	0	0	0	0	0
Calm and variable	96	62	66	59	6	0	17	27	333

[1] These observations were taken from September 1, 1820, till August 31, 1821, but were published *in full* only from January 12 to May 9. In the published *abstracts* for the year, the winds are divided merely into easterly and westerly, as follows:—

Easterly	14	15½	15½	18	24	24	17½	15	15	22½	18½	10½	210½
Westerly	17	12½	15½	12	7	6	19½	15	15	17½	11½	20½	148½

The station is about 300 miles north of Great Slave Lake.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds in British and Russian America.—*Continued.*													
Sitka,[1] Russian America.													
North	11	6	78	42	12	36	42	18	18	30	12	6	311
N. E.	127	7	198	90	24	42	78	42	18	30	30	18	704
East	48	14	222	233	156	162	90	156	246	240	270	210	2047
S. E.	167	330	48	59	114	60	6	90	102	174	90	204	1444
South	3	48	48	52	78	60	66	90	60	90	30	78	703
S. W.	5	31	48	113	156	66	120	54	72	18	42	36	42
West	57	18	66	65	144	186	168	108	42	72	72	48	1041
N. W.	41	10	36	53	30	72	36	24	36	6	24	48	416
Calm	279	237	0	14	18	36	120	162	120	66	150	96	1298

Fort Franklin, Great Bear Lake.

Course.	1825.				1826.										1827.				
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May.
N. to N. E. by N.	3	4	2	2½	1	1	3½	0	0	0	0	0	6½	6	0	1	0	1	0	0
N. E. to E. by N.	7	1	13	6	9	6	3	8	4	3	7	4	4	4½	10½	6	3	6	2	0
E. to S. E. by E.	9	4	17	3	16½	6	17	28	34	16	29	9	5	5½	11	9½	17	38	31	23½
S. E. to S. by E.	2	14	6	4	2½	1	3½	5	6	16	7	4	18½	9½	5½	4½	4	4	14	2
S. to S. W. by S.	0	2	1	3	0	0	0	0	0	0	1	0	1½	0	0	0	1	0	0	1
S. W. to W. by S.	0	1	1	1	1	½	1½	½	3	0	3	3	½	½	4	1½	0	1	1	0
W. to N. N. by W.	2	6½	8	16	5	10	9½	2	0	3	4	4	4	14	4	6	4	4	4	0
N. W. to N. by W.	6	15	10	19	23	22	18½	10	13	8	11	24	15½	21	20	27½	22	6	6	3½
Calm or variable	7	3½	4	7½	4	9½	9½	6½	2	0	0	2	6½	4	7	7	5	0	2	2

Norway House,[2] Hudson's Bay Territory.

Course.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	TOTAL FOR THE SEPARATE MONTHS.												Total.
								Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
North	49	58	92	85	43	41	60	23	38	53	30	31	27	38	24	32	50	51	31	428
N. E.	55	38	34	37	60	51	47	25	34	30	47	43	27	16	13	15	23	24	25	322
East	13	14	9	4	12	11	29	7	6	6	8	7	6	9	4	4	13	13	9	92
S. E.	31	17	14	10	31	27	22	18	12	11	12	10	9	9	10	22	14	14	11	152
South	61	85	69	66	61	78	100	31	32	44	42	47	59	57	48	38	28	44	50	520
S. W.	34	25	24	30	27	29	12	24	16	14	14	16	19	13	20	11	9	7	15	181
West	15	11	16	18	14	17	19	21	9	6	3	3	2	4	14	18	9	9	12	110
N. W.	53	43	54	93	64	61	86	46	30	26	32	20	16	32	49	39	48	30	36	404
Calm or variable	54	74	58	23	53	50	40	22	20	27	22	40	45	39	35	31	23	18	28	347

[1] March to December, 1842, and January and February, 1844.

[2] "Norway House is situated on a branch of Nelson's River, about 20 miles due north of the outlet of Lake Winnepeg, and is supposed to be about 400 feet above the level of the sea."—D. Ross.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Winds in British and Russian America.—*Continued.*													
Nain, Labrador.													
North	34	16	37	13	6	8		5	9	12	8	12	160
N. E.	1	9	8	9	21	23		2	3	2	4	0	82
East	0	0	4	0	6	17		7	24	7	12	0	77
S. E.	0	0	0	0	4	0		0	0	2	1	0	7
South	0	1	0	1	0	0		1	0	2	1	0	6
S. W.	0	1	0	1	1	1		3	2	3	0	0	12
West	16	19	4	3	7	5		28	17	22	29	30	180
N. W.	11	10	9	33	17	4		14	5	12	5	20	140
Calm	0	0	0	0	0	2		0	0	0	0	0	2

St. John's, Newfoundland.[1]

Course.	1840.	1841.	1842.	1843.	AVERAGE FOR THE SEPARATE MONTHS, IN HOURS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	33	45	28	24	56	40	63	20	28	39	18	24	21	72	52	96	529
N. N. E.	46	38	31	43	12	64	87	60	96	24	9	24	48	56	72	48	600
N. E.	60	84	40	53	68	60	78	56	124	68	15	87	78	84	128	0	841
E. N. E.	2	9	8	4	8	16	12	4	0	0	6	0	6	16	16	0	84
East	18	28	8	13	16	8	27	20	36	12	18	21	9	24	40	24	255
E. S. E.	11	2	0	3	0	4	3	8	12	12	0	0	0	8	12	0	59
S. E.	54	84	25	34	44	36	42	48	164	87	75	66	57	36	8	48	711
S. S. E.	11	28	12	12	16	16	12	36	20	33	15	6	9	16	12	48	289
South	59	41	22	18	52	56	27	48	20	36	48	33	57	56	44	48	525
S. S. W.	21	31	34	22	32	36	15	28	12	45	66	30	39	44	8	36	391
S. W.	132	89	78	101	104	32	78	140	56	123	186	228	150	160	44	132	1433
W. S. W.	29	31	32	20	36	12	45	40	24	27	63	39	27	16	32	60	421
West	94	72	72	56	140	68	84	80	68	99	102	99	87	76	100	48	1051
W. N. W.	22	33	19	14	24	60	36	24	4	30	21	6	51	12	28	24	320
N. W.	40	54	32	19	84	120	63	52	16	27	18	0	30	32	76	48	566
N. N. W.	6	19	15	10	40	36	21	8	20	15	8	0	9	4	8	60	224
Calm	30	46	27	42	8	20	42	40	32	57	81	78	42	32	40	24	496

[1] Mr. Templeman, to whom I am indebted for the foregoing observations, accompanies them with the following description of his locality:—

"The town is situated on the *north* side of the harbor, on the declivity of an eminence, the highest point of which does not, I should imagine, exceed 250 feet above the level of the sea. At the back of this (north) there is a succession of valleys and hills, the highest of which must, I should think, be 700 feet above the level. The south side of the harbor is a high mountain ridge from 700 to 800 feet high; the harbor is open to the sea E. S. E. and W. N. W., so that (the land being high on both sides of the narrows) it is often difficult, except when it blows hard, to say precisely how the wind is outside when between E. N. E. and S. S. W. We have nothing approaching to *mountains* in the immediate vicinity, and the highest hill does not exceed 1000 feet, and that is 4 or 5 miles from the town. It may, I think, be laid down as a general rule that, except when the wind is very light and blowing between E. N. E. and S. S. W., it is not subject to any local influence." . . . . "There are no extensive rivers in this part of the colony; that which empties itself into the harbor is not more than 30 feet wide at the broadest part, and very shallow."

Winds in British and Russian America.—*Continued.*

Michipicoten, Canada.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	2	4	4	3	1	2	0	3	3	8	3	5	38
N. N. E.	0	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	4	4	4	1	8	3	3	3	7	5	9	9	60
E. N. E.	0	2	1	2	4	1	1	1	2	1	3	3	21
East	17	14	14	9	10	3	5	6	15	3	16	19	131
E. S. E.	0	1	0	1	5	2	0	0	1	0	1	0	11
S. E.	8	14	9	8	4	3	4	7	.3	1	1	4	66
S. S. E.	0	0	0	1	0	0	0	0	0	0	0	0	1
South	6	5	2	6	5	6	2	2	2	8	7	7	58
S. S. W.	0	0	0	0	0	1	0	0	0	0	0	0	1
S. W.	5	9	22	20	17	16	16	11	10	14	5	9	154
W. S. W.	0	0	0	1	2	3	3	1	2	0	0	3	15
West	18	2	5	4	6	19	28	23	14	14	9	3	145
W. N. W.	0	0	1	2	0	1	0	3	0	5	1	0	13
N. W.	2	1	0	2	0	0	0	2	1	3	5	0	16
N. N. W.	0	0	0	0	0	0	0	0	0	0	0	0	0

Quebec, Canada.

Course.	1832.	1833.	1834.	1835.	1836.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
East	121	111	120	109	109	44	41	50	59	80	53	45	38	31	37	38	54	570
West	220	205	211	224	209	98	85	88	70	56	76	98	102	104	101	104	92	1069
Variable	25	49	84	82	48	18	16	17	21	19	21	12	15	15	17	8	9	188

Montreal, Canada.

Course.	1836.	1837.	1838.	MONTHS OF 1838. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Wilberforce, Canada, Dec. 1831.	Quebec, May, 1765, to May, 1766.
N.	131.70	113.00	133.50	15.50	4.00	7.50	5.25	6.50	5.50	3.00	4.50	5.00	1.50	2.50	6.00	9	3
N. E.	50.02	77.00	26.00	.00	.00	.50	.00	3.50	1.00	1.00	.50	4.00	1.50	1.00	.00	0	1
E.	24.84	15.00	14.50	.00	.00	1.00	.25	1.50	2.00	.00	1.00	.00	1.00	.50	.00	3	25
S. E.	17.64	22.00	24.00	.00	.00	.00	2.00	3.00	.00	1.00	.00	.00	4.00	2.00	.00	0	8
S.	111.32	77.00	98.50	5.00	1.00	1.00	3.75	2.50	4.50	2.00	11.00	1.50	3.00	5.50	8.50	36	1
S. W.	145.34	120.00	98.00	3.00	4.00	.00	5.50	5.50	4.00	6.50	3.50	5.00	5.50	4.00	2.50	12	8
W.	159.82	203.00	189.50	4.00	12.00	2.00	10.75	5.00	6.00	9.50	7.50	8.50	10.50	9.50	9.50	9	54
N..W.	75.32	77.00	60.00	2.50	1.00	1.00	2.50	1.50	1.00	4.00	3.00	2.00	2.00	5.00	4.50	0	12

Winds in British and Russian America.—*Continued.*

Toronto, Canada.

By Osler's Anemometer.

Course.	1841.	1842.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Windsor, Nova Scotia, 1794.	Iliuk, Aleutian Islands, 1½ years.
	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.		
North	795	450	27	57	164	103	112	125	181	77	126	170	42	111	1245	71	92
N. N. E.	348	333	24	25	125	67	26	55	67	50	97	42	36	67	681	21	21
N. E.	330	208	66	22	76	35	61	19	10	37	75	10	67	60	538	21	42
E. N. E.	310	470	43	33	98	94	38	40	28	110	62	87	108	39	780	4	6
East	460	519	26	85	85	173	69	133	52	105	42	69	93	47	979	7	28
E. S. E.	395	278	51	28	54	64	46	108	32	66	71	56	53	44	673	7	15
S. E.	326	333	30	29	44	73	54	71	66	84	70	37	91	10	659	12	49
S. S. E.	301	264	9	19	12	38	69	65	73	77	88	41	46	28	565	14	34
South	315	373	55	33	75	57	51	90	109	84	30	51	17	36	688	26	170
S. S. W.	363	547	69	76	89	36	98	87	139	66	50	27	58	165	910	16	41
S. W.	305	448	121	134	83	48	31	89	62	28	32	42	131	52	753	33	106
W. S. W.	282	346	106	107	20	28	16	19	29	7	40	49	132	75	628	12	45
West	384	356	148	72	55	75	2	31	10	14	22	79	62	146	740	45	85
W. N. W.	326	400	49	108	49	83	21	23	25	2	78	71	109	168	726	11	32
N. W.	357	412	108	93	55	59	53	17	49	30	35	136	88	51	769	36	50
N. N. W.	413	513	81	48	106	98	209	41	100	33	58	79	81	42	926	22	49
Calm	2669	2409	475	375	379	351	397	472	505	618	452	442	260	352	5078		0

Winds in the United States.

Hancock Barracks, Maine.

Course.	1829–30.[1]	1831 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1829–30. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	36	731	7	5	2	1	2	0	0	0	2	8	5	4
N. E.	143	650½	17	13	18	14	11	15	7	13	9	4	8	14
E.	73	296½	1	6	8	7	12	7	10	5	5	●	6	8
S. E.	170	644½	9	5	15	16	16	21	18	15	13	14	13	15
S.	24	907½	0	0	1	3	1	3	7	7	0	2	0	0
S. W.	70	255½	0	5	6	3	9	7	7	12	6	6	6	3
W.	5	256	0	0	0	0	1	1	1	0	0	2	0	0
N. W.	213	641½	28	22	17	16	12	6	12	10	25	19	23	23

Eastport, Maine.

Course.	1822 to 1826, inclusive.[1]	1831 to 1835, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1822 TO 1826, INCLUSIVE. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	190	216½	30	16	19	19	5	8	10	17	13	8	23	22
N. E.	125	164½	13	16	8	10	6	7	2	20	14	9	12	8
S. E.	124	152½	8	8	16	17	17	14	11	7	3	9	6	8
S.	52	244½	1	3	10	2	5	5	1	4	4	7	5	5
E.	431	659½	11	15	23	33	48	56	79	65	42	28	14	17
S. W.	242	347½	14	18	15	20	26	21	13	17	23	30	27	18
W.	267	411½	42	24	25	20	15	10	20	12	24	26	18	31
N. W.	398	359½	36	41	39	29	33	29	19	15	27	38	46	46

[1] For the separate years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Hampden, Maine.[1]

Course.	1844.	1845.	1846.	PROPORTION FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	127	114	94	11.00	11.25	8.50	10.00	4.67	10.67	3.66	7.50	9.25	11.00	10.25	15.25	113.00
N. E.	67	60	54	6.50	4.00	5.25	2.67	7.33	6.33	5.00	7.00	2.75	5.25	8.50	4.00	64.58
E.	16	12	9	1.25	1.00	1.50	1.33	.67	.67	1.33	1.50	.25	2.00	1.75	.25	13.50
S. E.	137	122	54	3.75	4.75	7.25	9.00	1.70	8.33	11.33	9.25	5.75	14.75	9.50	4.25	104.92
S.	329	312	382	17.25	14.50	25.50	24.00	34.00	33.67	44.67	37.75	34.50	23.00	14.50	20.75	324.08
S. W.	129	122	165	18.25	15.00	12.25	8.67	10.33	15.33	12.67	5.75	8.50	15.75	13.75	13.50	149.75
W.	209	235	217	9.25	19.25	20.00	23.67	15.67	22.00	17.00	15.50	14.25	12.25	21.25	19.25	209.33
N. W.	387	333	311	45.25	38.00	30.75	30.33	22.33	16.00	20.00	16.25	30.75	28.50	33.25	39.50	350.92

Portland, Maine.

Course.	1827 to 1830, inclusive.[2]	6 years since 1830.[2]	TOTAL FOR THE SEPARATE MONTHS FROM 1827 TO 1830, INCLUSIVE. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Biddeford, Maine, 1843.	Fort Fairfield, Maine, 1842.	Fort Kent, Maine, 1843.
N.	83	201½	18	11	1	15	9	4	2	2	2	8	10	6	70	89	88
N. E.	119	211	15	8	15	13	13	9	3	3	11	7	11	11		10	10
E.	84	153½	7	4	4	9	9	10	11	7	11	7	1	4	71	21	21
S. E.	170	153½	9	7	16	15	26	21	15	14	14	12	10	11		20	20
S.	311	267½	3	21	21	19	34	30	42	41	34	39	14	13	84	107	46
S. W.	249	349	26	13	18	21	16	20	32	25	19	21	18	20		256	87
W.	245	601½	25	32	18	16	15	14	16	17	12	15	36	29	140	154	77
N. W.	201	252	21	17	31	12	2	12	3	15	17	20	21	30		122	66

Saco, Maine.

Course.	1844.	1845.	1846.	AVERAGE FOR THE SEPARATE MONTHS.[3] Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	172	333	234	400	268	300	200	196	248	129	153	216	219	231	336
N. E.	86	63	50	88	72	108	44	76	40	36	30	57	81	66	129
E.	27	21	21	4	4	12	60	64	24	21	30	57	39	15	9
S. E.	97	52	47	36	52	116	120	88	48	45	99	72	87	72	18
S.	222	230	241	60	96	196	332	336	248	336	405	249	222	132	42
S. W.	128	56	115	32	48	96	64	104	172	171	144	99	114	69	69
W.	155	87	85	108	92	68	56	92	164	189	84	135	141	114	144
N. W.	211	172	146	328	348	156	156	100	88	117	81	120	144	309	300

[1] The average for the separate months extends from August 1, 1843, to April 1, 1847.

[2] For the separate years, see the published volumes of the U. S. Army Meteorological Register.

[3] The average for the separate months extends from July 1, 1843, to December 31, 1846.

Winds in the United States.—*Continued.*

Course.	Bath, Maine.			Owl's Head, Maine, 6 months.	Steuben, Maine, 3 months.	South Thomaston, Maine, 10 months.	South-west Harbor, Maine, 1 month.	Vinal Haven, Maine, 2 months.	Winthrop, Maine, 2 months.
	1832 to 1839, inclusive.[1]	1840.	1841.						
N.	17	8	9	59	23	67	4	19	7
N. E.	543	43	52	54	94	283	7	25	4
E.	14	2	12	68	4	38	14	7	4
S. E.	497	44	40	78	31	306	8	17	2
S.	27	12	15	89	12	60	9	11	7
S. W.	230	117	105	116	141	427	8	57	5
W.	42	29	13	282	48	154	12	16	4
N. W.	1065	100	99	180	53	317	18	15	6
Calm.	218	11	20	41	9	35	8	14	0

Course.	Addison, Maine, 3 months.	Bangor, Maine, 6 months.	Brewer, Maine, 3 months.	Gardiner, Maine, 4 months.	Monhegin Island, Maine, 3 months.	Machias, Maine, 1 month.	Charlestown, New Hampshire, 7 months.	Keene, New Hampshire, 5 months.	Peterborough, New Hampshire, 1 month.	White Island, New Hampshire, 1 month.
North	6	76	101	10	3	9	119	32	4	1
N. N. E.	14	1	0	29	1	1	8	0	0	3
N. E.	24	26	43	57	12	8	325	10	8	9
E. N. E.	31	0	0	1	6	0	0	5	4	0
East	11	7	16	1	7	13	41	27	4	5
E. S. E.	36	5	0	5	2	0	1	3	0	0
S. E.	5	24	38	50	8	18	47	37	18	4
S. S. E.	20	0	0	10	4	0	0	0	0	0
South	2	28	20	9	2	10	72	67	1	38
S. S. W.	42	1	0	9	1	4	12	7	0	0
S. W.	8	56	71	73	4	20	274	94	21	14
W. S. W.	14	1	0	10	0	0	5	1	0	2
West	17	52	218	8	3	9	99	67	22	9
W. N. W.	37	0	0	23	0	2	5	6	0	1
N. W.	41	229	162	147	1	28	246	362	70	5
N. N. W.	33	0	0	16	0	2	41	5	0	1
Calm	19	527	0	32	0	0	4	0	1	0

Portsmouth, New Hampshire.

Course.	1827 to 1830, inclusive.[2]	1831 to 1839, inclusive.[2]	1842.	TOTAL FOR THE SEPARATE MONTHS FROM 1827 TO 1830, INCLUSIVE.											
				Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	71	212	22	22	5	6	7	3	1	4	1	7	3	6	6
N. E.	187	432	40	10	6	16	33	21	14	13	12	21	16	13	12
E.	91	190	14½	2	4	7	12	13	10	10	4	12	6	6	5
S. E.	44	133	6	0	2	3	2	6	5	7	6	4	5	2	2
S.	357	634	75	10	11	28	24	44	53	36	55	31	38	16	11
S. W.	175	399	50½	13	20	10	8	12	13	21	14	9	16	14	25
W.	222	600	59	33	25	19	11	10	11	17	11	13	16	24	32
N. W.	314	687	98	34	40	34	23	15	13	16	21	23	24	40	31

[1] For the separate years, see American Almanac.

[2] For the separate years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Dartmouth College, New Hampshire.

Course.	1835.	PROPORTION FOR THE SEPARATE MONTHS.[1]												
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	79	15½	6½	5½	6½	9½	6½	9½	8	2	6	21½	16	113.17
N. E.	35	6	2½	3½	2	6	6½	3	2½	0	0	5	5½	42.50
E.	11	1	0	½	5	2½	7½	3	1½	0	0	½	½	21.83
S. E.	35	4½	4½	11½	10½	19	14½	6	3½	10	7	5½	4	100.67
S.	51	11½	3½	15½	13½	9	7½	12½	9	2	4	9½	4	101.33
S. W.	382	13½	16	20½	16½	13	18	31	34	32	58	14½	14½	276.33
W.	78	11	13½	11	8½	6½	8	9	7½	1	2	6½	8½	92.83
N. W.	375	30½	37½	23½	27½	27½	21½	19	27	44	21	27½	37½	343.84

Dover, New Hampshire.

Course.	1835.	1836.	1837.	1838.	1839.	1842.	MONTHS OF 1842.										
							Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	5	2	1	5	4	2	1	1	0	0	0	0	0	0	0	0	0	0
N. E.	59	79	62	81	80	65	2	2	9	10	11	5	1	6	5	0	5	9
E.	8	10	10	9	8	1	0	1	0	0	0	0	0	0	0	0	0	0
S. E.	40	59	77	56	84	72	2	4	5	7	6	10	6	16	5	4	7	0
S.	8	8	1	2	5	2	0	0	0	0	1	0	0	1	0	0	0	0
S. W.	91	78	86	89	83	91	16	6	9	5	3	8	19	1	10	9	2	3
W.	30	38	28	29	27	14	1	2	0	0	0	2	2	1	3	2	1	0
N. W.	124	100	100	94	74	118	9	12	8	8	10	5	3	6	7	16	15	19

Course.	Burlington, Vermont, 1850.	Middlebury, Vermont, 1 month.	Fayetteville, Vermont.		Grafton, Vermont, 3 months.	Bennington, Vermont, 4 months.	Newbury, Vermont, 1823 to 1849, inclusive.[2]	Cabotville, Massachusetts, 3 months.	Edgartown, Massachusetts, 1 month.	Medfield, Massachusetts, 2 months.	Northampton, Massachusetts, 4 months.
			One year.	One year.							
N.	105	29	12	18	39	0	7802	5	1	26	52
N. E.	11	1	31	44	45	9	131	42	10	38	49
E.	11	0	14	7	23	8	122	3	2	45	5
S. E.	23	0	9	13	78	77	181	29	6	20	11
S.	146	40	52	56	34	1	6810	15	0	28	30
S. W.	10	0	78	57	98	12	1267	58	7	73	86
W.	25	4	50	66	90	9	739	7	9	166	58
N. W.	34	10	119	105	174	255	1866	83	58	95	79
Calm	0	0	0	0	5	0	0	1	0	0	0

[1] This average is for the entire year 1835, the months of January, February, March, April, May, June, July, August, and November, 1836, and November and December, 1834.

[2] For abstracts for these years separately, see Annual Report of the Regents of the University of the State of New York for 1850.

Winds in the United States.—*Continued.*

Mendon, Massachusetts.

Course.	1842.	1843.	1844.	1845.	1846.	TOTAL FOR THE SEPARATE MONTHS OF 1845–46. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	0	2	1	3	3	0	0	0	0	1	0	0	0	2	1	0	1
N. E.	52	71	66	50	59	11	9	7	11	11	8	8	6	6	10	14	8
E.	0	8	7	11	23	1	2	2	1	5	4	8	5	1	2	6	2
S. E.	38	18	16	6	8	1	0	1	2	0	0	4	0	0	2	1	2
S.	0	18	15	8	7	1	0	2	2	0	0	1	0	1	5	3	0
S. W.	170	135	169	156	150	18	12	27	27	31	36	31	39	32	22	17	14
W.	0	7	2	21	29	9	6	7	2	4	4	2	1	6	2	3	4
N. W.	105	111	85	110	86	21	26	16	15	10	8	18	11	12	18	16	30

Boston, Massachusetts.

Course.	1828.	1831, 2, 4, and 6.
N.	11	82
N. E.	59	275
E.	43	89
S. E.	21	110
S.	31	51
S. W.	96	411
W.	30	78
N. W.	75	421

Williams College, Massachusetts.

Course.	1816.	1817.	1818.	1819.	1820.	1821.	1822.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.	Total.
N.	0	0	0	0	0	0	0	0	0	0	0	8	17	11	29	21	22	45	119	63	78	72	60	545
N. E.	6	2	1	0	5	2	2	4	8	6	5	42	17	15	25	12	17	11	31	28	25	6	10	280
E.	10	1	9	5	10	5	3	2	2	18	8	18	68	76	65	41	61	97	96	114	123	48	77	967
S. E.	74	91	90	137	148	82	64	134	106	63	96	106	228	164	258	223	191	192	174	142	146	204	140	3252
S.	95	77	95	228	208	213	287	258	150	175	209	158	107	129	86	115	148	138	165	170	169	156	146	3682
S. W.	71	99	71	85	84	60	56	52	151	99	97	85	121	79	58	74	36	57	56	84	46	49	65	1735
W.	0	14	16	17	13	14	4	4	9	31	14	109	123	134	74	104	51	150	161	164	111	120	172	1609
N. W.	279	260	269	586	587	686	678	607	602	556	543	477	377	445	471	479	478	325	292	327	399	440	413	10676

Worcester, Massachusetts.

Course.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	TOTAL FOR THE SEPARATE MONTHS OF 1843. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	60	84	27	78	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
N. E.	114	162	41	129	61	57	57	2	3	3	2	13	2	3	3	2	3	14	7
E.	0	6	0	3	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0
S. E.	78	51	11	51	23	15	4	0	0	0	0	0	0	0	2	0	1	0	1
S.	102	.72	5	36	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
S. W.	231	246	134	237	102	107	70	3	2	4	5	3	8	7	11	13	5	5	4
W.	60	39	24	138	29	29	1	0	0	0	0	0	0	0	0	0	0	0	0
N. W.	360	321	83	270	113	120	76	7	9	5	5	3	4	7	3	5	7	5	16

Winds in the United States.—*Continued.*

Nantucket, Massachusetts.

Course.	1838.	1840.	1841.	1837 and 1842.[1]	4 months of 1833.[2]	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	36	57	62	46	4	6	22	22	19	20	7	17	20	24	21	12	15	205
N. N. E.	18	23	49	27	2	8	8	13	15	5	12	7	8	15	5	16	7	119
N. E.	68	64	88	47	6	18	10	25	21	18	15	15	33	51	31	25	11	273
E. N. E.	8	10	13	19	3	6	2	8	2	2	3	1	5	10	8	2	4	53
East	16	28	36	30	4	4	12	17	13	7	6	5	15	12	4	10	9	114
E. S. E.	8	8	25	24	6	8	5	8	2	13	8	3	2	1	2	4	11	67
S. E.	28	55	38	30	7	8	17	9	18	11	16	5	18	18	15	7	15	157
S. S. E.	10	9	17	21	2	6	7	3	2	4	5	4	6	5	8	2	7	59
South	34	51	43	25	11	11	11	12	24	23	15	18	10	19	12	6	3	164
S. S. W.	20	17	42	40	8	14	6	9	14	25	11	9	10	8	8	10	3	127
S. W.	144	108	160	102	6	20	34	30	49	51	62	63	60	36	50	31	28	514
W. S. W.	44	19	46	27	7	12	14	8	13	18	22	27	8	12	7	6	7	149
West	38	52	72	31	7	25	28	11	12	23	8	11	4	14	25	11	23	195
W. N. W.	25	32	30	25	7	25	16	6	11	9	2	4	2	5	10	13	18	121
N. W.	109	162	93	60	19	44	45	68	32	17	9	19	21	26	44	79	63	462
N. N. W.	21	37	46	42	6	22	12	28	11	5	3	9	8	11	11	18	19	152

New Bedford, Massachusetts.[3]

Course.	1818.	1819.	1820.	1821.	1822.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N. & N. W.	104	105	104	110	93	101	101	96	85	115	110	113	92	120	92	105	227	184	166	107	85	78	70	75	114	140	192	208	1646
N. & N. E.	71	69	63	65	55	81	71	76	65	61	60	61	86	50	56	59	84	76	100	123	86	57	60	95	95	98	85	90	1049
S. & S. E.	47	51	89	67	71	50	48	53	73	71	64	56	56	56	57	58	58	59	82	88	115	101	85	104	92	69	56	58	967
W. & S. W.	143	140	110	123	146	133	146	140	142	118	131	135	131	139	161	143	127	133	148	162	210	244	281	221	179	189	147	140	2181
N.	17	18	17	18	16	17	17	16	14	19	18	19	15	20	15	18	38	31	28	18	14	13	12	12	19	23	32	34	274
N. E.	35	34	32	32	28	40	36	38	32	31	30	30	43	25	28	29	42	38	50	61	43	29	30	47	48	49	42	45	524
E.	36	35	31	33	27	41	35	38	33	30	30	31	43	25	28	30	42	38	50	62	43	28	30	48	47	49	43	45	525
S. E.	24	27	46	35	37	26	25	28	38	37	33	28	29	28	29	30	30	31	42	45	59	52	44	54	48	36	29	30	500
S.	23	24	43	32	34	24	23	25	35	34	31	28	27	28	28	28	28	28	40	43	56	49	41	50	44	33	27	28	467
S. W.	96	93	73	82	97	89	97	93	95	79	87	90	87	93	107	96	85	89	99	108	140	163	187	147	119	126	98	93	1454
W.	47	47	37	41	49	44	49	47	47	39	44	45	44	46	54	47	42	44	49	54	70	81	94	74	60	63	49	47	727
N. W.	87	87	87	92	77	84	84	80	71	96	92	94	77	100	77	87	189	153	138	89	71	65	58	63	95	117	160	174	1372

[1] January 1 to August 1, 1842, and August 1 to December 31, 1837.

[2] January, February, May, and July.

[3] The numbers *above* the line are the actual record. Those *below* show the same, distributed by estimation of the observer.

Winds in the United States.—*Continued.*

Amherst, Massachusetts.

Course.	1837.	1838.	1839.	1840.	1841.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	16	20	24	15	17	1	6	4	10	6	7	4	8	14	10	13	9	92
N. E.	37	26	40	36	42	5	8	21	16	30	17	4	20	16	9	18	17	181
E.	11	10	1	1	11	4	2	1	4	7	0	1	3	6	4	2	0	34
S. E.	82	158	52	191	181	66	60	59	66	63	77	64	60	78	67	51	47	764
S.	106	25	20	18	31	22	15	11	11	17	29	21	66	28	16	8	7	200
S. W.	92	122	137	127	77	24	28	29	30	60	50	88	15	43	52	41	38	255
W.	75	15	9	14	31	24	10	10	8	18	10	13	72	13	11	6	14	144
N. W.	314	354	354	354	377	171	156	185	163	117	110	118	125	109	144	167	174	1747

Course.	Dartmouth, Massachusetts, 8 months.	Framingham, Massachusetts, 8 months.	Cambridge, Massachusetts, 11 months.[1]	Ipswich, Massachusetts, 1781.	Waltham, Massachusetts, 1838.	Newburyport, Massachusetts, 5 months.	North Yarmouth, Massachusetts, 1 month.	Provincetown, Massachusetts, 16 months.[1]	Race Point, Massachusetts, 3 months.[1]	Little Compton, Rhode Island, 1 month.	Sanford, Connecticut, 1 month.
North	62	139	50½	42	46	30	2	108½	27	5	7
N. N. E.	18	66	62½	8	6	9	5	46	10	0	1
N. E.	106	65	116½	50	27	39	10	128½	31	15	19
E. N. E.	79	26	28½	1	0	1	8	80½	1	8	2
East	149	85	51	22	25	29	0	57	6	4	16
E. S. E.	21	28	15½	1	0	0	2	37	0	8	2
S. E.	51	38	47	19	7	15	9	71	18	5	10
S. S. E.	16	8	10½	5	0	6	8	62	9	1	0
South	61	75	88½	16	18	38	1	66½	21	1	8
S. S. W.	28	50	74	4	36	0	2	75	17	1	0
S. W.	166	215	263½	94	82	21	17	547½	52	29	33
W. S. W.	96	60	36½	10	8	3	18	186	20	0	1
West	101	467	107½	33	55	156	8	112	20	1	17
W. N. W.	42	71	24	23	9	0	12	77½	7	0	5
N. W.	147	204	163	111	88	65	43	217	14	13	29
N. N. W.	25	34	78	18	34	4	0	81	4	0	3
Calm	16	85	37	1	21	0	0	247	19	2	0

Fort Wolcott, Rhode Island.

Course.	1822 to 1835, inclusive.[2]	TOTAL FOR THE SEPARATE MONTHS FROM 1822 TO 1830, INCLUSIVE. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	342	26	15	35	20	21	13	13	16	23	27	28	28
N. E.	687	35	32	33	50	23	19	27	42	54	42	38	34
E.	103	9	7	7	12	9	9	5	7	5	5	6	2
S. E.	476	11	16	30	33	43	29	24	35	26	18	12	14
S.	194	6	5	15	8	13	20	22	19	13	14	7	8
S. W.	1774	68	60	52	73	107	130	145	124	94	89	75	71
W.	326	22	25	24	15	17	12	10	8	7	16	27	37
N. W.	1195	102	94	83	59	46	38	33	28	41	68	78	85

Friends' School, Providence, Rhode Island.

Course.	1837.	1838.	Part of 1842.[3]
N.	58	97	39
N. E.	45	103	42
E.	16	36	17
S. E.	18	47	18
S.	54	170	63
S. W.	85	206	97
W.	37	92	106
N. W.	145	338	60

[1] For convenience of printing, these observations, originally taken for thirty-two points of compass, have been reduced to sixteen points since the computations from them were made, which may slightly affect the results.

[2] For the separate years, see the published volumes of the U. S. Army Meteorological Register. [3] Jan. to July.

Winds in the United States.—*Continued.*

Course.	Fort Adams, Rhode Island. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Brown University, Providence, Rhode Island. 1832, 3, and 4.	1833.	Newport, 1831, 2, 3, and 8.	Point Judith, Rhode Island, 1 month.
N.	8	5	5	0	3	1	0	7	4	2	1	8	44	21	0	30	4
N. E.	6	4	6	13	9	6	4	9	17	6	6	7	93	165	48	114	7
E.	8	7	7	12	9	9	3	24	11	2	2	14	98	21	30	9	3
S. E.	14	10	11	7	8	14	9	6	4	1	0	1	85	21	21	94	8
S.	5	7	10	7	9	13	12	2	2	12	0	0	79	51	24	10	11
S. W.	8	8	10	13	18	15	22	7	11	14	21	0	142	123	150	407	24
W.	10	6	5	6	3	1	9	3	7	20	15	20	105	393	66	50	23
N. W.	8	9	8	2	3	1	3	4	4	5	15	22	84	111	117	319	13

Course.	New London, Connecticut. 7 years.[1]	Total for the separate months of 1827–8. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	New Haven, Connecticut. 1804.	1811.	1812.	1813.	Total.
N.	218	3	1	6	3	3	2	1	2	5	3	6	6	143	105	90	111	449
N. E.	372	12	7	7	9	9	5	1	7	20	8	4	11	99	207	188	188	582
E.	114	1	5	3	4	3	3	1	3	4	5	5	4	33	18	22	23	96
S. E.	301	10	5	9	11	16	10	8	7	8	6	7	4	131	108	135	110	484
S.	284	2	5	8	4	5	15	13	5	3	8	5	4	58	69	113	80	320
S. W.	521	9	11	10	13	13	16	34	29	13	16	7	13	224	255	153	261	893
W.	282	8	9	7	6	5	4	3	2	5	8	13	14	81	69	102	57	309
N. W.	514	17	13	12	10	8	5	1	7	2	8	13	6	329	264	345	315	1253

Course.	Middletown, Connecticut. 1835.	1836.	Parts of 1834 and 43.[2]	Proportion for the separate months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	115	125	118½	135	108	84	63	63	18	21	63	58	54	66	78
N. E.	61	88	85½	12	12	30	30	27	26	27	18	24	36	20	39
E.	15	47	19	3	6	15	12	0	54	15	0	12	12	10	0
S. E.	32	20	31½	15	12	15	15	30	16	24	12	18	4	10	15
S.	85	51	69	12	24	48	63	24	58	36	57	44	50	12	18
S. W.	70	78	110	18	18	30	51	42	44	90	57	74	72	52	45
W.	62	68	76	36	42	42	30	72	32	36	30	36	58	22	5
N. W.	153	141	248	108	117	90	87	18	64	42	111	78	64	118	102
Calm	0	0	57	0	0	0	0	75	0	0	0	0	0	0	0

[1] For the separate years, see the published volumes of the U. S. Army Meteorological Register.

[2] Making together a complete year, except the month of June.

Winds in the United States.—*Continued.*

Litchfield, Connecticut.

Course.	1849.	1850.	1851.	TOTAL FOR THE SEPARATE MONTHS.											
				Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	60	73	73	14	15	18	18	16	16	16	15	21	18	29	23
N. E.	52	48	52	9	7	19	18	13	10	10	18	17	12	6	6
E.	88	94	67	14	20	15	16	28	16	29	23	23	16	7	9
S. E.	63	49	33	7	9	10	17	13	10	17	19	17	14	14	9
S.	73	31	53	7	10	10	18	17	15	19	23	17	14	23	23
S. W.	88	138	161	35	27	27	21	23	45	44	46	32	36	20	28
W.	102	144	147	43	31	31	24	33	39	32	31	26	32	30	22
N. W.	135	137	131	40	35	43	39	31	35	28	32	33	34	24	13

Salisbury, Connecticut.

Course.	1844.	1845.	TOTAL FOR THE SEPARATE MONTHS.												
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	215	346	56	61	58	37	46	44	50	32	53	34	41	54	561
N. by E.	6	3	2	0	0	1	1	1	0	1	0	0	1	2	9
N. N. E.	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1
N. E.	41	46	8	11	5½	6½	6	7	6	10	4	12	3	8	87
N. E. by E.	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2
E. N. E.	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2
East	40	40	9	8½	9	14	4½	5	7	4	8	4	5	2	80
S. E.	56	261	8	8½	7½	20	18	33	37	47	47	46	30	15	317
S. E. by S.	0	1½	0	1½	0	0	0	0	0	0	0	0	0	0	1½
S. S. E.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
S. by E.	21	4½	0	1	6½	3½	5½	1	3	0	2	1	2	0	25½
South	205	157½	18½	34½	46	37	45½	33	28	35	14	30	23	23	362½
S. by W.	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1
S. W.	32	96	12	1	4	6	6	14	12	15	12	8	23	15	128
S. W. by W.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
West	30	20	5	1½	3	4	1½	4	7	2	2	11	4	5	50
N. W. by W.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
N. W.	71	116	22½	13½	20½	21	19½	8	10	9	6	9	17	31	187
N. N. W.	3	1	3	0	0	0	0	0	0	0	1	0	0	0	4
N. by W.	4	1½	4	0	0	0	1½	0	0	0	0	0	0	0	5½

Surface Winds at New York City. (Redfield.)

Course.	1838.	1839.	TOTAL FOR THE SEPARATE MONTHS.												Proportion for 1 years.
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N. E. quarter, including N.	282½	423	67	58½	99	67	51½	42½	21½	64	52½	55	61	66	216
S. E. quarter, including E.	215	211	14	16½	33	37½	51	75	38	46½	39½	29	34	12	127
S. W. quarter, including S.	720	529	149	73	74	92	128	120	152½	103½	120	70½	81½	85½	382
N. W. quarter, including W.	507½	502	74½	110½	90	88½	59½	57	66½	85½	72	62	114½	129	275

Winds in the United States.—*Continued.*

UPPER CURRENT AT NEW YORK CITY, (REDFIELD.)

Course.	1838.	1839.	Total for the separate months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Proportion for 7 years.
N. E. quarter, including N.	37	84	5	4	11	16	2	7	6	21	12	12	5	20	53
S. E. quarter, including E.	26	52	20	1	1	17	9	5	0	6	4	14	0	1	24
S. W. quarter, including S.	713	549	154	53	108	60	102	125	81	93	145	99	130	112	565
N. W. quarter, including W.	567	517	56	92	85	122	124	110	147	98	25	78	77	70	358

State of New York.

Course.	Granville. 4 years previous to 1839.[1]	Granville. 1839 to 1847, inclusive.[1]	Lewiston. 7 years previous to 1839.[1]	Lewiston. 1839 to 1847, inclusive.[1]	Hudson. 8 years previous to 1839.[2]	Hudson. 1841 to 1847, inclusive.[1]	Mt. Pleasant. 6 years previous to 1839.[1]	Mt. Pleasant. 1839 to 1844, inclusive.[1]	Montgomery. 10 years previous to 1839.[1]	Montgomery. 1839, 40, and 42.	Canenovia. 8 years previous to 1839.[2]	Canenovia. 1839 to 1846, inclusive.[1]	Lo wville. 8 years previous to 1839.[1]	Lo wville. 1839 to 1847, inclusive.[1]
N.	1018	2183	414	520	1480	998	605	627	799	120	170	203	1033	1308
N. E.	91	192	391	642	862	224	378	406	794	204	113	78	174	114
E.	24	42	262	282	167	82	119	78	214	16	104	115	107	93
S. E.	110	231	356	261	832	1009	320	483	370	63	268	346	786	727
S.	505	1868	776	937	1571	1197	915	875	1052	46	903	1058	1089	1733
S. W.	879	1545	1897	2364	208	153	647	512	1075	274	1125	962	584	451
W.	153	245	637	862	451	169	221	208	1670	380	923	1278	918	587
N. W.	147	268	381	706	828	1280	1177	1195	1332	359	2206	1804	1210	1560

State of New York.

Course.	Rochester. 7 years previous to 1839.[1]	Rochester. 1839 to 1847, inclusive.[1]	Potsdam. 10 years previous to 1839.[1]	Potsdam. 1839 to 1847, inclusive.[1]	Kinderhook. 9 years previous to 1839.[1]	Kinderhook. 1839 to 1846, inclusive.[1]	Jamaica. 12 years previous to 1839.[1]	Jamaica. 1839 to 1847, inclu sive.	Lansingburgh. 11 years previous to 1839.[1]	Lansingburgh. 1839 to 1846, inclusive.[1]	Kingston. 9 years previous to 1839.[1]	Kingston. 8 years since 1838.[1]
N.	358	497	521	349	2207	2779	505	648	1264	591	388	325
N. E.	492	659	972	1191	114	71	1226	735	258	170	1346	1495
E.	220	222	56	55	119	29	334	305	67	39	257	133
S. E.	349	433	194	280	214	163	796	493	314	665	424	427
S.	346	459	1136	877	2350	2234	825	760	2345	1206	641	459
S. W.	1087	1186	2589	2349	235	145	1737	1267	672	808	1381	1436
W.	1821	1402	617	511	192	52	583	755	1584	1352	685	355
N. W.	939	1716	1221	960	1143	371	2758	1611	1574	1013	1452	1212

[1] For separate abstracts for these years, both annual and monthly, see Annual Reports of the Regents of the University of the State of New York.

[2] 1839 omitted.

Winds in the United States.—*Continued.*

State of New York.

Course.	Middlebury.		Newburgh.		Ithaca.		Mexico.		North Salem.		Onondaga.	
	9 years previous to 1839.[1]	1839 to 1845, inclusive.[1]	8 years previous to 1839.[1]	8 years since 1838.[1]	7 years previous to 1838.[1]	8 years since 1838.[1]	1837–38.[1]	1840 to 1846, inclusive.[1]	7 years previous to 1839.[1]	1840 to 1847, inclusive.[1]	9 years previous to 1839.[1]	1839 to 1844, inclusive.[1]
N.	735	190	467	339	892	211	120	354	259	310	393	175
N. E.	377	285	1184	1148	247	112	72	124	762	486	193	97
E.	66	72	52	118	180	41	81	305	300	239	187	249
S. E.	84	87	259	527	570	393	242	760	567	683	467	332
S.	141	347	1000	697	1501	710	231	647	245	704	1824	1014
S. W.	3542	2348	1559	1138	286	1015	266	414	911	1452	464	822
W.	776	1327	599	961	393	824	224	1631	611	669	1618	1264
N. W.	853	508	776	916	1045	2538	274	879	1457	1301	1392	981

State of New York.

Course.	Oxford.		Redhook.		Pompey.													
							TOTAL FOR THE SEPARATE MONTHS.											
	9 years previous to 1839.[1]	1839 to 1845, inclusive.[1]	8 years previous to 1839.[1]	1839 to 1842, inclusive.[1]	11 years previous to 1839.[1]	1839 to 1843, inclusive.[1]	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	851	474	1830	814	124	17	1	8	16	22	16	11	8	14	12	15	2	9
N. E.	383	505	516	160	103	39	11	5	7	27	15	13	3	10	7	12	2	21
E.	110	20	368	44	51	21	6	8	7	11	8	12	2	1	3	3	5	10
S. E.	96	77	536	89	739	476	128	101	115	127	119	99	44	68	73	105	102	107
S.	968	612	1966	1338	1247	583	164	121	156	178	124	145	115	155	161	152	155	147
S. W.	1841	1189	180	94	2270	595	178	197	234	144	244	266	355	293	268	178	219	225
W.	1707	832	171	152	1710	784	201	227	199	195	237	217	250	183	206	182	183	170
N. W.	1118	1386	277	231	1807	1137	303	239	256	255	229	188	153	267	230	247	292	299

State of New York.

Course.	Springville.		Salem.		Utica.		Whitesborough.		Cambridge.		Ellisburg.		Henrietta.	
	1835.	1839, 42, 43, and 47.[1]	1838 and 1839.	7 years since 1839.[1]	13 years previous to 1839.[1]	1839 to 1845, inclusive.[1]	5 years previous to 1839.[1]	1839 and 40.	10 years previous to 1839.[1]	1839 and 1841.[1]	6 years previous to 1839.[1]	1842, 43, 44, and 1846.	1835 and 36.[1]	1838.
N.	24	175	165	1091	8	51	180	54	1783	238	388	271	144	94
N. E.	69	319	155	593	55	14	54	52	191	91	507	326	67	39
E.	7	144	4	47	1963	848	831	269	50	4	125	139	84	41
S. E.	24	169	19	169	969	211	153	143	139	39	239	361	70	35
S.	86	172	188	983	295	618	257	203	1825	222	923	564	376	140
S. W.	143	729	679	1366	852	237	246	218	1316	367	814	406	378	158
W.	224	858	91	410	4491	2672	1488	449	990	147	819	631	192	178
N. W.	208	354	162	455	170	463	443	74	1012	352	553	224	151	92

[1] For separate abstracts for these years, both annual and monthly, see Annual Reports of the Regents of the University of the State of New York.

[2] 1829 omitted.

Winds in the United States.—*Continued.*

State of New York.

Course.	Bridgewater, 4 years.[1]	Canajoharie, 2 years previous to 1839.[1]	Canandaigua, 9 years.[1]	Cuba, 1839, 40, and 41.[1]	Delhi, 1837.	Geneseo, 1839 to 1842, inclusive.[1]	Greenville, 1837.	Malone, 1839, 40, and 42.[1]	Millville, 1840 to 1847, inclusive.[1]	Oysterbay, 1834 and 37.[1]	Palmyra, 1835.	Plattsburg, 1841, 42, and 47.[1]	Schenectady, 2 years previous to 1839.[1]	Syracuse, 1843.
N.	88	8	253	41.35	88	183	15	122	316	42	44	385	84	8
N. E.	37	1	120	16.45	48	314	65	212	712	316	54	57	93	18
E.	116	182	121	10.82	47	171	26	46	314	85	19	45	41	55
S. E.	117	292	241	7.04	43	262	238	104	557	157	145	132	196	104
S.	775	40	1762	36.41	151	119	17	242	445	107	38	674	223	72
S. W.	488	72	899	35.15	184	622	39	484	1718	378	168	151	65	78
W.	931	401	2340	73.14	158	350	45	701	624	78	118	288	228	249
N. W.	418	464	838	27.16	61	951	285	281	1168	847	149	458	532	146

State of New York.

Course.	Albany.		Auburn.		Gouverneur.		Homer.		Aurora.		Flatbush.	
	13 years previous to 1839.[2]	1839 to 1847, inclusive.[1]	9 years previous to 1839.[2]	1839 to 1847, inclusive.[1]	6 years previous to 1839.[2]	6 years since 1838.[1]	6 years previous to 1839.[2]	1839 to 1847, inclusive.[1]	5 years previous to 1838.[2]	1840 to 1846, inclusive.[1]	11 years previous to 1839.[2]	1839 to 1847, inclusive.[1]
N.	1070	1097	769	613	267	734	24	7	820	1002	554	482
N. E.	398	626	248	184	423	492	20	20	20	177	1170	1187
E.	108	214	107	78	98	85	0	54	28	137	138	162
S. E.	702	164	617	885	141	246	257	517	118	870	668	653
S.	3010	2110	1451	1748	454	645	1196	711	1610	1258	555	619
S. W.	776	868	1017	1481	1405	1069	758	2865	119	490	1963	1357
W.	1418	224	749	828	847	486	602	46	420	730	721	739
N. W.	2019	1751	1628	1817	747	625	1582	2854	522	950	2267	1475

State of New York.

Course.	Fairfield.		Goshen.		Fredonia.		Poughkeepsie.		Prattsburgh.	
	9 years previous to 1839.[2]	8 years since 1838.[1]	2 years previous to 1839.[2]	8 years since 1838.[1]	8 years previous to 1839.[2]	1839 to 1847, inclusive.[1]	8 years previous to 1839.[1]	1841 to 1847, inclusive.[1]	1 year previous to 1839.[2]	1839 to 1846, inclusive.[1]
N.	84	34	49	221	521	532	824	1249	69	249
N. E.	85	45	145	1284	373	426	636	522	82	150
E.	1111	1018	48	197	202	218	104	129	6	87
S. E.	952	866	91	168	393	312	1463	368	11	206
S.	181	100	149	525	902	1017	874	915	167	1275
S. W.	290	287	526	1663	1414	837	873	880	121	659
W.	1190	2074	286	1248	1494	2829	221	601	197	910
N. W.	2683	1420	166	588	545	403	851	448	127	2308

[1] For separate abstracts for these years, both annual and monthly, see Annual Reports of the Regents of the University of the State of New York.

[2] 1829 omitted.

Winds in the United States.—*Continued.*

State of New York.

Course.	Easthampton.		Hartwick.		Hamilton.		Cherry Valley.		Johnstown.	
	11 years previous to 1839.[2]	1839 to 1845, inclusive.[1]	8 years previous to 1839.[2]	4 years since 1838.[1]	8 years previous to 1838.[2]	7 years since 1838.[1]	9 years previous to 1839.[2]	1841 to 1845, inclusive.[1]	9 years previous to 1838.[2]	1841 to 1845, inclusive.[1]
N.	490	378	276	150	398	294	287	172	88	20
N. E.	932	430	90	128	141	158	442	226	433	302
E.	948	470	102	46	87	77	330	238	932	562
S. E.	868	294	238	99	225	214	206	91	383	196
S.	988	430	2060	1116	984	918	948	364	49	40
S. W.	1309	500	588	249	1657	883	1357	741	433	302
W.	836	495	1046	296	526	774	2145	1248	3289	1984
N. W.	1670	660	1447	886	1878	1799	861	577	389	245

Ogdensburgh,[3] New York.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.
North	0 9 15	0 12 45	1 2 30	0 21 0	1 9 30	0 6 30	0 9 15	0 13 30	0 8 30	0 12 0	0 9 0	0 11 30	7 5 1.
N. by E.	0 13 30	0 10 30	0 17 0	0 7 45	0 13 0	0 9 0	0 9 0	0 18 0	0 10 0	0 11 30	0 8 15	0 6 30	5 22 15
N. N. E.	0 15 30	0 7 15	1 5 30	0 2 0	0 17 45	0 22 15	0 18 0	0 13 45	1 5 15	0 22 45	0 9 15	0 4 0	8 0 15
N. E. by N.	0 15 45	0 8 30	2 14 45	0 3 0	1 20 45	1 7 45	0 22 30	0 11 45	1 10 45	0 5 45	0 9 45	0 4 45	10 15 15
N. E.	1 5 15	0 22 30	4 16 30	0 10 0	1 2 30	1 7 30	0 17 0	0 13 0	1 11 15	0 10 0	0 17 30	0 12 52	14 1 52
N. E. by E.	1 3 30	0 19 45	4 0 15	0 4 0	1 5 0	1 1 45	0 14 45	0 20 30	1 14 15	1 1 15	0 23 30	1 0 0	16 12 30
E. N. E.	3 4 15	0 11 30	1 23 0	0 7 0	0 23 45	0 23 15	0 19 0	0 12 15	1 13 45	1 9 45	0 18 45	0 15 23	13 4 38
E. by N.	0 6 45	0 8 0	0 14 30	0 13 0	0 10 0	0 5 30	0 4 15	0 9 45	0 14 15	0 16 30	0 9 30	0 5 30	4 21 30
East	0 4 45	0 3 0	0 7 15	0 8 0	0 6 0	0 2 30	0 3 45	0 7 0	0 7 0	0 9 15	0 2 30	0 2 15	2 15 15
E. by S.	0 4 30	0 4 0	0 4 0	0 8 0	0 4 45	0 3 45	0 2 30	0 11 45	0 3 15	0 4 0	0 2 15	0 3 30	2 8 15
E. S. E.	0 5 15	0 5 15	0 5 15	0 10 0	0 8 45	0 3 45	0 3 45	0 9 15	0 2 30	0 3 30	0 2 45	0 3 45	2 15 45
S. E. by E.	0 5 15	0 5 45	0 4 0	0 0 0	0 16 45	0 5 30	0 2 15	0 9 0	0 2 15	0 5 0	0 2 30	0 2 0	2 13 15
S. E.	0 2 45	0 3 15	0 2 15	0 1 0	0 17 45	0 10 45	0 3 15	0 8 15	0 2 15	0 5 45	0 3 22	0 4 52	2 17 29
S. E. by S.	0 3 0	0 3 45	0 2 45	0 5 0	0 12 30	0 12 15	0 8 52	0 11 15	0 8 30	0 11 30	0 8 8	0 11 38	4 3 8
S. S. E.	0 13 0	0 11 0	0 2 30	0 4 30	0 7 0	0 1 3	0 15 45	0 23 22	0 10 0	0 15 37	0 21 0	0 21 15	7 4 14
S. by E.	0 11 0	0 2 8	0 6 0	0 0 0	0 6 15	0 13 15	0 13 45	0 20 53	1 9 15	0 20 53	1 9 0	1 8 45	8 7 31
South	3 10 0	0 14 0	0 11 30	1 1 0	1 13 30	0 19 30	1 23 45	1 4 0	1 15 30	2 0 0	2 6 30	3 1 45	20 4 0
S. by W.	2 2 30	0 20 0	1 7 30	0 1 0	1 12 30	1 11 30	1 15 30	2 6 30	1 19 45	1 9 15	2 21 45	3 11 0	21 4 45
S. S. W.	1 13 15	1 5 15	0 21 45	1 2 0	2 1 15	1 14 45	2 16 15	1 15 15	1 20 0	1 17 15	2 8 45	3 15 0	22 6 45
S. W. by S.	1 13 45	1 7 30	1 3 45	1 14 0	2 11 30	2 9 15	3 8 0	1 18 30	2 0 15	1 16 30	1 9 0	2 0 30	22 16 30
S. W.	2 4 30	1 23 0	1 15 15	3 15 0	2 7 30	3 14 0	4 8 15	2 8 0	1 22 30	2 12 0	1 13 0	1 13 15	29 12 15
S. W. by W.	3 3 0	2 11 45	1 20 45	2 11 0	1 19 0	3 12 0	2 21 0	1 17 15	1 12 15	1 20 30	1 15 15	1 1 45	25 21 30
W. S. W.	0 14 0	1 15 15	1 1 30	2 18 30	3 2 0	1 16 0	1 7 0	0 22 5	1 0 30	1 1 30	1 0 15	0 21 0	16 23 45
W. by S.	0 19 15	1 15 45	0 17 45	0 22 30	0 16 0	1 5 30	1 5 15	1 1 0	1 5 45	1 2 45	1 11 30	1 2 0	13 6 0
West	0 20 0	2 6 45	0 18 15	2 13 0	0 20 45	1 11 0	1 1 45	1 19 30	1 9 45	1 7 15	1 16 0	1 5 45	17 5 45
W. by N.	0 23 0	1 23 30	0 11 15	1 19 30	0 29 30	0 11 45	0 14 0	1 3 45	0 17 22	0 22 45	1 3 15	0 20 30	11 14 7
W. N. W.	0 22 30	1 9 0	0 5 45	1 2 15	0 6 0	0 8 30	0 9 0	1 6 30	0 11 53	0 17 0	0 23 15	0 17 30	8 19 8
N. W. by W.	0 15 30	1 4 45	0 6 30	1 5 0	0 11 0	0 7 45	0 14 8	1 6 45	0 19 38	1 0 30	1 0 45	0 21 37	9 8 53
N. W.	0 17 0	1 2 0	0 7 0	0 18 0	0 5 0	0 11 0	0 12 0	1 2 0	0 11 15	1 4 30	0 21 45	1 5 8	8 20 38
N. W. by N.	0 15 15	0 20 15	0 9 45	1 6 15	0 9 45	0 7 45	0 14 15	1 3 45	0 15 22	1 9 45	0 21 45	1 1 45	9 15 37
N. N. W.	0 15 30	0 18 30	0 14 30	0 22 15	0 10 0	0 7 30	0 14 45	0 20 30	0 9 30	1 3 15	0 14 0	0 16 0	8 2 15
N. by W.	0 3 45	0 17 30	0 11 15	0 20 30	0 11 30	0 5 45	0 15 30	0 15 15	0 10 15	0 15 15	0 12 15	0 15 0	6 9 45

[1] For separate abstracts for these years, both annual and monthly, see Annual Reports of the Regents of the University of the State of New York.

[2] 1839 omitted.

[3] These observations were taken by means of a self-registering vane, and the time is given in days, hours, and minutes.

Winds in the United States.—*Continued.*

State of New York.

Course.	Deaf and Dumb Institute.			Fort Columbus.		Watertown.	Fort Wood.	West Point.		Youngstown.		Plattsburg Barracks.
	1844.	1848.	1850.	1822 to 1830, inclusive.[1]	1831 to 1836 and 1839 to 1842, inclusive.[1]	1837 to 1840, inclusive.[1]	1837–38.[1]	1827 to 1830, inclusive.[1]	1831 to 1842, inclusive.[1]	1829–30.[1]	1831, 33, 40, and 42.[1]	1840 and 1842.[1]
N.	15	12	19½	125	185½	98½	26	182	620	56	106	95½
N. E.	82	81	59	435	523½	75	118	85	260	92	219½	52
E.	5	8	7	128	165½	137½	19	44	54	58	109	20½
S. E.	27	54	25	414	505½	90	66	241	326	45	61	72½
S.	13	7½	22	352	345½	178	95	201	1141	116	118½	181
S. W.	47	59	62½	660	695½	347½	208	184	415	102	248½	78½
W.	67	78	73	250	512½	310½	85	135	206	168	345½	69½
N. W.	107	70½	90	923	720	224	118	398	1357	93	253	161½

State of New York.

Course.	Adams, 1 month.	Brooklyn, 1 month.	Chatham, 4 months.	Flushing, 1 month.	Gallop's Isl'd, 1 month.	Hamilton College, 1 month.	Leonardsville, 1 month.	Lockport, 4 months.	Nassau, 1 month.	Penn Yan, 1 month.	Rhinebeck, 1 month.	Sands' Point, 2 months.	Troy, 2 months.	White Plains, 4 months.	Bloomingdale, 1846.
N.	25	9	77	4	16	0	10	25	22	4	23	28	37	0	14
N. E.	21	35	36	11	38	0	0	28	0	25	23	36	15	7	71
E.	2	9	15	1	11	13	3	65	0	0	0	5	3	10	10
S. E.	28	2	116	6	17	7	3	21	5	2	0	5	13	14	33
S.	24	11	41	50	10	7	34	14	16	88	13	18	30	12	8
S. W.	140	8	150	50	34	8	0	196	2	27	6	20	28	15	73
W.	60	27	59	52	80	7	0	102	9	38	6	18	65	2	31
N. W.	24	52	371	30	64	46	40	66	22	23	18	47	72	10	65
Calm	50	4	13	0	0	14	0	29	2	44	1	0	0	0	48

State of New York.

Course.	Amenia, 1849.	Buffalo.		Sackett's Harbor, 1831 and 1842.[1]	Somerville, 1850.	Rouse's Point, 1839.	Watervliet.	
		1831–32.	1841–42.				1831–32.	1834 to 1842, inclusive.[1]
N.	137	33	138	80	95	43	41	388
N. E.	78	193	89	163	81	34	20	209½
E.	11	123	146	20	19½	14	9	76½
S. E.	61	137	79	145	25	54	62	322½
S.	155	107	193	150	151	68	140	784
S. W.	108	567	494	352	166	53	94	320
W.	30[2]	152	214	197	115½	43	139	581½
N. W.	155	150	107	348	72½	56	226	605

[1] For the separate years, see the published volumes of the U. S. Army Meteorological Register.

[2] A hill, directly west of this place, accounts for the winds from that direction. See Regents' Report for 1850, p. 245.

Winds in the United States.—*Continued.*

Total of Winds in the State of New York, deduced from all the observations taken at the several Academies, as reported annually to the Regents of the University.

Course.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.
N.	539	1103	1442	1861	2676	2317	2956	2613	2755	2903	2300	2624	2226
N. E.	310	641	849	1502	1735	1417	1754	1794	2173	2158	2043	1614	1810
E.	345	623	1061	1110	926	890	974	869	971	1359	1442	1155	855
S. E.	616	876	1115	1640	1457	1834	1802	2214	1845	2317	2324	1862	1530
S.	1240	1748	3584	3784	4894	4333	5497	4381	4135	5338	3879	4536	3449
S. W.	942	1828	3890	4805	3586	4468	4790	4571	4894	6784	3559	3553	4619
W.	1273	2225	3312	4900	3652	4886	3987	4074	3960	6206	4283	4618	4116
N. W.	1275	2634	3044	4816	4204	4445	4662	5020	4805	5785	4322	5587	5275

Total of Winds in the State of New York.—*Continued.*

Course.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	Total.
N.	2982	2382	3601	2942	2804	2806	2456	2526	1850	1528	1954	56096
N. E.	2236	2007	2200	2544	2014	2319	1418	2021	1569	1206	1537	40871
E.	1029	871	1087	1254	1171	1064	910	587	598	665	538	22804
S. E.	1709	1970	1876	2317	2028	1861	1535	1823	1367	1553	1962	40928
S.	4332	4458	4949	5502	3752	4475	3492	3537	3104	3015	2516	98480
S. W.	5054	5010	4443	5567	5182	4689	5815	4037	3764	3092	2458	101400
W.	4190	4569	4598	5605	5966	4819	4528	2978	2286	2853	1992	95821
N. W.	5516	5867	5640	6483	5944	5107	5844	4391	3783	4368	3813	112080

Trenton, New Jersey.

Course.	1840.	1842.	1843.	1844.	1845.	1846.	TOTAL FOR THE SEPARATE MONTHS FROM 1842 TO 1845.												Total.
							Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	21	24	29	44	30	25	12	9	7	10	9	8	18	9	17	7	10	11	178
N. E.	60	72	74	79	70	93	21	24	26	38	25	18	13	35	26	26	17	26	448
E.	13	26	17	36	35	40	7	10	6	18	5	16	18	14	16	4	6	4	167
S. E.	52	49	62	63	58	71	12	12	18	28	23	23	24	35	21	21	14	6	355
S.	65	63	41	52	40	54	16	19	20	21	14	17	20	18	14	13	16	8	315
S. W.	97	129	127	130	115	113	40	30	32	35	63	65	67	36	27	42	37	27	711
W.	59	89	47	44	68	42	16	20	16	12	23	17	12	8	18	19	22	20	299
N. W.	90	91	120	103	109	122	41	37	52	29	33	32	25	29	19	42	33	51	635

Winds in the United States.—*Continued.*

Course.	Newark, New Jersey, 11 months.	Bloomfield, New Jersey, 1 month.	Burlington, New Jersey, 2 months.	Five fathom Bank (Cape May), 2 months.	Haddonfield, New Jersey, 2 months.	Middletown, New Jersey, 1831, 2, 3, 4.	Course.	Newark, New Jersey, 11 months.	Bloomfield, New Jersey, 1 month.	Burlington, New Jersey, 2 months.	Five fathom Bank (Cape May), 2 months.	Haddonfield, New Jersey, 2 months.	Middletown, New Jersey, 1831, 2, 3, 4.
North	37	15	15	15	10	61	South	29	0	2	22	25	89
N. N. E.	8	0	1	8	1		S. S. W.	1	0	1	16	1	
N. E.	42	8	8	12	34	145	S. W.	44	9	10	22	17	216
E. N. E.	0	0	1	11	0		W. S. W.	5	10	1	8	0	
East	5	0	12	10	19	65	West	43	17	35	36	8	194
E. S. E.	1	0	1	7	0		W.N.W.	3	1	0	40	0	
S. E.	10	2	6	9	5	118	N. W.	29	10	62	54	40	208
S. S. E.	2	0	0	8	0		N. N. W.	2	0	2	14	3	

Girard College, Pennsylvania.

Course.	1841.	1842.	1843.	1844.	1840 and 45.[1]	TOTAL FOR THE SEPARATE MONTHS.												
						Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	342	177	357	426	376	179	151	166	130	184	128	133	78	180	112	117	125	1678
N. by E.	142	132			76	13	9	8	18	14	22	58	21	45	41	47	54	350
N. N. E.	284	166	311	336	295	115	138	155	147	142	79	95	66	132	91	80	152	1392
N. E. by N.	118	179			34	4	14	19	27	26	16	31	23	46	22	72	31	331
N. E.	280	288	435	312	356	201	131	121	164	100	78	107	175	143	130	167	154	1671
N. E. by. E.	150	227			34	11	17	24	53	28	25	17	50	58	39	46	43	411
E. N. E.	470	325	582	521	385	275	175	265	370	153	114	151	196	195	94	137	158	2283
E. by N.	162	201			50	28	10	18	45	18	42	45	46	35	39	60	27	413
East	186	142	317	347	260	90	82	128	240	88	84	46	154	125	65	70	80	1252
E. by S.	88	81			10	10	2	12	7	13	29	15	42	11	8	17	18	179
E. S. E.	90	63	189	213	167	58	54	57	86	67	65	41	95	56	60	44	44	722
S. E. by E.	82	104			6	3	5	9	11	14	33	15	27	13	4	3	5	142
S. E.	94	128	176	290	165	59	39	57	78	86	87	81	140	86	47	54	39	853
S. E. by S.	52	159			28	2	10	33	13	17	28	36	43	15	21	21	0	239
S. S. E.	114	150	199	267	107	38	27	57	76	112	70	91	138	76	95	35	22	837
S. by E.	92	198			36	19	26	18	11	7	53	46	41	49	32	12	12	326
South	258	151	287	522	284	87	117	141	102	161	160	253	224	121	126	67	43	1602
S. by W.	216	276			108	39	37	43	42	49	37	55	69	84	74	51	20	600
S. S. W.	416	337	579	700	531	191	196	268	213	250	286	337	220	210	166	94	132	2563
S. W. by S.	220	419			64	50	57	66	49	65	51	104	46	58	83	30	44	703
S. W.	570	568	792	761	720	177	170	218	272	458	462	342	212	211	258	230	401	3411
S. W. by W.	220	185			22	35	29	20	17	41	70	64	54	10	17	36	34	427
W. S. W.	232	169	502	418	424	116	158	137	91	179	256	146	143	83	148	131	152	1740
W. by S.	132	155			62	15	21	20	20	23	12	28	41	54	25	47	43	349
West	292	207	465	442	490	227	147	166	90	132	158	121	114	107	198	212	224	1896
W. by N.	206	246			92	21	78	20	45	15	23	27	29	21	86	106	123	544
W. N. W.	490	312	939	632	589	366	455	316	201	97	170	149	197	164	245	356	226	2962
N. W. by W.	228	340			28	46	42	34	20	29	38	35	30	48	58	97	119	596
N. W.	534	602	712	715	865	400	277	309	241	245	159	168	211	310	407	371	330	3428
N. W. by N.	254	250			54	18	6	48	29	25	22	30	59	58	127	57	79	558
N. N. W.	360	181	598	510	634	239	200	217	175	183	148	180	127	205	188	204	217	2283
N. by W.	172	191			52	10	9	12	10	34	40	49	52	79	58	35	27	415

[1] July 1 to December 31, 1840, and January 1 to June 30, 1845.

Winds in the United States.—*Continued.*

State of Pennsylvania.

Course.	Pottsville, 5 months of 1839.[1]	Warren, 1 year, except May, June, Aug., and Oct.[1]	Indiana, 1 year, except April, May, and August.[1]	Mifflintown. 1 year, except November.[1]	Mifflintown. 1 year, except April and Aug.[1]	Franklin, 1 year.[1]	Smithport, 1 year.[1]	Huntingdon, 1 year.[1]	Harrisburg, 1 year.[1]	Uniontown, 1 year, except April.[1]	Fort Mifflin. 1823.	Fort Mifflin. 1824.	Butler. 5 months of 1840.[1]	Butler. 1841.	Butler. Sept. 1844, to Sept. 1845.	Chambersburg, Feb. 1839.
N.	12	34	11	6	33	0	32	0	50	18	1.00	.00	1	2	0	0
N. E.	17	15	1	55	65	3	86	0	31	84	7.00	2.08	18	43	55	10
E.	8	11	4	20	32	0	134	314	75	3	1.16	.33	110	305	230	0
S. E.	71	75	27	79	66	205	118	0	187	78	3.83	8.58	11	26	46	5
S.	4	51	23	1	25	1	56	0	51	21	1.08	1.41	9	7	1	0
S. W.	38	182	184	57	68	119	155	0	124	334	6.33	10.08	114	265	413	10
W.	75	71	234	47	112	3	359	755	195	186	2.58	2.66	170	372	291	0
N. W.	169	85	72	168	181	645	142	0	332	197	7.41	5.38	24	69	59	3
Calm	55	176	226	496	207	0	2	0	0	128	0	0	0	0	0	3

State of Pennsylvania.

Course.	Philadelphia (Franklin Institute). 1831.	1832, except Jan. and April.	1833.	4 months of 1834.	4 months of 1839.	5 months of 1840.	1841, except Jan. and Aug.	Part of 1842.	Newtown. 1 year, except Jan., April, and August.[1]	1841.[1]	Silver Lake. 1 year, except Jan., April, and August.[1]	1841.[1]	Pittsburg, 1 year.[1]	Ebensburg, 1 year.	Bedford, 1 year.[1]	Meadville, 1 year.[1]	Port Carbon, 1 year, except August.[1]	Bellefonte, 1 year, except April.[1]
North	19	29	6	5	9	25	62	2	18	30	62	153	4	38	10	89	20	110
N. N. E.						7	34		11	17	0	0	0	0	5	26	5	4
N. E.	45	30	37	16	18	37	104	17	117	173	8	25	33	21	7	37	94	98
E. N. E.						8	10		13	9	0	0	7	0	10	9	19	1
East	26	23	46	19	22	10	20	28	7	12	3	0	58	43	18	107	52	20
E. S. E.						7	4		4	12	0	0	10	0	36	28	5	3
S. E.	45	62	76	44	12	17	41	16	41	71	19	17	111	100	111	46	39	47
S. S. E.						2	4		6	14	4	1	2	2	22	6	8	5
South	74	80	72	16	11	40	62	14	14	30	99	120	33	51	42	135	16	73
S. S. W.						15	25		10	9	4	2	6	1	19	7	2	2
S. W.	96	108	69	28	32	71	135	48	164	222	158	176	72	160	185	47	71	118
W. S. W.						17	16		15	30	11	2	8	2	78	10	7	21
West	348	238	371	95	94	39	80	123	27	72	173	323	115	304	56	96	155	168
W. N. W.						19	31		20	36	24	4	12	8	249	4	11	11
N. W.	77	40	53	22	12	85	142	19	293	279	208	267	196	166	185	62	133	149
N. N. W.						10	27		3	10	12	4	11	2	51	3	11	10
Calm													318	116	0	354	276	12

[1] For abstracts for the separate months, see Journal of the Franklin Institute.

Winds in the United States.—*Continued.*

State of Pennsylvania.

Course.	Stroudsburg, 1 year, except May and June.[1]	Beaver, 1 year, except March and April.[1]	Haverford, 1 year, except April and October.[1]	Lancaster, 2 years.	Northumberland, 2 years.	Gettysburg, 2 years.[1]	Carlisle, 1 year, except July, August and September.[1]	Reading, 1 year, except April and August.[1]	Leviatown, 5 months of 1839.[1]	Canonsburg, Jan., July, and Oct.[1]	Erie, 3 months.[1]	Rose Cottage, 3 months.[1]
North	54	8	51	190	254	198	34	30	1	12	12	9
N. N. E.	5	0	38	66	8	68	11	0	7	1	8	0
N. E.	55	31	71	177	205	141	67	56	46	16	34	3
E. N. E.	1	4	22	35	3	15	9	1	7	0	0	2
East	80	12	18	79	137	27	25	49	0	13	3	1
E. S. E.	0	0	4	26	6	8	5	2	1	0	3	0
S. E.	14	96	28	163	158	60	26	59	20	7	4	10
S. S. E.	3	4	4	58	28	39	5	0	4	0	11	0
South	31	8	19	224	271	249	53	11	1	1	36	4
S. S. W.	8	1	20	81	8	93	7	2	32	0	5	2
S. W.	99	122	118	257	81	247	91	132	86	16	37	46
W. S. W.	6	2	45	77	4	47	10	16	15	0	9	3
West	171	22	32	190	336	217	104	74	2	67	69	28
W. N. W.	1	3	45	93	22	72	28	28	6	1	10	5
N. W.	101	378	183	319	230	225	145	444	132	19	26	23
N. N. W.	4	6	37	103	20	34	9	4	6	0	5	3
Calm	0	156	24	0	226	235	180	5	0	22	14	121

State of Pennsylvania.

Course.	Armstrong, 2 months.	Bethlehem, 2 months.	Danville, 2 months.[1]	Greenhill, 1 month.	Lamar, 1 month.	Milford, 1 month.	West Chester, 11 months.[1]	Wilkesbarre, 2 months.[1]	York, 3 months.[1]	Easton.		
										1838.	1839.	1847.
North	7	0	3	1	7	5	124	15	9	2.25	6.25	94
N. N. E.	0	0	0	0	0	0	22	0	0			34
N. E.	6	8	3	0	4	4	116	30	31	58.25	57.74	32
E. N. E.	0	1	0	0	0	1	2	0	1			5
East	22	7	1	19	6	5	93	3	14	3.25	15.10	24
E. S. E.	0	1	0	0	0	0	4	0	0			22
S. E.	16	2	14	12	4	10	20	12	13	23.63	30.99	56
S. S. E.	0	1	1	0	0	1	5	0	5			32
South	25	3	7	5	10	21	117	4	12	5.12	13.44	125
S. S. W.	0	1	1	0	0	1	12	1	2			5
S. W.	65	6	21	17	29	19	126	44	36	158.87	114.07	21
W. S. W.	5	6	0	1	1	0	6	0	5			5
West	165	14	22	131	64	12	318	4	26	18.75	19.75	78
W. N. W.	5	3	0	2	5	0	28	0	3			71
N. W.	49	4	10	0	32	14	145	34	107	102.88	107.66	135
N. N. W.	0	1	0	3	0	1	13	0	11			41
Calm	38	0	57	29	0	0	92	6	4			112

[1] For abstracts for the separate months, see Journal of the Franklin Institute.

Winds in the United States.—*Continued.*

State of Pennsylvania.

Course.	Carlisle, Pennsylvania, (Military Station.) 1840.	Carlisle, Pennsylvania, (Military Station.) 1841.	Allegheny Arsenal, Pennsylvania, 1836 to 1842, inclusive.[1]	Coebnaville, 2 months.	Coudersport, 5 months.	Germantown, 3 months.	Mercersburg, 4 months.	Norristown, 5 months.	Chambersburg, 1 month.
North	27	52	391	12	68	18	22	25	0
N. E.	57	68	258½	47	30	31	24	49	10
East	132	112	187½	27	20	19	4	84	0
S. E.	68	58	140½	42	65	16	17	13	5
South	53	68	332	49	94	4	14	62	0
S. W.	48	31	463½	73	71	44	54	91	10
West	264	249	400½	51	138	28	140	367	0
N. W.	94	94	383½	112	112	119	111	112	8
Calm				1	111	0	147	9	8

Somerset, Pennsylvania, (Lower Current.)

Course.	1841.[2]	Sept. 1, 1845, to Sept. 1, 1846.	4 months of 1846.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Upper current for 1 y'r, except July, Aug., Nov., & Dec.
North	23	35	6	1	1	5	3	3	6	5	11	3	8	6	6	58	23
N. N. E.	1	3	0	0	0	1	0	1	2	0	0	0	0	0	0	4	2
N. E.	19	17	3	0	2	5	8	6	0	5	5	0	2	1	2	36	3
E. N. E.	4	14	0	0	0	1	4	4	4	4	1	0	0	0	0	18	1
East	23	7	10	0	0	10	10	2	1	1	1	0	3	2	0	30	6
E. S. E.	0	9	3	0	0	0	0	1	6	0	2	0	0	0	0	9	12
S. E.	36	37	3	7	8	6	17	8	6	2	4	1	4	6	4	73	17
S. S. E.	8	12	3	0	0	3	2	3	0	4	6	1	1	0	0	20	3
South	58	76	9	11	4	11	20	6	17	4	16	9	8	9	12	134	36
S. S. W.	7	8	0	2	1	3	2	3	1	0	1	1	1	0	0	15	2
S. W.	109	106	58	12	10	14	16	25	20	29	17	20	14	26	12	215	67
W. S. W.	45	106	20	12	14	12	18	3	9	1	6	9	13	17	42	151	51
West	182	129	72	45	32	32	19	25	20	12	9	27	13	43	84	311	174
W. N. W.	51	94	16	14	10	10	10	14	5	14	4	12	8	16	28	145	51
N. W.	36	46	18	3	4	8	5	10	5	18	6	10	8	4	6	82	52
N. N. W.	2	5	1	0	2	0	1	1	2	0	0	0	0	1	0	7	3
Calm	331	305	103	60	34	56	43	51	65	44	77	48	73	47	38	636	154

Course.	Newark, Delaware, 5 months.	Emmetsburg, Maryland, 3 months.	Isthmus, Maryland, 11 months.	Baltimore, Maryland, 1834.	Washington City, 7 months of 1838.	Course.	Newark, Delaware, 5 months.	Emmetsburg, Maryland, 3 months.	Isthmus, Maryland, 11 months.	Baltimore, Maryland, 1834.	Washington City, 7 months of 1838.
North	13	52	139	41	16	South	7	25	199	63	30
N. N. E.	0	0	0	8	7	S. S. W.	0	7	5	1	23
N. E.	46	10	94	87	62	S. W.	115	49	85	164	85
E. N. E.	0	2	0	1	0	W. S. W.	0	10	0	1	3
East	25	12	74	140	10	West	72	132	55	78	16
E. S. E.	3	0	0	2	1	W. N. W.	0	35	0	1	3
S. E.	42	26	46	140	24	N. W.	174	87	344	213	115
S. S. E.	4	8	2	14	10	N. N. W.	4	7	1	17	0
						Calm	1	47	203	0	16

[1] For separate abstracts for these years, see the published volumes of the U. S. Army Meteorological Register.

[2] November, 1840, substituted for November, 1841.

Winds in the United States.—*Continued.*

Course.	New Castle, Delaware, 1826.	Fort McHenry, Maryland.											
		1831 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1831 TO 1835, INCLUSIVE.										
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	5	292½	11	2	3	3	2	2	1	3	2	7	11	5
N. E.	39	669½	29	24	18	29	15	16	10	23	22	25	27	29
E.	9	272	14	11	34	32	17	9	3	7	10	14	14	7
S. E.	64	588½	11	11	23	25	34	32	24	33	20	23	18	10
S.	22	808½	1	1	2	3	14	9	19	8	12	1	2	0
S. W.	123	596	16	23	17	10	22	22	38	27	33	25	15	16
W.	21	755	24	25	19	19	30	22	34	25	21	17	18	24
N. W.	82	901	49	44	39	29	21	38	26	29	30	43	45	64

Course.	Annapolis, Maryland.		Washington City.[2]															
	1822.	1831 to 1834, inclusive.[1]	1823 to 1830, inclusive.[1]	1831, 33, 34, and 1835.[1]	8 months in 1831, 32, 33, 34, and 35.[3]	July 1, 1838, to June 30, 1842.[3]	TOTAL FOR THE SEPARATE MONTHS FROM 1823 TO 1830, INCLUSIVE.											
							Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	37	69	161	72	9	263	15	11	9	19	12	16	12	18	18	12	10	9
N. E.	48	151	460	218	95	432	46	44	48	82	26	30	27	43	55	40	34	35
E.	24	44	72	30	4	189	3	4	7	7	11	10	3	6	10	6	2	3
S. E.	40	378	343	94	34	203	31	25	36	24	43	33	33	37	25	21	14	21
S.	33	156	381	163	43	327	19	19	29	29	47	30	36	33	33	39	32	35
S. W.	26	150	595	271	124	562	49	49	27	43	47	63	73	58	34	43	53	56
W.	28	106	71	115	7½	384	14	6	4	4	4	7	2	2	5	12	7	4
N. W.	72	404	335	501	100½	703	71	68	88	79	58	51	62	51	60	74	88	85

Course.	Bellona Arsenal, Virginia, 1832.[1]	Fort Washington, Va., 1833-34.[1]	Old Point Comfort, Virginia.											
			1826 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1826 TO 1830, INCLUSIVE.										
				Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	24	28	528	29	13	14	10	3	1	0	6	21	17	13	17
N. E.	49	33	1485½	33	33	36	26	44	26	29	30	40	39	25	32
E.	21	23	465	9	13	7	11	13	18	10	11	13	9	10	7
S. E.	62	46	690½	9	13	22	27	36	29	30	27	18	14	18	11
S.	21	304	582	1	10	5	13	11	10	7	9	6	4	7	8
S. W.	83	111	1387½	28	31	43	36	28	43	68	42	28	28	36	46
W.	53	77	449	16	7	16	12	14	16	7	24	8	17	19	13
N. W.	53	108	622½	30	21	12	15	6	7	4	6	16	27	23	21

[1] For abstracts of these years separately, see the published volumes of the U. S. Army Meteorological Register.

[2] Two independent registers for this station for the years 1831, 33, 34, 35, and 38.

[3] Calms 52.8.

Winds in the United States.—*Continued.*

Course.	Alexandria, Virginia, 1 month.	Norfolk, Virginia, 1 month.	Gosport, Virginia, 8 months.	West Brunswick, Virginia, 12 months.	Beaufort, North Carolina.												
					1834-35.	TOTAL FOR THE SEPARATE MONTHS.											
						Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	1	0	76	205	122	12	11	7	7	5	5	4	13	17	9	13	19
N. E.	0	15	110	260	79	3	5	3	7	3	8	2	6	12	15	6	9
E.	0	16	66	49	50	5	3	1	5	3	10	2	4	6	10	1	0
S. E.	1	23	59	82	60	10	4	5	4	4	5	10	2	4	5	3	4
S.	12	13	97	175	113	7	6	10	3	11	16	17	9	7	7	14	6
S. W.	1	40	153	684	188	14	19	22	19	23	9	20	20	13	9	9	11
W.	0	4	78	369	32	1	3	2	8	4	1	1	2	0	0	6	4
N. W.	7	9	61	367	86	9	8	11	8	6	7	6	6	1	7	8	9
Calm	9	0	23	241													

Chapel Hill, North Carolina.

Course.	1845.	1846.	TOTAL FOR THE SEPARATE MONTHS.											
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	140	204	24	28	31	24	21	18	26	29	43	38	40	22
N. by E.	2	5	1	0	0	0	0	0	5	1	0	0	0	0
N. N. E.	25	34	1	6	4	1	3	6	3	7	8	17	1	2
N. E. by N.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	146	156	21	24	22	27	25	24	24	29	31	28	12	35
N. E. by E.	20	22	0	3	5	5	3	2	5	4	5	4	2	4
E. N. E.	20	22	0	3	5	5	3	2	5	4	5	4	2	4
E. by N.	3	3	1	1	0	0	1	0	2	0	0	1	0	0
East	181	194	17	14	26	38	45	18	37	56	40	42	26	21
E. by S.	2	0	0	0	0	0	2	0	0	0	0	0	0	0
E. S. E.	8	10	0	0	1	2	7	0	3	0	3	0	1	1
S. E. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	85	70	11	4	14	19	18	10	14	15	15	13	12	10
S. E. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. E.	10	7	1	2	4	1	4	2	0	0	0	1	1	1
S. by E.	3	2	1	1	0	0	0	0	1	2	0	0	0	0
South	151	177	17	25	23	44	41	35	34	35	17	30	21	6
S. by W.	8	2	1	0	5	0	2	1	0	0	0	1	0	0
S. S. W.	43	39	13	8	10	9	8	7	6	4	3	5	4	5
S. W. by S.	2	1	2	0	0	0	0	0	0	0	0	1	0	0
S. W.	231	169	44	36	38	34	17	36	40	23	20	7	39	66
S. W. by W.	4	0	4	0	0	0	0	0	0	0	0	0	0	0
W. S. W.	26	24	6	5	3	4	7	6	3	4	1	2	5	4
W. by S.	5	5	3	2	0	0	0	1	3	0	0	0	1	0
West	192	206	46	23	37	15	28	27	26	32	32	35	58	35
W. by N.	6	0	4	1	0	0	1	0	0	0	0	0	0	0
W. N. W.	9	6	2	1	2	0	0	3	0	0	1	1	3	2
N. W. by W.	1	0	1	0	0	0	0	0	0	0	0	0	0	0
N. W.	138	83	22	37	20	15	13	23	9	7	17	16	12	30
N. W. by N.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. N. W.	13	5	1	3	2	2	1	1	2	2	2	1	1	0
N. by W.	2	0	2	0	0	0	0	0	0	0	0	0	0	0

Winds in the United States.—*Continued.*

Fort Johnston, North Carolina.

Course.	10 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1822 TO 1826, INCLUSIVE.												Florence, North Carolina, 1 month.	Wake Forest, North Carolina, 1 month.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		
N.	578	40	43	50	44	41	28	28	46	42	58	47	45	23	9
N. E.	650	8	6	10	10	4	0	2	2	9	7	11	13	12	5½
E.	131	9	8	5	6	13	5	5	9	12	10	10	5	0	2
S. E.	155	2	2	6	6	2	4	12	0	3	2	5	4	0	4½
S.	820	31	29	40	63	62	65	51	44	36	31	36	46	2	10
S. W.	688	15	5	10	3	8	12	19	20	5	5	3	3	16	8½
W.	261	15	24	14	12	18	27	31	22	23	20	21	14	32	10
N. W.	369	35	24	20	6	7	9	7	12	20	22	17	25	8	20½

Course.	Camden, S. Carolina, 1838.	Abbeville, S. Carolina, 1838–39.	Charleston, South Carolina.					Fort Moultrie, South Carolina.														
			1831, 32, and 33, in part.	1834.	1837.	1841.	1844.	1822 to 1824, inclusive.[1]	7 years since 1830.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1823–4.												
										Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	4	21	186	210	156	60	32	48	187	4	7	2	2	6	0	0	0	3	6	4	9
N. E.	97	166	379	114	183	226	65	172	531	21	12	17	12	11	14	4	7	19	14	21	20
E.	4	83	166	90	108	144	38	109	261	5	3	4	11	9	6	5	16	14	17	6	13
S. E.	26	61	287	99	129	126	43	182	367	4	7	8	16	12	16	15	19	11	8	6	0
S.	0	44	138	330	201	81	53	100	296	3	7	7	7	14	17	15	14	7	3	4	2
S. W.	135	94	515	78	138	228	69	103	435	15	8	9	7	7	5	17	6	6	5	12	6
W.	27	196	110	69	45	90	20	49	219	5	7	4	4	3	1	6	0	0	5	6	8
N. W.	65	49	218	84	135	111	45	28	261	5	6	1	1	0	1	0	0	0	4	1	4

Athens, Georgia.[2]

Course.	1841 to 1844.	1845.	SEPARATE MONTHS OF 1845.											
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	38	51	6	5	3	2	1	2	8	1	6	7	0	10
N. E.	119	78	4	1	5	5	6	1	4	11	7	22	1	11
E.	88	44	4	2	2	0	5	4	3	3	9	10	0	2
S. E.	30	17	2	0	1	1	3	4	1	2	0	3	0	0
S.	35	11	0	3	0	1	0	1	4	0	1	0	0	1
S. W.	100	96	9	8	6	8	8	15	11	6	9	3	6	7
W.	165	177	25	12	25	23	12	12	20	12	13	6	4	13
N. W.	64	63	5	12	9	2	0	0	4	6	5	1	8	11
Calm or variable		149	7	13	11	18	27	21	7	21	10	10	1	3

[1] For abstracts for these years separately, see published volumes of the U. S. Army Meteorological Register.

[2] The following is an extract from a letter of Prof. McCay accompanying the observations:—

"I do not think there is any local cause for our winds. There are no mountains within 60 or 70 miles—no regular ridges for a still greater distance. The country is undulating, with no changes of elevation amounting to 500 feet in a circle around us of 50 miles. The river near us is very small. Its course is very irregular, sweeping round us in a semicircular course. Other streams near us have a general course to the S. E., nearly S.

Winds in the United States.—*Continued.*

Augusta Arsenal, Georgia.

Course.	1826 to 1830, inclusive.[1]	1831 to 1835, and 1839 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1826 TO 1830, INCLUSIVE.											
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	95	175	13	11	9	6	7	3	2	7	4	17	7	9
N. E.	242	400½	14	26	18	8	20	25	9	28	28	30	11	25
E.	97	245½	14	9	10	7	7	4	8	9	13	9	2	5
S. E.	297	449	19	11	23	28	28	25	34	38	29	17	25	20
S.	151	285	12	7	21	14	10	9	12	13	12	9	15	17
S. W.	458	815	35	29	39	46	56	41	59	35	25	22	41	30
W.	201	407½	21	18	19	26	16	20	17	7	10	13	15	19
N. W.	286	510½	27	30	16	15	11	23	14	17	29	39	35	30

Course.	Oglethorpe Barracks, Georgia.		Augusta, Georgia.				Eutaw, Alabama, 1851.		Mobile, Alabama.			Glenville, Alabama, 1 month.	Tuscaloosa, Alabama, 1 month.
	1834.	1835.	1840.	1841.	1842.	1843.	Lower current.	Upper current.	1841.[2]	1841.	Part of 1838 & 1840.		
N.	29	34					295	79	240	270	30	1	9
N. E.	62	54	321	393	116	49	103	33	132	141	9	10	7
E.	25	28					53	11	27	21	0	1	8
S. E.	69	36	261	195	58	98	302	85	105	150	13	8	1
S.	57	57					175	62	417	396	43	0	2
S. W.	42	59	252	330	113	140	122	227	78	66	15	6	1
W.	20	46					107	310	45	12	1	3	8
N. W.	61	51	210	86	61	71	204	179	51	36	8	9	1
Calm							99	474	0	0	0	0	0

Course.	Milledgeville, Georgia, 2 months.	Whitemarsh Island, Georgia, 13 months.	Savannah, Georgia.			Port Gibson, Mississippi, 2 months.	Washington, Mississippi, 2 months.	Frank's Island, Louisiana, 2 months.	Atakapas, Louisiana, 2 months.
			1832, in part.	1833-34.[3]	10 months of 1843 and 1845.				
North	5	171	0	223.80	77	16	19	10	17
N. N. E.	0	87	0		11	4	2	0	0
N. E.	35	300	24		59	9	24	9	8
E. N. E.	0	10	0		19	2	2	11	1
East	48	85	0	271.74	114	10	9	41	8
E. S. E.	0	6	0		37	9	1	4	0
S. E.	36	197	8		52	12	27	11	10
S. S. E.	0	15	0		20	5	0	1	0
South	56	329	3	220.77	202	36	28	7	53
S. S. W.	1	34	0		20	4	3	0	0
S. W.	33	299	12		79	19	47	7	7
W. S. W.	0	65	0		19	12	0	0	0
West	128	359	0	238.34	194	44	26	4	2
W. N. W.	1	34	0		21	4	4	2	0
N. W.	39	359	13		54	24	20	6	0
N. N. W.	0	6	0		7	8	12	0	0
Calm	1	227	0		0	10	2	7	55

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

[2] Two independent registers.

[3] The numbers in this column are the original observations reduced in the direction of the cardinal points.

Winds in the United States.—*Continued.*

Tuskegee, Alabama.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	0	4	5	2	2	0	4	0	0	0	0	0	17
N. N. E.	0	4	0	0	0	0	0	0	0	0	0	2	6
N. E.	0	0	6	8	6	2	8	18	18	8	6	4	84
E. N. E.	0	0	2	1	1	1	0	0	0	8	0	0	13
East	18	8	4	13	5	8	2	6	14	10	8	8	104
E. S. E.	0	0	3	1	0	1	0	0	0	0	0	2	7
S. E.	0	12	15	20	12	19	20	12	2	8	4	20	144
S. S. E.	0	0	2	1	4	4	0	8	0	8	0	20	47
South	0	0	0	2	1	1	0	0	0	0	0	0	4
S. S. W.	2	0	5	0	2	3	2	0	4	0	0	0	18
S. W.	6	2	5	8	11	4	8	8	2	0	0	2	56
W. S. W.	0	0	0	0	1	1	0	0	0	2	0	0	4
West	6	18	5	2	3	6	4	0	2	0	0	4	50
W. N. W.	4	0	0	0	0	1	0	0	0	0	0	0	5
N. W.	0	8	8	2	13	9	14	10	0	16	0	0	80
N. N. W.	8	0	2	0	1	0	0	0	0	2	0	0	13

Course.	Spring Hill College, Alabama.												Knoxville, Alabama, 3 months.	Springfield, Alabama, 1 month.	Arendale, Alabama, 2 months.	La Grange College, Alabama, 8 months.	Mount Vernon, Alabama, 10 months.
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.					
N.	20	16	13	6	18	13	11	13	27	26	22	24	182	59	0	15	62	94½
N. E.	28	4	8	6	4	12	11	16	11	12	6	12	99	20	7	11	35	40
E.	12	4	9	11	6	14	9	8	4	13	3	5	86	33	0	37	28	2
S. E.	12	0	12	7	12	8	16	8	9	16	12	12	115	35	1	11	244	39½
S.	8	8	18	21	19	11	13	13	18	6	16	11	150	89	6	14	103	0
S. W.	4	20	10	8	11	15	16	12	9	2	5	8	102	16	8	36	58	69½
W.	0	8	8	3	6	10	13	13	6	0	2	4	67	135	64	99	48½	0
N. W.	20	8	26	11	5	7	7	6	10	3	13	7	102	63	26	4	143½	56½
Calm or variable	20	44	25	46	43	30	28	39	29	46	41	34	377	143	89	133	1	

Course.	St. Augustine, Florida.				TOTAL FOR THE SEPARATE MONTHS OF 1825, 26, 28, and 30.												Cape Florida.				
	1825, 26, 28, and 1830.[1]	1831, 32, and 1833.[1]	1835.	5 years since 1836.[1]	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Winter.	Spring.	Summer.	Autumn.	Total.
N.	68	75	83	218	18	7	5	2	6	4	0	2	6	5	9	4	6	3	2	4	15
N. E.	473	289	68	511	38	31	38	38	28	41	34	29	56	71	31	38	9	14	0	21	44
E.	41	80	11	141½	1	3	1	5	12	2	3	6	1	5	1	1	7	7	9	16	39
S. E.	458	292	27	266½	13	34	44	41	50	40	54	47	41	24	37	33	17	25	39	15	97
S.	52	121	91	204½	14	11	2	6	3	4	4	0	0	1	2	5	11	21	18	8	58
S. W.	189	91	22	219½	7	9	17	14	18	12	13	21	10	7	4	7	3	2	12	7	24
W.	74	46	14	129	12	8	5	6	3	10	10	11	0	4	1	4	5	3	4	7	19
N. W.	150	102	4	140	21	10	12	7	4	7	6	8	6	7	36	26	32	17	8	13	70

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Key West, Florida.

Course.	1835.	1834 to 1837.	TOTAL FOR THE SEPARATE MONTHS FROM 1834 TO 1837.												Key West Barracks, 1831, 32, and 34.[1]
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
North	39	216	32	40	16	16	8	8	0	0	8	32	16	40	184
N. N. E.	5	56	8	0	8	8	0	0	0	0	0	8	16	8	
N. E.	75	576	40	40	48	32	24	32	24	32	64	80	88	72	760
E. N. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
East	96	656	56	48	80	32	72	48	72	48	48	32	72	48	360
E. S. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
S. E.	54	536	48	32	24	56	64	40	72	64	64	40	16	16	444
S. S. E.	2	40	0	8	0	8	8	0	0	0	8	0	0	8	
South	9	128	8	0	8	8	8	32	24	24	0	0	8	8	50
S. S. W.	0	32	8	8	0	8	8	0	0	0	0	0	0	0	
S. W.	22	136	8	0	8	16	16	24	16	24	16	8	0	0	92
W. S. W.	0	24	0	8	0	0	8	0	0	0	0	0	0	8	
West	12	48	0	0	0	8	0	8	8	16	8	0	0	0	46
W. N. W.	0	40	0	8	8	0	0	8	0	8	0	0	0	8	
N. W.	42	232	32	24	24	16	24	24	8	16	8	16	16	24	256
N. N. W.	0	56	0	0	8	8	0	0	0	8	8	16	0	8	
Variable	9	48	8	8	16	24	8	16	24	8	8	16	8	0	

Course.	Pensacola, Florida.													Tortugas Islands, Florida.				
	7 years.[1]	TOTAL FOR THE SEPARATE MONTHS.												Winter.	Spring.	Summer.	Autumn.	Total.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.					
N.	216	20	32	19	11	6	6	17	11	15	28	25	17	16	4½	0	8	28½
N. E.	254	41	20	15	7	8	9	11	28	21	41	18	35	32	33½	6	34	105½
E.	99	9	12	20	2	3	1	5	4	8	7	8	20	11	15	11	16	53
S. E.	472	41	30	40	49	22	25	23	30	51	56	52	58	7	18	16	13	54
S.	379	28	25	44	48	58	34	25	35	24	22	19	27	6	5	2	1	14
S. W.	686	25	43	45	70	96	102	102	72	60	24	29	18	3	3	3	2	11
W.	92	6	4	7	6	6	20	13	9	4	4	8	10	1	1	2	1	5
N. W.	356	38	32	27	22	21	13	21	27	27	35	56	37	12	3	1	7	23
Variable														2	9	4	9	24

Course.	Tampa Bay, Florida.															Indian Key, Florida.				
	1823, 24, 27, 28, 30, & 31.[1]	1835.	1838 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1825, 26, 27, 28, and 30.												1831.	Winter.	Spring.	Summer.	Autumn.	Total.
				Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.						
N.	69	34	144	24	5	7	7	1	1	1	2	0	2	3	3	13	22	14	1	16	53
N. E.	310	43	391	11	28	19	22	18	8	10	15	34	30	25	25	58	13	2	3	19	37
E.	245	19	330½	5	8	6	16	24	35	6	13	21	24	15	15	57	14	20	46	30	110
S. E.	352	18	217½	7	21	25	21	25	21	39	34	29	17	18	22	63	13	17	23	8	61
S.	213	8	199	21	9	11	11	18	18	35	22	13	9	10	16	21	8	25	7	3	43
S. W.	383	19	267½	26	35	35	32	27	28	38	33	11	25	29	11	53	1	2	6	4	13
W.	351	12	157	29	21	33	29	26	27	20	21	29	30	28	41	17	4	8	2	5	19
N. W.	275	53	120½	27	16	19	12	9	12	6	15	13	18	23	22	83	14	2	1	5	22
Variable		6															1	2	3	1	7

[1] For separate abstracts for each of these years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort King, Florida.

Course.	5 years.[1]	Total for the separate months of 1833, 34, and 35.												Apalachicola, Florida.	Cedar Keys, 1842.	Carysford Reef, Florida.				
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	May.		Winter.	Spring.	Summer.	Autumn.	Total.
N.	155	4	12	4	13	7	2	0	3	7	2	5	11	3	19	10	10	2	9	31
N. E.	256	15	10	7	13	16	0	9	7	6	25	12	8	21	75½	15	20	15	31	81
E.	203	7	4	14	6	10	14	12	15	29	10	20	16	14	33	16	15	21	15	67
S. E.	188	16	11	16	6	5	17	18	12	7	7	6	12	9	51½	12	18	22	13	65
S.	279	20	12	8	10	15	29	26	12	10	10	9	18	21	29½	4	12	16	2	34
S. W.	406	14	21	21	26	17	19	18	13	10	14	9	5	16	85	6	5	7	7	25
W.	217½	10	5	13	11	11	5	13	28	15	17	24	9	21	26	7	2	1	2	12
N. W.	120½	7	9	10	6	11	5	1	3	6	8	6	13	10	45½	18	4	2	11	35
Variable														16		2	6	6	1	15

Natchez, Mississippi.

Course.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	1841.	Separate months of 1840, 41, 42, and 46.											
																		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	95	72	88	116	110	58	94	105	82	144	143	131	173	132	118	127	123	36	38	32	32	31	32	44	48	46	66	47	32
N. E.	58	44	44	41	45	21	19	38	54	56	34	22	37	41	44	48	42	15	9	10	5	15	7	4	11	30	20	7	14
E.	77	89	91	92	88	58	65	88	75	84	51	79	124	66	77	106	85	24	22	29	20	36	27	34	35	30	34	40	30
S. E.	132	103	76	64	84	44	54	43	40	39	52	33	66	61	66	68	115	35	23	38	35	17	22	26	28	49	39	34	27
S.	80	99	116	132	141	131	110	93	88	149	148	155	119	84	107	155	120	40	49	63	68	64	65	55	52	35	33	41	40
S. W.	88	116	85	68	64	90	54	72	71	96	59	66	123	87	120	94	107	33	19	33	37	39	47	55	26	18	20	17	23
W.	31	31	21	26	26	38	25	25	33	38	31	37	65	53	49	68	40	21	14	13	26	13	22	24	25	8	12	18	16
N.W.	54	46	26	11	25	28	31	16	25	20	20	21	49	30	28	23	12	6	11	14	7	9	7	7	9	4	10	10	8

Vicksburg, Mississippi.

Course.	1840.	1841.	1842.	Separate months of 1842.											
				Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	447	447	225	11	9	8	10	8	4	4	3	2	2	0	14
N. E.	45	33	54	0	1	0	0	0	2	1	5	2	3	3	1
E.	72	69	255	3	7	6	3	8	9	7	9	12	8	10	3
S. E.	111	135	69	2	2	1	2	0	0	0	3	5	3	4	4
S.	297	309	240	15	9	16	15	9	1	1	1	2	0	9	11
S. W.	42	27	18	0	0	0	0	0	1	1	2	1	0	1	0
W.	42	45	162	0	0	0	0	4	11	13	4	4	10	8	0
N. W.	42	30	72	0	0	0	0	2	2	4	4	2	5	4	1

New Orleans, Louisiana.

Course.	1826.	1836.	April to Sept. for 1834, 35, 36, and 37.	Nov. and Dec. of 1839.	1840.	1841.	1842.	Total for the separate months of 1841–42.											New Orleans Barracks, 1838 to 1842, inclusive.
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	154	204	669	54	162	249	189	19	10	7	7	10	5	10	8	12	21	13	24	302½
N. E.	90	113	969	18	42	57	54	6	9	3	0	1	1	1	6	2	1	5	2	283
E.	141	81	812	36	150	162	117	9	6	7	8	4	1	8	10	13	9	7	11	205½
S. E.	86	128	1446	12	108	93	66	5	3	3	7	5	3	2	7	5	6	4	3	143½
S.	74	131	0	6	252	255	258	12	6	19	13	21	21	18	12	19	10	12	8	231
S. W.	48	117	1578	6	48	78	132	5	9	7	10	5	8	6	7	1	2	5	5	231
W.	90	73	594	9	90	126	174	2	7	12	7	11	20	13	8	5	3	7	5	192½
N. W.	46	119	823	39	63	75	105	4	6	4	8	5	1	4	4	3	10	7	4	248

[1] For separate abstracts for each of those years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Petite Coquille, Louisiana.

Course.	1827 to 1830, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	104	12	12	9	7	6	3	8	8	8	8	7	16
N. E.	269	21	16	20	12	25	19	15	21	47	41	8	24
E.	254	26	23	21	22	18	12	15	25	15	23	26	28
S. E.	196	9	10	11	29	16	18	16	12	17	10	24	24
S.	97	7	14	14	14	13	8	5	8	4	3	4	3
S. W.	196	9	12	14	7	21	24	38	22	14	15	13	7
W.	189	17	16	11	11	13	20	10	9	5	9	11	7
N. W.	208	23	10	24	18	12	16	18	19	10	15	23	15

Fort Jessup, Louisiana.

Course.	1823 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1823 TO 1830, INCLUSIVE.												Baton Rouge, Louisiana, 7 years.	Fort Jackson, Louisiana, 1832.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		
N.	1158	27	27	20	29	17	4	22	31	33	24	18	26	160	21
N. E.	970½	36	36	31	48	33	33	36	56	68	54	39	32	251	76
E.	873	21	25	17	21	23	31	20	20	32	26	18	16	526	51
S. E.	894½	34	55	60	39	51	53	51	44	32	48	38	61	355	84
S.	839½	25	21	26	18	48	38	36	30	22	20	25	24	265	42
S. W.	908½	49	22	27	38	36	51	41	27	18	24	35	29	399	54
W.	825	18	11	20	13	18	10	19	15	5	7	21	7	319	15
N. W.	835	38	29	47	30	22	20	23	25	30	45	47	53	291	23

Fort Wood, Louisiana.

Course.	1831, 32, and 1833.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	52	9	4	1	1	3	3	1	0	5	6	10	9
N. E.	172	7	9	3	13	18	5	17	22	27	23	10	18
E.	100	11	9	8	7	4	6	8	10	11	12	4	10
S. E.	240	16	18	29	22	17	30	31	6	24	15	23	9
S.	88	9	12	8	5	10	18	9	5	3	7	6	3
S. W.	114	4	2	14	12	16	17	12	22	3	2	4	4
W.	99	15	13	13	7	14	6	5	8	6	4	3	7
N. W.	228	19	17	17	23	11	13	10	20	11	24	30	33

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort Pike, Louisiana.

Course.	1831 to 1834, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	123	11	20	12	10	5	7	3	4	3	18	15	15
N. E.	204	15	13	17	10	9	13	19	24	20	21	22	21
E.	284	36	32	28	11	18	7	10	23	33	38	24	24
S. E.	263	18	16	31	21	26	30	21	18	28	23	15	16
S.	84	5	11	8	18	7	8	9	2	8	3	5	5
S. W.	151	7	6	9	21	11	20	31	16	11	4	7	8
W.	185	10	6	7	24	23	22	22	22	9	8	12	20
N. W.	165	22	9	12	10	25	13	9	15	6	9	20	15

Fort Smith, Arkansas.

Course.	1840, 41, and 1842.[1]	TOTAL FOR THE SEPARATE MONTHS.												Little Rock, Arkansas, 1840.	Little Rock Arsenal, Arkansas, 1840.	Washington, Arkansas, 5 months.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
N.	148	30	5	16	4	4	4	14	11	10	11	22	17	31	93	2
N. E.	304	22	15	9	24	12	15	26	44	49	38	38	17	54½	117	12
E.	201	13	34	16	15	21	10	21	15	15	11	8	22	46	165	4½
S. E.	287	17	16	25	25	24	8	24	20	19	25	38	26	31	144	36
S.	445	17	11	38	39	81	94	65	28	31	21	8	12	58	99	4½
S. W.	296	17	29	33	25	21	21	12	24	30	40	19	25	54	156	49½
W.	286	54	47	30	32	10	7	12	26	14	14	14	26	54½	165	6½
N. W.	250	18	15	21	29	17	8	7	18	12	26	43	41	42	159	1

Nashville, Tennessee.

Course.	1839–40.	1841.	1842.	1843.	1844.	PROPORTION FOR THE SEPARATE MONTHS.											
						Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	67	657	389	592	615	.108	.354	.312	.153	.207	.061	.186	.156	.380	.524	.220	.143
N. E.	101	1872	997	1417	1517	.429	.591	.805	.478	.597	.539	.700	.567	.633	.622	.593	.412
E.	81	589	546	837	847	.231	.173	.172	.136	.197	.218	.282	.567	.523	.142	.193	.253
S. E.	82	521	1693	1127	888	.709	.669	.349	.403	.242	.276	.396	.485	.299	.369	.527	.297
S.	39	119	341	172	259	.146	.072	.080	.114	.078	.021	.069	.069	.054	.070	.118	.057
S. W.	332	4239	3788	3615	3996	1.212	1.080	1.425	1.662	1.865	2.343	1.704	1.612	1.711	1.331	1.150	1.676
W.	331	1666	1809	1527	1229	.844	.911	.618	.771	.656	.477	.430	.449	.309	.836	.753	.622
N. W.	105	337	437	713	649	.241	.249	.239	.286	.158	.065	.105	.097	.091	.196	.340	.395

[1] For separate abstracts for each of these years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Course.	Greenville, Tennessee, 3 months.	Knoxville, Tennessee, 8 months.	Danville, Kentucky, 5 months.	Louisville, Kentucky, 2 months.	Paris, Kentucky, 2 months.	Springdale, Kentucky, 2 months.	St. Mary's College, Kentucky, 7 months.
North	13	137	12	8	10	0	123
N. N. E.	2	16	0	8	2	8	
N. E.	1	78	51	8	9	5	71
E. N. E.	0	5	0	8	2	6	
East	18	78	46	10	9	5	42
E. S. E.	0	1	0	5	3	2	
S. E.	12	18	58	7	12	5	62
S. S. E.	6	2	0	5	2	5	
South	72	141	42	10	17	24	121
S. S. W.	6	63	2	22	6	21	
S. W.	68	292	365	24	56	20	390
W. S. W.	2	9	0	12	20	2	
West	220	316	252	18	109	6	366
W. N. W.	0	8	8	14	2	2	
N. W.	21	118	125	28	15	12	142
N. N. W.	1	12	0	5	6	20	
Calm	37	231	40	0	0	53	16

Course.	Ashtabula, Ohio, 5 months.	Chillicothe, Ohio, 1 year.	Chillicothe, Ohio, 4 months.	Cincinnati, Ohio, 6 months.	Dayton, Ohio, 4 months.	Granville, Ohio, 5 months.	Sandusky, Ohio, 9 months.	Zanesville, Ohio, 11 months.	Ravenna, Ohio, 1 month.
North	24	44	9	35	44	16	49	164	0
N. N. E.	1	2	15	18	15	8	5	7	4
N. E.	74	41	18	39	10	38	78	67	2
E. N. E.	1	1	0	5	16	23	16	0	11
East	21	20½	1	51	5	29	138	22	2
E. S. E.	0	1	5	11	3	6	4	0	8
S. E.	15	11	65	14	3	27	128	31	14
S. S. E.	1	1	26	9	0	7	2	0	6
South	127	27	13	22	10	19	195	129	3
S. S. W.	4	2	13	18	35	24	20	8	33
S. W.	103	40	105	62	65	244	332	221	45
W. S. W.	5	3	15	24	89	36	7	8	29
West	160	150½	56	295	129	81	362	240	4
W. N. W.	10	9	25	54	51	5	18	14	23
N. W.	193	220	121	56	67	20	174	87	37
N. N. W.	0	19	10	17	20	0	19	1	0
Calm	99	234	1	0	0	12	21	0	0

Steubenville, Ohio.

Course.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N. E.	25	21	9	13	3	10	12	13	10	12	29	20	5	24	18	15	14	32	28	8	7	15	12	17	16	24
S. E.	49	31	12	11	26	25	30	26	25	24	38	44	25	19	40	28	33	36	35	24	30	28	34	35	37	25
S. W.	124	136	171	139	168	135	131	139	111	127	111	98	141	128	160	150	148	148	155	170	183	155	135	156	146	153
N. W.	167	177	173	203	168	195	192	188	219	202	187	204	194	194	216	202	239	204	216	218	214	236	239	226	221	232

Winds in the United States.—*Continued.*

Hudson, Ohio. (Surface Winds.)[1]

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	205.0	207.8	305.4	332.1	316.1	286.6	327.4	325.5	257.4	207.5	141.5	219.2	3131.3
E.	132.3	95.5	154.1	169.5	159.6	116.1	103.8	160.4	154.1	114.7	123.2	137.8	1621.2
S.	294.0	257.5	187.8	215.5	210.6	264.0	190.6	189.4	256.2	255.7	227.1	236.2	2784.8
W.	537.2	526.5	500.9	434.4	470.7	477.7	489.4	397.0	428.0	517.4	486.9	560.3	5826.5

Hudson, Ohio. (Clouds.)

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	70.1	67.0	81.4	74.7	66.5	90.5	113.7	125.4	90.1	96.1	79.7	81.7	1037.1
E.	22.6	14.4	33.0	27.1	29.7	23.8	24.4	50.7	42.3	20.0	33.7	36.2	357.9
S.	121.2	87.9	65.3	78.0	78.7	97.4	82.7	105.4	82.8	89.9	111.1	98.6	1099.2
W.	267.9	256.3	208.3	192.8	214.3	250.9	252.6	222.8	199.4	245.8	240.6	252.9	2804.6

Course.	Cambridge, Ohio, 1 month.	Concord, Ohio, 1 month.	Columbus, Ohio, 8 months.	Lancaster, Ohio, 5 months.	Lebanon, Ohio, 13 months.	New Athens Ohio, 6 months.	Marietta, Ohio, 1 year.	Rensaleer, Indiana, 1 month.	Brookville, Indiana, 1 month.	Indianapolis, Indiana, 3 months.	Greensburg, Indiana, 3 months.	Winamac, Indiana, 3 months.
N.	2	0	142	64	83	72½	62	20	8	6	18	17
N. E.	16	0	99	45	216	75	11	18	33	5	27	17
E.	4	4	89	60½	127	11	6	1	28	2	16	11
S. E.	8	3	61½	60	281	51	19	7	32	9	11	14
S.	4	12	194½	241	228	75½	51	58	16½	9	30	25
S. W.	51	10	244	128	932	232½	127	22	84½	16	147	124
W.	26½	10	459	426½	820	145	46	38	96	4	68	159
N. W.	25½	1	265	56	293	215½	42	12	141	8	31	81
Calm	2	0	42	11	0	235	0	33	41	0	108	0

Brockville,[2] Indiana.

Course.	1841.	1842.	1840 and 1843, in part.	Proportion for the separate months.												Greencastle, Indiana, 3 months.
				Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
North	24	26	14	3	4	6	4	8	11	6	7	9	0	0	6	21
N. N. E.	34	10	17	4	4	3	3	17	4	4	2	5	10	0	10	7
N. E.	59	37	62	8	5	18	20	21	4	17	27	14	22	1	12	18
E. N. E.	21	22	26	1	1	15	17	11	4	0	1	5	0	6	9	3
East	18	28	46	1	8	17	9	12	4	3	14	10	10	4	5	9
E. S. E.	14	25	13	3	13	11	7	5	0	0	1	4	8	0	4	11
S. E.	99	103	68	29	7	17	23	24	25	33	30	21	40	33	8	19
S. S. E.	38	24	9	20	4	8	7	2	3	5	5	7	0	4	6	17
South	46	99	46	32	15	13	26	15	14	5	23	10	16	23	7	47
S. S. W.	32	18	27	12	7	4	3	4	8	2	1	13	2	8	14	35
S. W.	185	182	185	52	57	50	29	44	56	76	33	57	54	31	40	57
W. S. W.	70	46	41	21	29	27	5	5	6	5	3	6	22	24	15	23
West	89	213	166	60	67	41	39	48	39	31	24	28	48	37	30	70
W. N. W.	108	34	18	13	17	17	21	12	12	14	16	11	22	4	12	39
N. W.	98	110	41	10	9	20	25	30	23	30	39	31	22	9	12	39
N. N. W.	21	1	8	0	1	2	3	3	8	3	0	5	0	1	4	17
Calm	15	18	25	3	1	3	13	4	2	6	14	4	10	0	3	27

[1] These observations were taken with extreme minuteness in regard to direction, and then resolved in the direction of the cardinal points, taking into account both time and estimated force.

[2] This register extends from Nov. 1, 1840, to Sept. 30, 1843.

Winds in the United States.—*Continued.*

Chicago, Illinois.

Course.	1833.	1834.	1835.	1836.	3 months of 1845.	PROPORTION FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Peoria, Illinois, 1 month.
N.	54	65	98	115	22	14	22	23	46	39	25	34	18	27	33	9½	11	24
N. E.	49	47	30	20	23	6	8	13	13	19	8½	13	19½	15	6	5	10	19
E.	39	24	16	29	31	6	4	7	15	13	8½	10	19	9	5	4	7	15
S. E.	44	40	18	16	51	14	8	15	8	5	17½	7	12½	10	13	14	15	27
S.	36	33	93	51	15	22	19	19	12	19	11½	24	7	17	14	10½	24	18
S. W.	59	62	84	56	96	18	15	17	11	10	18½	22	27	18	22	82	19	13
W.	38	57	41	47	107	26	19	19	8	13	24	13	8	10	17	34½	21	21
N. W.	46	37	35	29	24	18	18	11	7	4	7	1	10	14	14	18	14	38
Calm						0	0	0	0	0	0	0	0	0	0	0	0	0

Rock Island, near Stephenson, Illinois.

Course.	8 years.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1827, 28, 29, AND 30. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Shawneetown, Illinois, 2 months.	Athens, Illinois, 1 year.
N.	385	34	24	14	28	14	13	26	19	32	18	29	19	61	11
N. E.	266	6	8	14	12	16	6	8	10	14	10	8	6	4	88
E.	308	14	6	9	15	9	9	6	18	18	11	15	12	11	1
S. E.	212	12	2	5	8	8	10	10	8	15	9	7	9	1	51
S.	672	21	34	53	26	49	55	39	46	22	40	20	32	24	36
S. W.	328	7	4	7	7	7	7	20	15	6	7	21	17	19	117
W.	444	13	17	12	17	16	12	12	11	7	22	14	18	53	17
N. W.	307	17	18	10	7	5	8	8	2	11	7	12	11	57	90
Calm														97	4

Course.	Jacksonville, Illinois, 9 months.	Macomb, Illinois, 3 months.	Upper Alton, Illinois, 2 months.	Course.	Jacksonville, Illinois, 9 months.	Macomb, Illinois, 3 months.	Upper Alton, Illinois, 2 months.	Course.	Mackinac, Michigan, 8 years.	Ann Arbor, Michigan, 2 months.	Presque Isle, Michigan, 6 months.
North	25½	30	20	South	75	55	11	N.	267½	N. W. to S. W. 36;	5
N. N. E.	0	10	7	S. S. W.	29½	29	3	N. E.	173	N. E. to S. E. 16;	26½
N. E.	6	33	15	S. W.	8	32	24	E.	475	N. 5; S. 4.	21½
E. N. E.	3½	8	0	W. S. W.	3	32	1	S. E.	268½		14
East	9½	11	1	West	24	62	53	S.	192		10½
E. S. E.	0	3	2	W. N. W.	19½	47	10	S. W.	222½		35½
S. E.	4½	63	15	N. W.	29	163	65	W.	773		67½
S. S. E.	1	30	9	N. N. W.	2	16	7	N. W.	550½		104½
								Calm			7

[1] For separate abstracts for each of these years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Detroit, Michigan.

Course.	1839, in part.	1840.	1841.	1842.	PROPORTION FOR THE SEPARATE MONTHS.											
					Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	19	47	61	50	40	32	48	40	32	24	72	60	63	36	12	63
N. by E.	1	6	10	0	0	4	4	0	4	0	0	0	9	15	9	0
N. N. E.	2	18	10	14	12	8	24	20	16	8	9	6	18	3	12	12
N. E. by N.	1	2	0	0	0	0	0	0	0	0	0	0	0	3	0	3
N. E.	15	60	45	31	36	28	96	72	20	20	24	51	30	48	18	30
N. E. by. E.	1	2	10	21	12	4	4	44	8	12	9	3	0	3	12	9
E. N. E.	7	14	25	26	4	12	52	40	28	12	9	15	9	12	15	24
E. by N.	4	25	18	4	8	8	20	32	32	12	6	0	9	24	9	6
East	36	70	62	41	16	24	80	76	44	72	72	57	39	33	72	12
E. by S.	0	5	18	8	4	8	0	4	20	12	15	3	9	15	9	6
E. S. E.	4	8	4	9	0	0	4	4	16	0	9	12	3	3	18	0
S. E. by E.	0	1	0	1	0	0	0	0	0	4	3	0	0	0	0	0
S. E.	15	38	14	10	12	12	8	20	20	16	9	36	21	21	18	15
S. E. by S.	0	0	1	2	0	0	4	0	0	0	0	3	0	0	3	0
S. S. E.	4	14	6	9	12	0	8	8	32	12	3	6	12	3	3	6
S. by E.	2	6	13	0	4	0	16	8	4	4	6	0	15	3	3	3
South	22	32	41	38	24	4	0	8	24	48	33	69	66	39	18	24
S. by W.	1	4	4	1	40	0	0	0	12	0	3	0	9	3	3	0
S. S. W.	8	35	11	14	16	16	4	16	20	32	15	30	24	21	9	3
S. W. by S.	1	6	4	18	12	20	8	0	16	12	15	9	6	0	6	0
S. W.	53	219	139	136	148	148	100	140	124	216	177	129	102	171	78	159
S. W. by W.	5	12	15	29	4	16	20	12	44	8	33	12	12	6	12	9
W. S. W.	10	52	46	65	60	60	28	44	12	52	39	51	30	48	69	63
W. by S.	6	30	20	7	24	28	16	4	16	16	12	3	6	30	30	12
West	46	122	62	68	88	88	52	32	40	36	72	75	75	75	126	81
W. by N.	1	5	8	6	4	4	8	4	8	4	3	6	3	9	12	0
W. N. W.	9	38	8	18	36	36	12	32	40	4	21	3	3	15	21	9
N. W. by W.	0	1	4	3	4	4	0	4	8	4	0	0	0	6	0	0
N. W.	60	138	38	59	84	56	68	36	76	48	30	84	75	45	75	120
N. W. by N.	2	7	5	8	12	8	4	4	8	8	0	3	9	3	6	6
N. N. W.	27	67	13	33	52	36	44	16	20	12	30	15	39	39	24	57
N. by W.	2	17	12	1	4	12	12	4	0	0	12	0	24	12	6	12

Fort Gratiot, Michigan.

Course.	9 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1831 TO 1835, INCLUSIVE.												1836.	Detroit Barracks, Michigan, 1840, 41, and 42.	Dearbornville Arsenal, Michigan, 1842.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
N.	352	9	18	11	24	20	20	26	24	17	7	5	6	5	112½	27
N. E.	568½	16	14	21	32	25	19	24	27	22	18	14	10	118	95½	7½
E.	55½	6	4	2	1	4	0	1	0	1	0	2	6	7	164	25
S. E.	203½	10	10	8	6	11	11	8	11	15	16	6	12	40	42½	6
S.	440	28	23	34	23	20	26	29	32	30	25	27	41	11	272½	97
S. W.	905	36	31	38	21	39	38	43	37	45	46	49	33	120	148	36½
W.	261	19	14	16	12	10	7	9	6	7	14	22	25	8	180	146½
N. W.	501½	31	27	25	31	26	29	14	19	13	29	26	20	57	81	19½

[1] For separate abstracts for each of these years, see the published volumes of the U. S Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort Brady, Michigan.

Course.	18 years.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1823, 24, 25, 26, 27, 28, AND 30.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	567½	13	11	12	5	7	9	12	11	13	9	17	12
N. E.	565	15	13	11	6	14	14	14	13	11	17	10	20
E.	750½	24	22	17	22	24	22	9	13	10	14	35	33
S. E.	1343½	43	39	56	46	40	33	22	28	42	37	32	37
S.	468	11	9	16	10	5	12	12	9	19	15	18	12
S. W.	596	15	14	10	20	15	14	34	32	16	20	17	17
W.	830½	24	30	26	40	38	47	49	50	34	33	20	18
N. W.	1447½	33	32	38	31	43	29	34	30	35	41	31	37

Prairie du Chien, Wisconsin.

Course.	13 years.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1822 AND 1824.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	789½	10	18	7	15	13	6	18	12	8	14	10	13
N. E.	191½	1	0	4	12	2	0	0	1	4	2	4	2
E.	227	0	0	1	5	0	1	0	1	2	0	0	0
S. E.	878½	8	7	10	2	14	9	6	9	12	11	10	5
S.	1061½	14	11	6	3	13	15	11	18	14	8	9	8
S. W.	790	7	5	6	10	9	2	9	5	4	4	5	8
W.	661½	5	8	6	9	2	10	8	5	0	8	8	6
N. W.	968½	22	13	22	4	9	6	13	11	16	15	12	20

Green Bay, Wisconsin.

Course.	18 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1822 TO 1830, INCLUSIVE.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	874	18	33	19	37	22	19	9	15	25	21	24	18
N. E.	1014	49	46	88	84	102	78	89	78	54	48	56	28
E.	300	2	5	13	4	6	5	5	8	12	10	8	6
S. E.	319	1	1	8	5	5	12	6	17	12	17	5	8
S.	1410	36	34	32	24	49	25	40	30	37	49	39	46
S. W.	1481	122	98	81	84	80	92	106	93	81	90	86	113
W.	647	23	25	28	22	9	24	15	23	29	27	30	25
N. W.	444	28	12	11	10	6	15	9	15	21	17	23	33

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort Winnebago, Wisconsin.

Course.	10 years.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1831, 32, 35, AND 36.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	1063	19	16	15	13	17	14	13	15	18	17	26	19
N. E.	449½	2	6	1	9	14	12	13	6	5	10	13	5
E.	388	9	3	3	6	9	12	5	12	6	11	10	5
S. E.	357½	6	4	5	10	13	8	19	17	5	11	6	14
S.	878	20	34	33	18	35	27	28	32	27	29	18	35
S. W.	578	28	28	34	24	11	10	12	12	31	16	12	11
W.	668½	28	14	21	23	14	22	13	11	13	11	13	15
N. W.	797½	13	18	12	17	11	15	21	19	15	19	21	19

Bloomington, Iowa.

Course.	1840, 43, 44, 45, and 46.	TOTAL FOR THE SEPARATE MONTHS OF 1843, 45, AND 46.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N. E.	186	10	9	11	4	6	6	11	6	4	4	4	5
S. E.	397	13	9	19	28	17	15	26	35	29	21	28	21
S. W.	425	28	22	15	24	20	27	28	25	27	40	14	22
N. W.	758	42	44	48	34	19	12	28	27	30	28	49	45

Fort Atkinson, Iowa.

Course.	1841–42.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	68	2	4	5	4	2½	1½	1	0	3½	4	3	5½
N. E.	97	9½	6½	9½	4	5	1½	2	0	2	2½	4½	4½
E.	107	2½	3	1½	16	2½	1½	3	5½	7½	4	9½	6
S. E.	95	2	3½	5	0	6½	9½	5	3½	5	2	2½	8
S.	118	3	4½	3	2	1	3	8½	10	7	11	2½	5½
S. W.	191	9	2	7½	13	10½	8	6	13	13	12½	3½	4
W.	862	16½	3	12½	13	9	16	0½	23½	15½	14	22	22
N. W.	861	17½	29½	18	8	25	19½	18	6½	6½	13	12½	10½

SOURCE OF THE DES MOINES, IOWA.—"Whenever a bend, an angle, or some prominent bluff, is more exposed to the fury of the *northwest winds* that blow violently *a great part of the year*," &c.—NICOLLET.

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Course.	Iowa City, Iowa, 2 months.	Lac Qui Parle, Iowa, 2 months.	Turkey River, Iowa, 1 month.	Fort Snelling, Iowa.											
				20 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1822 and 1824 TO 1836, INCLUSIVE.											
					Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	3	53	5	729	20	11	8	8	19	12	13	15	22	19	28	28
N. E.	14	11	16	429	7	9	7	11	14	10	12	9	22	10	18	15
E.	1	31	8	387	4	4	9	21	19	11	10	11	6	8	18	12
S. E.	9	19	32	803	22	17	27	33	30	37	26	31	36	18	18	17
S.	5	24	38	1160	31	33	41	35	56	47	33	43	29	22	21	27
S. W.	5	0	74	1172	66	53	39	41	48	42	58	54	45	79	33	32
W.	2	36	69	1359	49	58	67	57	38	53	60	47	46	53	68	60
N. W.	23	12	4	1264	49	41	50	34	24	28	32	38	35	39	52	62

St. Louis, Missouri.

Course.	10 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1827 TO 1836, INCLUSIVE.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	336	18	11	15	8	17	6	18	2	12	11	14	16
N. E.	258½	11	8	4	2	9	3	18	8	18	9	6	17
E.	242½	2	6	7	5	6	2	2	19	5	8	7	8
S. E.	497	12	26	27	27	8	18	19	29	18	20	20	21
S.	710	29	18	18	27	31	42	26	34	16	11	19	23
S. W.	423	11	5	23	20	18	21	16	21	17	22	19	14
W.	498½	13	8	10	13	20	11	11	8	11	20	9	7
N. W.	686½	28	31	25	23	20	22	19	8	23	23	26	23

Council Bluffs, Indian Territory.

Course.	1822 to 1826, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	395	42	32	58	27	14	16	13	25	17	38	52	66
N. E.	119	12	5	9	11	12	13	13	11	11	3	9	10
E.	97	2	2	4	9	9	16	16	17	12	5	2	3
S. E.	222	20	10	21	22	18	24	30	14	20	18	12	13
S.	483	35	26	18	41	61	49	49	60	43	38	34	29
S. W.	156	11	15	10	9	13	13	18	13	16	25	6	7
W.	86	5	12	6	11	9	9	3	5	6	8	9	3
N. W.	266	28	39	34	20	19	10	13	10	23	20	26	24

[1] For separate abstracts for each of these years, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort Leavenworth, Indian Territory.

Course.	11 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1831 TO 1834, INCLUSIVE.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	497	25	30	22	17	13	8	5	9	14	16	14	23
N. E.	227½	3	2	2	5	4	1	6	8	8	10	7	9
E.	155½	4	1	5	1	6	3	5	4	6	1	4	6
S. E.	520	6	9	11	8	11	14	15	20	19	9	5	21
S.	1368½	40	36	52	62	64	72	73	56	43	47	46	26
S. W.	311½	4	5	2	2	1	2	6	7	9	9	10	4
W.	367½	15	8	19	9	18	7	3	4	11	8	14	12
N. W.	570½	27	22	11	16	7	13	11	16	10	25	18	24

FORT LARAMIE.—It is stated in Fremont's Report, page 44, that the prevailing wind at this station is west.

Old Fort Wayne, Indian Territory.

Course.	1840-41.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	77	10	17	8	3	2	0	0	0	3	9	15	10
N. E.	181	26	17	21	9	8	8	18	18	24	21	9	7
E.	127	3	6	20	4	7	21	14	8	16	9	14	5
S. E.	345	17	25	32	44	49	40	39	23	33	17	9	17
S.	175	1	16	24	4	12	28	12	14	12	20	17	15
S. W.	282	31	16	20	18	37	16	38	36	16	9	18	25
W.	187	7	9	27	12	3	1	7	19	5	6	18	23
N. W.	225	29	8	36	26	6	8	5	8	13	34	24	28

Fort Gibson, Indian Territory.

Course.	1828 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS OF 1828, 29, and 30.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	424	16	9	5	4	1	0	1	3	15	7	11	1
N. E.	444	20	11	20	6	2	5	17	10	25	9	7	18
E.	906	5	4	4	4	2	3	3	5	5	13	14	8
S. E.	1526	45	46	54	50	85	76	45	68	40	49	29	40
S.	712½	2	2	0	5	0	1	1	5	3	2	2	1
S. W.	458½	3	4	0	5	0	3	14	1	1	0	4	3
W.	506	0	0	0	1	0	1	1	0	0	0	7	4
N. W.	510	2	9	10	15	3	1	11	1	1	13	17	18

[1] For abstracts of these years separately, see the published volumes of the U. S. Army Meteorological Register.

Winds in the United States.—*Continued.*

Fort Towson, Indian Territory.

Course.	1833 to 1842, inclusive.[1]	TOTAL FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	283	18	31	30	25	9	16	5	15	31	34	18	14
N. E.	829	20	22	17	13	9	12	14	17	22	31	18	26
E.	279½	22	10	11	26	15	15	11	15	17	5	8	16
S. E.	524½	36	24	33	34	45	30	36	31	37	26	46	48
S.	768	40	32	58½	57	83	96	104	78	61	45	22	27
S. W.	685½	45	50	41	50	47	47	44	57	29	58	66	50
W.	401	24	34	38	24	15	13	22	10	14	10	30	40
N. W.	371½	42	25	18½	12	23	12	12	24	29	32	33	24

Fort Vancouver, Oregon.

Course.	114 days.[2]	June 1, 1833, to June 30, 1834.	SEPARATE MONTHS FROM JUNE 1833 TO JUNE 1834.												Monterey, California, January.
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	0	9	0	0	2	1	0	0	4	0	1	0	0	1	5
N. E.	0	66	5	0	6	4	3	11	6	1	5	6	9	10	0
E.	23	30	3	1	3	2	0	0	1	2	2	7	2	7	4
S. E.	40	284	44	18	21	16	14	9	13	12	22	27	51	42	0
S.	15	188	1	10	7	10	8	22	19	33	39	23	6	10	8
S. W.	3	139	0	8	10	17	31	18	18	21	5	10	0	6	0
W.	3	23	0	2	5	1	2	4	2	5	2	0	0	0	5
N. W.	30	70	1	8	5	6	6	6	10	11	7	8	2	0	1
Calm		158	32	30	27	24	19	1	3	2	1	6	8	5	4

Fremont's Tour, Oregon and California.

It is not convenient to give an abstract, in tabular form, of the observations taken by Colonel Fremont during his tour in Oregon and California, in the years 1842, 1843, and 1844. The results will be given in another place.

Winds in Mexico, South America, and the West Indies.

Course.	Mazatlan, Mexico, Jan. and Feb.	Chagres, New Grenada, July.	Porto Cabello, Venezuela.			Ponce, Porto Rico, Jan.	Turk's Island, Bahamas, March.	Matanzas, Cuba.											
			Jan.	July.	Nov.			4 y'rs, 1833 to 1836.	SEPARATE MONTHS OF 1835.										
									Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	20	26	2	21	28	91	22	88	9	11	7	1	0	0	0	0	0	10	4	8
N. N. E.	0	0	2	0	0	0	6	0												
N. E.	8	14	101	46	43	31	53	165	10	7	12	18	23	9	9	13	12	18	22	12
E. N. E.	0	0	10	2	1	2	26	280												
East	1	18	47	58	37	74	34	50	3	5	6	1	2	0	0	2	0	3	4	4
E. S. E.	0	0	0	0	0	0	20	0												
S. E.	6	5	17	21	21	26	20	3	2	0	0	0	0	0	0	1	0	0	0	0
S. S. E.	0	0	0	9	5	0	2	0												
South	7	5	6	16	26	1	3	69	5	0	3	3	1	0	0	1	2	0	0	2
S. S. W.	0	0	1	2	3	0	0	0												
S. W.	3	25	3	26	19	0	2	2	0	0	0	0	0	0	0	0	2	0	0	0
W. S. W.	0	0	0	0	0	0	0	0												
West	15	34	7	7	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
W. N. W.	0	0	0	1	1	0	0	0												
N. W.	8	7	5	8	10	1	10	2	0	1	0	0	0	0	0	0	1	0	0	0
N. N. W.	0	0	0	0	0	0	3	0												
Calm or variable	34	5	5	1	5	3	2	375	2	4	3	7	5	21	22	14	13	0	0	5

YUCATAN.—"On the northern and western coasts of Yucatan, there is a constant N. E. wind throughout the year."—*Purdy's Sailing Directory.*

[1] For abstracts for these years separately, see the published volumes of the U. S. Army Meteorological Register.

[2] Date unknown.

Winds in the West Indies.—*Continued.*

Barbadoes.

Course.	Jan. 1842.	May, 1841.	June, 1841.	July, 1841.	Aug. 1841.	Sept. 1841.	Oct. 1841.	Nov. 1841.	Dec. 1841.	Upper current in Sept. & Oct.
North	0	0	0	0	1	1	0	0	0	18
N. N. E.	1	0	0	1	2	1	1	1	0	4
N. E.	9	0	0	0	7	6	2	1	6	9
E. N. E.	47	1	15	40	21	29	39	51	71	16
East	13	16	34	41	23	8	13	9	2	15
E. S. E.	2	16	28	8	15	4	19	6	1	8
S. E.	0	9	4	2	7	19	8	7	2	26
S. S. E.	0	5	1	2	8	2	2	0	0	31
South	0	0	0	0	0	1	0	0	0	11
S. S. W.	0	0	0	0	0	0	0	0	0	6
S. W.	0	0	0	0	0	2	0	0	0	89
W. S. W.	0	0	0	0	0	0	0	0	0	6
West	0	0	0	0	0	0	0	0	0	0
W. N. W.	0	0	0	0	0	0	0	0	0	1
N. W.	0	0	0	0	0	0	0	0	0	5
N. N. W.	0	0	0	0	0	0	0	0	0	16

Winds at the Bermuda Islands.

Course.	Centre Signal Station, Hamilton?																			Ireland Isle.			
							PROPORTION FOR THE SEPARATE MONTHS.																	
	Sept. 1838.	Dec. 1839.	1840.[1]	1841.[2]	1842.[2]	1843.[3]	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	August.	September.	October.	November.
North	6	0	293½	485	912	790	409	273	223	173½	198	101	112	93½	232	225	179	240	2459½	3	5	27	8
N. by E.	0	0	23	115	84	57	0	19	60	59	36	0	0	12	33	24	12	24	279				
N. N. E.	6	0	202½	84	96	176	63	101	21	156	61	0	0	0	56	51	24	31½	564½	0	3	6	6
N. E. by N.	0	0	48	17	60	103	48	41	48	24	0	0	0	24	19	0	24	0	228				
N. E.	54	0	201	262½	552	716	295	178	108½	47	111	58	96	162	336	173	157	48	1769½	9	17	34	28
N. E. by E.	0	0	0	20½	0	45	20½	0	0	0	0	3	0	0	24	0	18	0	65½				
E. N. E.	12	0	54	72	24	3	24	30	48	36	12	0	0	3	12	0	0	0	165	0	4	9	6
E. by N.	12	0	0	0	0	24	0	0	0	0	0	0	0	0	12	0	24	0	36				
East	66	0	341	395	396	426	207	138	51½	129½	210	55	227	188	170	151	64	24	1615	14	4	22	13
E. by S.	12	0	40	10	24	24	0	0	10	64	0	24	0	0	12	0	0	0	110				
E. S. E.	24	0	279½	145	24	51	50	132	53	97½	0	48	11	84	24	0	0	24	523½	9	5	0	0
S. E. by E.	12	0	0	0	24	12	0	0	0	12	0	0	0	24	12	0	0	0	48				
S. E.	216	0	93	227	720	614	20	94	36	24	192	216	310	408	336	155	55	24	1870	20	32	21	9
S. E. by S.	0	0	40	33½	84	24	9½	0	0	48	40	24	0	24	36	0	0	0	181½				
S. S. E.	66	0	148	232	252	136½	160	53	87½	109	66	60	85	92	66	24	0	24	826½	12	9	8	0
S. by E.	18	0	24	0	36	54	0	13	0	0	40	36	24	1	18	0	0	0	132				
South	30	0	270½	774½	152	884½	239½	235	198½	378½	293	365	368	353	234	106	152	227	3149½	35	18	11	3
S. by W.	6	0	24	35	204	139½	0	48	39	72	72½	96	14	36	6	3	24	0	410½				
S. S. W.	36	0	250	198	276	411	89½	202	147	70	131	87	55½	176	165	24	24	0	1171	3	9	0	1
S. W. by S.	0	0	221	24	240	153	0	102	24	107	162	120	48	24	48	0	0	3	638				
S. W.	78	24	316½	747½	1404	1230	497	258½	325½	287½	308½	436½	468	181½	399	72	182	310	3726½	27	21	8	15
S. W. by W.	0	0	152½	279½	72	42	42	0	47	50	88½	222½	72	0	0	0	0	19	541				
W. S. W.	12	0	383	356½	252	25	67½	135	403	61	170	120	24	0	48	0	0	0	1028½	6	1	0	2
W. by S.	0	0	99	94	36	6	6	0	41	35	0	108	12	0	0	0	6	27	235				
West	12	0	362½	484	492	427	159	300	229½	247½	198	211	156½	51	132	20	6	172	1782½	27	6	11	32
W. by N.	0	0	24	78	132	61	0	54	24	51	36	34	24	36	36	0	0	0	295				
W. N. W.	0	24	91½	174½	192	109	9	123½	157	96½	55	24	26	24	24	0	24	28	591½	0	14	0	18
N. W. by W.	0	0	81	46	0	21	0	0	0	0	121	21	0	0	0	0	0	0	142				
N. W.	30	24	334½	179	312	738	344	180½	313½	188½	40	48	39	41	54	57	192	107	1604½	5	26	20	32
N. W. by N.	0	0	64	42	72	82½	51	66	48	16	37½	2	12	12	0	24	2	0	270½				
N. N. W.	6	0	74½	59	264	172	101½	30½	124	56	0	24	24	14	30	0	63	103½	570½	0	0	9	7
N. by W.	0	0	0	48	156	82	64	5	108	16	45	24	0	0	0	0	16	0	278				
Calm or variable	6	0	0	0	12	0	0	0	0	0	0	0	0	0	18	0	0	0	18	16	6	0	0

[1] Except August, September, October, and November.

[2] Except October and November.

[3] Nearly complete.

Winds on the North Atlantic.

Latitude 55° to 60°.

Course.	Lon. 0° to 5°.	Lon. 5° to 10°	Lon. 10° to 15°.	Lon. 15° to 20.°	Lon. 20° to 25.°	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	2	0	8	0	0	1	8	11	8	8	26	0	0	0	10	1	4	0	4	6	1	0	0
N. N. E.	4	0	6	2	1	0	0	0	0	0	13	0	0	0	1	0	2	2	1	1	6	0	0
N. E.	5	5	1	0	1	2	0	1	0	5	20	0	0	0	1	1	3	0	13	0	2	0	0
E. N. E.	0	0	2	1	0	0	0	0	3	0	6	0	0	0	4	0	1	0	0	0	0	1	0
East	0	3	2	2	2	2	0	2	0	2	15	0	0	0	2	2	6	1	4	0	0	0	0
E. S. E.	0	0	1	2	2	3	0	0	0	2	10	0	0	0	0	6	0	0	0	0	4	0	0
S. E.	0	0	3	0	0	3	4	5	1	0	20	0	0	0	7	4	6	0	0	3	0	0	0
S. S. E.	0	0	8	8	1	1	0	0	0	0	18	0	0	0	0	4	3	1	5	0	5	0	0
South	1	3	2	3	7	2	2	3	0	0	23	0	0	0	3	2	5	1	1	4	7	0	0
S. S. W.	5	2	12	9	12	0	2	0	0	0	42	0	6	2	3	0	7	4	7	5	8	0	0
S. W.	13	0	9	17	10	1	0	6	2	0	58	0	2	0	2	7	6	11	6	13	10	1	0
W. S. W.	1	1	20	11	10	2	0	5	0	3	53	0	5	5	0	5	8	7	9	3	8	3	0
West	1	3	9	7	6	0	0	4	0	0	35	0	2	0	0	7	4	8	4	4	6	0	0
W. N. W.	4	4	6	10	3	0	0	0	0	0	32	0	2	2	1	1	4	4	12	0	6	0	0
N. W.	2	3	5	5	3	0	0	2	0	0	20	0	1	0	2	1	3	1	3	2	1	1	0
N. N. W.	3	4	5	2	4	2	0	1	0	0	21	0	1	0	2	3	6	1	4	3	1	0	0
Calm	0	1	4	1	0	0	0	0	0	0	6	0	0	0	0	0	2	1	0	0	2	1	0
Total	41	34	98	80	71	19	11	40	9	15	418	0	19	9	38	44	75	42	78	44	67	7	0
January	0	0	0	0	0	0	0	0	0	0	0												
February	0	0	17	2	0	0	0	0	0	0	19												
March	0	0	3	6	0	0	0	0	0	0	9												
April	0	0	3	0	6	0	3	20	6	0	38												
May	0	3	10	5	3	14	0	3	3	3	44												
June	3	9	15	15	14	5	3	6	0	0	75												
July	12	6	12	9	3	0	0	0	0	0	42												
August	6	10	14	21	10	0	0	0	0	12	73												
September	17	0	2	3	11	0	0	11	0	0	44												
October	3	6	17	17	24	0	0	0	0	0	67												
November	0	0	5	2	0	0	0	0	0	0	7												
December	0	0	0	0	0	0	0	0	0	0	0												
Total	41	34	98	80	71	19	11	40	9	15	418												

NOTE.—The lower part of this, and several succeeding tables, shows the total number of observations taken in each month between the meridians specified at the top.

Latitude 50° to 55°.

Course.	Lon. 0° to 5°.	Lon. 5° to 10.°	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 60° to 65°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	19	42	85	11	0	7	5	0	0	0	3	0	182	12	16	4	13	16	20	13	5	5	10	5	13
N. N. E.	13	23	34	16	9	2	1	1	0	2	4	0	105	10	7	4	11	17	16	9	8	9	6	5	3
N. E.	17	28	35	9	5	2	0	2	0	0	5	7	110	9	7	3	7	16	17	7	4	15	13	11	1
E. N. E.	36	22	54	22	20	10	2	0	0	0	0	0	166	8	13	17	1	23	30	17	7	7	22	9	7
East	20	34	56	28	8	1	3	0	0	0	4	1	160	10	12	7	23	24	21	13	3	3	30	6	3
E. S. E.	19	19	62	35	20	11	17	4	0	3	0	0	190	13	23	13	10	29	25	11	4	21	26	5	5
S. E.	15	23	61	33	21	11	10	3	0	0	4	0	186	14	13	20	20	34	21	9	5	24	13	1	1
S. S. E.	14	23	32	63	47	9	14	2	0	0	2	0	266	25	30	20	14	22	56	21	27	22	13	13	3
South	23	44	69	49	32	15	3	1	0	1	1	2	245	22	36	25	14	35	43	15	3	13	14	6	1
S. S. W.	34	24	79	51	45	26	12	2	0	3	3	0	284	13	47	30	29	20	43	40	12	15	20	5	7
S. W.	45	41	76	36	25	41	21	5	0	0	2	0	292	20	33	15	12	23	44	26	16	23	30	25	15
W. S. W.	25	33	121	71	59	45	20	4	0	2	0	0	380	32	43	23	14	21	70	65	25	23	23	22	14
West	40	79	85	54	35	32	11	3	0	0	0	5	344	19	44	29	17	23	35	44	34	31	20	27	16
W. N. W.	25	42	33	49	34	13	11	5	1	3	0	0	266	19	26	17	13	20	33	31	23	20	13	19	17
N. W.	30	31	49	29	21	14	3	1	0	0	0	0	178	13	11	13	11	23	24	13	9	13	12	13	3
N. N. W.	13	17	63	13	24	23	12	0	0	0	0	0	170	10	19	13	5	25	19	13	19	10	11	12	9
Calm	12	21	31	33	16	3	5	1	0	0	0	0	132	13	14	6	10	12	20	19	14	2	15	5	2
Total	400	551	1075	622	431	270	160	34	1	14	33	15	3606	272	409	269	229	303	547	371	223	271	301	189	182
January	46	45	105	59	17	0	0	0	0	0	0	0	272												
February	28	67	118	90	60	38	3	0	0	0	[illegible]	0	409												
March	18	33	116	41	39	9	1	3	1	3	0	0	269												
April	15	20	31	40	23	4	16	0	0	3	27	0	229												
May	37	34	36	35	42	32	17	0	0	0	0	0	393												
June	64	36	150	32	44	52	47	12	0	0	0	0	547												
July	54	53	92	62	48	41	21	0	0	0	0	0	371												
August	18	43	58	36	53	6	9	0	0	0	0	0	223												
September	25	36	36	43	13	19	3	4	0	6	6	15	271												
October	31	13	36	37	46	35	26	10	0	2	0	0	301												
November	19	30	43	23	26	32	7	4	0	0	0	0	189												
December	45	21	34	9	20	2	0	1	0	0	0	0	132												
Total	400	551	1075	622	431	270	160	34	1	14	33	15	3606												

Winds on the North Atlantic.—*Continued.*

Latitude 45° to 50°.

Course.	Lon. 0° to 5°.	Lon. 5° to 10°.	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
															Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	10	15	41	47	52	67	43	20	12	4	2	0	0	313	15	14	18	43	40	24	22	46	24	45	17	10
N. N. E.	7	13	57	41	41	46	49	28	17	25	4	0	0	328	16	23	22	27	37	22	41	44	28	35	16	17
N. E.	6	19	49	33	26	22	33	25	14	1	1	3	5	237	7	19	27	15	41	27	28	15	21	17	10	10
E. N. E.	10	12	60	39	48	33	38	34	41	23	1	2	0	341	11	18	40	24	46	42	40	40	32	26	9	13
East	15	22	26	23	45	28	38	49	36	25	3	1	0	311	16	30	28	26	36	45	23	27	29	36	10	5
E. S. E.	4	22	29	33	35	35	47	47	36	21	3	1	0	313	24	27	24	37	58	30	27	23	27	24	10	7
S. E.	0	19	32	31	30	24	28	24	22	11	2	2	0	225	21	20	18	21	28	13	13	25	27	24	6	9
S. S. E.	4	11	40	56	78	59	48	68	44	21	7	2	0	433	26	33	18	37	48	55	56	35	44	43	18	20
South	21	20	41	60	57	74	80	65	42	26	3	4	0	493	36	46	29	29	47	87	29	40	53	39	23	35
S. S. W.	7	22	89	90	98	128	114	88	66	50	15	4	2	778	62	64	50	58	78	123	67	85	61	55	25	50
S. W.	8	23	65	74	101	98	115	107	75	27	23	22	5	743	29	53	59	40	92	136	67	99	39	44	51	34
W. S. W.	27	14	100	138	129	143	124	123	97	29	22	8	0	954	64	63	62	61	88	135	126	134	50	64	60	47
West	14	20	87	86	135	130	114	104	55	20	17	5	0	787	50	49	48	44	62	136	81	76	54	70	69	48
W. N. W.	8	19	129	124	122	99	133	108	65	17	8	8	0	825	46	54	54	48	59	105	100	86	71	84	62	56
N. W.	9	23	71	83	94	71	66	58	49	13	19	1	2	559	32	33	52	48	42	74	50	57	39	67	37	28
N. N. W.	7	18	85	84	79	83	64	50	44	19	6	1	0	540	20	33	31	54	51	74	39	74	47	69	25	23
Calm	2	4	29	36	50	55	39	46	32	14	4	0	0	311	18	20	8	35	36	55	37	41	20	19	15	7
Total	154	296	1030	1078	1215	1195	1178	1044	747	346	135	59	14	8486	498	599	583	647	879	1183	846	947	666	761	463	419
January	0	12	43	74	67	92	93	71	32	7	2	0	0	493												
February	6	6	52	69	103	111	106	65	66	12	3	0	0	599												
March	8	12	67	74	90	90	59	72	67	36	13	0	0	583												
April	9	19	89	86	125	145	92	43	19	12	17	0	0	647												
May	9	38	128	141	137	131	132	102	58	7	1	0	0	879												
June	49	78	119	132	216	138	138	165	78	44	12	14	0	1183												
July	26	24	94	125	105	99	97	95	103	57	16	3	2	846												
August	21	36	128	100	69	93	106	129	123	80	43	19	0	947												
September	0	20	57	81	111	109	85	78	78	21	8	6	12	666												
October	18	24	88	97	88	75	114	124	78	36	7	17	0	761												
November	22	15	71	46	55	53	86	51	36	20	8	0	0	463												
December	0	12	94	53	49	59	65	49	19	14	5	0	0	419												
Total	154	296	1030	1078	1215	1195	1178	1044	747	346	135	59	14	8486												

Latitude 40° to 45°, Longitude from Greenwich 0° to 45°.

Course.	Lon. 0° to 5°.	Lon. 5° to 10°.	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
											Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	0	2	8	15	19	30	31	43	48	196	5	1	19	16	29	19	8	20	32	23	8	16
N. N. E.	0	5	16	21	20	34	50	42	50	238	6	8	43	33	38	18	11	17	19	25	5	15
N. E.	0	0	14	25	15	14	26	19	19	132	1	14	24	4	15	6	9	10	23	14	6	6
E. N. E.	3	5	16	6	7	33	53	49	45	217	7	3	13	18	24	23	20	33	53	7	4	12
East	3	4	4	2	24	17	31	34	32	151	7	6	9	9	5	17	19	28	26	4	3	18
E. S. E.	0	0	11	1	11	12	41	38	60	174	3	6	9	20	10	14	45	16	24	14	5	8
S. E.	0	0	5	16	20	23	32	54	56	206	1	13	14	25	17	40	49	11	14	3	11	8
S. S. E.	0	0	10	12	21	43	59	96	84	325	18	19	22	32	20	37	60	52	26	16	12	11
South	0	0	8	16	31	40	61	66	97	319	6	22	20	34	40	42	47	32	19	30	15	12
S. S. W.	0	0	9	15	41	46	71	107	161	450	25	17	35	35	53	47	60	59	37	28	18	36
S. W.	0	0	14	22	40	26	63	108	108	381	23	29	26	39	65	62	20	38	24	24	12	19
W. S. W.	0	0	23	33	46	48	82	158	144	534	27	26	62	58	63	71	65	47	31	31	11	42
West	1	0	28	19	41	39	78	121	121	448	17	42	55	36	42	64	38	38	18	31	39	29
W. N. W.	2	2	30	27	29	46	78	112	165	491	19	30	62	47	54	65	35	33	38	50	22	36
N. W.	0	3	19	28	37	33	61	51	94	326	10	28	30	19	37	45	17	30	36	38	8	28
N. N. W.	2	3	18	23	34	50	56	56	101	343	4	13	34	43	47	44	28	34	26	28	13	29
Calm	1	0	2	10	7	34	32	43	64	193	5	5	20	14	10	27	40	17	19	27	4	5
Total	12	24	235	291	443	568	905	1197	1449	5124	184	282	497	482	569	640	571	515	465	393	196	330
January	0	0	17	14	31	3	10	31	78	184												
February	0	0	0	20	30	25	58	79	70	282												
March	0	0	0	37	36	35	80	109	200	497												
April	0	0	31	9	38	70	104	115	115	482												
May	0	3	14	22	46	60	108	136	180	569												
June	0	3	36	33	51	78	107	157	180	640												
July	0	6	4	24	36	93	102	151	155	571												
August	0	3	15	17	60	35	105	138	147	515												
September	0	3	17	18	14	62	87	132	132	465												
October	3	3	16	40	38	63	73	71	86	393												
November	3	3	33	18	17	20	24	43	35	196												
December	6	0	52	39	46	29	47	40	71	330												
Total	12	24	235	291	443	568	905	1197	1449	5124												

Winds on the North Atlantic.—*Continued.*

Latitude 40° to 45°, Longitude from Greenwich 45° to 75°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	81	94	104	115	134	114	642	42	29	52	73	61	70	62	59	54	49	55	36
N. N. E.	88	68	51	67	67	63	404	21	37	24	30	65	27	35	33	59	19	23	31
N. E.	60	89	78	85	116	122	550	28	38	30	36	88	35	67	62	67	41	38	25
E. N. E.	86	39	28	59	56	51	319	25	14	21	18	31	34	31	49	36	20	31	9
East	51	77	78	92	154	110	562	22	22	56	37	59	77	76	70	52	33	38	20
E. S. E.	88	56	49	32	67	36	328	26	20	32	16	38	25	43	50	24	18	21	20
S. E.	70	92	86	82	129	97	556	16	18	60	39	58	53	85	80	39	27	44	42
S. S. E.	126	76	54	84	129	62	531	21	15	27	30	66	53	87	108	44	32	22	31
South	96	131	138	126	216	191	898	39	17	74	60	119	110	160	118	74	55	37	35
S. S. W.	124	90	121	102	156	131	724	32	22	36	50	78	112	150	88	72	30	28	31
S. W.	98	168	201	205	216	268	1156	46	38	78	78	126	195	222	134	90	39	32	38
W. S. W.	160	101	97	146	181	116	801	38	30	39	57	86	137	186	55	48	31	58	41
West	126	179	207	188	258	165	1118	51	46	79	56	113	158	204	119	86	64	80	62
W. N. W.	128	102	215	125	142	119	726	59	60	66	49	49	71	86	40	49	60	75	62
N. W.	94	154	154	128	175	176	881	64	89	89	63	75	54	90	62	55	75	84	81
N. N. W.	88	93	92	93	128	78	572	35	39	47	57	63	86	61	24	47	59	77	27
Calm	59	86	76	89	121	78	509	20	18	25	39	55	40	112	71	46	25	35	23
Total	1618	1695	1729	1818	2440	1977	11277	580	542	880	788	1280	1287	1757	1217	942	672	828	614
January	91	89	94	64	143	99	580												
February	106	88	96	84	62	106	542												
March	121	108	118	126	206	151	830												
April	115	120	126	86	156	180	783												
May	195	160	170	189	281	235	1230												
June	213	202	184	216	285	287	1287												
July	178	236	263	350	414	321	1757												
August	166	193	158	170	336	194	1217												
September	147	172	167	159	182	115	942												
October	108	101	131	105	124	103	672												
November	98	130	117	150	186	142	823												
December	85	96	105	119	115	94	614												
Total	1618	1695	1729	1818	2440	1977	11277												

Latitude 35° to 40°, Longitude from Greenwich 0° to 45°.

Course.	Lon. 0° to 5°.	Lon. 5° to 10°	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	4	27	58	42	26	42	47	40	26	312	24	3	8	20	46	30	50	47	47	26	0	11
N. N. E.	7	36	63	75	51	113	73	81	62	561	31	3	21	38	71	63	141	54	74	34	9	22
N. E.	11	27	25	68	34	38	42	44	37	321	17	1	17	30	35	45	60	38	34	19	4	21
E. N. E.	24	11	40	46	38	60	93	78	45	435	30	2	9	18	61	52	63	90	63	15	16	16
East	22	29	7	22	9	37	50	43	34	253	13	4	9	18	24	35	51	19	28	36	4	12
E. S. E.	12	22	23	14	12	46	69	66	76	340	23	7	10	18	28	45	60	35	26	39	30	19
S. E.	6	16	16	10	15	27	63	68	82	303	24	3	11	19	32	67	46	22	18	20	20	21
S. S. E.	0	7	26	24	18	92	127	123	117	534	39	4	7	25	39	60	148	66	55	30	20	41
South	4	10	22	27	50	91	97	93	107	501	41	4	18	33	31	49	98	75	39	60	28	25
S. S. W.	1	6	47	31	59	137	200	156	215	852	76	6	22	37	75	82	231	149	89	36	21	28
S. W.	11	9	49	34	41	78	80	95	128	525	47	12	15	25	47	73	101	73	57	44	15	16
W. S. W.	9	19	59	59	42	187	152	124	192	843	64	9	11	36	82	114	254	115	66	36	21	35
West	40	36	35	35	26	80	50	72	49	423	43	9	10	47	41	57	92	49	42	15	5	13
W. N. W.	2	8	48	62	36	88	92	78	101	515	51	7	21	25	49	89	102	55	31	43	14	28
N. W.	5	28	35	36	21	48	41	37	39	290	20	4	12	15	54	48	42	23	18	30	4	20
N. N. W.	2	29	48	49	46	90	55	53	53	425	44	3	11	17	70	51	78	43	37	29	7	35
Calm	24	6	16	13	17	99	67	50	44	336	18	3	9	8	42	37	101	48	25	22	9	14
Total	184	326	617	642	541	1353	1398	1301	1407	7769	605	84	221	429	827	997	1718	1001	749	534	227	377
January	18	51	116	112	63	64	51	48	82	605												
February	0	0	0	0	19	6	19	25	15	84												
March	0	9	25	13	5	33	24	19	93	221												
April	21	21	77	46	43	49	35	72	65	429												
May	45	62	118	82	59	105	88	140	128	827												
June	12	24	45	48	58	179	206	212	213	997												
July	42	52	55	82	72	443	372	348	252	1718												
August	8	36	30	46	50	259	256	167	154	1001												
September	9	22	42	86	69	108	177	97	139	749												
October	22	31	56	56	42	54	85	74	114	534												
November	12	3	22	5	15	15	32	54	69	227												
December	0	15	31	66	46	38	53	45	83	377												
Total	184	326	617	642	541	1353	1398	1301	1407	7769												

Winds on the North Atlantic.—*Continued.*

Latitude 35° to 40°, Longitude from Greenwich 45° to 75°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	89	54	103	145	201	382	924	53	58	116	91	105	93	80	60	74	69	60	65
N. N. E.	49	81	75	86	125	230	646	23	44	41	90	87	67	41	58	62	55	28	50
N. E.	28	64	101	184	219	365	911	37	49	56	105	120	78	84	98	92	95	50	47
E. N. E.	62	79	88	44	75	182	480	20	23	35	62	79	48	39	41	40	43	23	27
East	20	39	69	65	188	255	586	24	29	67	51	66	64	77	56	38	60	28	26
E. S. E.	46	87	82	51	60	118	394	33	7	21	36	39	43	42	40	50	27	16	40
S. E.	52	81	77	55	136	189	590	23	27	41	45	95	53	92	62	44	47	27	34
S. S. E.	139	146	78	79	89	133	664	32	22	47	44	80	83	63	91	54	67	33	43
South	140	135	137	123	197	320	1052	67	35	90	92	131	142	136	124	67	84	47	37
S. S. W.	235	249	115	96	128	202	1025	45	25	66	92	110	204	198	103	54	85	46	47
S. W.	108	158	258	260	376	487	1647	76	65	131	155	191	258	308	168	100	48	86	61
W. S. W.	171	173	137	148	182	228	1039	68	40	76	83	103	118	223	90	55	39	66	78
West	78	87	201	230	300	375	1271	98	50	153	114	117	138	175	93	81	68	85	99
W. N. W.	102	139	106	138	201	205	891	83	91	126	68	70	87	62	29	37	48	88	102
N. W.	89	60	134	196	284	331	1094	117	85	164	123	64	102	57	88	55	80	87	122
N. N. W.	81	96	82	75	114	211	659	45	38	83	85	56	47	88	47	28	31	76	85
Calm	38	67	58	67	124	144	498	11	29	42	65	87	87	114	57	89	27	22	18
Total	1427	1795	1801	1992	2949	4407	14871	855	717	1855	1401	1550	1662	1829	1255	970	923	873	981

January	91	110	128	117	129	280	855
February	19	79	103	102	91	323	717
March	76	118	149	194	360	458	1855
April	86	136	143	156	335	545	1401
May	114	147	169	184	324	612	1550
June	251	281	225	248	296	361	1662
July	250	277	265	253	461	323	1829
August	135	145	166	193	229	387	1255
September	145	144	128	152	194	207	970
October	104	127	128	144	144	276	923
November	80	100	96	129	188	280	873
December	76	131	101	120	198	355	981
Total	1427	1795	1801	1992	2949	4407	14871

Latitude 30° to 35°, Longitude from Greenwich 5° to 45°.

Course.	Lon. 5° to 10°.	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	4	36	38	29	44	21	35	19	226	10	3	12	19	25	33	34	31	34	18	2	5
N. N. E.	3	58	71	81	102	45	61	68	489	24	17	18	12	34	48	99	93	40	48	30	26
N. E.	5	19	45	40	20	31	53	51	264	31	0	6	10	36	21	36	31	29	33	3	28
E. N. E.	2	28	31	47	90	57	125	96	471	38	4	10	16	41	78	59	73	31	55	29	37
East	4	4	9	16	32	45	56	85	251	20	7	9	5	20	29	37	33	23	29	22	17
E. S. E.	0	6	14	19	35	70	78	102	319	21	5	18	17	16	33	30	45	23	30	45	36
S. E.	0	2	11	22	25	42	69	67	238	29	7	6	24	12	27	7	26	8	14	42	36
S. S. E.	0	4	19	41	47	89	130	158	488	39	17	17	52	45	51	32	62	27	36	52	58
South	0	1	10	18	29	63	100	83	304	26	7	19	38	18	42	13	41	12	15	24	49
S. S. W.	0	5	23	30	55	68	108	104	393	30	10	21	44	29	43	40	61	26	33	43	13
S. W.	1	6	5	45	72	47	62	42	280	29	15	3	16	23	26	25	53	20	31	26	13
W. S. W.	2	7	23	29	80	50	83	75	349	29	3	8	29	37	69	31	30	33	28	34	18
West	4	7	15	24	26	20	36	24	156	11	8	1	10	8	22	12	22	12	23	11	16
W. N. W.	2	25	36	45	37	31	45	42	263	16	3	24	8	13	44	29	32	19	43	13	19
N. W.	1	23	16	22	29	28	25	31	175	10	3	8	10	14	41	17	12	22	14	16	8
N. N. W.	2	39	31	44	74	24	48	52	314	37	2	4	19	29	49	43	36	30	30	19	16
Calm	5	5	10	35	60	20	59	69	263	5	6	16	2	24	44	41	31	20	44	16	14
Total	35	270	407	587	857	751	1168	1168	5248	405	117	200	331	424	700	585	712	409	524	427	409

January	3	63	58	35	41	74	81	50	405
February	0	9	15	14	23	30	10	22	117
March	0	21	33	22	15	33	31	45	200
April	0	9	15	29	29	47	106	96	331
May	0	32	35	11	24	49	112	160	424
June	0	9	33	77	157	104	155	165	700
July	10	35	15	36	201	50	104	84	585
August	3	32	62	117	169	96	126	107	712
September	9	18	56	71	51	46	36	72	409
October	7	27	32	74	75	84	130	95	524
November	0	0	22	27	35	37	108	148	427
December	3	14	36	24	37	52	119	124	409
Total	35	270	407	587	857	751	1168	1168	5248

Winds on the North Atlantic.—*Continued.*

Latitude 30° to 35°, Longitude from Greenwich 45° to 75°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	30	20	17	21	93	85	266	18	13	28	34	32	14	11	22	17	25	26	26
N. N. E.	49	56	54	51	165	164	539	39	34	56	88	80	19	31	43	46	49	30	24
N. E.	43	40	26	34	98	47	288	15	12	25	43	35	14	24	13	29	45	20	18
E. N. E.	74	50	47	79	138	105	493	36	12	40	48	35	21	45	37	43	57	52	17
East	43	40	25	24	52	54	238	15	7	16	29	26	11	25	20	14	49	19	7
E. S. E.	83	89	67	72	184	114	559	28	21	49	62	89	21	78	39	37	59	37	39
S. E.	59	80	35	25	96	87	382	20	4	43	30	40	26	41	35	31	34	18	10
S. S. E.	112	70	25	61	216	150	634	36	30	57	104	92	54	49	50	50	45	44	23
South	60	36	19	33	122	98	368	16	32	28	53	50	47	49	24	6	30	19	14
S. S. W.	98	79	67	86	317	238	885	64	68	97	125	71	69	154	77	41	43	51	25
S. W.	84	31	23	46	151	102	387	24	19	52	48	42	32	50	42	15	13	22	28
W. S. W.	60	52	55	122	204	164	657	48	44	97	68	59	56	44	53	28	28	72	60
West	39	30	31	63	115	55	333	34	33	42	57	22	17	10	11	9	19	31	48
W. N. W.	37	55	48	104	212	163	619	65	74	111	89	34	26	20	11	19	43	49	78
N. W.	18	23	13	32	98	89	268	26	22	45	39	28	13	9	4	9	28	31	24
N. N. W.	56	44	24	61	154	161	500	35	39	59	76	50	29	24	38	34	33	46	37
Calm	52	14	34	59	108	64	326	21	13	23	37	32	39	19	27	43	24	25	23
Total	947	709	610	978	2518	1940	7692	540	477	868	1080	862	508	683	546	471	619	592	496
January	60	49	60	62	186	173	540												
February	18	29	37	53	190	150	477												
March	60	67	33	116	338	259	868												
April	111	72	28	111	397	311	1030												
May	62	24	34	116	431	195	862												
June	117	31	25	32	203	100	508												
July	118	84	74	114	208	85	683												
August	46	72	55	106	125	142	546												
September	53	34	76	59	142	107	471												
October	120	137	97	59	93	113	619												
November	101	66	65	66	146	148	592												
December	81	44	26	79	109	157	496												
Total	947	709	610	978	2518	1940	7692												

Latitude 25° to 30°, Longitude from Greenwich 15° to 45°.

Course.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	14	25	61	31	17	14	162	12	15	8	16	8	20	32	19	10	12	7	8
N. N. E.	81	208	210	89	81	43	712	34	26	23	24	28	96	155	125	58	41	72	35
N. E.	37	75	152	50	121	50	485	24	12	15	24	24	40	144	35	29	45	46	47
E. N. E.	34	80	149	172	204	149	788	69	39	30	46	51	67	140	89	68	62	64	68
East	12	27	77	62	90	71	339	20	15	6	22	20	26	48	57	28	37	26	34
E. S. E.	15	37	57	75	121	81	386	31	16	28	31	20	29	31	23	30	34	46	37
S. E.	5	13	22	55	46	24	165	27	14	11	6	8	16	8	7	12	12	15	29
S. S. E.	14	11	35	94	69	38	261	27	7	12	23	7	20	8	12	34	32	32	47
South	7	9	40	54	51	13	174	7	8	18	14	13	10	5	4	4	24	33	34
S. S. W.	10	16	40	87	92	29	274	24	13	20	22	15	29	9	6	28	28	46	34
S. W.	3	7	26	36	24	26	122	9	8	12	14	6	8	8	9	11	8	14	20
W. S. W.	7	23	35	53	45	16	179	16	10	20	7	16	19	13	14	15	16	16	17
West	5	13	25	7	9	9	68	7	9	3	2	6	4	12	3	5	8	7	2
W. N. W.	12	22	51	41	47	34	207	25	24	9	8	10	17	7	7	18	24	41	17
N. W.	5	12	26	34	18	8	103	7	5	15	7	6	11	11	1	10	9	15	6
N. N. W.	23	41	76	63	40	12	255	18	16	23	22	15	46	36	6	17	29	14	13
Calm	5	16	48	39	53	26	187	13	8	17	6	6	21	18	12	15	20	40	11
Total	289	630	1130	1042	1128	648	4867	370	245	270	294	254	479	680	429	392	441	584	479
January	49	41	51	76	91	62	370												
February	28	36	52	76	33	20	245												
March	29	12	45	63	86	35	270												
April	10	37	56	52	99	40	294												
May	17	19	54	64	60	40	254												
June	21	64	99	122	105	68	479												
July	55	131	218	101	107	68	681												
August	11	101	148	51	48	70	429												
September	8	65	82	110	90	37	392												
October	8	35	90	117	115	81	440												
November	32	58	115	105	155	76	534												
December	26	36	122	105	139	51	479												
Total	289	630	1130	1042	1128	648	4867												

Winds on the North Atlantic.—*Continued.*

Latitude 25° to 30°, Longitude from Greenwich 45° to 80°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Lon. 75° to 80°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
									Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	4	8	37	84	61	25	30	249	37	25	48	28	13	2	8	9	8	16	37	23
N. N. E.	5	15	27	101	69	23	16	256	19	17	22	48	26	1	3	11	16	15	36	42
N. E.	12	34	116	302	195	74	27	760	68	47	66	118	97	40	39	50	49	56	70	60
E. N. E.	31	24	66	106	85	17	39	368	24	27	18	47	35	22	36	40	19	25	55	20
East	58	44	111	208	124	60	58	658	47	41	50	69	95	38	97	65	28	59	28	41
E. S. E.	27	41	79	186	68	33	25	409	27	23	20	26	44	32	53	49	21	42	51	21
S. E.	27	41	168	271	151	50	41	744	39	31	58	87	134	77	67	80	41	56	30	44
S. S. E.	8	12	32	79	48	28	18	225	8	17	18	21	50	29	14	15	9	25	11	8
South	14	13	61	115	68	49	17	337	20	28	41	41	60	22	26	15	15	26	9	34
S. S. W.	2	8	37	75	61	23	4	205	8	22	22	21	36	14	14	11	17	23	4	13
S. W.	11	21	74	153	112	42	10	423	48	28	54	43	40	50	33	22	17	34	20	34
W. S. W.	12	5	21	38	28	19	6	129	14	19	27	12	8	10	2	5	3	4	11	14
West	7	10	41	90	38	27	13	226	27	25	35	45	15	9	7	20	6	7	10	20
W. N. W.	8	5	19	33	10	8	18	101	20	9	32	7	6	4	3	4	0	7	0	9
N. W.	12	12	33	80	66	33	22	258	33	39	45	35	19	9	1	8	11	11	13	29
N. N. W.	2	5	25	39	32	14	10	127	21	24	15	22	16	0	2	2	2	3	6	14
Calm	6	14	38	82	57	27	18	242	16	29	18	24	19	12	14	26	33	22	12	17
Total	246	307	980	1987	1273	552	372	5717	481	451	589	694	718	371	414	432	295	431	408	443
January	25	12	76	150	114	28	76	481												
February	31	12	18	178	128	63	26	451												
March	12	26	111	200	152	65	23	589												
April	13	21	135	277	157	56	35	694												
May	13	33	132	288	150	45	47	718												
June	19	10	63	150	58	45	26	371												
July	20	25	104	133	69	27	31	414												
August	27	46	33	137	33	31	20	432												
September	8	31	77	103	49	22	5	295												
October	33	44	96	134	67	37	20	431												
November	36	32	33	107	104	45	41	403												
December	9	10	42	130	142	33	22	443												
Total	246	307	980	1987	1273	552	372	5717												

Latitude 20° to 25°, Longitude from Greenwich 15° to 45°.

Course.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS.												
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	20	41	37	39	14	12	163	7	28	21	10	2	9	25	20	10	14	9	8
N. N. E.	29	292	308	160	78	21	888	38	55	24	33	28	112	210	158	77	56	68	89
N. E.	10	83	157	151	152	50	603	42	19	18	31	33	64	129	77	42	36	56	56
E. N. E.	9	76	188	242	276	116	902	62	68	30	58	49	92	110	86	82	91	101	73
East	4	36	67	103	78	44	332	42	19	21	20	16	29	8	20	34	37	41	45
E. S. E.	6	24	30	79	45	38	222	29	25	15	16	3	19	4	11	13	19	44	24
S. E.	0	7	8	22	13	5	55	10	8	5	1	0	3	0	3	1	8	14	2
S. S. E.	4	9	17	34	26	7	97	8	18	7	4	0	12	1	7	9	8	13	10
South	0	13	8	16	9	10	56	5	5	12	1	0	2	1	0	1	12	10	7
S. S. W.	6	12	36	32	15	5	106	17	4	19	12	1	5	3	0	4	11	16	14
S. W.	0	3	28	16	7	6	65	15	5	10	3	0	2	2	0	2	11	12	3
W. S. W.	1	23	19	15	11	10	79	17	4	12	7	4	0	13	0	3	5	7	7
West	1	3	4	12	4	0	24	5	1	4	1	3	0	0	0	1	2	1	1
W. N. W.	1	20	22	27	30	9	109	17	9	24	5	6	3	0	3	6	16	15	5
N. W.	0	14	17	9	5	1	46	8	3	5	12	1	2	2	1	0	3	3	1
N. N. W.	3	30	53	45	24	4	164	13	9	29	28	3	19	5	3	13	16	6	10
Calm	2	11	28	17	15	10	83	2	2	3	6	4	3	2	5	6	15	14	11
Total	101	702	1022	1019	802	348	3994	337	282	264	248	163	381	515	394	304	360	430	316
January	17	50	35	115	79	41	337													
February	2	62	63	70	64	21	282													
March	23	29	57	66	50	40	264													
April	6	47	61	50	59	25	248													
May	6	13	40	29	54	21	163													
June	7	67	33	159	57	3	381													
July	10	125	144	129	79	28	515													
August	10	105	161	24	49	45	394													
September	1	74	95	74	33	22	304													
October	7	36	121	79	90	27	360													
November	9	56	99	122	104	40	430													
December	4	33	63	102	79	30	316													
Total	101	702	1022	1019	802	348	3994													

Winds on the North Atlantic.—*Continued.*

Latitude 20° to 25°, Longitude from Greenwich 45° to 80.°

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70.°	Lon. 70° to 75°.	Lon. 75° to 80°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
									Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	15	38	57	43	18	7	0	178	24	21	35	29	5	4	3	13	7	9	10	13
N. N. E.	68	43	79	50	11	2	4	257	28	24	33	30	17	9	19	13	33	10	13	28
N. E.	49	245	397	236	51	28	0	1006	58	89	68	125	179	83	59	86	65	45	87	62
E. N. E.	67	168	196	124	24	7	3	589	42	40	66	54	62	43	85	49	40	30	48	30
East	53	184	290	163	50	24	3	767	24	64	81	97	90	57	92	64	46	60	46	46
E. S. E.	32	87	128	90	19	12	6	374	22	23	36	58	36	29	32	20	20	52	27	19
S. E.	14	100	209	152	28	17	7	507	28	40	60	78	75	29	22	24	60	68	14	29
S. S. E.	18	26	42	35	11	1	1	134	9	16	11	14	20	9	6	3	3	21	17	5
South	17	45	61	44	17	7	0	191	30	15	21	37	18	9	6	4	10	14	18	9
S. S. W.	9	27	27	25	3	0	1	92	10	10	7	9	4	5	0	4	10	14	17	2
S. W.	8	40	34	39	12	3	0	136	9	9	20	24	7	7	3	3	15	22	7	10
W. S. W.	9	16	15	10	1	3	0	54	5	5	13	6	5	3	0	2	2	8	3	2
West	4	25	23	7	11	0	0	70	11	10	20	13	5	0	0	0	3	3	4	1
W. N. W.	11	11	18	5	10	0	0	55	3	5	20	14	0	3	0	0	3	3	1	3
N. W.	2	25	30	22	10	1	3	93	18	8	20	27	5	2	0	0	0	5	5	3
N. N. W.	9	17	14	20	2	3	0	65	15	4	14	8	2	0	1	0	6	1	5	9
Calm	12	24	44	33	13	8	3	137	10	9	21	24	11	8	7	0	11	8	18	10
Total	397	1121	1664	1098	286	123	31	4720	346	392	546	647	541	300	335	285	334	378	340	281
January	21	61	140	87	18	12	7	346												
February	26	65	149	122	23	3	4	392												
March	61	147	119	149	57	10	3	546												
April	38	146	228	149	44	31	11	647												
May	22	107	247	131	32	2	0	541												
June	22	76	117	69	16	0	0	300												
July	23	85	161	51	0	15	0	335												
August	27	95	78	69	9	7	0	285												
September	39	110	141	82	9	3	0	334												
October	75	103	89	58	27	21	0	373												
November	28	95	107	81	20	9	0	340												
December	15	31	88	100	31	10	6	281												
Total	397	1121	1664	1098	286	123	31	4720												

Latitude 15° to 20°, Longitude from Greenwich 45° to 80°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Lon. 75° to 80.°	Total.	TOTAL FOR THE SEPARATE MONTHS.											
									Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	25	25	19	12	2	4	1	88	12	6	22	13	5	2	3	1	2	4	1	17
N. N. E.	34	69	37	3	3	4	1	151	7	40	26	15	4	14	7	9	3	8	9	9
N. E.	352	521	203	36	47	42	9	1210	70	109	143	167	178	126	79	85	38	72	68	80
E. N. E.	158	289	178	17	21	11	1	675	27	44	68	82	108	74	67	42	42	45	59	22
East	147	242	146	22	74	47	15	693	33	55	117	97	83	31	50	49	36	59	43	40
E. S. E.	58	86	56	7	19	2	1	229	9	14	32	42	24	13	5	17	16	22	22	13
S. E.	46	74	72	13	20	14	6	245	13	9	26	67	22	4	1	10	17	41	23	12
S. S. E.	14	8	10	1	1	3	4	41	0	1	3	9	4	0	0	5	2	3	6	3
South	13	30	13	4	1	3	3	72	4	0	8	13	4	0	3	4	12	6	11	2
S. S. W.	3	4	3	0	0	3	3	16	0	0	1	9	0	0	0	0	1	4	0	1
S. W.	9	14	3	0	0	0	0	31	2	0	3	3	6	0	0	0	2	6	3	1
W. S. W.	6	1	0	3	0	0	0	10	0	0	0	4	0	0	0	5	0	0	0	1
West	3	10	2	1	0	3	0	19	0	0	3	9	0	0	0	0	1	2	3	1
W. N. W.	5	0	1	1	0	1	0	8	0	0	5	2	0	0	0	0	1	0	0	0
N. W.	14	5	7	0	0	2	0	28	0	1	7	8	0	0	6	0	1	1	2	2
N. N. W.	1	1	4	0	0	0	1	7	0	1	0	2	0	0	0	0	0	0	0	4
Calm	13	16	16	0	1	9	2	57	4	3	4	15	6	0	0	0	0	9	10	6
Total	906	1395	775	120	189	148	47	3580	181	288	468	567	434	264	221	227	174	287	260	214
January	21	74	27	21	10	28	0	101												
February	24	132	81	6	20	14	6	283												
March	122	141	109	38	42	10	6	468												
April	118	238	123	7	23	41	17	567												
May	88	210	115	3	11	7	0	434												
June	50	145	61	4	4	0	0	264												
July	70	97	39	5	1	9	0	221												
August	94	79	32	10	6	6	0	227												
September	87	42	20	3	13	0	9	174												
October	87	80	65	8	22	16	9	287												
November	96	90	52	8	7	5	0	260												
December	49	67	49	7	30	12	0	214												
Total	906	1395	775	120	189	148	47	3580												

Winds on the North Atlantic.—*Continued.*

Latitude 15° to 20°, Longitude from Greenwich 15° to 45°.

Course.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	8	66	69	18	7	7	165	9	11	14	8	4	10	39	20	18	22	4	4
N. N. E.	26	415	379	144	69	12	1045	48	53	86	87	63	115	210	185	94	74	76	54
N. E.	7	96	296	228	114	122	863	56	32	61	62	48	112	112	87	95	66	72	60
E. N. E.	4	105	286	316	157	87	955	59	51	48	46	37	87	114	104	84	103	143	79
East	1	31	95	70	51	67	315	23	18	23	21	16	19	20	36	31	30	50	28
E. S. E.	1	33	44	37	23	39	177	13	5	3	5	6	0	21	17	28	30	27	22
S. E.	0	1	18	8	2	25	54	0	2	12	4	0	2	0	2	10	10	7	5
S. S. E.	0	7	23	12	3	6	51	2	3	6	1	0	0	2	11	5	10	5	6
South	1	10	6	3	4	4	28	2	3	2	2	0	0	5	1	2	3	6	2
S. S. W.	0	12	9	2	0	0	23	1	3	2	0	2	0	0	5	3	3	3	1
S. W.	0	5	9	0	1	2	17	3	2	3	0	0	0	0	5	2	2	0	0
W. S. W.	1	15	9	1	2	0	28	5	1	2	1	0	0	3	3	0	5	1	2
West	1	2	10	2	1	1	17	1	1	2	0	2	0	0	1	0	7	0	3
W. N. W.	2	18	3	0	2	0	30	1	1	2	4	3	1	0	4	3	7	1	3
N. W.	4	3	7	0	0	0	19	0	2	2	0	1	1	3	4	0	1	5	0
N. N. W.	0	57	40	16	12	1	126	9	9	16	7	3	16	3	31	14	7	5	6
Calm	0	26	19	24	11	3	83	1	7	1	3	3	2	20	3	6	12	15	5
Total	51	907	1327	876	459	376	3996	233	204	235	201	188	365	557	526	395	392	420	280
January	6	51	82	66	19	9	233												
February	0	60	54	56	25	9	204												
March	7	45	64	56	26	37	235												
April	0	23	79	49	34	16	201												
May	0	31	41	53	33	30	188												
June	0	73	122	118	31	21	365												
July	9	204	163	31	72	23	557												
August	4	160	203	47	54	53	526												
September	2	110	116	69	23	75	395												
October	6	61	163	62	43	47	392												
November	7	55	115	151	51	41	420												
December	10	34	115	63	43	10	280												
Total	51	907	1327	876	459	376	3996												

Latitude 10° to 15°, Longitude from Greenwich 45° to 75°.

Course.	Lon. 45° to 50°.	Lon. 50° to 55°.	Lon. 55° to 60°.	Lon. 60° to 65°.	Lon. 65° to 70°.	Lon. 70° to 75°.	Total.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	17	8	0	0	4	1	30	0	3	6	3	0	2	1	0	2	4	0	9
N. N. E.	55	26	0	2	3	0	86	23	18	14	7	2	1	0	3	4	4	5	5
N. E.	675	277	6	13	23	1	995	57	127	167	153	125	106	63	39	20	26	62	45
E. N. E.	214	119	25	10	9	0	377	16	35	69	63	66	30	13	14	7	27	21	16
East	107	66	19	17	30	3	242	14	15	40	41	47	9	9	3	13	14	5	22
E. S. E.	37	32	13	6	5	0	93	3	11	23	3	7	0	4	3	3	6	10	5
S. E.	31	21	4	3	3	1	63	3	2	5	14	10	1	4	4	7	3	0	5
S. S. E.	11	4	5	1	0	0	21	1	0	0	0	3	0	0	2	9	4	2	0
South	5	4	0	1	1	3	14	0	1	1	3	0	0	0	0	4	4	0	1
S. S. W.	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
S. W.	5	1	0	0	0	1	7	0	0	0	1	1	0	1	0	0	4	0	0
W. S. W.	0	1	0	0	0	1	2	0	0	1	1	0	0	0	0	0	0	0	0
West	3	3	0	0	0	2	8	0	1	0	2	1	0	0	0	2	0	0	2
W. N. W.	2	0	0	0	0	2	4	0	0	0	2	0	0	0	0	0	0	0	2
N. W.	4	9	1	0	0	0	14	0	1	3	1	1	0	0	0	3	1	0	4
N. N. W.	5	2	0	0	0	1	8	0	2	2	2	0	0	0	0	0	0	0	2
Calm	10	10	0	0	0	0	20	1	0	3	3	0	0	1	1	7	2	2	0
Total	1182	583	73	53	78	16	1985	123	216	334	305	263	149	101	79	96	104	107	118
January	63	23	16	9	7	0	123												
February	140	59	5	6	6	0	216												
March	156	141	3	9	20	0	334												
April	172	110	6	6	0	11	305												
May	175	74	2	0	9	3	263												
June	110	30	0	0	0	0	149												
July	77	21	0	0	3	0	101												
August	67	12	0	0	0	0	79												
September	45	20	9	9	3	0	86												
October	52	32	12	3	5	0	105												
November	69	31	3	4	0	0	107												
December	51	21	12	7	25	2	118												
Total	1182	583	73	53	78	16	1985												

Winds on the North Atlantic.—*Continued.*

Latitude 10° to 15°, Longitude from Greenwich 15° to 45°.

Course.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	6	67	60	21	14	28	196	5	5	9	5	16	21	17	55	31	16	7	9
N. N. E.	45	383	87	28	45	52	640	41	47	86	38	37	48	64	74	67	68	69	51
N. E.	11	211	280	163	202	535	1402	72	88	122	137	142	126	155	149	97	108	119	92
E. N. E.	13	188	299	186	83	167	986	58	48	79	79	60	138	91	71	52	72	185	53
East	0	50	261	218	114	125	768	32	47	45	60	37	62	83	60	43	87	151	61
E. S. E.	11	50	78	42	27	29	237	14	15	11	10	1	20	25	26	26	36	29	24
S. E.	0	10	31	26	28	89	184	2	3	1	2	1	4	17	26	15	27	21	15
S. S. E.	2	53	17	10	14	8	104	0	1	1	0	0	3	13	33	14	30	6	3
South	0	25	37	14	9	16	101	0	0	0	0	0	7	9	44	26	7	7	1
S. S. W.	13	84	25	16	7	6	151	0	0	0	0	0	2	30	71	30	13	3	2
S. W.	4	34	51	21	20	18	148	0	0	0	0	0	1	33	63	39	9	3	0
W. S. W.	7	53	17	9	17	6	109	0	0	1	1	0	3	19	43	29	9	4	0
West	1	7	13	18	19	15	73	0	0	0	0	0	1	12	25	23	9	3	0
W. N. W.	28	45	6	7	6	5	97	4	9	1	4	2	10	17	21	21	7	0	1
N. W.	6	15	15	8	11	11	66	0	1	0	0	1	8	13	24	13	4	1	1
N. N. W.	11	92	15	7	4	9	138	1	3	2	1	3	14	24	56	24	9	1	0
Calm	19	96	67	25	28	16	251	2	3	1	2	0	13	62	78	44	27	15	4
Total	177	1463	1359	819	648	1085	5551	231	270	309	339	300	481	684	919	594	538	574	317
January	15	55	72	33	17	39	231												
February	35	62	62	31	16	64	270												
March	4	45	64	60	40	96	309												
April	10	66	65	45	16	137	339												
May	4	68	55	54	28	91	300												
June	15	135	150	66	40	75	481												
July	21	205	174	104	69	111	684												
August	21	287	250	99	113	149	919												
September	16	202	137	65	135	39	594												
October	5	149	98	91	72	118	533												
November	26	107	130	113	75	123	574												
December	5	82	102	58	27	43	317												
Total	177	1463	1359	819	648	1085	5551												

Latitude 5° to 10°, Longitude from Greenwich 10° to 55°.

Course.	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Lon. 45° to 50°.	Lon. 50° to 55°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
											Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	1	25	92	33	18	31	14	3	1	218	19	27	26	30	27	22	19	6	8	11	6	17
N. N. E.	36	94	271	45	32	84	77	43	10	692	35	64	107	108	58	47	26	11	27	40	35	39
N. E.	1	25	150	224	192	436	511	254	25	1817	140	215	294	325	226	215	104	32	13	59	91	104
E. N. E.	5	47	170	148	97	101	154	71	7	800	66	95	102	114	85	68	30	16	10	50	101	68
East	4	21	51	193	95	98	110	56	5	628	34	32	37	32	76	68	45	29	31	55	118	71
E. S. E.	24	55	102	75	29	55	50	17	1	408	18	16	7	14	19	35	36	40	29	68	95	31
S. E.	2	42	87	107	66	83	99	36	1	523	11	10	18	13	21	65	93	53	61	72	80	26
S. S. E.	33	335	306	73	40	41	44	9	0	881	5	1	4	4	22	72	225	307	115	75	35	16
South	54	490	293	145	55	41	36	2	2	1118	5	2	8	0	3	72	239	514	145	76	43	11
S. S. W.	138	391	325	71	31	16	11	1	0	984	6	7	9	2	9	76	188	368	174	100	30	15
S. W.	8	64	85	81	51	13	31	3	0	336	2	1	2	2	3	25	63	94	97	33	12	2
W. S. W.	29	113	127	36	7	8	6	0	0	326	8	9	4	4	7	29	73	93	60	26	6	7
West	9	24	20	36	15	21	21	7	0	153	1	7	0	2	3	8	33	48	20	21	6	4
W. N. W.	57	47	40	11	8	24	4	1	0	192	19	14	22	14	10	12	30	18	18	16	5	14
N. W.	6	21	16	32	11	26	5	2	0	119	1	7	7	6	6	21	21	9	16	20	2	3
N. N. W.	16	50	91	11	4	13	9	1	0	195	17	18	15	17	17	31	17	13	14	18	6	12
Calm	73	120	144	118	69	49	45	17	2	627	19	20	14	4	8	38	109	74	44	115	62	70
Total	496	1964	2370	1439	810	1135	1227	523	54	10018	456	545	676	691	596	954	1351	1725	882	855	733	555
January	48	49	108	77	25	56	69	24	0	456												
February	49	63	103	72	19	70	123	40	6	545												
March	31	41	92	71	31	126	144	30	10	676												
April	10	65	124	59	36	126	126	92	3	691												
May	2	38	134	86	42	86	140	65	2	595												
June	12	119	265	181	82	88	147	60	0	954												
July	43	332	351	187	109	122	167	40	0	1351												
August	115	718	489	123	62	92	92	31	3	1725												
September	24	255	249	112	76	84	41	40	1	882												
October	52	138	227	164	68	124	58	17	7	855												
November	52	59	102	200	104	113	80	23	0	733												
December	58	87	126	107	56	48	40	11	22	555												
Total	496	1964	2370	1428	810	1134	1228	525	54	10018												

Winds on the North Atlantic.—*Continued.*

Latitude 0° to 5,° Longitude from Greenwich 10° to 55°.

Course.	Lon. 10° to 15°.	Lon. 15° to 20°.	Lon. 20° to 25°.	Lon. 25° to 30°.	Lon. 30° to 35°.	Lon. 35° to 40°.	Lon. 40° to 45°.	Lon. 45° to 50°.	Lon. 50° to 55°.	Total.	TOTAL FOR THE SEPARATE MONTHS.											
											Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	0	16	36	29	68	18	5	6	2	175	11	17	38	58	21	4	0	0	4	4	4	14
N. N. E.	1	29	92	137	194	61	32	6	0	552	49	67	106	191	60	10	8	2	1	14	10	34
N. E.	0	20	51	58	77	268	208	14	4	695	57	87	139	183	114	25	6	2	5	17	19	41
E. N. E.	5	57	97	118	141	106	81	7	0	612	54	75	94	84	90	50	27	16	12	25	41	44
East	2	25	65	84	83	148	100	13	0	520	78	47	88	45	72	87	31	20	48	18	38	58
E. S. E.	11	121	287	294	348	86	80	8	0	1225	84	88	70	72	68	138	120	96	88	112	189	105
S. E.	24	242	421	261	139	306	161	12	0	1566	71	63	47	56	113	154	216	276	141	145	165	119
S. S. E.	146	645	424	180	60	80	31	0	0	1566	40	45	31	33	56	127	218	443	278	180	97	78
South	198	404	96	38	12	25	10	0	0	778	31	8	20	12	25	50	69	279	171	76	18	14
S. S. W.	128	246	90	28	9	6	0	0	0	497	19	13	20	20	27	30	54	111	138	46	2	17
S. W.	17	66	17	2	3	6	3	0	0	114	6	5	9	2	10	7	1	29	26	8	1	10
W. S. W.	15	68	25	11	5	2	0	0	0	126	7	11	7	19	11	16	6	19	14	10	4	2
West	6	6	4	4	4	2	0	2	0	28	1	0	1	1	4	2	2	9	5	2	0	1
W. N. W.	0	28	27	7	9	0	0	0	0	71	6	7	15	3	12	11	1	6	1	3	0	6
N. W.	0	6	7	12	6	3	2	1	0	37	4	2	7	11	5	1	1	0	0	2	0	4
N. N. W.	0	23	31	39	20	4	3	0	0	120	12	13	21	37	20	2	0	2	2	1	2	8
Calm	0	52	118	68	44	43	16	2	0	338	31	32	40	52	56	16	8	4	6	8	26	59
Total	548	2054	1883	1360	1217	1159	727	66	6	9015	556	580	703	879	764	675	768	1814	935	621	616	604
January	15	91	115	122	89	90	34	0	0	556												
February	0	72	139	112	111	108	48	0	0	580												
March	0	100	121	108	155	114	100	7	3	703												
April	8	66	146	166	166	191	133	3	0	879												
May	0	71	173	104	119	195	97	4	1	764												
June	22	96	181	106	84	91	95	0	0	675												
July	49	245	141	79	52	122	78	7	0	768												
August	266	602	240	79	46	52	28	6	0	1314												
September	135	417	152	64	100	28	33	6	0	935												
October	33	162	134	107	89	61	27	3	0	621												
November	2	39	131	205	132	69	38	0	0	616												
December	8	93	210	113	74	43	31	30	2	604												
Total	548	2052	1883	1365	1216	1158	724	66	6	9015												

Winds at the Straits of Gibraltar.

Lat. 35° to 40°, Longitude 0° to 10° West from Greenwich.

Course.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	4	0	1	1	9	2	5	1	2	6	0	0	31
N. N. E.	4	0	3	0	3	0	17	6	2	5	3	0	43
N. E.	4	0	0	3	10	2	2	3	4	8	1	1	38
E. N. E.	4	0	1	3	9	1	8	0	0	0	9	0	35
East	3	0	0	6	8	3	8	8	6	1	1	7	51
E. S. E.	6	0	0	1	4	0	11	8	2	1	1	0	34
S. E.	3	0	0	5	8	3	0	3	0	0	0	0	22
S. S. E.	4	0	0	0	1	0	0	0	0	0	0	2	7
South	1	0	0	0	3	1	2	2	0	4	0	1	14
S. S. W.	2	0	0	0	5	0	0	0	0	0	0	0	7
S. W.	2	0	0	2	1	2	4	1	0	8	0	0	20
W. S. W.	4	0	0	0	7	6	3	0	4	4	0	0	28
West	16	0	0	19	13	10	5	1	8	2	0	2	76
W. N. W.	1	0	1	0	1	2	4	0	1	0	0	0	10
N. W.	1	0	1	0	6	3	6	5	0	10	0	1	33
N. N. W.	10	0	2	0	9	1	5	0	2	1	0	1	31
Calm	0	0	0	2	10	0	14	1	0	3	0	0	30

Winds on the Atlantic Ocean and at the Azores.

Course.	Atlantic Ocean. Lat. 0° to 10°.	Lat. 10° to 20°.	Lat. 20° to 30°.	Lat. 30° to 34°.	Lat. 34° to 36°.	Lat. 36° to 40°.	North of Lat. 40°.	Separate months north of Lat. 36.° Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Azores.[1] Fayal.	St. Michael's.	Terceira.	Gracioса.	St. Mary's.
North	2	24	85	16	29	132	2725½	283	329	381½	250	344	108	144	240	362	192	107	117	2857½	106	60	79	47	14
N. by E.		48	12	4	33	23	93	0	0	50	3	21	6	0	0	0	24	12	0	116	0	13	0	7	0
N. N. E.	12	55	49	17	67	106	313½	57	16	126½	75	44	0	0	0	52	37	12	0	419	12	93	35	0	10
N. E. by N.		44	32	44	21	0	75	0	0	11	4	21	0	0	0	24	12	3	0	75	0	0	0	0	0
N. E.	24	213	377	41	95	174	101	36	9	231	60	58	0	15	15	24	16	40	8	512	275	122	58	0	45
N. E. by E.		121	112	0	82	15	41	28	0	8	0	0	0	0	0	0	0	20	0	56	0	0	0	0	0
E. N. E.	22	122	119	23	61	10	170	27	31	44	45	0	0	0	0	0	0	33	0	180	13	28	8	13	12
E. by N.		160	12	0	63	12	33	25	0	0	0	0	12	0	0	0	0	6	2	45	0	0	0	0	0
East	114	428	441	17	47	22	4624	227	309	538	316	788	396	252	360	352	352	312	444	4646	8	67	47	7	6
E. by S.		45	178	0	45	0	163	65	0	9	12	12	24	0	0	0	0	40	1	163	0	0	0	0	0
E. S. E.	17	68	256	10	9	11	135	13	0	33	20	12	4	9	0	0	18	35	0	146	10	11	14	0	15
S. E. by E.		0	62	5	20	3	84	3	0	0	0	0	4	0	0	0	0	51	29	87	0	0	0	0	0
S. E.	189	32	163	41	27	37	141	5	28	31	16	6	28	15	0	0	12	37	0	178	105	23	21	8	0
S. E. by S.		0	11	0	7	0	48	0	12	0	3	12	5	0	0	0	0	12	4	48	0	0	0	10	0
S. S. E.	96	0	115	50	20	54	152	27	32	36	9	0	19	0	0	42	0	23	18	206	18	29	0	6	0
S. by E.		0	24	74	34	0	11	0	0	0	0	0	4	0	0	0	0	3	4	11	4	0	0	0	0
South	169	0	47	111	27	94	2557	141	256½	275½	447	400	291	149	192	168	60	67	204	2651	73	42	28	6	15
S. by W.		0	49	49	40	43	48	4	30	36	3	0	0	4	0	14	0	0	0	91	0	0	0	0	0
S. S. W.	11	6	152	97	35	46	314	24	21	52	10	12	47	10	60	80	12	32	0	360	31	72	62	0	2
S. W. by S.		0	21	17	41	22	113	0	7	25	0	11	44	12	12	0	0	24	0	135	0	0	0	0	0
S. W.	37	4	165	133	36	73	607	0	18	183	50	85	23	65	42	115	60	39	0	680	168	67	114	7	15
S. W. by W.		0	32	0	0	21	80	0	23	30	12	0	12	12	0	0	12	0	0	101	0	0	0	0	0
W. S. W.	11	4	100	61	40	130	542	97	42	156	50	82	5	12	23	126	37	42	0	672	22	43	63	0	0
W. by S.		0	24	24	3	6	76	0	15	11	18	2	0	12	0	0	0	24	0	82	0	20	0	0	0
West	102	0	183	100	47	112	13919½	584	876	1488½	1931	1639	1056	879	1572	996	1076	794	1140	14031½	52	60	198	0	0
W. by N.		0	65	7	0	5	141	0	14	11	37	12	0	12	12	24	24	0	0	146	0	4	0	0	0
W. N. W.	3	0	58	70	35	51	650	12	41	107	39	116	0	36	72	167	8	90	13	701	16	49	92	0	0
N. W. by W.		0	48	12	0	9	61	0	0	5	4	0	0	33	0	24	0	4	0	70	0	4	0	14	0
N. W.	7	0	70	204	51	70	763	21	149½	27	96	163	0	12	36	192½	48	70	18	833	41	100	108	0	25
N. W. by N.		0	34	0	7	0	63	0	13	2	12	0	0	12	12	12	0	0	0	63	0	0	0	4	0
N. N. W.	0	4	74	29	24	36	249	27	88	52	45	5	0	5	12	40	0	0	11	285	2	33	32	0	0
N. by W.		0	10	0	6	23	53	0	9	15	18	19	0	0	0	0	0	15	0	76	0	5	0	35	0
Calm or variable	8	34	102	182	144	63	2754	138	144	281	243	381	240	151	403	284	204	96	252	2817	21	5	0	0	1

Winds at the Madeira and Canary Islands.

Course.	Funchal, Madeira. 1826.	1827.	1828.	Total for the separate months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Teneriffe.[2] Course.	December, 1826.
N.	26	21	57	5	7	13	4	6	3	4	0	4	4	5	28	104	N.	14
N. E.	184	157	141	19	21	13	22	30	28	41	58	19	28	26	20	482	N. E.	120
E.	39	56	31	3	4	13	9	4	7	3	2	5	10	5	5	126	E. N. E.	60
S. E.	14	20	12	8	1	4	2	0	0	0	2	4	3	1	1	46	E.	122
S.	3	2	2	4	0	0	1	0	0	0	0	0	0	0	0	7	S. E.	14
S. W.	7	7	8	5	0	0	3	2	0	0	0	0	4	1	0	22	Calm or variable	174
W.	69	74	81	16	18	11	15	12	13	13	0	28	7	11	6	224		
N. W.	23	29	34	2	6	8	4	8	9	1	0	0	6	11	2	86		

[1] These observations were taken in the months of June and July, 1839.

[2] These observations were taken on board the brig Ocean, partly while lying at anchor at Teneriffe, and partly between there and the Madeiras.

Winds in Great Britain and Ireland.

Course.	Elgin, Scotland.															Aberavon, Wales, Sept. Oct. and Nov.	Dublin, Nov. 1840.	Bronxholm, Scotland, 10 years.	Inchkeith, Scotland, 10 years.	Calton Hill, Scotland, 10 years.
	1835.	1836.	1837.	TOTAL FOR THE SEPARATE MONTHS. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.					
North	9	2	5	1	0	0	1	4	5	2	0	0	1	1	1	16	7	2		152	93
N. N. E.	1	4	1	0	0	1	0	2	0	1	2	0	0	0	0	6	1	0			
N. E.	4	8	28	3	0	3	8	7	9	6	1	2	0	1	0	40	4	2		205	158
E. N. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0			
East	11	4	9	1	0	3	4	2	1	0	3	4	0	5	1	24	5	2	1333	739	471
E. S. E.	5	1	0	0	1	1	1	1	0	0	1	1	0	0	0	6	4	0			
S. E.	27	8	51	10	5	4	6	6	4	7	9	9	6	7	13	86	6	2		224	158
S. S. E.	55	42	6	7	3	9	5	6	8	10	12	18	15	7	3	103	2	0			
South	30	38	41	13	7	1	8	3	10	17	4	11	7	18	20	109	3	0		292	111
S. S. W.	6	17	8	1	4	7	2	0	0	1	1	1	4	7	3	31	0	0			
S. W.	101	124	135	23	42	38	28	20	20	31	30	28	38	31	31	360	6	0		339	630
W. S. W.	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	5	4			
West	39	32	33	23	3	12	10	8	3	9	10	3	7	11	5	104	1	6	2319	1371	798
W. N. W.	11	0	0	0	1	0	0	2	6	1	0	0	1	0	0	11	3	4			
N. W.	39	41	48	9	7	12	10	19	17	16	11	4	6	1	16	128	7	4		217	444
N. N. W.	25	45	0	2	10	2	7	13	6	3	9	9	8	1	0	70	1	2			
Variable																				113	789

Course.	Clunie Manse, Scotland.						Banff Castle, 1 year, Scotl'd.	Castle Toward, Scotland.		Londonderry, Ireland.											
	1833.	1834.	1835.	1836.	Total.	4 years.[1]		1834.	1835.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	16	11	11	23	61	3	50	31	43	0	0	3	3	1	9	2	7	5	3	4	4
N. E.	34	33	33	36	141	11	52	10	10	2	0	0	2	1	0	0	0	6	4	1	1
E.	44	28	42	27	141	9	29	79	87	2	3	3	0	4	0	0	2	3	1	0	3
S. E.	33	39	29	22	123	11	30	20	14	14	19	17	1	6	0	0	3	3	0	2	10
S.	19	28	11	24	82	2	37	72	68	4	3	3	2	2	2	2	5	3	0	0	1
S. W.	104	134	118	119	470	28	61	55	42	1	3	3	2	3	3	4	2	6	3	0	6
W.	46	28	54	61	189	15	24	45	40	12	5	5	15	6	11	23	17	7	11	12	12
N. W.	64	64	67	51	249	21	31	53	61	2	0	1	3	7	14	1	0	4	17	23	7

Course.	Kinfaun's Castle, Scotland.												Course.	Isle of Man, Irish Sea.								
	1813.	1814.	1815.	1816.	1817.	1819.	1820.	1821.	1825.	1828.	1835.	1836.		1822.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.
N. & N. E.	10	3	9	32	25	28	19	10	9	44	37	42	N.	81	104	93	80	82	105	64	102	83
E. & S. E.	76	109	102	105	91	109	97	132	119	93	84	64	E.	57	60	92	97	87	102	107	110	84
S. & S. W.	101	65	85	62	133	60	67	45	95	146	119	142	S.	102	108	61	62	86	93	113	91	104
W. & N. W.	178	188	169	167	116	168	183	178	142	83	125	118	W.	111	93	120	126	110	65	82	62	94

[1] Date not known.

Winds in England.

Course.	London. 1806 to 1818, inclusive.													Manchester.					New Malton.				
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	12 y'rs.[1]	1801.	1819.	1820.	1821.	3 y'rs.[1]	6 y'rs.[1]	1820.	1821.	1822.	1825.
N.	32	17	16	36	12	25	26	17	23	18	29	29	280	283	44	4	1	0	0	15	39	55	31	67
N. E.	38	21	89	67	67	49	25	31	53	53	50	37	580	584	277	21	41	38	10	15	52	42	51	36
E.	28	21	38	33	40	22	14	18	32	27	18	28	319	322	11	21	17	10	5	6	26	15	23	14
S. E.	28	23	21	34	32	22	19	14	40	35	27	24	319	321	19	58	34	33	12	5	14	15	25	19
S.	26	27	16	14	21	9	20	18	21	30	22	10	234	235	22	44	46	12	10	15	54	60	41	49
S. W.	73	100	69	55	74	74	97	98	67	87	87	99	980	989	412	124	122	159	39	22	84	84	94	89
W.	39	37	39	24	19	39	48	53	41	43	44	46	472	478	158	21	46	53	12	13	39	59	39	40
N. W.	60	50	48	47	40	68	85	96	44	38	51	58	685	689	12	53	31	42	12	9	37	15	26	30
Calm or Variable	47	38	32	44	55	48	34	21	35	36	28	39	457		0	19	28	18	0	6	21	20	34	21

Course.	Greenwich.											Devonport.[2]		Sturbington,[2] 1 year.	Carlisle, 1 year.	Delphes, 1 year.
	1800.	1801.	1802.	1803.	1804.	1805.	1806.	1807.	1808.	1841.[1]	1842.[1]	1841.	1842.			
North	146	255	91	172	103	166	136	187	311	418	482	400	479	42	17	47
N. N. E.	111	73	90	103	182	102	139	238	125	136	168	106	255	854	25	41
N. E.	756	772	762	903	531	1218	1106	768	871	240	454	267	480	317	64	82
E. N. E.	165	126	115	189	202	248	139	54	175	284	210	80	170	147	84	69
East	828	641	397	873	522	496	500	285	488	204	488	480	468	75	28	128
E. S. E.	95	80	104	109	112	47	68	61	63	74	62	281	340	68	8	20
S. E.	115	130	76	114	205	137	113	97	66	78	80	590	622	81	88	44
S. S. E.	136	125	77	86	163	61	40	33	0?	136	46	278	500	77	40	27
South	598	558	714	759	676	597	669	497	772	508	480	780	680	186	65	47
S. S. W.	389	685	205	308	262	265	702	293	0?	684	482	390	860	149	24	72
S. W.	577	583	647	653	876	617	770	951	0?	1196	916	772	635	265	121	162
W. S. W.	208	195	318	213	230	66	220	392	189	808	792	320	270	609	104	67
West	330	521	391	398	346	425	349	404	577	798	588	780	485	883	93	92
W. N. W.	230	155	248	195	247	229	241	274	229	220	118	530	460	877	11	37
N. W.	180	383	344	186	264	182	181	378	393	200	86	1393	1000	412	58	70
N. N. W.	0	0	0	35	49	65	7	0	70	164	142	330	464	298	10	47
Calm																21

Course.	Mansfield Woodhouse, 10 years.	Alderly Rectory, 1 year.	Cheltenham, 1 year.	High Wycombe, 1 year.	Thetford, 1 year.	Keswick, 5 years.	Southwick, 11 years.	Kendal.		Bristol.		Lancaster.						Liverpool.						
								5 years.[1]	1828.	1777.	1778.	1816.	1817 or 1818?	1819.	1820.	1821.	6 years.[1]	1828.	1829.	1830.	1831.	1832.	1833.	1834.
N.	131	63	67	49	85	5	249	9	40	35	13	17	15	26	18	16	4	7	17	18	25	34	18	25
N. E.	395	0	91	25	83	6	492	22	22	218	170	44	41	36	32	23	10	35	39	24	31	14	22	27
E.	195	45	65	30	65	15	291	3	23	21	16	22	18	34	48	44	10	19	23	12	16	5	8	24
S. E.	195	0	82	32	82	9	376	5	12	100	116	54	31	30	33	39	10	108	85	68	64	73	68	64
S.	176	167	73	43	118	15	276	6	30	35	24	45	53	46	61	46	15	17	23	25	42	33	34	24
S. W.	994	0	227	56	130	17	1116	38	83	252	280	93	111	83	88	110	26	58	27	55	56	46	36	62
W.	702	86	57	66?	73	24	367	11	124	17	9	64	70	71	66	67	19	42	34	44	28	51	48	37
N. W.	682	0	68	64	95	9	784	6	32	54	102	27	26	39	20	20	6	81	117	121	103	110	131	102

[1] Date uncertain. [2] By Osler's Anemometer. [3] By Whewell's Anemometer.

Winds in England.—*Continued.*

Course.	Bushey Heath.							Penzance.					Helston.		Sidmouth, 1812.	Gosport.			Course.	Gosport.			Sidmouth, 1813.	Derby.	
	1818.	1819.	1820.	1821.	1822.	1824.	1825.	4 years.[1]	1819.	1820.	1821.	1822.	1822.	1825.		3 years.[1]	1816.	1817.		1818.	1819.	1820.		1812.	1813.
N.	24	19	18	7	5	8	10	9	53	34	20	29	28	47	54	10			N. to N. E.	38	45½	35½	87	85	84
N. E.	172	208	215	63	77	67	84	7	35	30	16	24	31	21	40	9	64	67	N. E. to E.	47½	24	38½			
E.	61	42	38	14	18	17	18	8	30	37	21	28	48	62	13	14			E. to S. E.	26½	49½	54	58	56	39
S. E.	119	117	104	40	47	35	32	16	45	60	59	56	26	26	58	8	71	54	S. E. to S.	54½	29	26			
S.	28	32	21	6	6	4	5	9	22	15	42	43	35	29	42	11			S. to S. W.	62	35	36	111	119	123
S. W.	300	262	285	145	132	129	112	19	55	63	75	77	92	75	95	13	99	134	S. W. to W.	68	34½	51			
W.	75	78	77	15	34	28	33	16	65	48	65	58	36	43	38	21			W. to N.W.	43	87½	71¼	120	106	119
N. W.	157	216	204	69	46	73	69	16	58	79	56	42	69	62	66	14	132	110	N. W. to N.	25½	60	53			
Calm or variable	45	26	37	5	0	5	0	0	0	0	11	8													

Winds in Denmark, Norway, and Sweden.

Course.	Copenhagen.		Aparade, 9 years.	Christiansoe, 8 years.	Wyburg, 1 year.	Stockholm, 4 years.	Soendmor? 12 years.	Goersdoff.			Spydberg.		Cronberg, 1842.											
	26 years.	50 years.						1847.	1848.	Total.	1784.	1785.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
N.	1948	4910	700	441	1	15	697	87	55	142	200	205	2	3	8	2	5	8	7	4	6	3	17	4	69
N. E.	3311	4861½	1183	819	11	11	252	75	53	128	130	97	17	15	6	43	39	15	16	28	23	10	15	24	251
E.	5435	6607¼	1684	859	4	11	388	178	151	329	82	77	42	14	9	33	13	9	2	21	8	15	5	10	181
S. E.	5244	5918¾	847	969	16	9	434	101	65	166	124	172	2	0	0	3	2	2	5	4	2	1	0	0	21
S.	3627	7061	739	702	2	12	939	76	51	127	129	164	0	9	3	1	6	5	2	7	5	5	6	1	50
S. W.	2476	9361	1368	1426	30	14	239	136	141	277	111	111	13	21	17	0	7	19	26	9	28	25	11	15	191
W.	3545	10448	1749	1631	9	19	1390	230	173	403	67	28	11	15	41	4	14	21	24	14	12	16	25	26	223
N. W.	3006	6892½	1585	1105	27	9	199	147	72	219	75	49	0	1	9	2	7	10	10	5	1	8	3	7	63

Winds in Denmark, Norway, Sweden, and Russia.

Course.	Skagen, 9 years.	Holmia.			Monachium.				North and west coast of Norway, September.
		1783.	1784.	1785.	1781.	1783.	1784.	1785.	
North	415	127	85	87	85	57	80	67	0
N. N. E.	285	18	21	42	0	9	1	0	0
N. E.	929	38	97	65	43	81	23	63	0
E. N. E.	888	25	13	35	0	4	9	1	0
East	440	88	63	74	155	234	233	135	0
E. S. E.	325	22	11	14	0	19	20	2	0
S. E.	1095	39	79	60	54	28	23	77	0
S. S. E.	472	25	24	23	0	6	9	2	3
South	683	91	62	46	135	66	77	91	4
S. S. W.	529	30	24	40	0	11	13	18	0
S. W.	1645	81	114	84	138	174	164	144	9
W. S. W.	887	34	38	52	0	13	10	14	2
West	1056	185	129	84	429	340	395	447	2
W. N. W.	573	13	22	31	0	16	1	3	6
N. W.	802	42	83	63	38	0	31	32	6
N. N. W.	283	4	27	42	0	0	3	0	0
Calm					0	0	41	58	0

Course.	Archangel, 18 years.	Moscow, 5 years.	Kasan, 1 year.	Kerk, 2 years?[2]	Wilna, 1 year.	Petropolis? 1 year.[3]	Dorpat, 1 year.	Schoesel, 2 5-12 years.
N.	2350	25.6	135	11	271	39	100	352
N. E.	1426	35.8	84	7	161	21	89	1429
E.	2339	81.6	8	14	291	55	101	613
S. E.	2760	36.7	204	6	671	24	127	307
S.	1969	54.9	176	10	291	71	157	120
S. W.	2757	38.3	160	15	541	18	174	1077
W.	3007	54.1	14	22	911	80	225	1211
N. W.	2023	33.3	71	15	461	40	122	1783
Calm	1784							

[1] Date uncertain.

[2] Locality doubtful.

[3] St. Petersburg. (?)

Winds in Russia.—*Continued.*

Lougan.[1]

Course.	Jan.	Jan.	Feb.	Feb.	March.	March.	April.	April.	May.	May.	June.	June.	July.	July.	Aug.	Aug.	Sept.	Sept.	Oct.	Oct.	Nov.	Nov.	Dec.	Dec.	Total.
N.	5	8	0	14	4	0	14	5	6	11	11	40	9	15	4	24	5	7	0	4	0	0	0	8	194
N. E.	6	7	12	5	11	13	26	14	9	11	2	29	15	10	5	9	3	11	4	8	2	0	9	6	227
E.	18	96	42	28	95	83	102	39	118	65	21	26	67	34	53	19	101	142	127	37	73	33	98	40	1557
S. E.	17	5	5	13	0	70	7	58	24	9	9	1	14	6	20	19	6	6	5	8	23	4	21	15	365
S.	40	4	34	27	34	19	15	28	19	36	12	15	33	18	47	11	16	4	12	7	16	30	0	11	473
S. W.	23	13	12	14	2	27	0	31	1	23	15	18	0	15	0	20	1	0	0	13	0	19	1	30	277
W.	45	39	57	45	17	6	25	14	10	16	36	31	20	47	32	66	39	8	17	59	3	92	3	44	771
N. W.	5	1	0	5	2	3	6	9	1	9	22	24	8	22	2	10	0	1	0	18	0	19	0	7	174
Calm	89	75	62	73	83	17	45	42	60	68	112	56	91	86	85	70	69	61	83	94	123	43	116	87	1790

St. Petersburg.

Course.	20 years.[2]	1818.	1830.	1831.	1832.	July, 1835, to July, 1836.	July, 1836, to July, 1837.	TOTAL IN HOURS FOR THE SEPARATE MONTHS SINCE 1830. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	852	27	56	29	44	177	142	137	140	74	48	226	146	276	167	282	200	192	106
N. E.	772	36	175	310	147	271	448	397	348	595	784	954	980	628	671	637	398	416	405
East	961	51	43	100	60	279	281	91	155	222	350	209	812	218	252	260	383	404	298
S. E.	680	24	106	84	108	509	436	353	661	629	462	267	234	330	399	267	552	599	426
South	835	34	194	119	168	426	290	503	470	708	394	215	263	271	308	432	594	786	1052
S. W.	905	82	380	275	324	374	344	1163	1033	925	867	739	537	859	700	801	1057	710	595
West	1292	124	81	65	168	560	489	609	472	300	334	628	728	742	609	478	266	160	343
N. W.	1009	22	11	4	4	201	188	130	50	27	9	161	99	149	174	112	99	114	195
Calm or variable		15	49	109	80	131	300	334	85	240	357	326	298	247	440	336	171	219	294

Winds in Prussia and Austria.

Course.	Dusseldorp, 1 year.	Dantsic, 13 years. Winter.	Spring.	Summer.	Autumn.	Total.	Sagan. 5 years.[2]	1781.	1783.	1784.	Divio. 1783.	1784.	Buda. 1782.	1783.	1784.	1785.	Prague. 1783.	1784.
North	97	147	493	590	195	1425	6	39	60	37	250	248	15	23	32	50	18	49
N. N. E.	74	38	152	158	30	378			10	11	42	25	29	27	22	34	11	12
N. E.	78	34	116	147	84	381	12	127	126	120	50	51	118	127	67	59	18	19
E. N. E.	25	16	58	83	33	190			21	26	14	2	22	40	14	11	15	28
East	107	104	234	156	175	669	9	128	90	87	48	51	20	17	40	62	1	22
E. S. E.	32	62	74	58	98	292			24	14	7	7	12	14	8	14	30	59
S. E.	83	175	132	56	137	500	9	100	84	78	24	26	91	92	60	33	24	49
S. S. E.	72	79	95	29	85	288			26	23	26	21	18	36	32	32	21	45
South	59	798	474	308	704	2284	17	177	110	132	242	228	32	32	66	62	20	154
S. S. W.	45	157	107	113	205	582			58	59	29	45	56	34	75	36	36	66
S. W.	83	183	165	140	273	761	24	239	211	233	96	132	153	123	87	57	130	120
W. S. W.	23	95	98	72	97	362			29	20	37	26	12	11	6	13	111	58
West	152	636	496	702	565	2399	11	154	76	81	111	107	18	21	85	139	51	88
W. N. W.	22	255	241	278	225	999			34	35	31	17	189	150	237	237	72	67
N. W.	62	115	143	155	153	576	12	90	121	107	36	62	246	300	207	156	67	61
N. N. W.	58	48	48	32	46	174			8	15	26	23	27	28	35	53	32	24
Calm or variable													93?	71?	98?	115?	34?	14?

[1] There are two different records of observations taken at this place, both dated 1838.

[2] Date uncertain.

Winds in Prussia and Austria.—*Continued.*

Berlin, Prussia.

Course.	25 years.	Proportion for the different seasons for 17 years.[1]				Proportion for the separate months for 11 years.[1]											
		Winter.	Spring.	Summer.	Autumn.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	1068	100	100	100	100	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	1965					0	0	1	1	1	0	0	0	0	0	0	0
E.	3227	100	100	100	100	5	4	3	1	2	0	0	0	2	1	2	3
S. E.	2658					0	0	0	1	2	2	0	0	0	3	3	0
S.	1849	190	113	85	167	0	1	0	0	0	0	0	0	0	1	0	0
S. W.	6031					2	5	2	4	3	2	0	3	3	1	1	3
W.	6149	137	132	277	160	2	3	4	5	3	4	7	5	6	3	3	3
N. W.	4826					0	1	0	1	2	4	2	3	1	0	1	0

Course.	Vienna, Austria, 1841.													Posen, Poland, 1847–48.						
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Jan.	Feb.	March.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	10	19	9	18	33	11	16	4	15	1	2	9	142	0	0	1	0	0	1	2	0
N. E.	0	5	0	1	7	0	2	0	4	1	0	1	21	10	1	0	1	0	0	2	0
E.	1	1	0	1	3	2	4	7	0	0	0	1	20	9	1	1	4	0	0	5	5
S. E.	6	55	31	29	22	21	3	28	29	37	39	32	332	1	2	4	2	1	0	5	0
S.	18	7	20	18	17	6	18	15	19	32	21	17	198	1	5	3	0	0	1	6	1
S. W.	13	2	7	6	5	3	2	5	3	3	17	12	78	2	10	6	0	2	1	3	2
W.	12	0	1	5	4	2	4	1	0	5	10	4	48	0	3	2	0	3	1	1	3
N. W.	64	22	55	51	32	74	79	63	50	44	41	48	623	0	0	1	1	1	4	1	0

Course.	Schoenthal, Austria, 1841.													Pillan, 18 years.	Hofmansgave, 4 years.	Brunsbourg, 1 year.
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.			
N.	5	2	0	2	1	11	1	6	0	0	0	0	28	1073	7	84
N. E.	10	58	15	45	44	13	7	18	27	12	19	12	280	825	9	14
E.	2	0	14	0	1	0	0	0	7	0	8	6	38	1349	10	63
S. E.	5	11	0	1	3	2	2	3	0	3	0	13	43	1581	14	83
S.	3	4	5	7	2	4	1	5	9	2	4	2	48	1210	14	165
S. W.	60	9	52	21	23	56	76	57	47	74	59	53	587	2525	20	229
W.	5	0	4	4	8	2	2	0	0	0	0	3	28	1892	15	228
N. W.	3	0	3	10	11	2	4	4	0	2	0	4	43	2027	11	133

[1] Proceedings of British Association.

Winds in Germany.

Course.	Manheim.															St. Andex.				
					SEPARATE MONTHS OF 1785.															
	10 years.[1]	1781.	1784.	1785.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	1781.	1782.	1783.	1784.	1785.
North	352	27	46	24	4	2	2	1	5	5	0	0	0	0	1	4	45	47	36	31	47
N. N. E.	517	50	51	78	10	7	7	7	11	8	2	1	2	2	5	16		2	2	0	0
N. E.	673	53	49	84	9	6	14	13	15	4	2	1	3	2	5	10	131	67	39	24	17
E. N. E.	935	120	106	77	5	5	12	3	7	3	3	4	6	13	5	11		6	3	0	0
East	398	44	27	53	4	2	3	9	3	1	4	4	10	5	1	7	72	103	94	26	49
E. S. E.	835	89	85	81	13	7	1	6	6	2	5	8	10	14	7	2		0	3	0	1
S. E.	615	52	53	51	7	2	3	1	2	1	9	8	5	5	6	2	48	16	51	67	30
S. S. E.	626	75	69	54	6	3	2	1	2	4	3	10	7	3	8	5		0	1	0	0
South	278	23	19	42	2	1	0	3	2	1	2	8	9	5	8	1	38	49	26	35	70
S. S. W.	894	117	103	84	6	8	5	4	1	4	5	16	11	15	5	4		5	3	7	3
S. W.	818	58	99	83	4	8	5	2	12	1	13	12	11	6	7	2	156	88	92	139	98
W. S. W.	885	87	90	77	1	8	4	1	5	8	18	8	7	7	4	6		2	1	0	0
West	456	40	31	46	1	7	5	4	2	2	11	4	3	4	2	1	222	447	259	291	280
W. N. W.	751	74	83	79	5	8	5	11	5	15	6	5	2	5	6	6		12	10	1	0
N. W.	541	57	56	81	3	3	12	10	7	11	5	3	4	4	11	8	266	119	137	62	125
N. N. W.	1045	129	153	101	13	7	13	14	8	20	3	1	0	5	9	8		9	8	1	0
Calm																		42	0	0	0
3–4?																		71	62	64	83

Ratisbon.

Course.	1781.	1783.	1784.	1785.	SEPARATE MONTHS OF 1785.											
					Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	77	105	112	114	3	12	8	15	14	20	3	1	2	1	16	19
N. E.	116	163	163	117	32	13	15	9	14	2	1	2	3	1	11	14
E.	140	140	119	94	6	11	19	7	8	6	3	4	7	2	6	15
S. E.	162	170	126	205	38	2	13	16	16	9	9	13	15	25	24	25
S.	34	84	30	20	0	0	0	1	2	0	4	1	6	4	1	1
S. W.	160	111	67	59	1	6	1	5	4	6	4	2	18	4	5	3
W.	196	183	171	187	1	16	4	9	11	4	21	37	26	31	19	8
N. W.	159	181	259	297	12	24	32	28	24	43	48	33	13	25	7	8

Course.	Anspach.													Munich, 7 years.	Wurtzburg, 5 years.	Hamburg, 30 years.	Stuttgard.	Lunenburg, 10 or 20 years. (?)	Cuxhaven, 10 or 20 years. (?)
	1843.	SEPARATE MONTHS OF 1843.																	
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.						
N.	59		2	5	5	10	8	9	2	9	0	8	1	6	11	381	20	16	31
N. E.	96		11	18	5	11	11	1	11	7	1	11	9	5	9	1130	60	31	27
E.	118		8	29	10	11	1	2	11	29	3	11	3	18	10	1339	99	35	49
S. E.	94		15	6	14	7	6	5	14	0	15	10	12	4	6	1134	6	32	36
S.	78		17	11	10	4	3	3	9	3	4	5	9	10	9	504	16	29	22
S. W.	116		11	6	8	8	9	10	8	1	29	21	5	20	16	2164	101	63	72
W	285		11	11	35	25	27	39	20	18	38	18	43	34	23	2696	51	97	56
N. W.	141		9	7	13	17	25	15	18	17	3	6	11	3	16	1600	12	62	72

[1] Date uncertain.

Winds in Germany.—*Continued.*

Course.	Peissenberg.															Erfurth.				
					SEPARATE MONTHS OF 1785.															
	1781.	1783.	1784.	1785.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	5 years.[1]	1781.	1782.	1783.	1784.
North	60	20	37	34	3	3	5	6	2	4	2	1	1	2	4	1	5	173	125	34	59
N. N. E.		20	20	36	1	1	5	3	3	3	2	2	0	3	6	7			4		
N. E.	46	121	116	90	5	14	10	11	8	8	7	4	5	2	7	9	7	53	85	76	93
E. N. E.		68	70	63	2	2	7	3	14	6	3	2	6	1	3	14			0		
East	227	81	96	73	1	6	15	11	6	4	3	4	3	2	5	13	21	112	102	226	212
E. S. E.		10	15	20	2	0	0	0	0	2	1	1	2	3	6	3			6		
S. E.	30	50	85	72	15	7	5	4	5	4	3	0	9	3	7	10	5	37	118	87	85
S. S. E.		22	20	30	5	0	0	0	1	0	0	3	4	5	8	4			1		
South	70	90	48	62	7	2	2	2	6	8	2	7	4	6	9	7	4	247	142	15	104
S. S. W.		14	8	55	1	0	0	2	4	3	5	6	5	9	11	9			5		
S. W.	35	195	120	117	15	9	8	7	11	6	9	17	10	13	10	2	17	121	248	153	185
W. S. W.		26	22	39	0	0	2	0	1	2	2	16	4	8	3	1			10		
West	424	192	242	201	19	28	16	18	20	17	32	13	19	15	1	3	29	139	149	372	263
W. N. W.		30	20	57	1	1	1	1	3	6	8	9	8	12	2	5			0		
N. W.	36	83	84	69	3	7	8	9	2	10	6	4	6	6	5	3	12	44	78	126	91
N. N. W.		9	16	34	2	2	4	5	1	4	6	2	3	3	1	1			6		
Calm		63		43	11	2	5	8	6	3	2	2	1	0	2	1					

Course.	Uffenheim.													Neustadt, 1842 or 43. (?)						
		SEPARATE MONTHS OF 1843.																		
	1843.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
N.	106	3	9	5	6	12	12	15	10	18	1	10	5	1	0	2	3	5	10	5	4	6
N. E.	24	0	2	2	1	4	6	2	0	1	1	5	0	4	1	9	1	7	6	8	9	5
E.	157	10	15	25	12	18	4	3	15	31	1	17	6	5	20	38	16	15	8	3	7	36
S. E.	82	9	9	11	3	8	7	4	10	0	12	3	4	16	8	10	5	7	8	1	3	0
S.	110	9	21	15	13	5	3	4	7	6	5	8	14	6	13	16	8	1	3	4	18	5
S. W.	98	4	8	2	7	9	12	3	11	0	18	20	4	15	13	4	16	18	12	9	4	0
W.	393	52	13	15	39	31	34	42	21	21	49	23	53	42	24	12	41	36	30	45	35	27
N. W.	97	6	5	4	9	6	12	20	7	13	6	4	5	4	5	2	0	4	13	18	3	11

Course.	Gunzenhausen.													
		SEPARATE MONTHS OF 1843.												
	1843.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	30	0	2	1	1	3	6	5	3	5	0	3	1	
N. E.	8	0	0	0	0	0	1	2	0	0	0	0	0	
E.	181	12	27	41	14	15	9	3	12	22	1	11	14	
S. E.	78	4	6	3	0	5	7	5	6	5	9	18	5	
S.	61	4	8	4	5	2	2	3	12	6	6	2	7	
S. W.	55	6	3	4	8	7	2	3	2	0	6	8	6	
W.	279	36	10	8	28	26	26	28	20	16	38	15	28	
N. W.	48	0	0	1	4	4	7	13	7	6	2	3	1	

[1] Date uncertain.

Winds in Germany.—*Continued.*

Herbipolis.[1]

Course.	1781.	1782.	1783.	1784.	1785.	SEPARATE MONTHS OF 1785. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	27	51	50	120	67	14	13	11	12	4	3	2	0	0	7	0	1
N. N. E.		13	6	0	35	0	0	2	11	13	2	2	0	0	0	1	4
N. E.	10	77	98	104	53	7	7	6	3	7	1	0	3	2	7	0	10
E. N. E.		18	22	9	23	2	5	0	2	2	0	0	1	0	1	3	7
East	126	96	153	98	78	9	2	7	2	9	0	0	16	15	11	1	6
E. S. E.		44	18	6	7	3	0	0	1	0	1	0	2	0	0	0	0
S. E.	116	102	66	30	48	9	1	7	6	1	0	1	5	7	4	3	4
S. S. E.		52	7	3	6	0	0	2	0	0	1	1	0	1	1	0	0
South	275	105	46	49	27	5	1	1	0	1	2	0	2	4	1	5	5
S. S. W.		42	22	6	17	0	1	2	0	3	0	1	5	2	1	0	2
S. W.	246	166	233	163	98	7	9	3	7	2	1	17	11	7	10	12	12
W. S. W.		41	31	20	51	1	2	1	3	9	15	14	1	0	0	1	4
West	238	134	190	293	322	17	23	28	24	24	26	33	36	34	23	34	20
W. N. W.		44	14	8	56	4	2	1	2	9	16	11	1	4	1	2	3
N. W.	32	76	111	147	133	15	9	19	10	4	17	2	7	8	18	20	9
N. N. W.		6	6	6	45	0	6	3	7	2	5	4	3	5	4	5	1

Tegern See.

Course.	1781.	1783.	1784.	1785.	SEPARATE MONTHS OF 1785. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Ingolstadt, 1 year.	Gottingen.[2]	1783.
North	288	288	65	89	0	8	3	4	6	1	9	4	1	2	1	0	31	10	45
N. N. E.		9	19	20	0	1	2	3	3	2	1	2	2	2	2	0	0		54
N. E.	76	71	53	39	2	3	3	3	9	2	3	2	6	1	3	2	64	10	113
E. N. E.		7	19	15	1	2	0	4	3	0	1	0	1	1	0	2	185		25
East	26	91	42	51	0	4	2	1	3	3	2	11	5	15	5	0	0	9	35
E. S. E.		6	31	116	6	0	7	3	4	9	10	12	17	23	14	11	78		41
S. E.	162	153	159	131	23	5	1	14	8	10	11	8	14	5	18	14	0	13	96
S. S. E.		39	96	57	12	7	6	3	10	5	1	6	0	3	1	3	51		67
South	160	241	122	71	16	6	14	2	7	6	2	4	3	0	5	6	0	17	55
S. S. W.		2	16	18	4	0	1	0	3	6	1	1	0	0	0	2	246		109
S. W.	107	90	34	48	14	3	1	2	1	8	3	2	1	0	6	7	0	16	105
W. S. W.		0	5	20	1	0	2	0	1	1	3	0	2	3	5	2	297		74
West	28	39	23	148	2	2	4	1	0	10	23	19	19	18	18	32	0	13	29
W. N. W.		2	9	53	1	1	4	3	4	6	6	12	5	1	5	10	112		65
N. W.	203	136	274	214	9	34	41	38	25	18	11	9	12	9	7	1	0	12	69
N. N. W.		76	140	55	9	11	3	11	6	4	5	1	2	2	0	1	26		69
Calm																	29		

Giengen an der Brenz.

Course.	1841.	SEPARATE MONTHS OF 1841. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	88	1	8	7	19	9	15	6	7	8	1	2	5
N. E.	101	8	14	3	18	11	3	4	8	12	7	5	8
E.	110	1	20	8	12	20	4	4	8	17	6	5	5
S. E.	33	8	4	2	1	3	0	2	2	2	3	0	6
S.	115	8	5	16	8	8	4	6	9	9	10	23	9
S. W.	259	37	10	18	5	17	13	23	12	16	37	35	36
W.	203	18	10	25	9	11	21	28	22	10	19	14	16
N. W.	167	12	13	14	18	14	30	19	22	16	4	2	3
Calm	9							1	3		1	2	2

[1] Wurtzburg (?)

[2] Date and number of years uncertain.

Winds in Germany.—*Continued.*

Giengen.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	89	1	8	7	20	10	14	7	6	6	2	2	6
N. E.	99	9	12	5	17	10	3	4	8	12	7	3	9
E.	112	1	20	8	12	20	4	3	9	17	8	3	7
S. E.	37	8	4	2	1	3	0	2	2	2	3	4	6
S.	117	8	5	16	8	8	5	6	9	10	10	23	9
S. W.	255	36	10	17	5	17	13	21	12	15	36	37	36
W.	202	18	10	24	9	11	21	29	22	10	19	12	17
N. W.	168	12	15	9	19	14	30	20	22	18	4	2	3

Hof.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	71	13	9	4	13	9	10	4	1	2	5	1	0
N. E.	88	1	19	6	16	14	2	4	7	8	3	4	4
E.	59	4	6	1	10	7	2	2	3	15	4	2	3
S. E.	196	8	24	17	15	29	12	9	18	22	13	11	18
S	111	14	5	19	9	7	6	7	8	15	4	12	15
S. W.	179	19	4	14	4	8	13	22	14	7	14	27	33
W.	246	23	8	20	15	12	2	35	22	12	38	27	13
N. W.	135	11	9	22	8	7	24	10	19	9	3	6	7

Carlsruhe.

Course.	1819.	1834.	1835.	TOTAL FOR THE SEPARATE MONTHS OF 1834 and 1835.											
				Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	78	61	68	7	5	8	29	11	13	11	11	10	11	7	6
N. E.	394	366	293	36	42	67	70	58	56	45	48	58	41	67	71
E.	16	25	79	10	4	7	4	3	12	17	10	8	8	16	5
S. E.	9	24	31	10	0	0	2	8	3	5	2	13	5	3	4
S.	13	32	33	5	5	2	3	6	3	12	2	2	9	8	8
S. W.	500	536	408	103	95	67	43	74	78	73	93	72	98	74	74
W.	66	13	137	7	10	23	16	18	10	19	12	10	10	4	11
N. W.	19	38	46	6	7	12	13	8	5	4	8	7	4	1	7

Winds in Germany.—*Continued.*

Mergentheim.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	132	6	12	11	24	15	24	11	11	2	5	8	8
N. E.	85	8	15	10	16	2	8	3	5	1	0	9	8
E.	233	11	42	26	21	38	10	9	20	24	5	12	15
S. E.	30	2	0	1	2	2	4	0	4	3	5	6	1
S.	109	13	0	15	4	10	5	7	12	9	14	16	4
S. W.	157	34	9	8	11	12	10	27	7	8	11	9	15
W.	271	13	2	13	8	12	6	30	31	33	46	26	35
N. W.	68	6	4	9	4	2	11	6	3	10	7	4	2

Burglengenfield.

Course.	1843.	SEPARATE MONTHS OF 1843.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	71	0	6	3	6	7	6	11	5	18	0	8	1
N. E.	1	0	0	0	0	0	0	0	0	0	0	0	1
E.	405	22	25	62	37	32	17	24	45	34	26	50	31
S. E.	57	16	15	0	2	4	2	2	4	0	8	3	1
S.	66	3	18	6	6	1	7	1	15	0	1	5	3
S. W.	15	2	1	1	1	1	0	2	2	1	2	0	2
W.	422	47	22	14	36	48	50	45	22	27	54	21	36
N. W.	47	3	2	7	2	0	8	8	0	9	2	3	3

Issny.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	19	4	7	2	2	0	2	0	0	0	0	0	2
N. E.	37	0	3	3	5	7	7	2	3	0	1	3	3
E.	162	11	11	22	18	25	10	7	2	18	7	8	3
S. E.	76	5	12	9	4	3	2	6	6	13	5	3	8
S.	91	15	4	4	4	5	5	10	11	6	6	10	11
S. W.	268	24	13	19	22	17	27	32	14	13	30	24	33
W.	54	3	4	1	4	5	5	2	4	3	13	4	1
N. W.	15	0	2	2	1	0	2	2	2	2	0	1	1

Winds in Germany.—*Continued.*

Tutlingen.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	107	15	4	16	17	10	19	6	13	2	0	5	0
N. E.	95	0	23	6	6	12	14	7	7	12	0	0	8
E.	146	0	8	8	20	21	4	5	13	13	21	33	0
S. E.	18	0	0	2	4	1	3	0	0	3	0	0	0
S.	34	1	0	7	6	7	1	7	2	2	1	0	0
S. W.	207	44	6	21	7	14	8	9	13	19	22	19	25
W.	308	29	11	17	18	22	28	39	22	16	34	29	43
N. W.	185	4	32	16	12	6	13	20	23	23	15	4	17

Badenbach.

Course.	1842.	SEPARATE MONTHS OF 1842.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	29	5	0	1	6	1	4	3	2	2	2	3	0
N. E.	55	7	4	1	10	11	3	0	5	9	3	2	0
E.	8	0	0	0	0	1	0	1	6	0	0	0	0
S. E.	106	14	18	6	3	7	1	3	9	1	10	11	23
S.	12	0	0	1	0	0	2	3	0	3	1	2	0
S. W.	47	0	4	10	1	3	7	5	3	9	4	1	0
W.	19	0	0	1	0	1	6	1	0	0	2	6	2
N. W.	89	5	2	11	10	7	7	15	6	6	9	5	6

Schussenreid.

Course.	1841.	SEPARATE MONTHS OF 1841.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	53	6	1	6	4	6	0	0	10	18	1	0	1
N. E.	129	0	24	7	4	35	22	9	2	12	12	0	2
E.	51	0	2	0	0	0	0	0	1	2	15	30	1
S. E.	30	0	0	24	5	0	0	1	0	0	0	0	0
S.	33	6	2	9	4	4	0	1	0	1	0	6	0
S. W.	331	46	20	31	12	28	35	35	22	10	1	54	37
W.	269	12	0	3	51	11	23	12	23	35	52	0	47
N. W.	200	23	35	13	10	17	10	29	34	12	12	0	5

Winds in Holland and Belgium.

Franeker.

Course.	13 years.	PROPORTION FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	2943	210	111	370	263	456	355	450	223	201	53	101	150
N. E.	14322	2054	1104	1896	1608	1340	1454	583	772	864	597	969	1081
E.	3482	393	338	454	170	232	125	128	203	580	235	290	334
S. E.	17185	1912	1875	1401	967	1125	553	623	603	1680	2140	2222	2084
S.	4960	427	538	314	202	185	231	285	469	564	680	605	460
S. W.	34263	2580	3854	2150	2460	2186	2107	3427	3690	2797	3060	2818	3134
W.	9555	574	720	762	575	632	1348	1120	1000	824	812	643	545
N. W.	33293	1850	1460	2653	3755	3844	3827	3384	3040	2490	2423	2352	2215

Brussels.

Course.	1839.	1840.	1842, 43, and 1844.	1833 to 1842.	1772 to 1779.	PROPORTION FOR THE SEPARATE MONTHS FROM 1772 TO 1779.											
						Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	34	20	1036	50	15	2	0	2	1	3	4	1	0	1	0	0	1
N. N. E.	19	28	861	33													
N. E.	54	56	1507	104	6	1	0	1	1	1	1	0	1	0	0	0	0
E. N. E.	93	144	1688	60													
East	89	101	2485	56	21	2	1	4	4	1	1	0	3	2	1	1	1
E. S. E.	26	9	818	14													
S. E.	35	32	681	27	4	0	1	0	0	0	1	0	1	0	1	0	0
S. S. E.	20	17	562	20													
South	43	40	1469	37	13	1	2	1	0	1	0	0	0	1	3	2	2
S. S. W.	77	49	1997	68													
S. W.	158	105	3868	171	50	4	6	4	4	3	2	5	4	5	4	5	4
W. S. W.	158	158	3739	113													
West	185	221	2129	125	44	4	5	2	3	2	6	5	3	5	2	3	4
W. N. W.	75	71	1080	56													
N. W.	47	80	1192	56	7	0	0	0	1	2	1	2	1	0	0	0	0
N. N. W.	39	21	732	30													

Utrecht.

Course.	1842.	SEPARATE MONTHS OF 1842.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	29	0	1	1	5	2	3	6	3	3	2	3	0
N. E.	100	6	1	5	31	8	14	2	11	8	7	6	1
E.	111	21	3	2	20	12	9	5	12	11	2	11	3
S. E.	68	7	8	3	2	6	0	3	13	5	2	12	7
S.	32	3	2	2	0	1	1	2	1	6	0	3	11
S. W.	144	15	25	12	0	9	2	6	6	18	20	11	20
W.	150	8	14	17	1	13	19	22	10	5	16	10	15
N. W.	95	1	2	20	1	11	12	16	6	4	13	4	5

Winds in Holland and Belgium.—*Continued.*

Course.	Amsterdam, 54 years.	Louvain, 1844.	Mailand.	Alost.		Ghent.			Breda.					
				1839.	1840.	1839.	1840.	1844.	1838.	1839.	1840.	1841.	1842.	1843.
North	24½	57	7	58	51	50	49	96	47	54	36	28	27	80
N. N. E.	1	23		101	67	17	16	16	46	24	39	27	66	78
N. E.	30	125	13	21	20	82	72	60	120	114	48	42	101	100
E. N. E.	6½	58		76	102	51	49	33	55	66	26	19	35	32
East	48½	58	26	14	16	67	149	139	155	138	103	50	44	136
E. S. E.	6	14		31	59	27	24	20	39	32	11	13	6	16
S. E.	21	16	9	18	11	62	84	48	47	62	26	21	18	56
S. S. E.	7	15		39	68	27	29	25	33	38	11	20	4	26
South	24	42	4	26	34	99	121	128	59	82	25	24	35	84
S. S. W.	8½	16		65	87	70	86	37	68	50	31	63	69	130
S. W.	67	51	12	66	82	218	202	98	189	220	90	125	94	218
W. S. W.	12	107		214	255	64	104	32	124	134	61	88	59	64
West	54	333	20	63	48	148	164	129	200	230	138	93	98	262
W. N. W.	15	51		154	130	84	94	111	70	74	35	45	31	46
N. W.	31	88	9	54	35	89	106	79	102	96	44	32	24	74
N. N. W.	5	45		104	83	33	41	33	30	66	18	39	19	42

Winds in France.

Denainvilliers.

Course.	Montpelier, 37 years.	31 years.	PROPORTION FOR THE SEPARATE MONTHS.											
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	74	95	4	5	6	14	11	9	7	5	8	8	12	6
N. E.	58	101	11	9	13	9	10	9	4	8	8	12	5	8
E.	52	21	4	3	1	1	1	0	0	1	3	2	2	3
S. E.	29	6	0	0	0	0	2	0	0	1	1	0	1	1
S.	31	121	10	13	8	5	8	8	10	12	9	10	11	17
S. W.	10	163	10	12	13	12	10	16	19	20	16	11	15	9
W.	35	7	0	0	1	2	0	1	2	1	0	0	0	0
N. W.	76	16	0	1	1	2	1	4	3	1	3	0	0	0

Marseilles.

Course.	1823.	1824.	1825.	1826.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	1847.	1848.	Total.
N.	17	86	2	5	0	1	5	0	2	6	4	2	4	0	1	1	1	1	0	1	139
N. E.	0	0	0	5	1	4	2	2	3	2	1	5	15	6	1	5	2	5	2	1	62
E.	64	37	26	25	37	55	47	46	40	55	82	52	25	17	21	25	12	23	29	25	743
S. E.	31	36	58	58	35	35	50	50	50	38	28	39	48	50	46	69	70	67	41	57	956
S.	28	45	33	30	41	50	27	35	57	33	19	63	17	13	17	9	16	3	12	18	566
S. W.	15	9	38	37	34	31	18	31	10	32	18	30	16	22	21	11	6	20	38	34	471
W.	89	55	77	53	58	44	57	65	55	49	29	65	79	47	63	50	70	55	83	74	1217
N. W.	157	126	175	191	232	183	208	192	161	177	221	145	155	192	171	166	174	172	137	134	3469

Winds in France.—*Continued.*

Strasburg.

Course.	20 years.	PROPORTION FOR THE SEPARATE MONTHS.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	98.68	6.34	4.81	8.94	9.50	12.06	13.34	8.47	10.41	8.03	6.59	4.81	5.38
N. E.	264.44	25.25	19.38	28.28	25.03	24.69	18.53	17.28	17.66	23.78	23.84	21.28	19.44
E.	61.09	5.03	3.84	4.47	6.37	6.28	5.44	5.44	4.84	6.06	5.63	3.53	4.16
S. E.	89.36	8.31	6.06	4.37	5.81	7.03	6.38	7.75	9.50	9.09	10.53	7.81	6.72
S.	309.09	30.75	30.31	22.03	20.22	20.81	16.31	24.16	23.09	21.81	27.38	34.06	38.16
S. W.	121.84	9.25	9.40	12.31	8.94	8.44	10.34	12.32	11.44	9.22	8.88	9.56	11.44
W.	44.09	1.94	3.22	3.72	3.38	3.78	4.90	12.94	5.94	3.90	3.15	2.72	2.50
N. W.	107.15	6.13	7.62	8.88	10.75	9.90	14.44	12.28	10.25	8.12	7.03	6.53	5.22

Paris.

Course.	1816 to 1826.	1827 to 1846.	1846.	1847.	1806 to 1847.	15 years.[1]	27 years.[1]	TOTAL FOR THE SEPARATE MONTHS FROM 1806 TO 1845.											
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	483	658	28	27	1242	586	1589	111	90	120	138	114	131	97	93	97	76	58	62
N. N. E.					858			35	29	40	57	48	27	20	14	20	21	17	30
N. E.	378	811	59	54	1469	670	2432	120	77	189	127	118	122	92	92	120	88	93	118
E. N. E.					382			24	26	27	56	52	23	20	26	45	31	19	33
East	324	414	27	28	751	350	735	59	46	58	64	70	43	40	55	71	72	59	59
E. S. E.					289			24	20	20	21	20	19	12	15	20	16	25	27
S. E.	231	493	29	35	916	398	1170	98	82	57	62	79	47	48	37	62	94	91	95
S. S. E.					373			48	41	23	25	29	27	12	17	30	55	39	27
South	682	882	45	51	1725	892	1319	142	166	112	132	121	75	98	111	152	186	167	161
S. S. W.					649			52	66	56	47	51	44	53	49	52	61	60	64
S. W.	727	1317	94	58	2281	1043	3630	159	136	160	123	170	185	185	211	192	175	222	211
W. S. W.					701			58	52	48	32	59	65	94	70	49	48	57	69
West	853	1152	56	62	2055	1049	1265	140	145	159	129	132	190	230	245	135	148	153	131
W. N. W.					590			38	51	58	48	45	58	79	53	39	50	31	40
N. W.	335	1711	27	37	1200	516	1560	84	77	83	101	88	114	125	117	87	92	86	82
N. N. W.					281			24	25	24	33	38	24	25	19	22	16	14	17
Variable or calm		504		13	128			24	7	6	5	6	6	10	10	7	11	9	14

Course.	Cambray.			Dijon.														
								TOTAL FOR THE SEPARATE MONTHS OF 1845–46.										
	1847.	1848.	Total.	1845.	1846.	1847.	1848.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	117	147	264	45	56	53	36	13	11	6	5	11	0	3	9	11	12	10	10
N. E.	233	171	404	47	29	34	28	7	8	12	7	8	11	2	2	4	4	7	4
E.	95	80	175	30	60	57	48	4	6	7	6	4	15	13	4	14	4	7	6
S. E.	78	40	118	21	18	18	27	2	0	4	6	5	5	4	2	6	2	3	0
S.	188	191	379	85	78	63	85	15	8	11	15	6	4	13	16	18	18	20	19
S. W.	140	228	368	24	25	21	25	3	3	5	3	3	4	5	3	5	5	7	3
W.	167	164	331	99	77½	85	85	15½	16	13	17	2	20	20	21	0	11	5	16
N. W.	75	75	150	14	15½	34	32	2½	4	4	1	3	1	2	5	2	3	1	1

[1] Date not known.

Winds in France.—*Continued.*

Course.	Versailles.			Toulouse.			Metz.												
								TOTAL FOR THE SEPARATE MONTHS FROM 1835 TO 1846.												
	1847.	1848.	Total.	1747 to 1756.	1839 to 1846.	1847.	1847.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	137	51	188	38	9.78	26	47	179	133	185	186	165	179	125	178	120	143	116	142
N. N. E.	185	137	322	0		3	22												
N. E.	141	138	279	25	5.27	5	14												
E. N. E.	24	74	98	0		3	15												
East	78	89	162	10	4.79	2	36												
E. S. E.	63	62	125	0		2	3												
S. E.	137	95	232	89	86.90	37	18												
S. S. E.	93	79	172	0		32	16												
South	136	172	308	6	7.91	47	31	186	233	180	179	200	186	240	187	245	223	249	223
S. S. W.	156	224	380	0		10	19												
S. W.	174	202	376	13	9.03	17	28												
W. S. W.	127	126	253	0		12	25												
West	161	218	374	95	112.04	39	56												
W. N. W.	174	145	319	0		39	17												
N. W.	156	122	278	89	73.03	75	11												
N. N. W.	68	71	139	0		16	12												
Calm or variable					227.05	168													

Course.	Saint Lo.				Rodez.														
									TOTAL FOR THE SEPARATE MONTHS FROM OCT. 1845 TO SEPT. 30, 1847.										
	1844.	1845.	1846.	Total.	Oct. 1845, to Sept. 1846.	Oct. 1846, to Sept. 1847.	1848.	Total.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	46	49	35	130	45	20	14	79	3	4	8	0	5	8	19	6	5	1	0	6
N. N. E.	53	28	25	106	1	5	0	6	0	0	1	2	0	0	0	0	0	0	2	1
N. E.	71	53	73	197	6	9	5	20	0	0	1	0	3	5	1	0	0	1	0	4
E. N. E.	37	35	26	98	0	3	0	3	0	1	0	0	2	0	0	0	0	0	0	0
East	34	32	30	96	10	10	4	24	0	3	2	1	2	1	2	2	5	0	1	1
E. S. E.	24	10	5	39	0	6	0	6	1	0	0	0	1	1	1	0	0	0	2	0
S. E.	49	15	25	89	76	75	71	222	25	8	13	8	18	11	10	2	8	12	31	5
S. S. E.	20	25	17	62	3	9	0	12	1	1	0	1	3	0	0	0	0	0	6	0
South	23	33	41	97	28	13	12	53	6	0	9	2	10	5	0	1	0	1	2	5
S. S. W.	41	26	34	101	0	3	0	3	0	0	1	0	0	0	0	0	0	0	2	0
S. W.	37	63	65	165	25	24	26	75	6	3	6	8	5	3	4	0	0	2	3	9
W. S. W.	47	44	50	141	2	10	0	12	0	0	4	1	3	0	1	0	0	0	0	3
West	61	72	78	211	115	22	53	190	9	15	4	20	5	14	12	20	11	8	7	12
W. N. W.	40	42	16	98	5	18	0	23	6	5	0	3	1	0	2	0	0	0	1	5
N. W.	38	43	29	110	49	34	145	228	5	13	11	13	4	12	6	0	1	6	3	9
N. N. W.	49	35	24	108	0	10	0	10	0	2	2	1	0	0	4	0	0	0	0	1
Calm or variable	200			200																

Winds in France.—*Continued.*

Course.	Bordeaux. 1847.	Bordeaux. 1848.	Bordeaux. Total.	Valognes, 1847.	La Chapelle, 1847.	Orange, 1835 to 1848.	Course.	Bordeaux. 1847.	Bordeaux. 1848.	Bordeaux. Total.	Valognes, 1847.	La Chapelle, 1847.	Orange, 1835 to 1848.
N.	86	74	160	46	34	21.6	S. W.	17	8	25	60	49	12.8
N. E.	28	18	46	30	33	5.0	W.	95	121	216	95	69	18.4
E.	60	39	99	51	38	10.7	N. W.	20	16	36	45	22	16.1
S. E.	5	10	15	5	15	13.1	Calm or variable					6	
S.	54	77	131	33	38	72.9							

Course.	Syam. 1846.	Syam. 1848.	Rouen. 1845.	Rouen. 1846.	Rouen. 1847.	Rouen. 1848.	Rouen. Total.	Rouen. separate months of 1845–46. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	80	81	5	40	41	9	95	3	4	3	5	7	3	0	4	1	0	6	9
N. N. E.	7	13	19	0	0	4	23	2	0	3	2	5	4	0	0	1	0	2	0
N. E.	11	7	55	41	61	19	176	3	8	8	12	13	11	4	8	11	6	5	7
E. N. E.	1	2	19	0	0	0	19	4	4	3	3	0	2	0	0	3	0	0	0
East	8	9	13	28	10	0	51	3	2	3	2	4	8	8	1	5	0	5	0
E. S. E.	0	0	4	0	0	0	4	0	0	0	1	2	0	0	0	1	0	0	0
S. E.	7	3	8	12	20	0	40	1	1	1	4	0	0	0	3	2	3	5	0
S. S. E.	3	6	8	0	2	1	11	1	0	2	2	0	1	0	1	1	0	1	0
South	55	39	14	53	39	5	111	3	6	10	5	5	2	11	5	4	9	5	2
S. S. W.	27	19	31	0	3	1	35	5	0	0	2	0	2	5	4	3	5	2	3
S. W.	52	56	48	114	103	18	283	19	4	8	6	8	12	12	14	19	25	23	12
W. S. W.	5	14	18	0	0	0	18	0	0	2	2	3	1	0	5	3	2	0	0
West	18	20	50	48	25	11	134	7	17	9	7	7	8	12	3	3	7	3	15
W. N. W.	2	1	30	0	7	3	40	0	2	2	3	3	4	6	9	0	0	0	1
N. W.	6	10	30	29	54	17	130	8	7	7	3	2	2	3	7	2	6	2	10
N. N. W.	10	16	13	0	0	0	13	3	1	1	1	3	0	1	0	0	0	0	3

St. Hyppolyte de Caton.

Course.	Average for the separate months from 1837 to 1849, inclusive. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	12.38	9.90	11.07	11.60	9.59	13.66	13.06	11.39	8.54	10.04	8.99	11.32
N. E.	7.23	6.60	6.23	6.92	5.38	5.66	3.48	4.85	5.62	6.63	5.66	7.46
E.	.15	.30	.92	.22	.29	.50	.39	.32	.46	.69	.64	.23
S. E.	.23	.77	.61	.69	2.00	1.28	.69	.70	1.62	1.24	.79	.54
S.	4.38	6.28	6.31	7.15	9.58	7.13	7.71	7.48	9.69	6.63	7.49	5.54
S. W.	.31	.30	.46	.33	1.32	.36	.28	.78	1.46	.69	.87	.54
W.	1.31	.70	.69	.32	.22	.20	.85	.93	.23	.77	1.63	.77
N. W.	5.01	3.15	4.70	2.77	2.62	1.20	4.54	4.55	2.38	4.31	3.93	4.70

Winds in France.—*Continued.*

Course.	Nancy.													Montmorenci.											
	6 years.	PROPORTION FOR THE SEPARATE MONTHS.												15 years.	PROPORTION FOR THE SEPARATE MONTHS.										April 1, 1771, to April 1, 1772.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	5	0	0	1	1	1	2	0	0	0	0	0	0	67	6	5	7	7	7	6	7	6	4	4	4	4	761
N. E.	37	4	3	3	4	3	4	1	4	2	2	2	5	51	6	2	5	5	5	4	3	6	3	4	3	5	181
E.	4	0	0	0	1	0	0	0	0	1	1	0	1	89	4	4	4	3	3	2	2	4	3	3	3	4	401
S. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	12	1	1	1	1	1	1	0	1	1	2	1	1	71
S.	7	0	0	0	0	0	0	1	0	2	3	0	1	44	3	4	2	2	4	3	2	3	5	7	5	4	571
S. W.	35	2	5	1	1	4	2	4	2	3	4	4	3	60	4	7	5	4	4	4	5	4	6	6	6	5	261
W.	18	1	2	1	1	1	3	3	2	1	0	3	0	54	4	4	3	4	4	6	6	6	4	3	5	5	881
N. W.	5	1	0	2	0	0	0	0	0	0	1	1	0	45	3	3	3	4	4	5	4	5	3	3	5	3	521

Winds in France, Spain, and Portugal.

Course.	Massillia,[1] France.			Hafnia,[2] France.			Cantabria, Spain, 1 year.	Gibraltar, July, Aug., and October.	Oporto, Portugal.	
	1783.	1784.	1785.	1783.	1784.	1785.			Mar.	April.
North	2	2	6	27	30	37	61	0	3	9
N. N. E.	0	0	1	14	12	35	12		0	0
N. E.	14	18	45	48	42	53	94	0	0	1
E. N. E.	0	0	0	16	38	10	5		0	0
East	6	8	5	30	35	45	93	61	2	3
E. S. E.	0	0	0	22	45	36	3		3	4
S. E.	515	492	517	53	84	79	25	4	4	0
S. S. E.	1	0	0	24	39	42	4		0	2
South	0	0	0	59	40	28	95	4	8	6
S. S. W.	0	0	0	26	32	35	19		3	2
S. W.	77	65	49	56	64	66	224	0	16	4
W. S. W.	0	0	0	27	61	46	26		6	2
West	22	60	53	80	98	86	184	0	3	1
W. N. W.	0	1	4	41	79	94	36		5	4
N. W.	409	425	380	84	138	126	163	11	7	13
N. N. W.	0	1	0	20	34	49	23		1	7
3–4?	0	136	73	108	182	110	39			

Winds in Italy.

Course.	Naples.													Padua.				
	1842.	SEPARATE MONTHS OF 1842.												Time unknown.	1781.	1783.	1784.	1785.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.					
N.	69	4	8	2	8	3	5	1	9	2	11	3	13	8	216	319	309	333
N. E.	176	26	26	13	11	8	10	6	10	9	16	13	28	7	169	122	135	132
E.	6	0	0	0	0	0	2	0	0	1	0	1	2	28	146	121	133	177
S. E.	69	6	4	5	5	12	8	8	1	6	5	5	4	4	75	77	87	96
S.	52	3	1	5	6	5	5	11	5	5	4	2	0	7	50	40	64	201
S. W.	223	11	7	24	22	22	24	29	18	23	14	25	4	12	76	59	65	189
W.	28	1	0	5	0	3	0	1	4	3	3	5	3	21	149	184	145	138
N. W.	105	10	9	8	8	9	6	6	15	11	9	6	8	3	191	111	168	99
Calm																239		

[1] Marseilles. (?)

[2] Havre. (?)

Winds in Switzerland.

Mount St. Gothard.

Course.	1782.	1783.	1784.	1785.	SEPARATE MONTHS OF 1785.												Regensburg, 7 years.
					Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
North	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9
N. N. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N. E.	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	12
E. N. E.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
East	8	6	1	17	0	1	0	0	0	0	0	0	6	4	5	1	13
E. S. E.	17	25	24	43	15	6	0	0	0	0	1	3	8	2	7	1	
S. E.	86	127	262	249	22	9	31	14	24	15	19	18	20	15	15	47	15
S. S. E.	129	106	18	6	0	4	0	0	0	0	0	0	0	0	1	1	
South	79	144	165	126	18	2	2	9	4	3	9	20	14	9	20	16	2
S. S. W.	89	39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
S. W.	27	32	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
W. S. W.	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
West	7	7	0	1	0	0	1	0	0	0	0	0	0	0	0	0	20
W. N. W.	200	67	3	17	3	5	2	1	0	1	2	0	0	2	1	0	
N. W.	345	502	574	585	30	57	54	64	60	68	60	47	35	56	34	20	21
N. N. W.	59	6	0	1	0	0	0	1	0	0	0	0	0	0	0	0	

Winds in Italy.

Rome.

Course.	1783.	1784.	1785.	SEPARATE MONTHS OF 1785.												Bologna, 1 year.
				Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
North	230	234	238	39	22	25	17	21	9	14	10	27	21	19	19	25
N. N. E.	136	108	150	17	5	11	31	5	16	12	9	7	10	13	14	16
N. E.	39	37	36	2	4	1	2	1	6	4	3	0	0	8	5	3
E. N. E.	25	31	25	2	3	1	1	1	2	1	1	1	4	5	3	108
East	21	19	13	0	2	1	1	1	0	1	2	0	3	1	1	180
E. S. E.	14	16	13	0	2	0	0	0	1	0	0	1	0	3	6	10
S. E.	33	42	54	4	3	2	3	4	4	4	3	6	3	9	9	0
S. S. E.	61	78	94	9	11	8	9	10	4	5	5	3	7	8	15	4
South	73	78	60	2	4	3	3	10	6	6	6	6	9	2	3	19
S. S. W.	36	40	31	4	1	6	0	2	2	1	5	4	5	1	0	10
S. W.	155	158	171	4	11	19	14	19	10	17	29	24	13	9	12	1
W. S. W.	115	129	96	3	6	8	3	8	19	16	12	9	8	2	0	145
West	25	34	41	0	2	2	5	3	8	10	4	0	1	4	2	470
W. N. W.	12	10	5	2	0	3	0	0	0	0	0	0	0	0	0	45
N. W.	35	38	33	4	6	0	4	5	2	2	2	3	3	2	0	2
N. N. W.	71	46	27	4	2	0	0	3	1	0	2	4	6	3	2	8
3–4 ?	11															

Winds in Italy.—*Continued.*

Parma.

Course.	1841.	SEPARATE MONTHS OF 1841.												St. Zena, 1 year.	Genoa, March, 1843.
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.		
N.	133	16	2	12	24	11	7	7	14	11	10	9	10	9	30
N. E.	119	6	10	13	9	16	10	11	23	4	4	8	5	7	2
E.	201	6	23	11	18	20	19	17	15	25	27	5	15	53	17
S. E.	64	8	3	14	8	5	8	5	1	3	3	3	3	14	0
S.	31	2	1	0	4	2	4	4	1	5	5	2	1	16	4
S. W.	165	15	1	12	8	10	19	30	14	17	18	15	6	7	1
W.	130	10	8	8	8	13	11	12	6	9	8	21	16	13	8
N. W.	236	25	29	23	11	16	12	7	19	16	15	26	37	10	0

Winds at Constantinople, Turkey.

Course.	1840.	Parts of 1839 and 1841.	AVERAGE FOR THE SEPARATE MONTHS.											
			Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	3	12	½	0	0	0	1	0	0	0	0	0	0	6
N. N. E.	2	0	1	0	0	0	0	0	0	0	0	0	0	0
N. E.	447	263	26	36	30	40	35	41½	48	49	45	37	12½	33½
E. N. E.	12	10	1	1	7	1	0	0	0	0	0	0	0	1
East	13	2	0	2½	2	0	1	1	0	0	0	0	1½	½
E. S. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. E.	1	0	½	0	0	0	0	0	0	0	0	0	0	0
South	3	10	½	0	0	0	0	1	0	0	0	0	12	1
S. S. W.	0	4	0	0	0	0	0	0	0	0	0	0	6	0
S. W.	237	160	29½	17	20½	18	24½	15	14	13	15	25	25	18½
W. S. W.	4	1	2	0	0	0	0	0	0	0	0	0	1½	0
West	7	5	1	½	½	1	½	1	0	0	0	0	0	1½
W. N. W.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. W.	3	3	0	0	2	0	0	½	0	0	0	0	1½	0
N. N. W.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Winds in Turkey in Asia, and on the Mediterranean Sea.

Course.	Smyrna.										Trebizonde.											Eastern part of the Mediterranean Sea, 3 years.
												SEPARATE MONTHS OF THE YEAR.										
	Jan.	Feb.	Mar.	April.	May.	June.	Sept.	Oct.	Nov.	Dec.	1836.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
N.	1	0	5	3	0	0	7[2]	4	3	6	19	3	2	2	6	2	1	1	1	1	0	0	0	106
N. E.	6	4	3	11	4	8	2	10	10	16	5	0	0	0	4	0	0	1	0	0	0	0	0	196
E.	7	8	2	4	2	2	2	3	2	2	317	9	17	34	20	27	28	30?	25	27	36	31	33	23.3
S. E.	6	7	3	1	1	3	2	3	1	2	4	0	0	0	0	0	1	0	1	0	1	1	0	16
S.	6	12	9	3	6	2	6	4	5	1	55	22	13	0	1	1	0	0	3	1	0	8	6	33.6
S. W.	1	1	2	0	0	2	4	1	0	0	15	4	3	1	0	1	0	0	1	1	1	2	1	13.6
W.	0	0	0	0	0	5[1]	0	1	2	0	40	4	5	6	8	4	6	1	3	2	0	0	1	49.3
N. W.	1	0	1	4	0	3	2	0	0	0	246	20	18	19	21	27	24	29	26	17	13	11	21	26.3
Calm	1	1	0	1	0	0	2	5	6	2														

[1] Sea breeze.

[2] Three of these marked "Sea breeze."

Winds in Turkey in Asia.—*Continued.*

Course.	Jerusalem. 1846. May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	1847. Jan.	Feb.	April.	May.	June.	July.
North	2	4	3	7	21	10	8	6	5	7	2	6	4	1
N. N. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	1
N. E.	3	0	0	0	0	7	2	2	1	4	1	2	0	1
E. N. E.	0	0	0	0	0	0	3	7	5	0	2	0	0	0
East	3	1	0	0	0	1	2	7	6	0	3	1	0	0
E. S. E.	0	0	0	0	0	0	0	0	0	0	0	1	0	0
S. E.	1	2	0	0	0	0	0	0	0	0	0	0	1	0
S. S. E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South	1	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. W.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. W.	1	0	0	0	0	0	0	2	0	4	7	1	0	0
W. S. W.	0	0	0	0	0	0	0	0	1	0	0	0	0	0
West	4	2	4	4	1	0	5	2	2	5	1	9	1	4
W. N. W.	0	0	0	0	0	0	0	1	5	0	0	0	1	0
N. W.	7	17	24	20	8	12	10	3	5	8	14	11	22	24
N. N. W.	0	0	0	0	0	0	0	0	1	0	0	0	1	0

Course.	Bagdad. 1 year.	SEPARATE MONTHS OF THE YEAR. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North	170	0	93	32	22	21	0	0	0	2	0	0	0
N. N. E.													
N. E.	28	0	3	10	0	0	0	0	0	0	0	15	0
E. N. E.													
East	6	0	0	0	0	4	0	0	0	0	0	2	0
E. S. E.													
S. E.	58	0	0	12	4	15	0	0	0	0	6	6	21
S. S. E.													
South	157	12	24	36	6	13	2	0	0	36	0	10	18
S. S. W.													
S. W.	354	0	0	28	70	57	13	0	91	61	26	0	8
W. S. W.	153	0	0	0	0	15	121	15	0	0	0	2	0
West	558	57	18	8	53	36	35	155	71	49	0	76	0
W. N. W.	57	0	0	0	0	3	0	0	0	0	0	6	48
N. W.	591	93	30	56	23	12	14	9	24	30	160	63	77
N. N. W.													

Course.	Bahmduu.[1] Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Nov.	Dec.
N.	16	1	0	0	1	9	2	1	0	3	6
N. E.	0	0	0	1	0	0	0	1	0	2	1
E.	1	1	2	3	3	0	0	0	0	1	3
S. E.	0	0	0	0	0	0	0	0	0	0	2
S.	1	9	2	0	1	0	0	0	0	0	6
S. W.	7	8	3	5	5[2]	7[2]	3[2]	0	2	4	8
W.	1	5	7[2]	2½	1[2]	6[2]	1[2]	0	0	0	5
N. W.	5	2	0	1½	0	2	0	2	0	1	0

Course.	Beirut. Jan.	Feb.	March.	April.	May.	June.	Nov.	Dec.
N.	3	8	5	0	3	3	1½	2½
N. E.	1	0	1	1	½	0	2	1½
E.	0	0	0	0	½	0	1	1
S. E.	2	0	0	2	½	0	2½	4
S.	1	2	2	0	1	0	1½	1
S. W.	18	10	5	6½	10½	20½[2]	12½	13
W.	6	4	4	1½	11½	4[2]	2	2
N. W.	0	4	4	0	3½	2½	0	5

Course.	Erzeroum. 1836.	SEPARATE MONTHS OF THE YEAR. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	38	2	1	5	5	5	0	1	3	3	3	4	6
N. E.	27	7	1	2	2	0	3	0	3	2	1	0	6
E.	116	7	9	8	15	11	13	14	15	9	9	4	2
S. E.	17	3	2	0	5	0	3	2	0	0	0	2	0
S.	2	1	0	0	0	0	0	0	0	0	0	0	1
S. W.	11	0	2	0	3	0	3	0	0	0	0	3	0
W.	107	2	6	2	11	25	11	6	3	12	15	9	5
N. W.	56	1	1	8	4	6	3	4	3	3	15	6	2

Course.	Bassora. Part of 1789.	SEPARATE MONTHS. Feb.	Mar.	April.	May.	June.
N.	7	0	3	4	0	0
N. E.	27	0	16	8	3	0
E.	76	12	26	32	6	0
S. E.	14	6	0	4	4	0
S.	38	8	15	9	6	0
S. W.	88	23	2	8	5	0
W.	96	11	76	6	0	3
N. W.	329	12	22	10	108	177

[1] On Mount Lebanon—elevation 3,100 to 3,200 feet.

[2] About half of these were marked "Sea-breeze" in the original record.

Winds at Teflis, Georgia.

Course.	Part of 1844.	SEPARATE MONTHS. May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Course.	Part of 1844.	SEPARATE MONTHS. May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	111	16	18	9	15	6	5	16	26	S. W.	10	1	0	1	1	2	4	1	0
N. E.	17	3	2	0	1	1	2	0	8	W.	16	3	1	1	3	1	6	1	0
E.	44	5	7	12	4	6	7	2	1	N. W.	181	26	43	23	20	19	26	20	4
S. E.	70	7	3	15	14	18	9	4	0	Calm	228	19	14	25	24	25	32	35	54
S.	50	5	2	7	11	12	2	11	0										

Winds in Persia.

Ooroomiah.

Course.	Part of 1849–49.[1]	Dec. 1849, to Nov. 1850.	AVERAGE FOR THE SEPARATE MONTHS. Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
North	21	24	1½	1	0	1½	2	4	1	2	8	0	5½	5	31½
N. by E.	13	24	½	1	½	1½	½	2	1	2	1	0	4	14	28
N. N. E.	4	3	½	0	0	½	1	0	0	0	0	0	½	2	4½
N. E. by N.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. E.	1	20	0	0	0	½	0	2½	1	8	3	0	1½	1	17½
N. E. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. N. E.	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1
E. by N.	7	7	0	½	0	1	½	3	3	0	0	0	½	1	9½
East	7	15	1	1	½	1	½	½	1	3	4	1	1	2	16½
E. by S.	11	10	0	0	½	3½	½	1½	1	1	3	0	½	4	15½
E. S. E.	8	0	1½	½	0	0	0	2½	0	0	0	0	0	0	4½
S. E. by E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. E.	4	146	5	2	7	6½	7	10½	17	14	11	18	8½	1	107½
S. E. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. S. E.	68	5	11	6½	1½	6½	5½	5	0	0	1	1	0	1	39
S. by E.	38	18	2½	2½	6½	6½	4	½	0	1	1	4	1½	2	32
South	36	29	7½	2½	4	7	4	0	0	0	5	7	1	1	39
S. by W.	51	35	4	7	10	6	7½	1	5	2	2	5	0	1	50½
S. S. W.	37	19	6	7½	5	4	4½	½	0	0	1	0	0	0	28½
S. W. by S.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S. W.	2	114	3	6½	7½	5	6	5	5	1	6	17	10	3	75
S. W. by W.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
W. S. W.	30	19	4½	4½	5	1	7½	½	0	0	0	1	½	1	25½
W. by S.	79	87	9½	17½	18½	9	11½	4	3	0	4	5	3½	9	94½
West	59	272	20½	16½	16½	14½	14½	13	23	18	26	21	19½	18	221
W. by N.	22	70	2	2½	5	5	4	6½	11	5	2	4	7½	8	62½
W. N. W.	6	8	½	1	1½	1½	1	½	0	0	0	0	½	1	7½
N. W. by W.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. W.	37	129	4½	1½	2½	3½	4½	12½	16	31	9	9	19½	9	122½
N. W. by N.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. N. W.	48	7	3	3	½	4	4	11½	0	1	0	0	2½	2	31½
N. by W.	11	24	4	½	½	½	1½	3	0	2	3	0	2	7	24
Calm	0	1	½	0	0	0	0	0	0	0	0	0	0	0	½

[1] January 1 to June 18, 1848, and November, 1849.

NOTE.—I am indebted for the foregoing observations to Rev. Justin Perkins, who, in his letters accompanying them, dated February 19, and July 22, 1848, has given the following description of the place of observation, and of the local influences to which it is subject.

"My residence is on the north-eastern declivity of a high mountain. This location may, perhaps, affect the direction of the wind here somewhat, though probably not a great deal. There are, however, some important local causes

Winds in Persia and Siberia.

Course.	Tehran, Persia, 1850.				Tabreez, Persia, 1850.				Nijné Taguilsk. Ural Mountains.	
	Feb.	March.	April.	May.	Sept.	Oct.	Nov.	Dec.	1848.	1849.
North	12	4	4	1	2	5	2	0	26	14
N. N. E.	1	0	0	0	0	1	0	0	42	10
N. E.	11	6	5	4	8	2	0	0	125	124
E. N. E.	0	0	0	0	0	0	0	0	3	8
East	5	3	0	1	44	26	30	33	4	7
E. S. E.	0	0	0	0	2	1	0	1	4	7
S. E.	3	10	6	11	1	1	1	3*	144	146
S. S. E.	0	0	0	0	1	1	0	0	17	33
South	2	8	4	19	0	7	7	9	31	25
S. S. W.	0	0	0	0	0	0	0	0	37	12
S. W.	17	28	7	32	4	1	1	3	221	225
W. S. W.	1	1	0	0	0	1	0	1	51	55
West	6	17	50	23	19	43	47	43	29	58
W. by N.	1	0	0	0	0	0	0	0	0	0
W. N. W.	0	0	1	0	0	0	0	0	50	79
N. W.	16	16	13	2	7	4	2	0	144	177
N. N. W.	8	0	0	0	1	0	0	0	37	12
Calm or variable	0	0	0	0	1	0	0	0	144	103

Catharinenburg, Siberia.[1]

Course.	1836.	1837.	TOTAL FOR THE SEPARATE MONTHS.											
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	168	236	14	15	11	78	55	88	53	49	33	30	18	10
N. E.	102	119	2	0	14	40	49	16	15	21	31	4	13	16
E.	130	145	2	6	12	11	25	29	30	49	37	11	50	13
S. E.	316	303	53	39	73	74	41	60	37	84	42	16	32	68
S.	277	195	92	20	31	28	24	41	28	58	54	33	22	41
S. W.	642	533	123	114	136	82	96	66	79	56	78	150	116	129
W.	608	767	129	125	111	130	100	88	129	68	99	150	113	133
N. W.	306	193	8	12	44	36	67	76	75	39	53	63	15	11
Calm	378	424	73	125	64	49	39	61	50	73	53	39	101	75

affecting the winds in this province, which I will here state. About once a month, ordinarily, we have a strong wind, often violent, from the *west*, which is the *simoom* or Samiel from the Arabian desert. It usually continues about three days; and though its noxious properties are much neutralized by its passage over a distance of hundreds of miles, and across the high snowy Koordish Mountains, it is still a *warm* wind (often *hot*) here, and very debilitating to men and animals. And it is often so dry and hot here, as to wither and crisp vegetables." . . . "There is ordinarily, particularly in summer, a morning breeze lasting two-thirds of the day, from the Lake of Ooroomiah, which is about fifteen miles east of us; and an evening breeze, continuing through the night, from the Koordish Mountains on the west." . . . . "We have also occasionally (once or more in the course of a month) a warm south wind from the hot plains of Mesopotamia, the nearest point of which is about a hundred miles distant; but this wind is distinct from the simoom that comes to us from the Arabian desert. At intervals of a few weeks, and sometimes oftener, we have also a cold invigorating wind from the north, which comes down from the mountains of Ararat."

"The daily lake and mountain breezes continue during the warm part of the year with great regularity, except when interrupted by the simooms, usually once in four, five, or six weeks. During this part of the year, there is also much uniformity in the *weather*, a cloud seldom appearing in the sky.

[1] Situated upon a plain, 813 feet above the level of the sea.

Winds in Siberia.—*Continued.*

Bogoslowsk.

Course.	1842.	SEPARATE MONTHS OF THE YEAR 1842.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	404	26	42	70	40	12	46	28	54	24	14	34	14
N. E.	518	4	88	34	56	0	36	88	104	72	22	2	12
E.	178	0	0	0	86	14	2	46	16	10	4	0	0
S. E.	198	0	16	12	26	16	6	36	4	6	20	50	6
S.	514	0	28	30	66	178	86	20	2	10	16	62	16
S. W.	736	8	2	50	38	104	122	42	16	94	110	102	44
W.	802	208	136	62	34	32	70	12	2	52	96	2	96
N. W.	766	36	64	66	62	56	68	34	98	126	110	28	18
Calm	1524	214	72	172	72	84	44	186	200	86	104	200	290

Zlatouste.[1]

Course.	1337.	SEPARATE MONTHS OF THE YEAR.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	21	3	1	0	0	4	5	0	6	0	1	1	0
N. E.	28	1	0	0	1	7	3	1	6	5	3	1	0
E.	232	18	3	10	22	27	14	43	28	46	8	4	9
S. E.	385	34	18	47	38	48	56	26	38	32	11	22	15
S.	64	5	1	2	4	24	12	5	2	4	2	0	3
S. W.	65	8	1	9	2	19	5	3	13	2	3	0	0
W.	403	73	45	47	46	63	33	39	22	14	14	0	7
N. W.	1022	56	71	68	84	20	68	94	56	85	138	128	154
Calm	700	50	84	65	44	36	44	37	77	52	68	84	59

Barnoule.

Course.	1838.	SEPARATE MONTHS OF THE YEAR.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	261	30	24	23	35	26	18	15	11	27	44	8	0
N. E.	498	17	26	42	56	70	48	47	63	33	67	13	16
E.	31	2	0	0	0	1	0	4	11	4	3	2	4
S. E.	290	19	32	18	10	13	22	45	42	20	17	29	23
S.	274	19	24	29	20	21	20	14	14	5	20	28	60
S. W.	1000	80	76	89	53	68	95	94	46	118	47	119	115
W.	64	4	8	5	3	5	9	4	9	3	1	9	4
N. W.	182	6	3	7	27	28	11	8	38	16	16	15	7
Calm	319	70	31	35	36	16	17	17	14	14	33	17	19

[1] Elevation 1,200 feet, surrounded by mountains two or three thousand feet above the level of the sea.

Winds in Siberia.—*Continued.*

Nertchinsk.

Course.	1842.	SEPARATE MONTHS OF THE YEAR.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	109	5	9	6	11	21	18	10	4	9	11	4	1
N. E.	71	2	5	4	13	6	14	9	3	5	4	6	0
E.	62	0	15	0	11	1	9	3	10	4	2	7	0
S. E.	86	0	14	1	4	1	10	23	26	5	1	1	0
S.	715	10	19	4	2	3	4	11	3	8	3	3	1
S. W.	128	1	13	15	13	13	3	10	22	15	14	3	6
W.	284	19	71	18	31	20	8	15	12	14	21	48	7
N. W.	255	31	25	9	46	22	19	12	20	12	23	23	13
Calm	2064	676	501	129	49	37	35	93	86	48	45	145	220

Yacoutsk.

Course.	1838.	SEPARATE MONTHS OF THE YEAR.											
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	308	46	23	9	22	11	24	10	26	5	21	44	57
N. E.	143	1	5	0	13	15	30	25	50	0	2	0	2
E.	35	0	4	0	0	5	8	1	10	1	3	2	1
S. E.	32	0	0	2	0	9	5	2	2	0	10	1	1
S.	62	1	0	2	1	0	6	19	3	24	2	2	2
S. W.	89	2	7	18	4	17	10	9	5	10	2	3	2
W.	363	41	34	49	30	18	11	19	4	39	43	38	37
N. W.	322	23	14	18	41	48	23	31	21	32	32	21	18
Calm	106	10	15	26	9	1	3	8	3	9	9	9	4

Winds at Pekin, China.

Course.	1757.	1758.	1759.	1760.	1761.	1762.	1844.	SEPARATE MONTHS OF 1844.											
								Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	163	99	83	120	74	60	370	26	23	28	30	26	25	15	35	40	40	53	29
N. E.	92	76	122	82	92	97	276	15	21	16	16	27	38	26	33	23	25	15	21
E.	62	30	35	53	60	45	105	7	5	13	14	12	16	17	5	6	5	1	4
S. E.	70	55	84	38	82	99	233	9	6	27	27	25	34	28	30	19	20	7	1
S.	247	155	252	282	270	271	625	19	24	66	66	81	67	81	93	52	23	35	18
S. W.	23	31	11	20	21	15	448	34	46	39	40	36	28	61	43	39	32	27	23
W.	19	19	19	26	31	13	64	0	11	8	8	3	4	4	0	8	18	0	0
N. W.	45	41	74	92	62	101	623	106	70	34	33	42	30	15	9	48	66	51	119
Calm							464	63	54	28	17	20	22	28	23	23	45	79	62

Winds in Hindoostan.

Course.	Calcutta.													Patna, Futtehpore, and on the Ganges.							
	8 years.	TOTAL FOR THE SEPARATE MONTHS.																			
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	95	238	103	46	9	4	0	8	0	21	113	332	295	6	0	3	0	2	0	0	13
N. E.	79	132	122	75	33	29	30	20	73	91	113	128	126								
E.	116	66	154	79	29	91	244	177	238	207	64	21	22	76	62	100	28	54	24	30	45
S. E.	143	53	75	176	163	226	159	258	226	266	81	25	10								
S.	141	37	75	197	326	358	197	198	117	91	73	4	0	1	1	1	6	0	0	0	0
S. W.	181	74	117	281	284	209	250	230	246	232	165	29	14								
W.	95	118	159	79	117	49	90	89	81	71	97	54	120	41	57	20	90	64	100	90	66
N. W.	150	288	196	67	38	33	30	20	20	21	294	407	414								

Duklum.

Course.	1826.	1827.	1828.	1829.	1830.	TOTAL FOR DIFFERENT HOURS OF THE DAY.				TOTAL FOR THE SEPARATE MONTHS.											
						Sunrise.	9 to 10 o'clk A.M.	4 o'clock P. M.	10 to 11 o'clk P.M.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N.	33	14	21	32	15	29	40	46	0	20	20	9	7	5	1	0	0	0	23	17	13
N. E.	82	19	15	22	55	23	57	62	1	26	17	5	10	12	1	0	0	0	25	28	19
E.	87	147	194	185	90	130	368	197	8	105	63	79	29	12	1	0	0	0	63	187	164
S. E.	43	29	8	12	11	20	40	41	0	13	12	1	0	8	5	0	0	0	9	9	46
S.	14	9	12	1	0	14	14	8	0	13	1	2	3	5	2	0	0	1	1	2	6
S. W.	159	6	13	40	87	55	113	130	7	2	3	3	6	52	87	101	19	26	4	1	1
W.	318	489	419	432	324	357	643	902	80	46	73	156	240	242	241	279	314	299	69	10	13
N. W.	16	14	53	18	21	27	33	51	11	8	14	14	12	35	1	0	0	0	9	7	23
Calm	359	341	320	305	395	847	452	304	117	219	221	178	129	77	81	52	126	114	259	171	142

Winds in Africa.

Course.	Tripoli.					Bassa Cove.			Cape Palmas.		Coast of Sierra Leone and Liberia, May, 1840.
	March.	April.	May.	June.	July.	Sept.	Oct.	Nov.	Dec.	Jan.	
North	20	13	4	16	21	4	3	1	0	0	1
N. N. E.	0	2	1	1	1	0	0	0	0	0	0
N. E.	7	9	18	21	22	0	0	0	0	18	1
E. N. E.	1	1	12	5	12	0	0	0	0	0	1
East	8	11	30	21	27	0	6	0	0	0	1
E. S. E.	2	1	3	12	2	0	0	0	0	0	1
S. E.	7	9	10	9	5	0	2	0	0	3	5
S. S. E.	2	1	5	1	4	0	0	0	0	0	0
South	16	16	7	5	2	6	1	0	30	9	1
S. S. W.	2	3	0	0	0	33	0	0	9	0	1
S. W.	14	2	2	0	0	29	48	74	24	33	33
W. S. W.	3	7	1	0	0	0	0	0	9	0	7
West	10	15	3	2	2	9	9	4	0	15	3
W. N. W.	1	0	0	0	0	0	0	0	0	0	1
N. W.	20	19	15	13	13	3	1	0	0	6	9
N. N. W.	3	2	2	1	3	0	0	0	0	0	4
Calm	9	8	11	14	11	0	0	0	12	9	18

Winds at Islands in the Pacific and Indian Oceans.

Waioli, Sandwich Islands.

Course.	April 1, 1845, to April 1, 1846.	SEPARATE MONTHS OF 1842.											
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
N. E.	438	6	20	36	41	54	52	60	58	55	34	8	14
Variable	294	56	36	26	21	8	8	2	4	5	28	52	48

Course.	Oahu, Sandwich Islands, July, 1837.	Russell, New Zealand.					Pago-pago, Navigator's Islands.									Tananarivou, Madagascar, 1829.		
		April.	May.	June.	July.	Aug.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Jan.	Feb.	Mar.
North	0	2	2	0	1	4											0	2	0
N. N. E.	1	0	0	3	0	0											3	0	0
N. E.	13	0	3	2	2	1	5	3	7	0	1	1	3	0	8	0	12	4	13
E. N. E.	4	0	2	0	1	1											15	14	14
East	0	0	3	2½	0	0											48	68	71
E. S. E.	0	0	1	0	0	0											12	38	0
S. E.	1	1	2	1½	2	0	3	12	16	22	19	27	22	25	19	12	9	25	0
S. S. E.	0	0	2	0	0	0											0	0	0
South	0	0	2½	1½	1½	1											0	3	0
S. S. W.	0	0	1	0	3	0											0	0	0
S. W.	0	1	6½	11	10	1½	0	0	1	1	1	2	5	1	3	0	9	0	0
W. S. W.	0	0	1	0	0	1											0	0	0
West	0	0	3	6½	2½	3											12	0	0
W. N. W.	0	0	0	0	2½	0											6	0	0
N. W.	0	3	1	2	2	½	12	13	6	2	6	0	1	5	0	0	27	5	0
N. N. W.	0	0	0	0	0	0											3	6	21
Calm	2	0		0	0	0											24	3	31

The following series of wind-roses exhibits to the eye the relative predominance of the different winds as given in the preceding abstracts; the width of the shading in the circumference at different points of the compass being proportioned to the time during which winds from those points prevailed. In a few rare localities, and others where there are marked local disturbances, a map of the surrounding country is added, to show the cause of the disturbance.

SERIES C.

THE following Tables show the mean direction[1] of the wind at each station, where observations have been taken for a complete year or more, and, in some few instances, for a shorter period. The stations are divided into five sections, and in each section they are arranged according to their latitudes, proceeding from north to south. The portions of the northern hemisphere embraced in each section are as follows, viz. :—

1st section. America, east of longitude 87°.
2d " The Atlantic Ocean and its Islands.
3d " Europe and Africa.
4th " Asia, and the Pacific Ocean.
5th " America, west of longitude 87°.

The fifth column shows the ratio of the *progressive* motion in the mean direction to the total distance travelled by the wind, being as the numbers in the column to 100.

SECTION I.

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
1	Igloolik . . .	Melville Peninsula	N. 36° 18′ W.	42	1
2	Winter Island . .	near do.	N. 29 26 W.	42½	1
3	New Herrnhut . .	Greenland	N. 86 59 E.	32	1
4	Friederichthal, and at sea	Do. and Baffin's Bay	N. 21 39 E.?	45?	1½
5	Nos. 3 and 4 combined .		N. 62 40 E.	19	2½
6	Nain	Labrador	N. 25 55 W.?	50	1½
7	Michipicoton . . .	Lake Superior	S. 18 57 W.	17½	1
8	St. John's (1840) . .	Newfoundland	S. 62 6 W.		1
9	Do. (1841) . .	Do.	S. 78 26 W.		1
10	Do. (1842) . .	Do.	S. 82 38 W.		1
11	Do. (1843) . .	Do.	S. 74 27 W.		1
12	No. 8 to No. 11, inclusive	Do.	S. 78 4 W.	18	4
13	Fort Kent . . .	Maine	N. 62 45 W.	88	1
14	Fort Fairfield . . .	Do.	S. 65 52 W.	57	1
15	Quebec	Lower Canada	S. 89 58 W.	31	7
16	Fort Brady (1823) . .	Michigan	S. 56 53 W.	16	1
17	Do. (1824) . .	Do.	S. 64 55 W.	24	1
18	Do. (1825) . .	Do.	S. 45 7 W.	21	1
19	Do. (1827) . .	Do.	N. 6 23 W.	12	1
20	Do. (1828) . .	Do.	S. 49 6 W.	5	1
21	Do. (1830) . .	Do.	N. 87 2 E.	5	1
22	No. 16 to No. 21, inclusive	Do.	S. 63 23 W.	9	6
23	Houlton (1829) . .	Maine	N. 13 30 E.	10	1
24	Do. (1830) . .	Do.	N. 23 15 E.	18	1

[1] In this table no allowance is made for the relative *force* of the different winds, the only element taken into account being their *duration* or *time of blowing*.

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
25	Nos. 23 and 24 combined	Maine	N. 19° 38′ E.	14	2
26	Mackinaw (1826)	Michigan	S. 80 31 W.	6	1
27	Montreal (1836)	Lower Canada	S. 88 32 W.	50	1
28	Do. (1837)	Do.	N. 88 13 W.	45	1
29	Do. (1838)	Do.	N. 87 50 W.	39	1
30	No. 27 to 29, inclusive	Do.	N. 89 10 W.	44	3
31	Total of 10 stations	Lat. 45° to Lat. 50°	S. 81 7 W.	16	17 7/8
32	Windsor	Nova Scotia	N. 49 48 W.	28	1
33	Malone (1839)	New York State	S. 80 1 W.	19	1
34	Do. (1840)	Do.	S. 73 3 W.	23	1
35	Do. (1842)	Do.	S. 83 31 W.	66	1
36	No. 33 to No. 35, inclusive	Do.	S. 80 26 W.	34	3
37	Eastport (1822)	Maine	S. 82 22 W.	29	1
38	Do. (1823)	Do.	S. 84 10 W.	26	1
39	Do. (1824)	Do.	S. 88 40 W.	27	1
40	Do. (1825)	Do.	S. 88 12 W.	28	1
41	Do. (1826)	Do.	S. 58 13 W.	28	1
42	No. 37 to No. 41, inclusive	Do.	S. 80 12 W.	26	5
43	Ogdensburg	New York State	S. 58 34 W.	29½	1
44	Plattsburg (1841)	Do.	S. 85 57 W.	27	1
45	Do. (1847)	Do.	N. 84 56 W.	23½	1
46	Do. (1841, 42, 47)	Do.	S. 76 46 W.	24½	3
47	Hampden (1844)	Maine	S. 80 31 W.	30	1
48	Do. (1845)	Do.	S. 77 27 W.	33	1
49	Do. (1846)	Do.	S. 68 68 W.	39	1
50	No. 47 to No. 49, inclusive	Do.	S. 77 15 W.	33	3
51	Potsdam	New York State	S. 66 59 W.	36	11
52	No. 37 to No. 51, inclusive	Lat. 44½° to Lat. 44¾°	S. 71 0 W.	29	26
53	Gouverneur	New York State	S. 76 24 W.	61½	7
54	Bath (1832)	Maine	S. 65 45 W.		1
55	Do. (1833)	Do.	N. 87 30 W.		1
56	Do. (1834)	Do.	S. 65 45 W.		1
57	Do. (1835)	Do.	S. 78 7 W.		1
58	Do. (1836)	Do.	S. 77 54 W.		1
59	Do. (1837)	Do.	S. 86 57 W.		1
60	Do. (1838)	Do.	S. 87 7 W.		1
61	Do. (1839)	Do.	S. 86 57 W.		1
62	Do. (1840)	Do.	S. 81 59 W.		1
63	Do. (1841)	Do.	S. 88 47 W.		1
64	No. 54 to No. 63, inclusive	Do.	S. 82 0 W.	26	10
65	Sackett's Harbor (1842)	New York State	S. 87 35 W.	19½	1
66	Watertown	Do.	S. 70 33 W.	33	1?
67	Lowville	Do.	S. 89 31 W.	23½	8
68	No. 54 to No. 67, inclusive	Lat. 43¾° to Lat. 44°	S. 76 46 W.	22½	19
69	Ellisburg	New York State	S. 64 56 W.	28½	6
70	Hanover	New Hampshire	N. 81 34 W.	34	3
71	Portland (1827)	Maine	S. 52 9 W.	21	1
72	Do. (1828)	Do.	S. 17 15 W.	28	1
73	Do. (1829)	Do.	S. 44 8 W.	30	1
74	Do. (1830)	Do.	S. 77 30 W.	31	1
75	No. 71 to No. 74, inclusive	Do.	S. 42 33 W.	29	4
76	Toronto	Upper Canada	N. 10 23 W.	4	2
77	Saco (1844)	Maine	N. 89 47 W.	22	1
78	Do. (1845)	Do.	N. 38 54 W.	24	1
79	Do. (1846)	Do.	N. 84 35 W.	20	1
80	No. 77 to No. 79, inclusive	Do.	N. 69 50 W.	20	3
81	Nos. 75, 76, 80, 518 comb'd	Lat. 43½° to Lat. 43¾°	S. 77 30 W.	20½	18

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
82	Mexico	New York State	S. 57° 24′ W.	28½	2
83	Gaines	Do.	N. 72 13 W.	32	4
84	Granville	Do.	S. 88 9 W.	24½	4
85	Salem	Do.	S. 62 22 W.	23	3
86	Youngstown (1829–30)	Do.	S. 77 37 W.	21	2
87	No. 82 to No. 86, inclusive	Lat. 43½° to Lat. 43½°	S. 79 50 W.	24	15
88	Whitesboro'	New York State	S. 89 33 W.	27½	5
89	Dover (1835)	New Hampshire	N. 72 10 W.	30	1
90	Do. (1836)	Do.	N. 62 2 W.	17	1
91	Do. (1837)	Do.	S. 89 14 W.	15	1
92	Do. (1838)	Do.	N. 65 14 W.	16	1
93	Do. (1839)	Do.	S. 54 8 W.	5	1
94	Do. (1842)	Do.	N. 77 31 W.	18	1
95	No. 89 to No. 94, inclusive	Do.	N. 75 18 W.	16½	6
96	Lewistown	New York State	S. 45 58 W.	39½	2
97	Millville	Do.	S. 70 44 W.	26	5
98	Rochester	Do.	N. 89 32 W.	38	7
99	Utica	Do.	S. 61 41 W.	33½	12
100	Palmyra	Do.	S. 69 7 W.	26	1
101	Fairfield	Do.	N. 55 51 W.	26½	11
102	Cambridge	Do.	S. 42 40 W.	30½	11
103	Portsmouth (1827)	New Hampshire	S. 81 12 W.	22	1
104	Do. (1828)	Do.	S. 67 24 W.	28	1
105	Do. (1829)	Do.	S. 70 39 W.	25	1
106	Do. (1830)	Do.	S. 85 2 W.	14	1
107	No. 103 to No. 106, inclusive	Do.	S. 74 50 W.	21	4
108	Syracuse	New York State	S. 73 55 W.	40	1
109	Johnstown	Do.	N. 89 18 W.	40½	10
110	Henrietta	Do.	S. 52 57 W.	36	3
111	No. 88 to No. 110, inclusive	Lat. 43° to Lat. 43½°	S. 73 15 W.	29	70
112	Onandaga	New York State	S. 67 8 W.	38	9
113	Pompey	Do.	S. 66 48 W.	52	16
114	Fayetteville	Vermont	N. 85 18 W.	38	2
115	Port Huron (1831 to 1835)	Michigan	S. 66 5 W.	24	5
116	Bridgewater	New York State	S. 84 41 W.	32½	4
117	Cazenovia	Do.	S. 87 52 W.	50	9
118	Canajoharie	Do.	N. 84 14 W.	27	3
119	Buffalo	Do.	S. 59 57 W.	52	2
120	Canandaigua	Do.	S. 62 50 W.	54	10
121	Middlebury	Do.	S. 72 31 W.	56	12
122	Hamilton	Do.	S. 79 50 W.	47½	10
123	Cherry Valley	Do.	S. 73 53 W.	46	9
124	Schenectady	Do.	N. 73 42 W.	29	4
125	Lansingburgh	Do.	S. 79 52 W.	34	12
126	Cayuga	Do.	S. 52 40 W.	26	6
127	No. 112 to No. 126, inclusive	Lat. 42½° to Lat. 43°	S. 75 10 W.	40½	113
128	Watervleit (1831)	New York State	S. 86 37 W.	40	1
129	Williamstown (1816)	Massachusetts	N. 88 44 W.		1
130	Do. (1817)	Do.	S. 82 33 W.		1
131	Do. (1818)	Do.	S. 84 25 W.		1
132	Do. (1819)	Do.	N. 74 55 W.		1
133	Do. (1820)	Do.	N. 82 49 W.		1
134	Do. (1821)	Do.	N. 70 1 W.		1
135	Do. (1822)	Do.	N. 77 3 W.		1
136	Do. (1823)	Do.	N. 83 30 W.		1
137	Do. (1824)	Do.	N. 77 57 W.		1
138	Do. (1825)	Do.	N. 75 30 W.		1
139	Do. (1826)	Do.	N. 83 49 W.		1

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
140	Williamstown (1827)	Massachusetts	N. 77° 52′ W.		1
141	Do. (1828)	Do.	S. 76 0 W.		1
142	Do. (1829)	Do.	N. 88 20 W.		1
143	Do. (1830)	Do.	N. 69 0 W.		1
144	Do. (1831)	Do.	N. 81 22 W.		1
145	Do. (1832)	Do.	N. 73 39 W.		1
146	Do. (1833)	Do.	S. 80 2 W.		1
147	Do. (1834)	Do.	N. 83 12 W.		1
148	Do. (1835)	Do.	S. 85 55 W.		1
149	Do. (1836)	Do.	N. 89 2 W.		1
150	Do. (1837)	Do.	N. 78 59 W.		1
151	Do. (1838)	Do.	N. 77 47 W.		1
152	No. 129 to No. 151, inclusive	Do.	N. 81 43 W.	29	23
153	Ipswich	Do.	N. 66 55 W.	41	1
154	Albany	New York State	S. 63 5 W.	30	12
155	Hartwick	Do.	S. 59 20 W.	43	9
156	Homer	Do.	S. 68 41 W.	50	6
157	Auburn	Do.	S. 74 55 W.	30	11
158	Prattsburg	Do.	S. 76 46 W.	47½	1
159	Springville	Do.	S. 85 14 W.	44	4
160	No. 128 to No. 159, inclusive	Lat. 42½° to Lat. 42¾°	S. 81 15 W.	38	68
161	Oxford	New York State	S. 88 38 W.	45½	9
162	Ithaca	Do.	S. 62 27 W.	13	7
163	Fredonia	Do.	S. 64 42 W.	40½	9
164	Detroit (1839)	Michigan	N. 73 10 W.	27	1
165	Do. (1840)	Do.	S. 88 28 W.	35	1
166	Do. (1841)	Do.	S. 75 40 W.	18	1
167	No. 164 to No. 166, inclusive	Do.	S. 89 0 W.	25	3
168	Waltham	Massachusetts	N. 71 34 W.	39	1
169	Greenville	New York State	N. 84 16 W.	8	1
170	Kinderhook	Do.	N. 62 18 W.	14	9
171	Amherst (1837)	Massachusetts	N. 82 29 W.	36	1
172	Do. (1838)	Do.	N. 72 45 W.	30	1
173	Do. (1839)	Do.	N. 70 25 W.	32	1
174	Do. (1840)	Do.	N. 76 3 W.	26	1
175	Do (1841)	Do.	N. 61 55 W.	26	1
176	No. 171 to No. 175, inclusive	Do.	N. 73 13 W.	30	5
177	Cambridge	Do.	S. 88 28 W.?	22	1½
178	Boston	Do.	N. 88 20 W.	25	1½
179	Worcester (1840)	Do.	N. 77 41 W.	35	1
180	Do. (1841)	Do.	N. 63 10 W.	32	1
181	Do. (1842)	Do.	N. 87 5 W.	41	1
182	Do. (1843)	Do.	N. 71 47 W.	41	1
183	Do. (1844)	Do.	N. 74 17 W.	37½	1
184	Do. (1845)	Do.	N. 74 59 W.	43	1
185	Do. (1846)	Do.	N. 55 40 W.		1
186	No. 179 to No. 185, inclusive	Do.	N. 73 29 W.	38	7
187	Delhi	New York State	S. 58 59 W.	29½	2
188	Hudson	Do.	S. 79 28 W.	3	8
189	No. 161 to No. 188, inclusive	Lat. 42¼° to Lat. 42½°	N. 89 15 W.	24	63½
190	Cuba	New York State	N. 86 41 W.	32	3
191	Mendon (1842)	Massachusetts	S. 74 35 W.		1
192	Do. (1843–44)	Do.	S. 82 49 W.	31	2
193	Do. (1845–46)	Do.	S. 86 3 W.		2
194	No. 191 to No. 193, inclusive	Do.	S. 82 31 W.	35½	5
195	Provincetown	Do. (Cape Cod)	N. 73 13 W.?	20½	1 7/12
196	Redhook	New York State	S. 82 13 E.	10½	8
197	Salisbury (1844)	Connecticut	N. 30 27 E.	3	1

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
198	Salisbury (1845)	Connecticut	N. 60° 9′ E.	9	1
199	Nos. 197 and 198 combined	Do.	N. 53 7 E.	6	2
200	No. 190 to No. 199, inclusive	Lat. 42° to Lat. 42½°	S. 85 42 W.	11	19 7/12
201	Kingston	New York State	N. 69 10 W.	19	9
202	Silver Lake	Pennsylvania	N. 84 24 W.	56	1½
203	Smithport	Do.	S. 75 6 W.	33	1
204	Friend's School, Providence	Rhode Island	N. 81 35 W.	32	2 7/12
205	Brown University, do.	Do.	N. 86 33 W.	43	4
206	No. 201 to No. 205, inclusive	Lat. 41½° to Lat. 42°	N. 87 0 W.	35½	18½
207	Brockville	Indiana	S. 60 5 W.	34	3
208	Poughkeepsie	New York State	S. 12 20 E.	11½	8
209	Meadville	Pennsylvania	S. 27 2 E.	5	1
210	New Bedford	Massachusetts	S. 81 0 W.	26	16
211	Middletown (1834 and 1843)	Connecticut	N. 60 26 W.	43	1½
212	Do. (1835)	Do.	N. 51 49 W.	30	1
213	Do. (1836)	Do.	N. 46 10 W.	33	1
214	No. 211 to No. 213, inclusive	Do.	N. 54 10 W.	35	2 1/12
215	Montgomery	New York State	N. 84 25 W.	32	10
216	Fort Adams	Rhode Island	S. 31 3 W.	11	1
217	No. 207 to No. 216, inclusive	Lat. 41½° to Lat. 41½°	S. 79 30 W.	17	41 1/12
218	Fort Wolcott (1822)	Rhode Island	S. 71 21 W.	33	1
219	Do. (1823)	Do.	N. 88 35 W.	27	1
220	Do. (1824)	Do.	S. 89 12 W.	28	1
221	Do. (1825)	Do.	S. 84 55 W.	28	1
222	Do. (1826)	Do.	S. 77 7 W.	24	1
223	Do. (1827)	Do.	N. 67 51 W.	32	1
224	Do. (1828)	Do.	N. 79 40 W.	26	1
225	Do. (1829)	Do.	S. 78 33 W.	33	1
226	Do. (1830)	Do.	N. 72 46 W.	26	1
227	Newport (1831, 32, 33)	Do.	S. 74 54 W.	37	1
228	Do. (1838)	Do.	N. 87 17 W.	42	1
229	No. 218 to No. 228, inclusive	Do.	S. 89 2 W.	30	11
230	Franklin	Pennsylvania	N. 60 4 W.	47	1
231	New London (1827)	Connecticut	S. 65 41 W.	18	1
232	Do. (1828)	Do.	S. 36 44 W.	23	1
233	Nos. 231 and 232 combined	Do.	S. 49 55 W.	18	2
234	West Point (1827 to 1830)	New York State	N. 85 9 W.	18	4
235	Goshen	Do.	S. 60 33 W.	44	4
236	North Salem	Do.	N. 62 47 W.	23	7
237	New Haven	Connecticut	N. 65 7 W.	24½	4
238	Nantucket	Massachusetts	N. 77 0 W.	23	4½
239	Hudson[1]	Ohio	S. 88 33 W.[1]	53?	7
240	No. 218 to No. 239, inclusive	Lat. 41½° to Lat. 41½°	N. 86 30 W.	26	44½
241	Forty-nine different stations	New Eng., S. of Lat. 45°	N. 87 37 W.	26	78½
242	Mount Pleasant	New York State	N. 83 18 W.	20½	7
243	Newburgh	Do.	S. 61 9 W.	23½	8
244	Easthampton	Long Island, do.	S. 74 47 W.	9½	11
245	No. 241 to No. 244, inclusive	Lat. 41° to Lat. 41½°	S. 76 45 W.	17½	26
246	Stroudsburg	Pennsylvania	N. 75 35 W.?	31	½
247	Butler (1840)	Do.	S. 55 47 W.		1/12
248	Do. (1841)	Do.	S. 62 39 W.	26	1
249	Do. (1844–45)	Do.	S. 52 58 W.	37	1
250	No. 247 to No. 249, inclusive	Do.	S. 56 59 W.	32	2 1/12
251	Oysterbay	Long Island, N. Y.	S. 83 27 W.	15	2
252	Bloomingdale	New York State	N. 58 52 W.	15	1
253	Newark	New Jersey	N. 66 53 W.	24	2
254	No. 246 to No. 253, inclusive	Lat. 40½° to Lat. 41°	N. 87 54 W.	22	8½
255	Deaf and Dumb Institute	New York City	N. 58 58 W.	28	3

[1] Upper current.

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
256	New York City (Fisher) .	New York City	S. 66° 56′ W.	21	10
257	Fort Columbus (1822 to '30)	Do.	S. 86 3 W.	19	9
258	Northumberland . .	Pennsylvania	N. 53 32 W.	10	1⅝
259	Easton (1848) . . .	Do.	N. 64 18 W.	17	1
260	Jamaica	Long Island, N. Y.	N. 70 32 W.	24	12
261	Flatbush	Do.	N. 75 57 W.	29	12
262	Mifflintown . . .	Pennsylvania	N. 57 50 W.	31½	1¾
263	Pittsburg	Do.	N. 87 30 W.	23	1
264	Ebensburg . . .	Do.	S. 81 21 W.	47	1
265	Huntingdon . . .	Do.	West	41	1
266	No. 255 to No. 265, inclusive	Lat. 40¼° to Lat. 40¾°	N. 83 45 W.	27	53 7/8
267	11 stations (1826) .	New York State	S. 68 38 W.	30	11
268	23 do. (1827) .	Do.	S. 86 15 W.	31½	23
269	29 do. (1828) .	Do.	S. 62 44 W.	35	29
270	28 do. (1829) .	Do.	S. 76 29 W.	35	28
271	34 do. (1830) .	Do.	S. 79 43 W.	27	34
272	34 do. (1831) .	Do.	S. 76 42 W.	35½	34
273	36 do. (1832) .	Do.	S. 69 33 W.	29	36
274	35 do. (1833) .	Do.	S. 74 50 W.	29	35
275	36 do. (1834) .	Do.	S. 80 12 W.	28	36
276	45 do. (1835) .	Do.	S. 72 53 W.	33¼	45
277	39 do. (1836) .	Do.	S. 76 55 W.	22½	39
278	35 do. (1837) .	Do.	S. 85 2 W.	29	35
279	33 do. (1838) .	Do.	S. 85 56 W.	33	33
280	38 do. (1839) .	Do.	S. 85 16 W.	29	38
281	37 do. (1840) .	Do.	S. 80 7 W.	32	37
282	39 do. (1841) .	Do.	S. 88 0 W.	28	39
283	44 do. (1842) .	Do.	S. 79 29 W.	30	44
284	40 do. (1843) .	Do.	S. 87 34 W.	34	40
285	37 do. (1844) .	Do.	S. 82 16 W.	29	37
286	35 do. (1845) .	Do.	S. 81 21 W.	37	35
287	34 do. (1846) .	Do.	S. 83 43 W.	26	34
288	27 do. (1847) .	Do.	S. 77 1 W.	27	27
288 *a*	25 do. (1848) .	Do.	S. 81 26 W.	30	25
288 *b*	23 do. (1849) .	Do.	N. 88 24 W.	20	23
289	No. 267 to No. 288 *b*, incl'ye	Do.	S. 79 49 W.	30	797
290	72 stations[1] . . .	Do.	S. 79 8 W.	31⅛	862
291	Middletown . . .	New Jersey	S. 86 35 W.	22	4
292	Steubenville (1833) .	Ohio	N. 85 2 W.		1
293	Do. (1834) .	Do.	N. 83 14 W.		1
294	Do. (1835) .	Do.	S. 89 49 W.		1
295	Do. (1836) .	Do.	N. 78 17 W.		1
296	Do. (1837) .	Do.	S. 85 43 W.		1
297	Do. (1838) .	Do.	N. 81 20 W.		1
298	Do. (1839) .	Do.	N. 81 18 W.		1
299	Do. (1840) .	Do.	N. 82 52 W.		1
300	Do. (1841) .	Do.	N. 72 30 W.		1
301	Do. (1842) .	Do.	N. 77 52 W.		1
302	Do. (1843) .	Do.	N. 73 50 W.		1
303	Do. (1844) .	Do.	N. 70 59 W.		1
304	Do. (1845) .	Do.	N. 83 50 W.		1
305	Do. (1846) .	Do.	N. 75 43 W.		1
306	No. 292 to No. 305, inclusive	Do.	N. 80 58 W.	55	1
307	Harrisburg . . .	Pennsylvania	N. 82 56 W.	28	14
308	Newtown	Do.	N. 63 31 W.	33	1⅛
309	No. 291 to No. 308, inclusive	Lat. 40¼° to Lat. 40¾°	N. 79 7 W.	34	20¾
310	Carlisle (1840) .	Pennsylvania	S. 89 30 W.	19	1
311	Trenton	New Jersey	S. 75 52 W.	17	6

[1] These stations include all the preceding but two, and seventeen additional ones.

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
312	Lancaster	Pennsylvania	N. 81° 55′ W.	19	2
313	Bedford	Do.	S. 86 57 W.	45	1
314	Somerset (1841)	Do.	S. 74 40 W.	36	1
315	Do. (1845–46)	Do.	S. 72 32 W.	37	1½
316	Nos. 314 and 315 combined	Do.	S. 73 27 W.	36½	2½
317	No. 310 to No. 316, inclusive	Lat. 40° to Lat. 40½°	S. 81 50 W.	30	12½
318	Girard College	Philadelphia	N. 74 5 W.	21	5
319	Franklin Institute (1831)	Do.	S. 79 48 W.	53	1
320	Do. (1832)	Do.	S. 64 27 W.	46	1
321	Do. (1833)	Do.	S. 72 25 W.	48	1
322	Do. (1839)	Do.	S. 81 44 W.	39	1
323	Do. (1841)	Do.	S. 88 54 W.	36	1
324	Do. (1842)	Do.	S. 75 3 W.	45	1
325	No. 319 to No. 324, inclusive	Do.	S. 75 4 W.	45	6
326	Uniontown	Pennsylvania	S. 74 43 W.	48	1½
327	Fort Mifflin (1823)	Do.	N. 50 1 W.	15	1
328	Do. (1824)	Do.	S. 31 57 W.	36	1
329	Nos. 227 and 328 combined	Do.	S. 54 30 W.	18	2
330	Gettysburg	Do.	S. 87 2 W.	27	1½
331	No. 318 to No. 330, inclusive	Lat. 39½° to Lat. 40°	S. 80 20 W.	30	15½
332	40 different stations	Pennsylvania	N. 88 15 W.	32	48½
333	Newcastle	Delaware	S. 52 25 W.	28	1
334	Maryland Academy	Baltimore	S. 67 54 W.	4	1
335	Fort McHenry	Do.	N. 59 6 W.	15½	5
335½	No. 333 to No. 335, inclusive	Delaware and Maryland	S. 74 48 W.	13½	7
336	Maricetta	Ohio	S. 68 23 W.	41	1
337	No. 333 to No. 336, inclusive	Lat. 39½° to Lat. 39½°	S. 71 35 W.	20	8
338	Annapolis	Maryland	S. 47 20 W.	16	1
339	Washington (1823)	District of Columbia	N. 79 2 W.		1
340	Do. (1824)	Do.	N. 86 31 W.		1
341	Do. (1825)	Do.	N. 81 58 W.		1
342	Do. (1826)	Do.	N. 56 59 W.		1
343	Do. (1827)	Do.	N. 64 7 W.		1
344	Do. (1828)	Do.	S. 51 44 W.		1
345	Do. (1829)	Do.	S. 65 16 W.		1
346	Do. (1830)	Do.	S. 85 55 W.		1
347	No. 339 to No. 346, inclusive	Do.	N. 86 43 W.	17	9
348	Washington (1831,2,3,4,5)	Do.	N. 83 41 W.	24	5
349	Do. (1838,39,40,41,42)	Do.	N. 81 52 W.	15	4
350	No. 339 to No. 349, inclusive	Do.	N. 85 12 W.	17	13½
350½	Nos. 338 and 350, combined	Do.	S. 71 39 W.	13	14½
351	Bellona Arsenal	Near Richmond, Va.	S. 61 7 W.	15½	1
352	Old Point Comfort (1826)	Virginia	S. 28 19 E.	13	1
353	Do. (1827)	Do.	S. 14 40 E.	13	1
354	Do. (1828)	Do.	N. 70 23 W.	5	1
355	Do. (1829)	Do.	N. 73 35 W.	14	1
356	Do. (1830)	Do.	N. 59 50 W.	11	1
357	No. 352 to No. 356, inclusive	Do.	S. 43 15 W.	3	5
358	14 different stations	Del., Md., and E. Vir.	N. 89 1 W.	13	25½
359	Nashville (1839–40)	Tennessee	S. 74 31 W.	39	2
360	Do. (1841)	Do.	S. 64 13 W.	29	1
361	Do. (1842)	Do.	S. 40 0 W.	37	1
362	Do. (1843)	Do.	S. 53 49 W.	24	1
363	Do. (1844)	Do.	S. 51 26 W.	25	1
364	No. 359 to No. 363, inclusive	Do.	S. 57 20 W.	30	5
365	Chapel Hill (1845)	North Carolina	S. 66 21 W.	10	1
366	Do. (1846)	Do.	N. 60 2 W.	3	1
367	Nos. 365 and 366 combined	Do.	S. 76 5 W.	6	2

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
368	Beaufort	North Carolina	S. 57° 19′ W.	13	2
369	Camden	South Carolina	N. 83 32 W.	22	1
370	Abbeville	Do.	N. 70 5 W.	8	2
371	Summerville . . .	Georgia	N. 55 38 W.	15	1
372	Athens (1841 to 1844)	Do.	N. 65 12 W.	15	4
373	Do. (1845) .	Do.	N. 71 27 W.	35	1
374	Nos. 372 and 373, combined	Do.	N. 67 30 W.	19	5
375	Fort Johnston (1822) .	North Carolina	N. 68 7 W.	19	1
376	Do. (1823) .	Do.	S. 68 16 W.	16	1
377	Do. (1824) .	Do.	N. 78 15 W.	10	1
378	Do. (1825) .	Do.	N. 48 41 W.	25	1
379	Do. (1826) .	Do.	S. 87 3 W.	13	1
380	No. 375 to No. 379, inclusive	Do.	N. 75 32 W.	15	5
380½	Nos. 374 and 380, combined	Do.	N. 71 8 W.	17	10
381	Augusta, Arsenal (1826) .	Georgia	S. 26 2 W.	28	1
382	Do. (1827) .	Do.	S. 8 8 W.	9	1
383	Do. (1828) .	Do.	N. 84 40 W.	21	1
384	Do. (1829) .	Do.	N. 83 49 W.	14	1
385	Do. (1830) .	Do.	S. 89 44 W.	23	1
386	Augusta (1840) .	Do.	N. 81 28 E.	8	1
387	Do. (1841) .	Do.	S. 75 0 E.	12	1
388	Do. (1842)? .	Do.	North	1	1
389	Do. (1843) .	Do.	S. 28 29 W.	27	1
390	No. 381 to No. 385, inclusive	Do.	S. 52 40 W.	16	5
391	No. 386 to No. 389, inclusive	Do.	S. 15 2 E.	8	4
392	No. 381 to No. 389, inclusive	Do.	S. 38 41 W.	9	9
393	Fort Moultrie, Charleston Harbor (1822) .	South Carolina	S. 37 7 E.	29	1 1
394	Do. (1823) .	Do.	S. 75 35 E.	31	1
395	Do. (1824) .	Do.	S. 53 26 E.	26	1
396	Charleston (1831, 2, 3) .	Do.	S. 6 54 E.		2
397	Do. (1834) .	Do.	S. 28 30 E.		1
398	Do. (1837) .	Do.	S. 84 22 E.		1
399	Do. (1841) .	Do.	S. 62 22 E.		1
400	Do. (1844) .	Do.	S. 31 32 E.		1
401	No. 393 to No. 395, inclusive	Do.	S. 55 53 E.	28	3
402	No. 396 to No. 400, inclusive	Do.	S. 40 0 E.	6½	6
403	No. 393 to No. 400, inclusive	Do.	S. 50 38 E.	14	9
404	Tuskeegee . . .	Alabama	S. 69 13 E.	22½	1½
405	Savannah . . .	Georgia	S. 50 42 E.	7	3
406	Oglethorpe Barracks (1834)	Near Savannah	S. 51 48 E.	9	1
407	St. Augustine (1825) .	Florida	N. 68 43 E.	38	1
408	Do. (1826) .	Do.	N. 48 21 E.	29	1
409	Do. (1828) .	Do.	S. 64 38 E.	37	1
410	Do. (1830) .	Do.	S. 81 52 E.	30	1
411	Do. (1835) .	Do.	N. 24 17 E.	11	1
412	No. 407 to No. 411, inclusive	Do.	N. 79 19 E.	25	5
413	Fort King (1833) .	Do.	S. 12 13 W.	7	1
414	Do. (1834) .	Do.	S. 0 7 E.	38	1
415	Do. (1835) .	Do.	S. 31 17 W.	5	1
416	No. 413 to No. 415, inclusive	Do.	S. 4 50 W.	17	3
417	Tampa Bay (1825) .	Do.	S. 27 0 E.	15	1
418	Do. (1826) .	Do.	S. 19 50 W.	21	1
419	Do. (1827) .	Do.	S. 47 33 W.	37	1
420	Do. (1828) .	Do.	S. 36 52 W.	25	1
421	Do. (1830) .	Do.	N. 50 49 E.	9	1
422	Do. (1835) .	Do.	N. 12 18 E.	33	1
423	No. 417 to No. 422, inclusive	Do.	S. 36 50 W.	11	6

SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
423½	No. 407 to No. 422, inclusive	Florida	S. 38° 4′ E.	10	14
424	Cape Florida	Do.	S. 47 59 E.	20	1
425	Carysford Reef	Do.	N. 82 25 E.	32	1
426	Indian Key	Do.	S. 89 44 E.	47	1
427	Tortugas Islands	Do.	N. 65 29 E.	48	1
428	Key West	Do.	N. 78 6 E.	38	4
429	No. 424 to No. 428, inclusive	Do.	N. 80 8 E.	35	8
430	Matanzas	Cuba	N. 60 39 E.	65	4
431	Turk's Island	Bahamas	N. 64 46 E.(?)	65	1 1/3
432	Pouce	Porto Rico	N. 50 2 E.(?)	64	1 1/3
433	No. 430 to No. 432, inclusive	West Indies	N. 60 31 E.	65	4 2/3
434	Barbadoes	Do.	N. 84 33 E.(?)	89	1/4
435	Do. (Upper Current)	Do.	S. 4 22 W.(?)	30	1/6
436	Chagres and Porto Cabello	South America	N. 64 13 E.(?)	69	1/3

SERIES C. SECTION II.—**Atlantic Ocean and its Islands.**

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	Time embraced.
1	Eyafiord (1812–13)	Iceland	N. 86° 38′ W.	22	1 year.
2	Do. (1813–14)	Do.	N. 86 29 W.	10	1 do.
3	Nos. 1 and 2 combined	Do.	N. 86 35 W.	16	2 years
4	Reikiavik	Do.	N. 63 25 E.(?)	20?	7 months.
5[1]	At sea, lat. 55° to 60°	Atlantic Ocean	S. 64 55 W.(?)	32?	139 days.
6[1]	Do. 50° to 55°	Do.	S. 52 41 W.	23	1202 days.
7[1]	Do. 45° to 50°	Do.	S. 74 19 W.	27	2829 do.
8[1]	Do. 40° to 45°, lon. 0° to 45° W.	Do.	S. 73 8 W.	27	1708 do.
9[1]	Do. Do. 45° to 75° W.	Do.	S. 85 8 W.	19	3757 do.
10[1]	Do. north of lat. 40°	Do.	N. 87 4 W.	30	6 4/6 years.
11	No. 5 to No. 10, inclusive	Do.	S. 79 20 W.	25	33½ do.
12	Terceira and vicinity	Azores	S. 67 30 W.	26	2 months.[3]
13	Fayal and vicinity	Do.	S. 55 11 W.	20	2 Do.[3]
14	St. Michaels and vicinity	Do.	S. 64 41 W.	20	2 Do.[3]
15	Total of five stations and vicinity	Do.	S. 63 21 W.	21	7 Do.[3]
16[2]	At sea, between lat. 36° and 40°	Atlantic Ocean	N. 84 20 W.(?)	11½	6 Do.
17[1]	Do. lat. 35° to 40°, lon. 0° to 45° W.	Do.	S. 44 26 W.	15	2590 days.
18[1]	Do. Do. Do. 45° to 75° W.	Do.	S. 84 0 W.	18½	4790 do.
19[2]	Do. lat. 30° to 36°	Do.	S. 57 2 W.(?)	8	4 months.
20	Hamilton?	Bermuda Islands	S. 45 48 W.	20	3½ years.
21	Ireland Isle	Do.	S. 51 14 W.(?)	2	4 months.
22	Funchal (1826)	Madeira Islands	N. 29 53 E.		1 year.

[1] Computed from Maury's Charts, 1st edition. The corrections made in the 2d edition have all been applied in Series B, and the more important ones also in this Series and in Series D. The others are so small as hardly to affect the results officially, so that a re-computation seemed unnecessary.

[2] These results were computed, and the corresponding drawings made, before the reception of Lieutenant Maury's Wind and Current Charts, which afford far more satisfactory data, and it is thought best now to retain them, as they appear to be, for the most part, correct.

[3] Observations at sea, in the vicinity, are combined with those taken for two months at the island in order to complete the year.

SERIES C. SECTION II.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	Time embraced.
23	Funchal (1827)	Madeira Islands	N. 31° 51′ E.	42	1 year.
24	Do. (1828)	Do.	N. 9 49 E.		Do.
25	Nos. 22, 23, and 24, combined . .	Do.	N. 23 50 E.	45	3 years.
26	No. 25 combined with Teneriffe . .	Do. and Canary Is.	N. 25 52 E.	46	$3\frac{1}{12}$ years.
27[1]	At sea, lat. 30° to 35° lon. 5° to 45° W.	Atlantic Ocean	S. 44 27 E.	10	1748 days.
28[1]	Do. Do. 45° to 75° W.	Do.	S. 31 35 W.	11	2564 do.
29[1]	Do. lat. 25° to 30°, lon. 15° to 45° W.	Do.	N. 62 53 E.	26	1622 do.
30[1]	Do. Do. 45° to 80° W.	Do.	S. 79 4 E.	28	1906 do.
31[2]	Do. lat. 20° to 30°	Do.	S. 86 1 E.(?)	22	4 months.
32[1]	Do. lat. 20° to 25°, lon. 15° to 45° W.	Do.	N. 50 20 E.	58	1331 days.
33[1]	Do. Do. 45° to 80° W.	Do.	N. 79 23 E.	55	1573 do.
34[1]	Do. lat. 15° to 20°, lon. 15° to 45° W.	Do.	N. 49 1 E.	77½	1332 do.
35[1]	Do. Do. 45° to 80° W.	Do.	N. 68 43 E.	77	1193 do.
36[2]	Do. lat. 10° to 20°	Do.	N. 70 51 E.(?)	84	2 months.
37[1]	Do. lat. 10° to 15°, lon. 15° to 45° W.	Do.	N. 57 25 E.	66	1850 days.
38[1]	Do. Do. 45° to 75° W.	Do.	N. 59 55 E.	82	662 do.
39[1]	Do. lat. 5° to 10°, lon. 10° to 55° W.	Do.	N. 80 32 E.	34	3339 do.
40[1]	Do. Do. 30° to 55° W.	Do.	N. 66 8 E.	58	1250 do.
41[2]	Do. lat. 0° to 10°	Do.	N. 79 56 E.(?)	85	1 month.
42[1]	Do. lat. 0° to 5°, lon. 15° to 55° W.	Do.	S. 60 2 E.	55	3005 days.
43[1]	Do. Do. 30° to 55° W.	Do.	N. 87 55 E.	66	1057 do.

SERIES C.—SECTION III.

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
1	Hecla Cove and vicinity .	Spitzbergen	N. 81° 13′ E.(?)	13	$\frac{1}{12}$
2	Archangel . . .	Russia	S. 47 42 W.	9	18
3	Holmia?	Sweden	N. 84 48 W.	12	3
4	St. Petersburg (1818) .	Russia	S. 85 21 W.	19	1
5	Do. (1830) .	Do.	S. 18 16 W.	34	1
6	Do. (1831) .	Do.	S. 43 41 W.	16	1
7	Do. (1832) .	Do.	S. 20 0 W.	24	1
8	Do. (1835–6) .	Do.	S. 14 9 W.	19	1
9	Do. (1836–7) .	Do.	S. 2 21 W.	8	1
10	Do. (date unknown) .	Do.	N. 67 30 W.	10	20
11	No. 4 to No. 10, inclusive	Do.	S. 85 45 W.	9	26
12	Petropolis (St. Petersburg)?	Do.	S. 61 29 W.	11	1
13	Spydburg	Norway	S. 86 57 E.	10	2
14	Stockholm . . .	Sweden	N. 85 2 W.	10½	4
15	Dorpat	Russia	S. 33 45 W.	20	1
16	Skagen	Denmark	S. 46 36 W.	20	9
17	Elgin	Scotland	S. 44 47 W.	44	3
18	Banff Castle . . .	Do.	S. 2 47 W.	12	1
19	Castle Toward . . .	Do.	S. 25 10 W.	10	2

[1] Computed from Maury's Charts, 1st edition. The corrections made in the 2d edition have all been applied in Series B, and the more important ones also in this Series, and in Series D. The others are so small as hardly to affect the results appreciably, so that a re-computation seemed unnecessary.

[2] These results were computed, and the corresponding drawings made, before the reception of Lieutenant Maury's Wind and Current Charts, which afford far more satisfactory data, and it is thought best now to retain them, as they appear to be, for the most part, correct.

SERIES C. SECTION III.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
20	No. 17 to No. 19, inclusive	Scotland	S. 38° 0′ W.	21	6
21	Wyburg	Denmark	S. 75 45 W.	27	1
22	Kinfaun's Castle	Scotland	S. 59 9 W.	24	12
23	Cluny Manse	Do.	S. 81 3 W.	25	4
24	Nos. 22 and 23 combined	Do.	S. 70 6 W.	24	16
25	Calton Hill	Do.	S. 80 10 W.	24	10
26	Inchkeith	Do.	S. 71 38 W.	21	10
27	Cronberg	Sweden	N. 17 48 W.	9	1
28	Kasan	Russia	S. 10 18 E.	22½	1
29	Moscow	Do.	N. 57 33 W.	7	5
30	Copenhagen	Denmark	S. 59 0 W.	16	50
31	Bronxholm	Scotland	West	27	10
32	Carlisle	England	S. 56 31 W.	30	1
33	Londonderry	Ireland	N. 88 31 W.	30	1
34	Nos. 32 and 33 combined	Great Britain	S. 74 0 W.	29	2
35	Soendmor	Sweden (?)	S. 59 17 W.	17	12
36	Christianssae	Denmark	S. 65 44 W.	18	8
37	Apenrade	Do.	N. 64 21 W.	8	9
38	Nos. 36 and 37 combined	Do.	S. 80 30 W.	12	17
39	Goersdoff	Do. (?)	S. 78 18 W.	12½	2
40	Total of Sweden[1]		S. 50 0 W.[1]	20	
41	Total of Denmark[2]		S. 62 0 W.[1]	18	
42	Keswick	England	S. 44 21 W.	26	5
43	Konigsburg	East Prussia	S. 71 25 W.[2]		?
44	Wilna	Russia	S. 59 26 W.	24	1
45	Pillau	East Prussia	S. 63 35 W.	18	18
46	Braunsburg	Do.	S. 60 42 W.	41	1
47	Dantsic	Do.	S. 68 7 W.	11	15
48	Hoffmansgave	Do.	S. 32 14 W.	20	4
49	Kendal	England	S. 69 17 W.	46	6
50	New Malton	Do.	S. 69 5 W.	17	4
51	Isle of Man	Irish Sea	S. 68 47 W.	2	9
52	Cuxhaven	Hanover	N. 87 39 W.	18	15(?)
53	Stone Light-house	Germany (?)	S. 54 55 W.[2]		?
54	Nos. 52 and 53 combined	Do.	S. 73 20 W.(?)	18½(?)	(?)
55	Hamburg	Do.	S. 78 39 W.	25	30
56	Lancaster (1816)	England	S. 35 9 W.		1
57	Do. (1817–18)	Do.	S. 58 32 W.		1
58	Do. (1819)	Do.	S. 27 48 W.		1
59	Do. (1820)	Do.	S. 47 6 W.		1
60	Do. (1821)	Do.	S. 34 7 W.		1
61	Do. (date unknown)	Do.	S. 34 58 W.	31	6
62	No. 56 to No. 60, inclusive	Do.	S. 40 11 W.	30	5
63	No. 56 to No. 61, inclusive	Do.	S. 37 34 W.	30	11
64	Manchester (1801)	Do.	S. 71 22 W.	26	1
65	Do. (1819)	Do.	S. 30 46 W.		1
66	Do. (1820)	Do.	S. 38 52 W.		1
67	Do. (1821)	Do.	S. 55 56 W.		1
68	Do. (date unknown)	Do.	S. 42 3 W.		3
69	No. 64 to No. 68, inclusive	Do.	S. 49 54 W.	35	7
70	Liverpool	Do.	N. 89 2 W.	17½	7
71	Nos. 63, 69, and 70 combined	Do.	S. 77 15 W.	27½	21
72	Luneburg	Hanover	S. 82 14 W.	29	15
73	Franeker	Holland	S. 81 29 W.	27	13
74	Mansfield Woodhouse	England	S. 84 26 W.	37	10
75	Derby	Do.	S. 83 11 W.	20	2
76	Southwick	Do.	S. 77 29 W.	23	11

[1] Kaempts.

[2] Dove.

SERIES C. SECTION III.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
77	Alderly Rectory	England	S. 21° 31′ W.	31	1
78	No. 75 to No. 77, inclusive	Do.	S. 56 10 W.	21½	14
79	Berlin	East Prussia	S. 78 17 W.	29	25[1]
80	Posen	Poland	S. 9 21 E.(?)	25(?)	½
81	Amsterdam	Holland	S. 63 23 W.	16	54
82	Utrecht	Do.	S. 80 39 W.	13	1
83	Thetford	England	S. 40 40 W.	9	1
84	Delphen	Do. (?)	S. 60 24 W.	8	1
85	Cheltenham	Do.	S. 84 55 W.	19	1
86	Bushy Heath	Do.	S. 78 19 W.	17	7
87	High Wycombe	Do.	N. 85 14 W.	22	1
88	No. 83 to No. 87, inclusive	Do.	S. 63 40 W.	13	11
89	Mailand	Belgium	N. 61 4 E.	8	?
90	Cork	Ireland	N. 85 9 W.[2]	?	?
91	Sagan	East Prussia	S. 35 59 W.	22	5
92	Breda (1838 at 8 o'cl'k A. M.)	Belgium	S. 68 57 W.	16	1
93	Do. (1838 " 1½ do. P. M.)	Do.	S. 81 44 W.	18	1
94	Do. (1839 " 8 do. A.M.)	Do.	S. 53 25 W.	19	1
95	Do. (1839 " 2 do. P.M.)	Do.	S. 70 39 W.	11	1
96	Do. (1840 " 8 do. A.M.)	Do.	S. 73 40 W.	19	1
97	Do. (1840 " 2 do. P.M.)	Do.	S. 92 58 W.	28	1
98	Do. (1841 " 8 do. A.M.)	Do.	S. 62 43 W.	30.	1
99	Do. (1841 " 2 do. P.M.)	Do.	S. 78 35 W.	34	1
100	Do. (1842 " 8 do. A.M.)	Do.	S. 95 10 W.	14	1
101	Do. (1842 " 2 do. P.M.)	Do.	S. 96 9 W.	15	1
102	Do. (1843 " 8 do. A.M.)	Do.	S. 63 8 W.	23	1
103	Do. (1843 " 2 do. P.M.)	Do.	S. 75 46 W.	20	1
104	No. 92 to No. 103, inclusive	Do.	S. 76 4½ W.	20	6
105	Nos. 82, 89, and 104 comb'd	Holland and Belgium	S. 83 25 W.	8½	7[1]
106	Gottingen	Germany	S. 85 31 W.	9½	1
107	Do. (date unknown)	Do.	S. 36 49 W.	12	?
108	London (1806 to 1818)	England	N. 89 2 W.	16	13
109	Do. (date unknown)	Do.	N. 88 13 W.	18	12
110	Greenwich (1800 to 1808)	Do.	S. 8 31 W.	5	9
111	Do. (1841)	Do.	S. 59 25 W.	42	1
112	Do. (1842)	Do.	S. 61 44 W.	25	1
113	Nos. 111 and 112 combined	Do.	S. 60 14 W.	34½	2
114	Bristol	Do.	S. 17 19 W.	11	2
115	No. 108 to No. 114, inclusive	Do.	S. 63 0 W.	19	38(?)
116	Dusseldorff	West Prussia	N. 11 35 W.	3	1
117	Ghent	Belgium	S. 65 36 W.	22	3
118	Louvain	Do.	N. 67 43 W.	35½	1
119	Brussels (1772 to 1779)	Do.	S. 64 22 W.	39	8
120	Do. (1833 to 1844)	Do.	S. 33 20 W.	10	12
121	Nos. 119 and 120 combined	Do.	S. 58 12 W.	24	20
122	Alost	Do.	N. 81 11 W.	29½	2
123	Nos. 116, 117, 118, 121, and 122 combined	Do. and West Prussia	S. 86 30 W.	20½	27
124	Stunbington	England (?)	N. 67 35 W.	43	1
125	Gosport (1816 to 1820)	Do.	N. 82 29 W.	13	5
126	Do. (date unknown)	Do.	N. 88 19 W.	14	3
127	Nos. 125 and 126 combined	Do.	N. 85 30 W.	13½	8?
128	Sidmouth	Do.	S. 81 35 W.	17	2
129	Devonport (1841)	Do.	S. 79 19 W.	25	1
130	Do. (1842)	Do.	S. 71 33 W.	8	1
131	Nos. 129 and 130 combined	Do.	S. 77 24 W.	17	2
132	Nos. 124, 127, 128, and 131 combined	Do.	West	23	10[2]

[1] Kaemptz.

[2] Dove.

SERIES C. SECTION III.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
133	Erfurth (1781, 2, 3, and 4)	Germany	S. 55° 10′ W.	17	4
134	Do. (date unknown)	Do.	S. 86 48 W.	20	5
135	Nos. 133 and 134 combined	Do.	S. 72 30 W.	18	9
136	Hof	Do.	S. 54 41 W.	23½	1
137	Nos. 135 and 136 combined	Do.	S. 63 30 W.	20½	10
138	Helston	England	S. 82 15 W.	15	?
139	Penzance (1819 to 1822)	Do.	S. 69 35 W.	18	4
139½	Do. (date unknown)	Do.	S. 62 46 W.[1]		4
140	Nos. 138 and 139 combined	Do.	S. 76 0 W.	16	4[2]
141	Total of England	Do.	S. 66 0 W.[1]	20	
142	Schoenthal	Austria	S. 41 8 W.	29	1
143	Prague	Bohemia	S. 56 17 W.	37	2
144	Wurtzburg	Bavaria	N. 80 39 W.	26	5
145	Herbipolis (Wurtzburg?)	Do.	S. 66 45 W.	25	5
146	Uffenheim	Do.	S. 81 18 W.	28	1
147	No. 144 to No. 146, inclusive	Do.	S. 82 30 W.	26	11
148	Cambray	France	S. 66 24 W.	8	2
149	La Chapelle	Do.	S. 77 38 W.	16	1
150	Hafnia (Havre?)	Do.	N. 88 0 W.	14	8
151	Rouen	Do.	S. 82 45 W.	22	4
152	Valognes	Do.	N. 77 31 W.	26	1
153	No. 150 to No. 152, inclusive	Do.	N. 86 30 W.	20½	8
154	Manheim (1781, 84, and 85)	Germany	N. 58 28 W.	4	8
155	Do. (date unknown)	Do.	N. 64 46 W.	8½	10
156	Nos. 154 and 155 combined	Do.	N. 61 24 W.	4	13
157	Mergentheim	Do.	S. 89 30 W.	11	1
158	Anspach	Do.	N. 89 59 W.?	12	1½
159	Gunzenhausen	Do.	S. 53 53 W.	20	1
160	Carlsruhe	Do.	S. 73 19 W.	13	8
161	No. 156 to No. 160, inclusive	Do.	S. 77 0 W.	13	16
162	Ratisbon	Do.	N. 27 20 W.	15	4
163	Giengen	Do.	S. 81 8 W.	27½	1
164	Do. on the Brenz	Do.	S. 81 50 W.	28	1
165	Ingolstadt	Do.	S. 40 30 W.	24	1
166	St. Andex	Do.	N. 85 21 W.	39	5
167	Stuttgard	Do.	S. 35 27 E.	7	?
168	No. 162 to No. 167, inclusive	Do.	S. 82 0 W.	19	12[2]
169	Paris (1815 to 1826)	France	S. 66 20 W.	23	12
170	Do. (date unknown)	Do.	S. 65 4 W.	21	15
171	Do. do.	Do.	S. 79 15 W.	12	27
172	Do. (1827 to 1845)	Do.	S. 71 7 W.	19	19
173	Do. (1846)	Do.	S. 50 29 W.	18	1
174	Do. (1847)	Do.	S. 56 24 W.	13	1
175	Do. (1806 to 1847)	Do.	S. 66 39 W.	20	42
176	Versailles	Do.	S. 70 47 W.	17	2
177	Nos. 175 and 176 combined	Do.	S. 68 33 W.	18½	44
178	Montmorenci	Do.	N. 48 11 W.	14	15
179	Saint Lo	Do.	N. 57 39 W.	11	3
180	Nos. 178 and 179, combined	Do.	N. 52 20 W.	12½	18
181	Nancy	Do.	N. 79 38 W.	15	6
182	Metz	Do.	N. 83 19 W.	12½	1
183	Strassburg	Do.	S. 47 20 E.	13	20
184	No. 181 to No. 183, inclusive	Do.	S. 76 30 W.	6	27
185	Schoessl (?)	Russia	N. 46 44 W.	30	2[2]
186	Lougan	Do.	S. 63 6 E.	17	2(?)
187	Schussenreid	Germany (?)	S. 89 26 W.	44	1
188	Badenbach	Do. (?)	N. 32 6 E.	3½	1
189	Burglengenfield	Do. (?)	S. 58 53 W.	2	1

[1] Dove.

[2] Kaempts.

SERIES C. SECTION III.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
190	Munich	Germany	S. 59° 24′ W.	31	7
191	No. 187 to No. 190, inclusive	Do. (?)	S. 78 0 W.	18½	10
192	Vienna	Austria	N. 68 14 W.	20	1
193	Denainvilliers	France	S. 30 27 W.	14	31
194	Monachium (?)	Russia (?)	S. 66 45 W.	27	1
195	Tutlingen	Germany	N. 72 21 W.	35	1
196	Peissenberg	Do.	S. 80 19 W.	15	4
197	Tegern See	Do.	N. 33 29 W.	6	4
198	Regensburg	Switzerland	N. 30 53 W.	16	7
199	Issny	Germany	S. 2 30 W.	39	1
200	No. 195 to No. 199, inclusive	Lat. 47¾° to Lat. 48°	S. 79 0 W.	12½	17
201	Buda	Austria	N. 65 47 W.	31	4
202	Divio (?)	Do. (?)	S. 81 37 W.	15	2
203	Graetz	Do.	S. 75 58 E.[1]	?	1
204	19 stations	Southern Germany	S. 82 4 W.	20	19[2]
205	Total of Germany		S. 76 0 W.[2]	18	?
206	Do. of Russia and Hungary		N. 87 0 W.[2]	17	?
207	Do. of France and Netherl'ds		S. 88 0 W.[2]	13	?
208	Mount St. Gothard	Switzerland	N. 82 56 W.	26	4
209	Dijon	France	S. 55 20 W.	10	4
210	Syam	Do.	S. 87 27 W.	22	2
211	Nos. 209 and 210 combined	Do.	S. 78 0 W.	15½	
212	Bordeaux	Do.	N. 63 21 W.	18	2
213	Padua	Italy	N. 4 53 W.	24	4
214	Kerk	Russia (?)	N. 84 50 W.	20	2
215	Parma	Italy	N. 23 31 W.	19	2
216	St. Zeno	Do. (?)	S. 77 4 E.	34	1
217	Bologna	Do.	N. 87 13 W.	34	1
218	No. 215 to No. 217, inclusive	Do.	N. 36 0 W.	5	4
219	Rodez	France	S. 88 51 W.	24	3
220	Orange	Do.	S. 15 45 W.	33	14
221	St. Hyppolite	Do.	N. 5 15 E.	33	13
222	Montpelier	Do.	N. 9 8 E.	31	37(?)
223	No. 219 to No. 222, inclusive	Do.	N. 38 20 W.	10	64(?)
224	Toulouse (1747 to 1756)	Do.	N. 64 32 W.	26	10
225	Do. (1839 to 1846)	Do.	N. 84 1 W.	37	8
226	Do. (1847)	Do.	S. 83 19 W.	21	1
227	No. 224 to No. 226, inclusive	Do.	N. 81 11 W.	27	19
228	Massilia (Marseilles?)	Do. (?)	S. 3 39 E.	8	33
229	Marseilles	Do.	N. 67 20 W.	36	21
230	Nos. 181 and 182 combined	Do.	N. 79 48 W.	34	24
231	Cantabria	Spain (?)	S. 87 52 W.	31	1
232	Rome	Italy	N. 52 17 W.	14	3
233	Constantinople	Turkey	N. 47 19 E.	27	1 7/8
234	Oporto	Portugal	S. 84 35 W.?	34	1/3
235	Naples	Italy	N. 83 28 W.	11	1
236	Mafra	Portugal (??)	N. 3 0 E.	84	4
237	Gibraltar and vicinity	Spain	N. 38 18 E.	23	1 1/2
238	Tripoli	Barbary	N. 50 3 E.?	24½	5/8
239	Liberia and Sierra Leone	Western Africa	S. 44 44 W.?	65	½

[1] Dove.

[2] Kaemptz.

SERIES C. SECTION IV.—**Eastern Europe, Asia, and the Pacific Ocean.**

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
1	Yacoutsk	Siberia	N. 45° 20′ W.	48	1
2	Bogoslowsk	Do. (Ural Mountains)	N. 83 21 W.	20	1
3	Tobolsk	Do.	S. 67 00 W.[1]	?	10
4	Nijné Taguilsk	Do.	S. 75 26 W.	37	2
5	Catharinenburg	Do.	S. 63 54 W.	32	2
6	Zlatouste	Do.	N. 59 23 W.	26	1
7	Barnoule	Siberia	S. 35 3 W.	19	1
8	Iluluk	Aleutian Islands	S. 54 15 W.	25	1¼
9	Nertchinsk	Siberia	N. 72 56 W.	19	1
10	Teflis	Georgia	N. 17 30 W.?	21	¼
11	Trebizonde	Asia Minor	N. 37 40 E.	23	1
12	Erzeroom	Armenia	N. 5 33 W.	20	1
13	Pekin (1757 to 1762)	China	S. 22 4 E.	32	6
14	Do. (1844)	Do.	S. 74 22 W.	11½	1
15	Smyrna	Asia Minor	N. 85 58 E. ?	29	¼
16	Tabreez	Persia	S. 62 43 W.?	6?	½
17	Ooroomiah	Do.	S. 75 5 W.	40	1 7/12
18	Tehran	Do.	S. 77 34 W.?	42?	½
19	Mediterranean Sea	Eastern part	N. 24 39 E.	49	3
20	Beirut	Syria	S. 68 32 W.	53	¾
21	Bahmdun	Do. (Mt. Lebanon)	S. 84 51 W.?	32	1 1/12
22	Bagdad	On the Euphrates	N. 84 49 W.	65	1
23	Jerusalem	Palestine	N. 26 12 W.	62	1½
24	Bassora	Near m'th of Euphrates	N. 37 29 W.?	7	7/12
25	Sundry stations	On the Ganges	N. 82 10 W.?	10	¾
26	Calcutta	Hindoostan	S. 26 21 W.	13	8
27	Waioli	Sandwich Islands	North-east	60	1
28	Oahu	Do.	N. 51 57 E. ?	81	1/12
29	Duklum	Hindoostan	S. 89 7 W.	26	5

SERIES C. SECTION V.—**America, West of Longitude 87°.**

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
1	Melville Island	Arctic Ocean	N. 20° 42′ W.	44	1
2	Port Bowen	Near Barrow's Straits	N. 63 6 E.	27½	1
3	Victoria Harbor	Boothia Felix	N. 17 30 W.	30	½
4	Sheriff's Harbor	Do.	N. 61 13 W.	23	1
5	Felix Harbor	Do.	N. 26 2 W.	23	1
6	No. 3 to No. 5, inclusive	Do.	N. 34 55 W.	24	2½
7	Fort Franklin	Great Bear Lake	N. 70 30 E.	25	1¾
8	Fort Enterprise	100 miles north of Great Slave Lake	N. 39 54 E.	14	1
9	Fort Reliance	Great Slave Lake	N. 72 15 E.?	15½	¾
10	Sitka	Russian America	S. 55 37 E.	24	1
11	Norway House (1841)	On Nelson's River	N. 8 22 W.	5	1
12	Do. (1842)	Do.	N. 84 39 W.	2	1
13	Do. (1843)	Do.	N. 25 48 W.	18	1
14	Do. (1844)	Do.	N. 39 21 W.	32	1
15	Do. (1845)	Do.	N. 3 59 W.	8	1
16	Do. (1846)	Do.	N. 79 50 W.	4	1
17	Do. (1847)	Do.	S. 77 51 E.	7	1
18	No. 11 to No. 17, inclusive	Do.	N. 27 26 W.	8	7

[1] Dove.

SERIES C. SECTION V.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
19	Fort Vancouver	Oregon	S. 15° 37′ E.	41	1
20	Fort Snelling (1822)	Iowa	N. 49 14 W.	22	1
21	Do. (1824)	Do.	S. 68 22 W.	31	1
22	Do. (1825)	Do.	S. 59 0 W.	22	1
23	Do. (1826)	Do.	S. 54 15 W.	58	1
24	Do. (1827)	Do.	S. 57 28 W.	42	1
25	Do. (1828)	Do.	S. 68 48 W.	41	1
26	Do. (1829)	Do.	S. 62 34 W.	45	1
27	Do. (1830)	Do.	S. 66 54 W.	43	1
28	No. 20 to No. 27, inclusive	Do.	S. 66 9 W.	36	8
29	Green Bay (1822)	Wisconsin	S. 55 4 W.	24	1
30	Do. (1823)	Do.	S. 57 8 W.	15	1
31	Do. (1824)	Do.	S. 59 59 W.	11	1
32	Do. (1825)	Do.	S. 71 15 W.	15	1
33	Do. (1826)	Do.	S. 70 43 W.	29	1
34	Do. (1827)	Do.	S. 85 27 W.	29	1
35	Do. (1828)	Do.	S. 50 37 W.	2	1
36	Do. (1829)	Do.	S. 18 2 W.	16	1
37	Do. (1830)	Do.	S. 2 28 W.	18	1
38	No. 29 to No. 37, inclusive	Do.	S. 55 52 W.	15	9
39	Fort Winnebago (1831, 32, 35, and 36)	Do.	S. 57 6 W.	20½	4
40	Prairie du Chien (1822)	Do.	N. 82 26 W.	19	1
40½	Do. (1823)	Do.	N. 84 12 W.	13	1
41	Nos. 40 and 41, combined	Do.	N. 83 9 W.	16	2
42	Fort Atkinson (1841–42)	Iowa	N. 82 0 W.	37	2
43	Nos. 41 and 42, combined	Wisconsin and Iowa	N. 82 21 W.	22½	4
44	Fort Laramie	Missouri Territory	Westerly		
45	Sundry stations[1]	Oregon and California, north of lat. 38°	S. 49 36 W.	13	
46	Chicago (1833 to 1836)	Illinois	N. 56 31 W.	12	4
47	Council Bluffs (1822)	On the Missouri River	N. 61 28 W.		1
48	Do. (1823)	Do.	S. 6 55 W.		1
49	Do. (1824)	Do.	S. 25 49 E.		1
50	Do. (1825)	Do.	S. 8 11 W.		1
51	Do. (1826)	Do.	N. 80 54 W.		1
52	No. 47 to No. 51, inclusive	Do.	S. 17 35 W.	8	5
53	Nos. 46 and 52 combined	Do.	S. 85 21 W.	6	9
54	Rock Island (1827)	Near Stephenson, Ill.	S. 64 6 W.	13	1
55	Do. (1828)	Do.	S. 1 19 W.	20	1
56	Do. (1829)	Do.	S. 6 3 E.	7	1
57	Do. (1830)	Do.	S. 15 41 W.	14	1
58	No. 54 to No. 57, inclusive	Do.	S. 18 30 W.	12	4
59	Bloomington (1840)	Iowa	N. 42 17 W.	34	1
60	Do. (1843)	Do.	N. 78 19 W.	24	1
61	Do. (1844, 5, and 6)	Do.	S. 84 26 W.	25	3
62	No. 59 to No. 61, inclusive	Do.	N. 78 30 W.	24½	5
63	Nos. 58 and 62 combined	On the Mississippi	S. 59 24 W.	16	9
64	Sundry stations[1]	Platte River	S. 54 52 E.	2	
65	Fort Leavenworth (1831 to 1834)	Indian Territory	S. 16 55 W.	27	4
66	St. Louis (1827)	Missouri	S. 55 18 W.	29	1
67	Do. (1828)	Do.	S. 47 41 W.	13	1
68	Do. (1829)	Do.	S. 5 33 W.	6	1
69	Do. (1830)	Do.	S. 14 6 W.	22	1
70	No. 66 to No. 69, inclusive	Do.	S. 36 43 W.	12	4
71	Fort Wayne	Arkansas	S. 2 29 E.	16	2
72	Fort Gibson (1828)	Indian Territory	S. 54 18 E.		1

[1] Fremont's Exploring Tour.

SERIES C. SECTION V.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
73	Fort Gibson (1829)	Indian Territory	S. 65° 51′ E.		1
74	Do. (1830)	Do.	S. 62 26 E.		1
75	No. 72 to No. 74, inclusive	Do.	S. 59 58 E.	47	3
76	Fort Smith	Do.	S. 9 31 W.	15½	3
77	Little Rock (1840)	Arkansas	S. 58 58 W.	4	1
78	Fort Towson (1833 to 1840)	On Red River, Ind. Ter.	S. 17 48 W.	29	8
79	Sundry stations	Calif'nia, S. of lat. 38°	S. 54 26 W.	30	
80	Vicksburg (1841)	Mississippi	N. 56 26 E.	11	1
81	Do. (1840 and 42)	Do.	N. 59 8 E.	10½	2
82	Nos. 80 and 81 combined	Do.	N. 58 28 E.	10½	4
83	Natchez (1825)	Do.	S. 54 4 E.	16	1
84	Do. (1826)	Do.	S. 21 51 E.	21	1
85	Do. (1827)	Do.	S. 39 36 E.	22	1
86	Do. (1828)	Do.	S. 49 20 E.	20	1
87	Do. (1829)	Do.	S. 43 12 E.	23	1
88	Do. (1830)	Do.	S. 0 58 W.	21	1
89	Do. (1831)	Do.	S. 28 58 E.	14	1
90	Do. (1832)	Do.	S. 61 48 E.	13	1
91	Do. (1833)	Do.	S. 54 47 E.	11	1
92	Do. (1834)	Do.	S. 33 42 E.	9	1
93	Do. (1835)	Do.	S. 28 54 E.	9	1
94	Do. (1836)	Do.	S. 17 0 E.	12	1
95	Do. (1837)*	Do.	S. 28 30 E.	3	1
96	Do. (1838)	Do.	S. 20 20 E.	1	1
97	Do. (1839)	Do.	S. 0 56 E.	11	1
98	Do. (1840)	Do.	S. 22 1 E.	14	1
99	Do. (1841)	Do.	S. 24 8 E.	20	1
100	No. 83 to No. 99, inclusive	Do.	S. 31 2 E.	13	17
101	Nos. 82 and 100 combined	Do.	S. 70 15 E.	8½	21
101½	Fort Jesup (1823)	Louisiana	S. 0 33 E.	27	1
102	Do. (1824)	Do.	S. 68 17 E.	25	1
103	Do. (1825)	Do.	S. 86 40 E.	21	1
104	Do. (1826)	Do.	N. 75 32 E.	17	1
105	Do. (1827)	Do.	S. 84 45 E.	26	1
106	Do. (1828)	Do.	S. 87 3 E.	15	1
107	Do. (1829)	Do.	N. 63 20 W.	10	1
108	Do. (1830)	Do.	N. 75 19 W.	16	1
109	No. 101 to No. 108, inclusive	Do.	S. 56 54 E.	10	8
110	Mobile	Alabama	S. 18 15 E.	17	1
110½	Do.	Do.	S. 23 32 E.	21	1
111	Nos. 110 and 110½ combined	Do.	S. 21 10 E.	19	2
112	Spring Hill College	Near Mobile, Ala.	N. 51 34 E.	3	1
113	No. 110 to No. 112, inclusive	Alabama	S. 24 11 E.	11	3
114	Baton Rouge (1822)	Louisiana	S. 17 36 W.	6	1
115	Pensacola (1822)	Florida	S. 9 31 E.		1
116	Do. (1823)	Do.	S. 10 4 E.		1
117	Do. (1824)	Do.	S. 55 18 W.		1
118	Do. (1826)	Do.	S. 41 43 W.		1
119	Do. (1827)	Do.	S. 25 38 W.		1
120	Do. (1828)	Do.	S. 37 9 W.		1
121	Do. (1829)	Do.	S 0 47 W.		1
122	No. 115 to No. 121, inclusive	Do.	S. 23 48 W.	19	7
123	Petite Coquille[1] (1827)	Louisiana	S. 67 41 E.	24	1
124	Do. (1828)	Do.	S. 49 57 E.	8	1
125	Do. (1829)	Do.	N. 3 15 E.	20	1
126	Do. (1830)	Do.	N. 40 48 E.	20	1
127	No. 123 to No. 126, inclusive	Do.	N. 64 37 E.	12	4
128	Fort Pike	Do.	N. 88 0 E.	14	4

[1] Same as Fort Pike.

SERIES C. SECTION V.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
129	Fort Wood	Louisiana	S. 86° 3′ E.	5	8
130	New Orleans (1826)	Do.	N. 53 30 E.	19	1
131	Do. (1836)	Do.	N. 10 35 E.	7	1
132	Do. (1840)	Do.	S. 34 47 E.	14	1
133	Do. (1841)	Do.	S. 45 15 E.	4	1
133½	Do. (1842)	Do.	S. 49 16 W.	13	1
134	No. 130 to No. 134, inclusive	Do.	S. 73 52 E.	4½	5
135	Nos. 114, 127, 128, 129, and 135 combined	Do.	S. 87 0 E.	6½	17
136	Fort Jackson	Do.	S. 62 50 E.	29	1
137	Galveston	Texas	S. 58 54 E?	38	1½
138	Yucatan	Mexico	North-east		
139	Mazatlan	Do. (west coast)	N. 37 8 W.??	28	½

SUPPLEMENT TO SERIES C.

The following, mostly for fractions of a year, were added after the foregoing tables were completed.

SECTION I.

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
437	Addison	Maine	S. 74° 1′ W.?	19?	[1]
438	Machias	Do.	N. 87 48 W.??	13½??	[1]
439	Owl's Head	Do.	N. 79 5 W.?	84?	[1]
440	Steuben	Do.	S. 57 42 W.?	17?	[1]
441	South Thomaston	Do.	S. 68 54 W.?	13?	[1]
442	South-west Harbor	Do.	N. 76 46 W.??	7??	[1]
443	Vinal Haven	Do.	S. 62 2 W.?	17?	[1]
444	Charlestown	New Hampshire	N. 36 12 W.?	26?	[1]
445	Keene	Do.	N. 69 47 W.?	43?	[1]
446	Peterboro'	Do.	N. 63 12 W.??	47??	[1]
447	Bennington	Vermont	N. 46 25 W.?	49?	[1]
448	Grafton	Do.	N. 78 24 W.?	31?	[1]
449	Cabotville	Massachusetts	N. 72 30 W.??	23??	[1]
450	Medfield	Do.	N. 82 27 W.??	41??	[1]
451	Northampton	Do.	N. 70 58 W.?	37?	[1]
452	Framingham	Do.	N. 80 6 W.?	42?	[1]
453	Dartmouth	Do.	N. 73 3 W.?	10?	[1]
454	Newburyport	Do.	N. 69 5 W.?	38?	[1]
455	Little Compton	Rhode Island	S. 82 43 W.??	9??	[1]
456	Point Judith	Do.	S. 66 28 W.??	41??	[1]
457	Leonardsville	New York State	N. 84 40 W.??	26??	[1]
458	Lockport	Do.	S. 68 22 W.?	37?	[1]
459	Bethlehem	Pennsylvania	S. 70 43 W.??	26??	[1]
460	Cochranville	Do.	S. 86 12 W.??	22??	[1]
461	Coudersport	Do.	S. 83 7 W.?	26?	[1]
462	Beaver	Do.	N. 63 27 W.?	44?	[1]
463	Bellefonte	Do.	N. 69 46 W.?	33?	[1]
464	Cannonsburg	Do.	N. 71 55 W.?	41?	[1]
465	Erie	Do.	S. 81 42 W.??	33??	[1]
466	Germantown	Do.	N. 49 37 W.??	47??	[1]
467	Greenhill	Do.	S. 79 53 W.??	54??	[1]
468	Indiana	Do.	S. 73 44 W.?	73?	[1]

[1] A fraction of a year.

SUPPLEMENT TO SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
469	Haverford	Pennsylvania	N. 53° 47′ W.?	37?	1
470	Lewistown	Do.	N. 77 49 W.?	37?	1
471	Norristown	Do.	N. 86 5 W.?	53?	1
472	Pottsville	Do.	N. 67 33 W.?	48?	1
473	Port Carbon	Do.	N. 55 14 W.?	29?	1
474	Reading	Do.	N. 58 5 W.?	51?	1
475	Rose Cottage	Do.	S. 79 6 W.??	28??	1
476	Warren	Do.	S. 55 20 W.?	43?	1
477	Wilkesbarre	Do.	N. 57 48 W.??	24??	1
478	West Chester	Do.	N. 71 57 W.?	32?	1
479	York	Do.	N. 55 21 W.??	45??	1
480	Cape May	New Jersey	N. 72 15 W.??	33??	1
481	Newark	Delaware	N. 75 52 W.?	89?	1
482	Isthmus	Maryland	N. 51 4 W.?	17?	1
483	Gosport	Virginia	S. 41 14 W.?	7?	1
484	West Brunswick	Do.	S. 85 15 W.?	34?	1
485	Whitemarsh Island	Georgia	S. 60 7 W.?	22?	1
486	Apalachicola	Florida	S. 16 52 W.??	11??	1
487	Arendale	Alabama	S. 73 51 W.??	21??	1
488	Greenville	Tennessee	S. 66 57 W.?	58?	1
489	Knoxville	Do.	S. 76 35 W.?	35?	1
490	Danville	Kentucky	S. 66 49 W.?	53?	1
491	Louisville	Do.	S. 65 46 W.??	33??	1
492	Paris	Do.	S. 70 40 W.??	58??	1
493	Springdale	Do.	S. 39 6 W.??	23??	1
494	Bardstown	Do.	S. 74 36 W.?	46?	1
495	Ashtabula	Ohio	N. 89 47 W.?	35?	1
496	Cambridge	Do.	S. 75 56 W.??	43??	1
497	Chillicothe	Do.	S. 77 39 W.?	37?	1
498	Cincinnati	Do.	N. 82 47 W.?	49?	1
499	Columbus	Do.	S. 89 3 W.?	39?	1
500	Dayton	Do.	N. 78 11 W.?	62?	1
501	Granville	Do.	S. 48 34 W.?	50?	1
502	Lancaster	Do.	S. 60 39 W.?	44?	1
503	Lebanon	Do.	S. 62 10 W.?	40?	1
504	New Athens	Do.	S. 86 14 W.?	34?	1
505	Ravenna	Do.	S. 60 13 W.??	44??	1
506	Sandusky	Do.	S. 58 6 W.?	33?	1
507	Zanesville	Do.	S. 85 15 W.?	39?	1
508	Brookville	Indiana	N. 81 27 W.?	39?	1
509	Greencastle	Do.	S. 68 28 W.?	37?	1
510	Greensburg	Do.	S. 60 31 W.?	36?	1
511	Winnamac	Do.	S. 82 23 W.?	61?	1
512	Presq' Isle	Michigan	N. 66 29 W.?	42?	1
513	Ann Arbor	Do.	N. 87 8 W.??	33??	1
514	Somerville	New York	S. 61 37 W.	30	1
515	Amenia	Do.	N. 77 51 W.	15½	1
516	Newbury (1840 to 1849)	Vermont	N. 83 50 W.	31	10
517	Do. (1823 to 1849)	Do.	N. 62 9 W.	16	27
518	Biddeford	Maine	S. 78 32 W.	19	1
519	Houlton	Do.	S. 65 44 E.	9	14
520	Eastport	Do.	S. 58 46 W.	25	12
521	Portland	Do.	S. 66 14 W.	27	10
522	Portsmouth	New Hampshire	S. 42 4 W.	36½	14
523	Boston	Massachusetts	N. 74 36 W.	20	5
524	Fort Wolcott	Rhode Island	S. 53 11 W.	36½	14
525	New London	Connecticut	N. 85 26 W.	17	7
526	Litchfield	Do.	N. 81 32 W.	23½	3

[1] A fraction of a year.

SUPPLEMENT TO SERIES C. SECTION I.—*Continued.*

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
527	Sackett's Harbor	New York	S. 85° 12′ W.	43	2
528	Youngstown	Do.	N. 82 42 W.	25	6
529	Watervliet	Do.	S. 74 1 W.	28	11
530	West Point	Do.	N. 84 23 W.	18	16
531	Fort Columbus	Do.	S. 79 46 W.	11½	19
532	Fort Wood	Do.	S. 60 27 W.	26	2
533	Rouse's Point	Do.	S. 49 50 W.	16	1
534	Plattsburgh Barracks	Do.	S. 72 30 W.	19	2
535	Buffalo do.	Do.	S. 47 1 W.	82	2
536	Watertown	Do.	S. 67 7 W.	31	4
537	Alleghany Arsenal	Pennsylvania	N. 80 48 W.	21	7
538	Carlisle Barracks	Do.	N. 83 1 W.	19	2
539	Fort McHenry	Maryland	N. 68 29 W.	16	12
540	Annapolis	Do.	S. 50 10 W.	6½	5
541	Washington	District of Columbia	N. 77 32 W.	8½	12
542	Fort Washington	Maryland	S. 28 2 W.	44½	2
543	Old Point Comfort	Virginia	S. 76 14 E.	2	17
544	Fort Johnson	North Carolina	S. 69 7 W.	9	10
545	Fort Moultrie	South Carolina	S. 61 29 E.	18	10
546	Augusta Arsenal	Georgia	S. 52 24 W.	18	14
547	Oglethorpe Barracks	Do.	S. 11 42 W.	5	2
548	Nos. 46 and 534 combined	New York	S. 74 38 W.	24	5
549	Nos. 119 and 535 combined	Do.	S. 55 1 W.	43	4
550	Nos. 263 and 537, combined	Pennsylvania	N. 84 20 W.	22	8
551	St. Augustine	Florida	S. 89 9 E.	28	13
552	Tampa Bay	Do.	S. 45 33 E.	7	12
553	Key West Barracks	Do.	N. 70 27 E.	54½	8
554	Fort King	Do.	S. 14 42 W.	16	5
555	Cedar Keys	Do.	S. 6 43 E.	6	1
556	Mackinac	Michigan	N. 65 45 W.	20	8
557	Fort Brady	Wisconsin	N. 49 6 W.	4	18
558	Fort Gratiot	Michigan	S. 79 39 W.	21	9
559	Detroit Barracks	Do.	S. 25 19 W.	17	3
560	Nos. 167 and 559 combined	Do.	S. 63 54 W.	18	6
561	Dearbornville	Do.	S. 61 53 W.	47	1
562	Nos. 428 and 553 combined	Florida	N. 73 36 E.	46	7
563	Nos. 32 and 533 combined	Lat. 44° 57′ to 45°	N. 77 50 W.	17½	2
564	Easton	Pennsylvania	N. 85 19 W.	24½	3
565	Seneca Falls	New York	S. 78 33 W.	40	1
566	Chillicothe	Ohio	N. 58 18 W.	40	1
567	Burlington	Vermont	S. 32 57 W.	11	1
568	Nos. 53 and 567 combined	Lat. 44½ to 44½	S. 69 34 W.	31	8
369	Nightingale Hall[1]	South Carolina	S. 14 59 E.	1	1

[1] Not represented on the plates.

SUPPLEMENT TO SERIES C.—SECTION V.

No.	Name of Station.	Where situated.	Mean direction of Wind.	Rate of Progress.	No. of years embraced.
140	La Grange College	Alabama	S. 15° 4′ E.?	18?	1
141	Mount Vernon	Do.	N. 19 49 W.?	30?	1
142	Attakepas	Louisiana	S. 12 34 W.??	47??	1
143	Frank's Island	Do.	N. 87 43 E.??	44??	1
144	Washington	Arkansas	S. 4 1 W.??	35??	1
145	Mount Atlas	Tennessee	S. 74 52 W.?	58?	1
146	New Concord	Kentucky	S. 43 42 W.??	46??	1
147	Rensalaer	Indiana	S. 49 18 W.??	29??	1
148	Shawneetown	Illinois	N. 54 25 W.??	38??	1
149	Juliet	Do.	S. 52 25 W.?	37?	1
150	Macomb	Do.	N. 82 47 W.??	30??	1
151	Upper Alton	Do.	N. 67 20 W.??	44??	1
151½	Athens	Do.	S. 61 49 W.	31	1
152	Jacksonville	Do.	S. 50 31 W.?	34?	1
153	Lac qui parle	Iowa	N. 2 59 W.??	22??	1
154	Turkey River	Do.	S. 41 14 W.??	54??	1
155	East Troy	Wisconsin	N. 54 30 W.??	68??	1
156	Prairie du Chien	Do.	S. 77 53 W.	26	14
157	Fort Winnebago	Do.	N. 56 6 W.	14½	10
158	Fort Snelling	Minnesota	S. 42 24 W.	24	20
159	Green Bay	Michigan	S. 44 0 W.	15	18
160	Rock Island	Illinois	S. 48 8 W.	12	8
161	St. Louis	Missouri	S. 55 0 W.	17	10
162	Little Rock	Arkansas	S. 48 56 W.	6	2
163	Fort Towson	Do.	S. 17 26 W.	24	10
164	Fort Leavenworth	Indian Territory	S. 18 56 W.	23½	11
165	Fort Gibson	Do.	S. 47 38 E.	8	15
166	Fort Jesup	Louisiana	N. 22 41 E.	5	20
167	Baton Rouge	Do.	S. 31 34 E.	12	7
168	New Orleans Barracks	Do.	N. 9 23 W.	10	5
169	Eutaw (lower current)	Alabama	N. 2 52 E.	8	1
170	Do. (upper current)	Do.	S. 84 2 W.	85	1
171	Nos. 169 and 170 combined	Do.	S. 88 7 W.	17	1

[1] Fractions of a year.

The following series of maps exhibits to the eye the results contained in the preceding tabular series, and shows by means of the *straight* arrows the mean direction and rate of progress of the wind in the different regions of the northern hemisphere, as explained on page 9. The direction of the arrow shows the direction of the resultant, and its length the ratio of the progressive to the total motion of the wind, the unit being one inch. That is, if the wind were to blow constantly in one direction, so that the whole motion would be progressive, it would be represented by an arrow an inch in length.

An interrogation point affixed to an arrow denotes that it is doubtful, either in regard to *direction* or *length*, and a double one that it is exceedingly so. One affixed to a dot or number shows that the *locality* is doubtful. The chief source of uncertainty in the resultants represented by the arrows is the fewness of the observations from which they were deduced. The numbers on the maps correspond with those in the series, and will serve as references.

Plate VII. affords a general synopsis of the whole hemisphere. Every resultant that is at all reliable is represented upon it, either singly, or in combination with others in those sections of country where the stations are too numerous to allow each to be distinctly represented by separate arrows. And in combining different stations, care has been taken to select those having nearly the same latitude, since the investigations show that difference of latitude affects the resultants more than difference of longitude. As thus condensed, a single arrow, in some cases, represents observations for more than a century.

Plate VIII. contains the United States on a larger scale, sufficient to allow all the separate resultants to be exhibited, except in the Eastern and Middle States, where the stations are so numerous that the scale of the map is yet too small to allow them to be represented except in combination as before. This section is drawn upon a still larger scale on Plate IX. Plate X. contains Western Europe on an enlarged scale.

DEDUCTIONS AND REMARKS.

1. In the arctic regions of North America, lying within the polar circle, the mean direction of the wind is about N. N. W. and well defined. This is seen on Plate VII. The arrows, at six out of the seven stations (all except Port Bowen), are nearly parallel, and of a length indicating a progressive motion of about 40 per cent. of the entire distance travelled by the wind. This is a greater ratio than exists in any other part of the world, except within the limits of the trade winds. But it must be borne in mind that it is the *relative*, and not the *absolute* progressive motion, that is here considered. The latter may be, and probably is small; so small as to induce Parry and Barrow to believe that a *perfect calm* exists at the north pole.

2. Between the parallels of latitude 60° and 66° there appears to be a belt of easterly or north-easterly winds. The observations at Great Bear Lake, Great Slave Lake, and Fort Enterprise (Plate VII., Nos. 7, 8, and 9), in the interior of British America indicate this; as also those at the two stations in Greenland, and at Reikiavik in Iceland. At Sitka, in Russian America (No. 10), which is a little farther south, the mean direction is also easterly, and it is not improbable that the southern limit of this belt, instead of coinciding with a parallel of latitude, follows some such course as is represented by the dotted line on Plate VII. and others, viz. a less circle having its pole at about lat. 84° and lon. 105° west from Greenwich. Such a circle, drawn at a distance of 28° 20′ from its pole, passes north of all the stations in the eastern hemisphere except Spitzenbergen (see Plate I.), and it is remarkable that there too the mean direction of the wind is easterly, if we may rely on the observations taken by Parry during the few months that he spent there. The observations which have been taken at Alten, in Lapland, and at Hammerfest, in Norway, should show the same result, if the above limit is correctly assigned.

3. Passing south of this circle, we find a zone or belt of westerly winds, about 23½° in breadth, entirely encircling the globe, and having the pole of its southern as well as its northern limit near the point before mentioned, viz. in latitude 84° north, and longitude 105° west. This zone, which is exhibited in full on Plates I. and VII., and in detached portions on Plates VIII., IX., and X., embraces the southern portion of British America, all of the United States except the extreme southern part, nearly the whole of Europe, and most of the northern half of Asia, and at all the stations from which observations have been obtained, throughout this entire region, and the corresponding parts of the Atlantic and Pacific Oceans, the mean direction of the wind is westerly, with very few exceptions. This will appear from the following more particular statements.

4. Out of two hundred and fifty-one stations in North America, east of the Mississippi, and situated within this belt, all but six have the mean direction of the wind westerly. (See Plates VIII. and IX.) These six are Houlton in Maine, Salisbury in Connecticut, Redhook and Poughkeepsie in New York, Meadville in Pennsylvania, and La Grange College in Alabama, and it is noticeable that three of these places, viz. Salisbury, Redhook, and Poughkeepsie, are within thirty-five miles of each other, and in a region which Plate III. shows to be characterized by strong local disturbances, while La Grange College is located near the limit which divides the westerly from the equatorial winds, and, moreover, the mean direction of its winds was computed from only eight months' observations—a period too short to be relied on. So that the only undoubted and unexplained exceptions are Houlton and Meadville. Out of the 245 stations, at which the mean direction is westerly, at all but 14 it is from some point between N. W. and S. W., and at 210 of them it is within 35° of a due west point, as may be seen by the following statement:—

Within 5°	of due west,	39	stations;	viz.	15	on the north side	and 24	on the south side.
" 10	"	70	"		33	"	37	"
" 15	"	100	"		45	"	55	"
" 20	"	132	"		60	"	72	"
" 25	"	159	"		70	"	89	"
" 30	"	186	"		80	"	106	"
" 35	"	210	"		90	"	120	"
" 40	"	222	"		96	"	126	"
" 45	"	231	"		100	"	131	"

The 14 exceptions among the westerly directions are as follows:—

Within 50°	of due west,	5	stations;	viz.	0	on the north side	and 5	on the south side.
" 55	"	8	"		1	"	7	"
" 60	"	10	"		2	"	8	"
" 65	"	12	"		4	"	8	"
" 75	"	13	"		4	"	9	"
" 80	"	14	"		5	"	9	"

It is worthy of notice that, in all these exceptions,[1] the rate of progress is small, and, as a general fact, the farther the mean direction at any place deviates from the ordinary direction in the region where that place is situated, the less is the progressive motion; a fact that will be apparent by inspecting Plates VII. to X., and noticing the shortness of the irregular arrows. Thus, the average rate for all the 251 stations mentioned above is 30 per cent., while for the 14 exceptions among

[1] The winds at Toronto (one of these fourteen exceptions, and the greatest of them all) are very remarkable, and deserve special notice, as they were observed hourly, or bi-hourly, both by day and by night, for two years, with the utmost care, and with the most perfect instruments. And yet, the results are widely at variance with those which we find elsewhere in the same region, the mean direction being, as stated in the Table, N. 10° 23′ W., and the rate of progress only 6 per cent.; both indicating the existence of some powerful disturbing influence there. It is true that this result has reference only to time, but if we make the computation from the distance actually travelled, though it in some measure relieves the difficulty, it by no means removes it, as will be shown hereafter.

the westerly directions it averages but 18 per cent., and for the six where the direction is easterly it averages only 10 per cent., viz.:—

Houlton,	9 per cent.	Poughkeepsie,	11½ per cent.
Salisbury,	6 "	Meadville,	5 "
Redhook,	10½ "	La Grange College,	18 "

5. On the Atlantic Ocean, the mean direction of the wind, in the zone we are considering, is more southerly, but more uniform than in the United States. Of the 16 resultants (see Plate VII.), all are westerly, and the entire range between them is but 51° 14′, viz. from N. 84° 20′ W. to S. 44° 26′ W. The rate of progress is less than in the United States, being but 20 per cent. of the whole distance travelled by the wind.

6. Out of 142 stations lying in this zone in Europe, 117 have the mean direction from some point between N. W. and S. 30° W., and most of them are comprised within much narrower limits. (See Plates VII. and X.) Of the 25 exceptions, 13 still have the prevailing direction westerly, leaving but 12 out of 142 in which it is easterly, viz., Spydburg[1] in Norway, Posen in Poland, Mailand in Belgium, Stuttgard and Badenbach in Germany, Strasburg, St. Hyppolyte and Montpelier in France, Graetz in Austria, St. Zeno in Italy, Kasan on the Volga, in eastern Russia, and Lougan in southern Russia, north of the Black Sea. Several of these stations are not very far from the southern limit of westerly winds, and at some others the irregularity may, perhaps, be accounted for from geographical peculiarities. Thus, Posen is situated on the Wartha, where it runs almost due north, and the mean direction of its winds coincides very nearly with that of the stream. The same is true of Banff Castle (one of the twenty-five exceptions), situated on the Deveron in the north of Scotland. The effect of valleys in modifying the direction of the wind is strikingly exhibited at most of the stations on the Hudson and Mohawk Rivers in the State of New York. (Compare Plates III. and IX.)

7. There are but eight stations in Asia situated in the zone under consideration, and at all these the mean direction is westerly. (See Plate VII.)

8. In that part of the zone which crosses the Pacific Ocean, we have but one station, viz. Iluluk, one of the Aleutian Islands, and there, too, we find the mean direction westerly. (See Plate VII.) The testimony of navigators in the North Pacific[2] rather corroborates this result, and I have no doubt that the investigations of Lieutenant Maury will do the same.[3]

9. On the American continent, west of the Mississippi, there appears to be more diversity in the mean direction of the wind, yet here it is westerly at 16 stations out of 20, from which observations have been obtained. The most peculiar feature in this region is the line of southerly winds on the western borders of Arkansas and Missouri. It seems to form a kind of connecting link between the winds of this zone and the south-easterly ones that we find south of it, and, in some degree,

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[1] The locality of this station is very doubtful.

[2] Mitchell's Article in Journal of Science and Arts, vol. xix. p. 254.

[3] I am not without hope of obtaining Lieutenant Maury's results before these sheets go to press, and if so, they will be inserted on Plate VII.

to favor an idea that has been advanced, that there is a vast eddy extending from the western shore of the Gulf of Mexico to the eastern shore of the Atlantic—that the easterly trade-winds of the Atlantic Ocean, when they strike the American Continent, veer northwardly and then toward the north-east, and thus recross the Atlantic and follow down the coast of Portugal and Africa till they complete the circuit. Though, on the whole, the evidence is against this theory.

We wait with interest for the results of the investigations, now going on under the auspices of the Smithsonian Institution, in Oregon, California, and the territories west of the United States. When they shall be received, no doubt this article will require modification.

10. Near the limits which divide this zone from the polar winds on the north, and from the equatorial on the south (particularly the latter), the progressive motion is very small. The reader will notice the shortness of the arrows in South Carolina, Georgia, Alabama, Mississippi, and other places along the line, as compared with those farther north, on Plates VII. and VIII. The same thing is very noticeable on the Atlantic Ocean, and, in some degree, in Europe. The only material exception in the latter is Mafra, in Portugal, and it is exceedingly doubtful whether that place is properly located. And not only is the progressive motion small, but the direction is very uncertain. The different results obtained at Augusta and Savannah, in Georgia, in different years, could hardly be more diversified, and those of the upper and lower currents at Eutaw, Alabama (Nos. 169 and 170), are almost directly opposite each other. In Pekin, too, in China, which is near the line, the results obtained by the French missionaries in the last century, differ entirely from those of the recent Russian ones, as shown by the two arrows at that place on Plate VII.

11. The progressive motion is less in Europe than in America, as may readily be seen by comparing the length of the arrows.

12. There seems to be some approach to parallelism between the mean direction of the wind in any part of the belt, and the direction in which that part of the belt runs, so that the mean directions incline to make a constant angle with meridians drawn through the pole of the belt.[1] Thus, the winds are more southerly in the eastern part of the Atlantic than in the western part—more so in western Europe than in America or Asia. In eastern Siberia it is even north-westerly, if we may rely upon the results at Yacoutsk and Nertchinsk, and the prevailing testimony of navigators seems to be that the winds of the extreme North Pacific are also north-westerly, though the observations at Iluluk, south of Behring's Strait, do not indicate it.

The following table shows the latitudes at which the limits of this zone cross the different meridians, at intervals generally of 10°; the direction in which they run reckoned eastwardly, and the region of country, &c., where they cross.

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[1] This remark is thrown out rather as a conjecture, which future observations may or may not verify.

Longitude.	SOUTHERN LIMIT OF POLAR WINDS.			NORTHERN LIMIT OF EQUATORIAL WINDS.		
	Latitude.	Direction.	Place of crossing.	Latitude.	Direction.	Place of crossing.
80° W.	56° 20′	S. 84° 40′ W.	Hudson's Bay	32° 47′	S. 86° 47′ W.	South Carolina
70 W.	56 57	S. 82 45 W.	Labrador	33 20	S. 85 38 W.	Atlantic Ocean
60 W.	57 42	S. 81 2 W.	Off the coast of Labrador	34 1	S. 84 36 W.	Do.
				34 53	S. 83 45 W.	Do.
50 W.	58 37	S. 79 36 W.	S. W. of Cape Farewell	35 49	S. 83 5 W.	Do.
				36 51	S. 82 37 W.	Do. (near Azores)
40 W.	59 36	S. 78 29 W.	S. E. of do.	37 54	S. 82 23 W.	Do.
30 W.	60 40	S. 77 43 W.	Atlantic Ocean	38 55	S. 82 23 W.	Off coast of Portugal
20 W.	61 45	S. 77 19 W.	Do. (off S. coast of Iceland)	39 57	S. 82 37 W.	Spain
				40 55	S. 83 5 W.	Mediterranean Sea
10 W.	62 46	S. 77 19 W.	Do.	41 47	S. 83 45 W.	Turkey
0	63 46	S. 77 43 W.	Do.	42 33	S. 84 36 W.	Black Sea
10 E.	64 42	S. 78 29 W.	Coast of Norway	43 10	S. 85 38 W.	Do. (eastern part)
20 E.	65 31	S. 79 36 W.	Sweden	43 39	S. 86 47 W.	Caspian Sea
30 E.	66 14	S. 81 2 W.	Lapland	43 59	S. 88 2 W.	Independent Tartary
40 E.	66 47	S. 82 45 W.	Do.	44 9	S. 89 20 W.	Do.
50 E.	67 12	S. 84 40 W.	Arctic Ocean	44 10	West	Do.
60 E.	67 31	S. 86 44 W.	Do.	44 9	N. 89 20 W.	Chinese Tartary
70 E.	67 39	S. 88 54 W.	Siberia	43 59	N. 88 2 W.	Do.
75 E.	67 40	West	Do.	43 39	N. 86 47 W.	Do.
80 E.	67 39	N. 88 54 W.	Do.	43 10	N. 85 38 W.	Do.
90 E.	67 31	N. 86 44 W.	Do.	42 33	N. 84 36 W.	China
100 E.	67 12	N. 84 40 W.	Do.	41 47	N. 83 45 W.	Sea of Japan
110 E.	66 47	N. 82 45 W.	Do.	40 55	N. 83 5 W.	Do.
120 E.	66 14	N. 81 2 W.	Do.	39 57	N. 82 37 W.	Pacific Ocean
130 E.	65 31	N. 79 36 W.	Do.	38 55	N. 82 23 W.	Do.
140 E.	64 42	N. 78 29 W.	Do.	37 54	N. 82 23 W.	Do.
150 E.	63 46	N. 77 43 W.	Do.	36 51	N. 82 37 W.	Do.
160 E.	62 46	N. 77 19 W.	Do.	35 49	N. 83 5 W.	Do.
170 E.	61 45	N. 77 19 W.	Kamtschatka	34 58	N. 83 45 W.	Do.
180	60 40	N. 77 43 W.	Sea of do.	34 1	N. 84 36 W.	Do.
170 W.	59 36	N. 78 29 W.	Do.	33 20	N. 85 38 W.	Do.
160 W.	58 37	N. 79 36 W.	Bristol Bay (near Alaska)	32 47	N. 86 47 W.	Do.
				32 23	N. 88 2 W.	Do. (off coast of California)
150 W.	57 42	N. 81 2 W.	Off the coast of Rus. America	32 11	N. 89 20 W.	California
140 W.	56 57	N. 82 45 W.	Do.	32 10	West	New Mexico
130 W.	56 20	N. 84 40 W.	British America	32 11	S. 89 20 W.	Texas
120 W.	55 55	N. 86 44 W.	Do.	32 23	S. 88 2 W.	Mississippi
110 W.	55 41	N. 88 54 W.	Do.			
105 W.	55 40	West	Do.			
100 W.	55 41	S. 88 54 W.	Do. (near Lake Winnipeg)			
90 W.	55 55	S. 86 44 W.	Western shore of Hudson's Bay			

13. Passing south of the zone we have last been considering, we find that, contiguous to it, the winds in the United States and upon the Atlantic Ocean, are, on the whole, easterly, yet quite irregular, and having a very small progressive motion. This is seen by the shortness of the arrows in Louisiana, Texas, Florida, and the southern parts of South Carolina, Georgia, Alabama, and Mississippi (Plate VIII.), and also at Nos. 27, 29, 30, and 31 on Plate VII. Nos. 25 and 236 are exceptions, and will be spoken of below.

14. Farther south, we fall in with the well known north-easterly trade-winds, all characterized by long arrows, showing a decided prevalence, yet more so between latitude 10° and 25° than nearer the equator.

15. In the eastern parts of the Atlantic Ocean, near the coasts of Africa, and upon the Mediterranean Sea, also in Barbary, the winds seem to incline toward the Great Desert. This is seen on Plate VII. at all the stations in Spain, Southern France, Italy, and on the Mediterranean as far east as Constantinople (No. 233); and Smyrna (No. 15); also at Tripoli (No. 238); at Liberia (No. 239); at the Madeira Islands (No. 25); and on the Atlantic at No. 42. At No. 39 the direction is not materially changed, but the progressive motion is very much reduced, indicating a counteracting force in the direction of the Desert. It is also well known that all along the coast of Guinea south and south-west winds prevail. It was remarked by Dr. Halley, that, "in the southern parts of Italy, a south-east wind blows more frequently than any other;" but our observations from Rome and Naples indicate nothing of the kind, but rather the contrary. Our observations from Tripoli (No. 238) may not be altogether trustworthy, as they embrace a period of only five months, but the time was a tolerably fair mean for the year, in regard to temperature, viz. from March to July inclusive, and the results harmonize very well with No. 19, which represents four years' observations. At Fezzan, 300 miles south of Tripoli, the winds are said to be northerly in winter and southerly in summer.

16. In South-western Asia, the winds are so irregular as to defy all attempts to reduce them to system, from any data now in my possession. The north-west winds at Jerusalem[1] (No. 23), and the westerly ones at Bagdad (No. 22), are nearly as uniform as the "trades," while at Constantinople[2] and Trebizonde (Nos. 233 and 11), the mean direction is north-easterly, at Teflis and Erzeroom (Nos. 10 and 12), nearly north, at Beirut and on Mount Lebanon (Nos. 20 and 21), also at Tabreez, Tehran, and Ooroomiah[3] (Nos. 16, 17, and 18), westerly; at Smyrna (No. 15), east; and at Bassora (No. 24), hardly in any direction. At Aleppo, it is said to be north-west, but I have no observations from that place. (See Appendix O.)

17. The three stations in Hindoostan all show a feeble prevalence of westerly or south-westerly winds, although situated in latitudes proper for the "trades," and although the tracks of storms in the adjacent seas are generally from south-east toward north-west.[4]

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[1] In a letter to the author, from Rev. J. F. Lanneau, who long resided in Syria and Palestine, he remarks as follows, in relation to the north-west winds in the "hill country" of Judea: "So uniformly prevalent is the north-wester, that the olive-trees in the interior, situated so as to feel their constant influence, are inclined toward the south-east, and their branches checked in the opposite direction by its power, so that in some cases three-fourths or more of them are on that side, thus . This is very strikingly noticed immediately around Jerusalem."

[2] Rev. H. G. O. Dwight, to whom I am indebted for the observations on the winds at this place, makes the following remarks in relation to them: "There can be no doubt of the fact that the wind here, as a general thing, blows either from the north-east or from the south-west. A wind direct from either of the four cardinal points, never continues long in Constantinople. During the fifteen or sixteen years that I have been here, I have noticed that our prevailing wind in summer is north-east. Indeed, from July to October, it is so constantly and regularly from that quarter, as to be almost a monsoon."

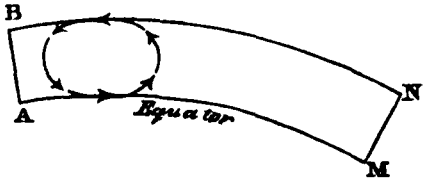
[3] See the remarks on the winds at this place in Series B.

[4] Piddington.

18. On the whole, do not the results in Series C authorize us to lay down the following, as a general description of the winds of the northern hemisphere? 1st. That from high northern latitudes the winds proceed in a southerly direction, but veer toward the west, as they approach a limit ranging from about latitude 56° on the western continent to about latitude 68° on the eastern, where they become irregular and disappear. The area of the zone occupied by these winds is about 11,800,000 square miles. 2d. That farther south there is a belt of westerly winds, less than 2000 miles in breadth, entirely encircling the earth; the westerly direction being clearly defined in the middle of the belt, but gradually disappearing as we approach the limits on either side. The area of this zone is estimated to be about 25,870,000 square miles. 3d. That south of the zone last named, the mean direction of the wind is easterly. This area is estimated to contain 60,760,000 square miles.[1]

Theoretical Considerations.

In looking for the causes of winds, there are two which are obvious; 1st, the diurnal revolution of the earth upon its axis, and 2d, the unequal distribution of heat over different parts of its surface; and we apprehend that these two, taken conjointly, are sufficient to account for all the leading observed phenomena. Dr. Halley, in a paper read before the Royal Society in 1686, undertook to explain the phenomena of the trade-winds, by taking into account only the latter cause; or at least introducing the former only so far as it affects the temperature of places near the equator at different hours of the day. His view (as explained by Professor Mitchell in his article already referred to) was, that the rarefaction of the air over the spot where the sun is vertical, and the continual motion of this spot westward by the diurnal motion of the earth, generated a series of vortices, moving westward below and eastward above, and that the lower parts constituted the trade-winds. According to his views, the motion would be as in the accompanying figure, in which A M N B represents a section of the atmosphere resting on the equator A M, as seen from the north side, and the different arrows show the direction in which the air is supposed to move.

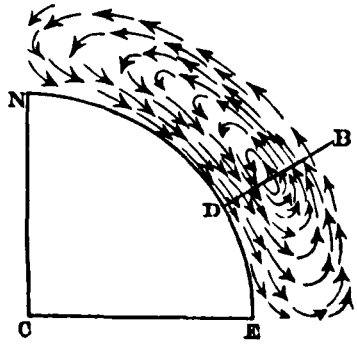


Others, on the contrary, have maintained that the mere rotation of the earth on its axis, combined with its annual revolution round the sun, is sufficient to account for the leading phenomena of winds, without any aid from heat. If at one and the same time the entire atmosphere were reduced to a perfect calm all over the surface of the earth, and if the temperature were everywhere the same, they have supposed that mere cosmical influences, such as we have named, would, in some unexplained way, create just such currents as

[1] Professor Dove, of Berlin, maintains that there are but two systems, viz. our 1st and 3d. See his Letter to Col. Sabine, published in the Report of the British Association for 1845.

now exist. To both these doctrines there are, however, insuperable objections,[1] and a correct theory can be obtained only by combining the two, for both must certainly operate, according to well-known physical laws, and unless neutralized cannot fail of producing their appropriate effects. It was by thus combining them that Hadley succeeded in satisfactorily accounting for the trade-winds, more than a century ago, and it remains to show that the same principles may be generalized so as to explain each of the three systems, which, according to our investigations, exist.

The rarefaction of the air near the equator, by heat, will cause it to rise, and give place to the colder, and, therefore, heavier air of the temperate and polar regions. The amount of this influence can be calculated, and it is found to be commensurate with the effects observed. If no other cause then existed, we should have a regular vortex, extending from the equator to the pole, as represented in the accompanying figure, in which E represents a point on the equator; N the north pole; C the centre of the earth; B D a line drawn through the centre of the vortex, and the several arrows the direction in which the air moves.



If the air were equally dense in all parts of the vortex, and its velocity the same, the centre of the vortex must be over that parallel of latitude which bisects the northern hemisphere, viz. the parallel of 30°. South of this parallel, the air must ascend, and north of it, it must descend. In point of fact, the centre must be a little farther north, since the descending currents are colder and more condensed than the ascending ones, and consequently must occupy less space, but the difference is not material. The result would be, a constant current along the surface of the earth from the poles toward the equator, while the air which ascended at the equator would flow back again toward the poles. As applied to the northern hemisphere, the lower current would be from north to south, and the upper from south to north.

But if we now take the rotation of the earth into account, it will modify these motions. As the heated air at the equator rises, and attempts to flow northerly toward the pole, it crosses successive parallels of latitude, whose easterly motion, by virtue of the earth's diurnal revolution, is continually diminishing. But the air, retaining the easterly motion which it had at the equator, and consequently moving more rapidly in that direction than the places over which it passes, has a *relative* motion, as from the west, which, combined with its northerly motion, carries it toward the north-east, and finally toward the east. On the same principles, the lower current must continually veer more and more toward the west, as it approaches the equator.

When we reflect that it is over 6,000 miles from the equator to the pole, while one-half of the entire atmosphere lies within seven miles of the surface of the

[1] See Appendix Q Art. 195

earth, we see that it must be quite impossible for the upper and lower currents to flow in opposite directions, one upon the other, for so great a distance, without intermingling. Each must communicate to the other its own motion by friction, and it will be only near the northern and southern extremities of the vortex, that they will be kept distinct, and each have its own proper motion. In other words, there must be a system of equatorial winds at the south, a system of polar ones at the north, and a system of blended ones between. Let us notice the necessary characteristics of each system separately.

The lower current of the equatorial system proceeding southerly, and at the same time veering toward the west, constitutes the trade-winds, and it is probable that at the limit where the upper current becomes blended with the lower, no inconsiderable part of it folds under itself, and returns toward the equator, thus contributing to augment the strength of the "trades." This limit we suppose to be that which defines the northern boundary of the equatorial winds on Plates I. and VII.

On the same principles, the cold surface wind of the arctic regions must commence to flow southerly—must veer toward the west like the trade-winds, and for the same reason—and finally become blended with the winds of the intermediate system; thus defining the southern limits of the polar winds.

In this intermediate system of blended winds, the mean direction must be the result of two opposite motions, the upper current tending to move eastward, and the lower westward. It is easy to see, however, that the former must prevail; for it has nothing to contend against but the friction of the latter, while the latter has not only this same friction, but also that of the earth's surface, both conspiring to destroy its motion westward. As a consequence, westerly winds must prevail in this zone, though with less uniformity than exists in the other two.[1]

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[1] I am aware that it may be urged as an objection to this view, that both the causes which are supposed to determine the lower current toward the south-west, "operate with greater energy between the parallels of 30° and 60°, than within the actual limits of the trade winds." (Mitchell.) But it should be noticed, 1st, that even if this were true, the causes which determine the upper current are increased in the same ratio, and it is on the *difference* of the two only, that the mean direction depends. And 2d, that the objection itself is not well founded, so far as one of the causes is concerned; for, according to our views, the zone of westerly winds lies wholly in the northern half of the vortex, where there could be no permanent ascending currents, as at the equator, to create trade winds.

It may be farther objected, that the theory here advocated requires an excess of northerly over southerly winds in the temperate regions, so as to dispose of the current coming down from high northern latitudes. We admit it, and are we sure that there is not? It is true that, *in respect to time*, the mean direction of the wind in those parts of the zone that have been most fully studied (viz. the United States, Western Europe, and the Atlantic Ocean), is from a point somewhat to the south of west. But are we sure that it is not compensated by north-westerly winds over Asia and the North Pacific? This is a question of fact, to be determined by observation. Thus far the indications are, that there is such a compensation, and we await with interest the results of Lieutenant Maury's investigations in that quarter of the globe to settle the question. Furthermore, are we sure that even in the parts of the zone first referred to, more air passes northward than southward? On this point Professor Dove, of Berlin, has the following remarks, in a letter to Colonel Sabine, published in the Report of the British Association for 1845: "But the air which passes over the parallel, coming from the equator, brings with it a higher temperature, which it gradually parts with as it flows over the surface of the earth, and which it cannot, therefore, bring back with it,

Thus we find that theory harmonizes perfectly with fact, both as it respects the direction and the constancy of the winds *regarded as systems*. Let us now examine a few minor details.

1. The facts mentioned in our fifteenth deduction have long been known, and have been usually, and I suppose correctly, accounted for by ascribing them to the rarefaction of the air over the Great Desert. Some additional facts, confirmatory of this idea, will be mentioned as we proceed.

2. The winds at the stations in South-western Asia, having of themselves but a feeble tendency to flow in one direction rather than another, owing to their proximity to the dividing line between two systems of winds, appear to be controlled entirely by the strong local influences to which they are subject, and for which that region is remarkable. This may account for their irregularity, alluded to above in our sixteenth deduction.

3. May not the less progressive motion of the wind in Europe than in the United States (mentioned as our eleventh deduction), be accounted for by the higher temperature of the former? Just as a burning building increases the strength of the wind on the side from which it blows, and diminishes it on the opposite side.

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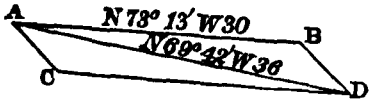
when it passes the same parallel on its return toward the equator. Now, colder air occupies less space than warm air, and therefore the current of air flowing from the pole to the equator is narrower than when it flows from the equator to the pole. If the beds in which these opposite currents flow are shifting ones, the same station will necessarily be oftener in a southerly than in a northerly current (in the northern hemisphere), and the proportion of southerly wind will in the course of a year exceed that of the northerly. Moreover, the southerly winds bring with them a quantity of vapor, with which they are continually parting in the form of rain and other precipitations; the returning northern dry winds do, indeed, bring back the same mass of *air*, but without its aeriform companion, which, having now assumed the form of a liquid, no longer contributes to raise the column of mercury in the barometer."

On considering the above-described alterations to which the atmosphere is subjected, on its passage from and return to the equator, we see that throughout the temperate zone the *mean direction* of the wind may be from the equator, converted by the rotation of the earth into a south-westerly direction in the northern, and a north-westerly in the southern hemisphere.

Professor Loomis seems to view the subject in a similar light. (See his articles on the Meteorology of Hudson, Ohio, published in the American Journal of Science and Arts.)

SERIES D.

THIS Series of Tables shows the mean direction of the wind, and the rates of its progress, for each month of the year, at the several places and sections of country mentioned, and hence the annual curve which it describes.[1] At a few places, there is added also the average number of days that the winds from the different points of compass prevail in each month; and, at a number of others, the direction and amount of the forces which deflect the wind from its mean annual direction. The method by which the latter were found was as follows: It was assumed that if there were no forces to deflect the winds, the mean direction and rate of progress would be the same for each month of the year, and equal to one-twelfth of the mean annual progress. If, therefore, according to the usual method of applying the "parallelogram of forces," we make the progress in any month the diagonal of a parallelogram, and one-twelfth of the mean annual progress one of the sides, either of the contiguous sides will represent the deflecting force, both in quantity and direction. Thus, for example, at Amherst, Massachusetts, the resultant for January is N. 69° 42′ W. 36, and for one-twelfth of the mean for the year, measured on the same scale, N. 73° 13′ W. 30. Draw A B in the direction N. 73° 13′ W. and make its length 30. Also draw A D in the direction N. 69° 42′ W. and make its length 36. Complete the parallelogram, and the side A C or B D will show the direction and amount of the deflecting force, viz. N. 52° 47′ W. 6.32. For the most part, the deflecting forces are merely approximations, determined, with tolerable accuracy, by construction upon a large scale, though in a few cases they were computed trigonometrically.



[1] In computing the annual curves, it became necessary to fix upon some general principle, upon which to compare and combine the observations taken at different places, and I adopted that of allowing equal weight to the observations of each month, without reference to the manner in which they were taken. There is no doubt that more reliance should be placed upon observations taken several times a day and recorded for sixteen or thirty-two points of the compass, than upon those taken less frequently and recorded less minutely, but it was difficult to decide how much.

SERIES D.

No. 1.—Melville Island, Arctic Ocean.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 7° 8′ W.	54
February	N. 16 5 W.	60½
March	N. 14 22 W.	70
April	N. 9 55 E.	47
May	N. 12 49 W.	43
June	N. 56 8 W.	20
July	N. 34 16 W.	21
August	N. 64 17 W.	28
September	N. 29 48 W.	58
October	N. 37 40 W.	60
November	N. 17 37 W.	75
December	N. 10 51 E.	22½
The year	N. 20 42 W.	44

No. 2.—Port Bowen, Arctic Ocean.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 72° 41′ E.	63
February	N. 70 11 E.	65
March	N. 66 13 E.	34
April	N. 78 11 E.	46½
May	N. 35 43 E.	24
June	S. 71 35 E.	24
July	S. 89 28 W.	41
August	N. 4 8 W.	54
September	S. 88 42 W.	18
October	N. 73 53 E.	43
November	S. 77 38 E.	24
December	N. 81 42 E.	50
The year	N. 63 6 E.	27½

No. 3.—Boothia Felix, Arctic Ocean.—3 stations.

2½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 47° 28′ W.	28
February	N. 45 21 W.	21
March	N. 50 16 W.	23
April	N. 86 41 W.	35
May	N. 28 48 W.	30
June	N. 71 56 W.	26
July	N. 11 33 E.	35
August	N. 21 11 W.	35
September	N. 32 18 W.	35
October	N. 54 1 W.	32
November	N. 1 43 E.	19½
December	N. 44 34 W.	17
The year	N. 34 55 W.	24

No. 4.—Igloolik, Arctic Ocean.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 19° 25′ W.	50
February	N. 82 3 W.	83
March	N. 46 1 W.	78
April	N. 43 5 W.	83
May	N. 83 82 W.	11
June	N. 33 28 W.	51
July	S. 77 6 E.	21½
August	N. 12 31 W.	33
September	N. 20 41 W.	8
October	N. 82 5 E.	19
November	N. 62 28 W.	47
December	N. 61 45 W.	40
The year	N. 36 18 W.	42

No. 5.—Winter Island, Arctic Ocean.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 25° 29′ W.	81
February	N. 34 59 W.	62
March	N. 43 0 W.	73
April	N. 27 9 W.	23½
May	N. 29 57 W.	56
June	N. 10 51 W.	11
July	N. 4 17 W.	23
August	S. 89 37 W.	41
September	S. 23 12 E.	3½
October	N. 10 9 E.	54
November	N. 13 20 W.	50½
December	N. 28 31 W.	57
The year	N. 29 26 W.	42½

No. 6.—Baffin's Bay (northern part).

3 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March		
April		
May		
June		
July	N. 6° 30′ E.	32
August	S. 72 16 E.	7½
September	S. 21 20 E.	11
October		
November		
December		

SERIES D.—*Continued.*

No. 7.—Arctic regions of North America.[1] 7 stations.

5¾ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 27° 32′ W.	45
February	N. 32 22 W.	44
March	N. 38 47 W.	47
April	N. 28 49 W.	41
May	N. 28 9 W.	33
June	N. 50 5 W.	25
July	N. 11 37 E.	13
August	N. 55 28 W.	24
September	N. 30 42 W.	16½
October	N. 28 20 W.	30
November	N. 20 16 W.	36
December	N. 27 29 W.	31

No. 8.—Arctic regions of North America.[2] 8 stations.

6¾ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 13° 32′ W.	37
February	N. 18 5 W.	37
March	N. 31 55 W.	39
April	N. 16 5 W.	33½
May	N. 21 7 W.	29
June	N. 45 14 W.	17
July	N. 10 43 W.	18
August	N. 44 48 W.	25
September	N. 37 ,2 W.	24
October	N. 14 27 W.	28½
November	N. 14 32 W.	34
December	N. 12 4 W.	29½

No. 9.—Fort Franklin, Great Bear Lake.

1¾ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 7° 11′ E.	34
February	N. 3 53 W.	32
March	N. 74 51 E.	32
April	S. 77 8 E.	51
May	S. 79 37 E.	55½
June		
July	S. 63 42 E.	46
August	S. 83 56 E.	41
September	N. 18 10 E.	30
October	N. 32 41 E.	10
November	N. 18 17 E.	23
December	N. 16 42 W.	27½
The year	N. 70 30 E.?	25?

No. 10.—Fort Enterprise.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 79° 1′ W.	28
February	N. 26 45 E.	30
March	N. 36 6 W.	8
April	N. 40 2 E.	36
May	S. 49 45 E.	46
June	Easterly	60
July	Westerly	6
August	Neutral	0
September	Neutral	0
October	Easterly	12
November	Easterly	18
December	Westerly	30
The year	N. 39 54 E.?	14

No. 11.—Fort Reliance, Great Slave Lake.

8 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 69° 48′ W.	18
February	N. 13 13 E.	10
March	N. 19 38 E.	9
April	N. 49 20 E.	25½
May	N. 76 51 E.	66
June		
July		
August		
September		
October	S. 64 28 E.	60
November	N. 66 23 E.	30
December	N. 65 21 E.	22

No. 12.—N. W. British America.[3]—3 stations.

3½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 25° 20′ W.	18
February	N. 6 32 E.	25
March	N. 62 8 E.	17
April	N. 77 0 E.	36½
May	S. 85 18 E.	56
June[4]	S. 71 40 E.	51
July	S. 63 42 E.	46
August	S. 83 56 E.	41
September	N. 18 10 E.	30
October	N. 74 8 E.	23
November	N. 36 57 E.	23
December	N. 30 6 E.	24

[1] Nos. 1, 3, 4, 5, and 6 combined. [2] No. 1 to No. 6, inclusive. [3] Nos. 9, 10, and 11 combined.

[4] No observations were reported for this month, and the resultant here recorded is merely estimated by taking the mean between May and July. (See data, pages 31 and 32.)

SERIES D.—*Continued.*

No. 13.—Eyafiord, Iceland.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 61° 43′ W.	56
February	S. 89 37 W.	42
March	S. 68 2 W.	30
April	S. 77 55 W.	40½
May	N. 10 37 W.	27
June	N. 18 18 W.	36½
July	N. 23 55 E.	35
August	N. 47 53 E.	24½
September	S. 26 24 W.	22
October	S. 62 18 E.	22
November	S. 45 26 W.	19
December	S. 74 59 W.	44
The year	N. 86 35 W.	16

No. 14.—Reikiavik, Iceland.

7 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March		
April		
May	N. 59° 22′ E.	34
June	N. 45 53 E.	7
July	N. 55 34 E.	14
August	S. 22 53 E.	27
September	S. 87 5 E.	40
October	N. 22 53 E.	54
November	N. 34 36 E.	42½
December		

No. 15.—Iceland.[1]—2 stations.

2 YEARS AND 7 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 61° 43′ W.	56
February	S. 89 37 W.	42
March	S. 68 2 W.	30
April	S. 77 55 W.	40½
May	N. 15 20 E.	24
June	N. 13 34 W.	25
July	N. 28 58 E.	27
August	N. 80 19 E.	16
September	S. 26 12 E.	15
October	N. 63 57 E.	22
November	N. 19 31 W.	8
December	S. 74 59 W.	44

No. 16.—New Herrnhut, Greenland.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 71° 41′ E.	51
February	S. 63 27 E.	59
March	N. 81 53 E.	87
April	N. 51 14 E.	10
May	N. 57 15 E.	32
June	N. 47 40 W.	21
July	S. 42 12 W.	19
August	N. 61 29 W.	12
September	S. 83 37 W.	42
October	S. 15 9 E.	46
November	N. 88 2 E.	81
December	N. 64 56 E.	73½
The year	N. 86 59 E.	32

No. 17.—Friederichthal, Greenland.

7 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	North	84
February	N. 13° 41′ W.	53½
March	N. 19 50 E.	20
April	S. 12 5 E.	56
May		
June		
July		
August		
September		
October	North	100
November	N. 6 24 E.	63
December	S. 1 51 W.	88

No. 18.—Baffin's Bay (southern part.)

9 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March		
April		
May		
June	S. 48° 28′ W.	42
July	N. 43 53 W.	8
August	S. 88 17 W.	19
September	N. 59 52 W.	6
October		
November		
December		

[1] Nos. 13 and 14 combined.

SERIES D.—*Continued.*

No. 19.—Southern Greenland and vicinity.[1] 3 stations.

2½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 25° 50′ E.	56
February	N. 54 30 E.	24
March	N. 71 0 E.	48
April	S. 23 0 E.	25
May	N. 57 15 E.	32
June	S. 22 0 W.	14
July	N. 35 0 W.	9
August	N. 43 45 W.	2½
September	N. 78 40 E.	6½
October	N. 12 0 E.	29
November	N. 54 30 E.	55
December	S. 48 30 E.	42½
The year	N. 62 40 E.	19

No. 20.—Nain, Labrador.

11 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 28° 30′ W.	78
February	N. 36 21 W.	61
March	N. 0 51 W.	79
April	N. 26 46 W.	76½
May	N. 7 40 E.	48
June	N. 1 35 E.	44
July		
August	N. 67 21 W.	57
September	N. 17 28 E.	23
October	N. 53 9 W.	46
November	N. 53 19 W.	35
December	N. 59 22 W.	83
The year	N. 25 55 W.?	50?

No. 21.—Norway House, Hudson's Bay Territory.

7 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 69° 17′ W.	16
February	N. 5 27 W.	16
March	N. 1 19 E.	14
April	N. 29 7 E.	14
May	N. 57 37 E.	9
June	S. 12 43 E.	10
July	S. 86 7 W.	4
August	S. 88 9 W.	20
September	N. 67 29 W.	12
October	N. 10 16 W.	26
November	N. 8 50 E.	15
December	N. 65 1 W.	7
The year	N. 27 26 W.	8

No. 22.—Sitka, Russian America.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 88° 13′ E.	23
February	S. 36 36 E.	51
March	N. 64 45 E.	40
April	S. 78 56 E.	22
May	S. 6 18 W.	30
June	S. 56 42 W.	8
July	S. 75 50 W.	18
August	S. 34 8 E.	21
September	S. 59 9 E.	35
October	S. 60 2 E.	47
November	S. 72 48 E.	34
December	S. 53 5 E.	44
The year	S. 55 37 E.	24

No. 23.—St. Johns, New Foundland.

4 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 87° 52′ W.	33	N. 72 ° W.	15
Feb.	N. 47 55 W.	28	N. 1 W.	18
March	N. 41 12 W.	22	N. 15 E.	17
April	S. 59 0 W.	24	S. 7 E.	8
May	N. 84 22 E.	24	N. 82 E.	44
June	S. 47 56 W.	24	S. 22 E.	16
July	S. 43 23 W.	52	S. 24½ W.	36
Aug.	S. 43 57 W.	34	S. 10 W.	22
Sept.	S. 63 30 W.	27	S. 24½ W.	9
Oct.	S. 68 9 W.	14	S. 84 E.	8
Nov.	N. 17 1 W.	25	N. 25 E.	33
Dec.	S. 78 58 W.	27	S. 82 W.	6
The year	S. 78 4 W.	18		

No. 25.—Hampden, Maine.

3¾ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 72° 3′ W.	42	N. 18 ° W.	22
Feb.	N. 75 51 W.	47	N. 34 W.	22
March	S. 82 24 W.	36	N. 60 W.	6
April	S. 85 41 W.	38	N. 59 W.	8
May	S. 37 3 W.	31	S. 40 E.	22
June	S. 54 9 W.	36	S. 6 E.	15
July	S. 34 3 W.	42	S. 15 E.	30
Aug.	S. 36 30 W.	30	S. 35 E.	22
Sept.	S. 71 58 W.	35	S. 19 W.	5
Oct.	S. 70 41 W.	26	N. 75 W.	7
Nov.	N. 77 37 W.	37	N. 10½ W.	16
Dec.	N. 75 46 W.	45	N. 29½ W.	22

[1] Nos. 16, 17, and 18 combined. Determined approximately by construction.

SERIES D.—*Continued.*

No. 24.—Average duration of winds in each month, between the parallels of latitude 45° and 50°, deduced from observations taken at ten different stations, in Iowa, Wisconsin, Michigan, Canada, and Maine, for a joint period of $17\frac{5}{12}$ years.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Mean direction.	Rate of Progress.	No. of days.
January	4.17	.11	2.66	.08	2.89	.00	3.95	.21	2.71	.33	2.35	.34	5.58	.25	4.87	.37	.13	N. 58° 40′ W.	14	31.00
February	2.81	.60	2.41	.21	2.54	.07	3.39	.15	1.74	.34	2.23	.12	4.52	.56	5.91	.34	.30	N. 47 43 W.	19	28.24
March	3.19	.84	3.43	.23	2.73	.03	5.01	.12	2.04	.15	2.82	.43	3.94	.37	5.07	.20	.40	N. 24 37 W.	9	31.00
April	2.16	.55	2.15	.10	2.43	.10	4.56	.36	2.43	.26	4.35	.39	4.81	.28	5.00	.07	.00	S. 69 34 W.	15½	30.00
May	1.56	.96	3.23	.12	3.75	.27	5.72	.20	1.57	.12	3.75	.30	5.00	.04	4.21	.20	.00	S. 12 27 W.	3	31.00
June	1.68	.24	2.61	.03	2.67	.18	4.29	.33	2.85	.48	4.14	.36	6.15	.33	3.27	.15	.24	S. 51 31 W.	18	30.00
July	1.50	.09	1.68	.09	1.53	.00	3.42	.15	2.67	.66	6.72	.72	7.11	.21	3.99	.03	.43	S. 64 3 W.	37	31.00
August	1.98	.24	2.76	.03	1.71	.00	3.87	.06	2.97	.30	7.11	.42	6.24	.15	2.97	.00	.19	S. 56 43 W.	28	31.00
September	2.10	.48	2.79	.12	1.44	.03	4.17	.09	3.24	.39	4.74	.33	4.83	.51	4.65	.09	.00	S. 69 58 W.	20	30.00
October	2.68	.56	2.44	.19	1.87	.08	3.96	.16	3.02	.44	5.46	.16	4.59	.27	5.08	.04	.00	S. 70 59 W.	19½	31.00
November	2.86	.65	2.96	.22	3.54	.14	3.26	.11	2.43	.07	3.31	.45	4.26	.28	5.27	.07	.12	N. 50 56 W.	11	30.00
December	3.01	.47	2.60	.08	3.37	.03	3.88	.47	2.06	.33	4.10	.75	3.34	.22	5.38	.64	.27	N. 69 50 W.	10	31.00

No. 26.—Amherst, Massachusetts.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
January	N. 69° 42′ W.	36	N. 53° W.	6
February	N. 63 34 W.	35	N. 12 E.	6
March	N. 53 39 W.	41	N. 15 W.	17
April	N. 55 2 W.	33	N. 16 E.	11
May	N. 85 9 W.	22	S. 33 E.	10
June	S. 67 5 W.	22	S. 22 E.	20
July	S. 70 47 W.	37	S. 18 W.	23
August	S. 88 34 W.	26	S. 5 E.	10
September	S. 76 54 W.	16	S. 47 E.	19
October	N. 78 53 W.	30	S. 53 W.	5
November	N. 55 19 W.	41	N. 20 W.	16
December	N. 57 2 W.	47	N. 34 W.	21
The year	N. 73 13 W.	30		

No. 27.—Nantucket, Massachusetts.

4½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
January	N. 66° 45′ W.	37	N. 51° W.	15
February	N. 75 9 W.	31	N. 62 W.	10
March	N. 28 10 W.	32	N. 19 E.	24
April	S. 82 53 W.	20	S. 4½ W.	8
May	S. 51 59 W.	30	S. 1 W.	24
June	S. 35 59 W.	34	S. 1 W.	34
July	S. 67 39 W.	39	S. 37 W.	25
August	S. 60 47 W.	7	S. 61 E.	19
September	N. 3 44 W.	13	N. 70½ E.	22
October	N. 72 57 W.	25	N. 33 W.	4
November	N. 43 52 W.	41	N. 9 W.	25
December	N. 55 11 W.	36	N. 30 W.	18
The year	N. 77 0 W.	23		

No. 28.—Average duration of winds in each month, in the New England States, south of latitude 45°, deduced from observations taken at forty-nine different stations, for a joint period of 78¼ years.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.		No. of days.
																				Direction.	Am't.	
Jan.	3.55	.10	2.77	.10	1.18	.08	1.95	.10	1.68	.16	4.61	.15	3.73	.30	9.95	.29	.30	N. 56° 49′ W.	38	N. 20° W.	24	31.00
Feb.	2.66	.19	2.50	.09	1.19	.13	1.81	.09	2.07	.12	4.27	.15	3.52	.16	8.71	.12	.46	N. 59 2 W.	30	N. 2 E.	15	28.24
Mar.	2.68	.09	3.13	.09	1.52	.05	2.67	.09	3.07	.08	4.76	.03	3.42	.08	8.72	.13	.39	N. 64 31 W.	26	N. 9 E.	12	31.00
April	2.18	.20	3.77	.03	2.32	.02	3.00	.02	3.41	.14	5.58	.12	2.62	.08	6.35	.13	.03	N. 89 57 W.	14	East	12	30.00
May	1.74	.15	3.15	.09	1.93	.16	3.46	.06	4.56	.32	6.75	.16	3.15	.16	4.94	.12	.15	S. 48 15 W.	21	S. 34½ E.	19	31.00
June	1.42	.11	2.09	.13	1.60	.08	2.90	.12	4.37	.19	8.04	.53	2.97	.13	5.07	.06	.19	S. 51 46 W.	32	S. 1 W.	23	30.00
July	1.44	.08	1.79	.04	1.28	.03	2.70	.06	5.18	.18	10.07	.31	3.43	.06	4.16	.12	.07	S. 47 8 W.	41	S. 6½ W.	29	31.00
Aug.	1.80	.14	3.04	.13	1.62	.08	3.30	.09	5.22	.19	7.77	.18	2.66	.05	4.46	.10	.23	S. 40 51 W.	25¼	S. 34 E.	24	31.00
Sept.	2.39	.19	3.44	.18	1.72	.08	2.71	.15	3.68	.27	6.05	.30	2.83	.19	5.39	.21	.22	S. 76 15 W.	17¼	S. 62 E.	12	30.00
Oct.	2.32	.05	2.92	.08	1.43	.02	2.48	.07	3.77	.09	6.83	.08	3.39	.09	7.16	.20	.02	S. 84 16 W.	26	S. 2 E.	4	31.00
Nov.	2.91	.17	2.92	.09	1.28	.13	1.98	.04	1.79	.10	5.07	.17	3.44	.19	9.33	.23	.16	N. 61 8 W.	34	N. 13 W.	18	30.00
Dec.	3.22	.09	2.95	.08	1.25	.11	1.73	.06	1.83	.04	4.96	.05	4.04	.17	10.23	.17	.02	N. 59 3 W.	39	N. 20 W.	21	31.00
Total.	29.04	1.46	33.89	1.02	17.82	.99	29.65	.86	38.67	1.65	73.51	1.98	40.22	1.63	89.00	1.83	2.02	N. 87 37 W.	26			365.24

SERIES D.—*Continued.*

No. 29.—Pompey, New York.

16 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	S. 70° 50′ W.	45½	N. 28° E.	8
Feb.	S. 71 31 W.	[illegible]	N. 24 W.	5
March	S. 66 0 W.	50	N. 85 E.	2
April	S. 66 17 W.	38	N. 68 E.	14
May	S. 65 39 W.	52	S. 34 E.	1
June	S. 55 16 W.	55½	S. 6 E.	18
July	S. 64 5 W.	69	S. 55 W.	17
Aug.	S. 69 14 W.	57	N. 82 W.	5
Sept.	S. 63 30 W.	58	S. 31 W.	6
Oct.	S. 61 32 W.	53	S. 11 E.	6
Nov.	S. 68 19 W.	52	N. 21½ W.	1
Dec.	S. 70 33 W.	47	N. 33½ E.	6
The year	S. 66 48 W.	52		

No. 30.—New York State.—72 stations.

362 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	S. 87° 51′ W.	33	N. 46° W.	6
Feb.	S. 89 23 W.	32½	N. 16 W.	7
March	S. 82 56 W.	31	N. 28 W.	3
April	N. 82 59 W.	22	N. 42½ E.	12
May	S. 71 12 W.	28	S. 4 E.	5
June	S. 67 36 W.	34	S. 23 W.	9
July	S. 67 27 W.	43	S. 35½ W.	12
Aug.	S. 76 21 W.	33	S. 66 W.	5
Sept.	S. 72 28 W.	33	S. 27 W.	6
Oct.	S. 69 21 W.	38	S. 35½ W.	8
Nov.	S. 89 7 W.	31	N. 16 W.	6
Dec.	S. 88 57 W.	33	N. 36 W.	6
The year	S. 79 8 W.	31½		

Proportion of winds in each month, in the State of New York, being the sums of the observations taken at fifty-five different stations for a joint period of 360 years.

Months.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Mean direction.	Rate of Progress.
January	1141½	805	411	681	1738	1938½	1976½	2466	S. 87° 51′ W.	33
February	960½	750	400	685½	1540½	1673	1930½	2330½	S. 87 6 W.	33
March	1018½	725	498	765½	1924½	1804	1923½	2520½	S. 82 55 W.	31
April	1280½	1071½	626	785½	1600½	1540½	1671½	2208	N. 82 41 W.	22
May	1090	869½	536½	895	1996½	1984	1822	1949½	S. 71 24 W.	28
June	878	651	430	826	1979	2229	1985½	1946½	S. 67 38½ W.	34
July	827	482½	316	661½	2016½	2775	2274½	1986½	S. 67 27 W.	43
August	1124½	777	388½	711½	1979	2308	1993	2059½	S. 76 21 W.	33
September	982½	733	398	787	1854	2267	1915	2008½	S. 72 30 W.	33
October	1098	759	439	876½	2155½	2231	1857	2078½	S. 69 21 W.	38
November	1162	828	490½	685½	1621½	1887	2042	2319½	S. 89 7 W.	31
December	1245	876	452	648	1680½	2093	2187	2382½	S. 88 57 W.	33
Total	12758	9327½	5385½	9008½	22086	24730	23578	26256	S. 78 59 W.	31½

No. 31.—New York City.

10 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	N. 66° 58′ W.	37	N. 31° W.	27
Feb.	N. 56 7 W.	24	N. 5 W.	23
March	S. 77 39 W.	22	S. 4 W.	3
April	S. 59 51 W.	29	S. 87½ W.	8
May	S. 39 46 W.	25	S. 20 E.	13
June	S. 38 16 W.	48	S. 20 W.	32
July	S. 26 0 W.	39	S. 3 E.	28
Aug.	S. 19 43 W.	28	S. 23½ E.	22
Sept.	S. 1 25 W.	14	S. 70½ E.	19
Oct.	S. 87 54 W.	19	N. 3 E.	8
Nov.	S. 89 5 W.	31	N. 60 W.	15
Dec.	N. 45 44 W.	23	N. 5 E.	24
The year	S. 66 56 W.	21		

No. 32.—New Jersey and Pennsyl'a.—57 stations.

63 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	N. 77° 47′ W.	26	N. 22° E.	5
Feb.	N. 75 49 W.	33½	N. 34 W.	9
March	N. 81 10 W.	25	N. 41 E.	4
April	S. 89 48 W.	14	S. 86 E.	14
May	S. 84 23 W.	28	S. 14 W.	5
June	S. 77 33 W.	30	S. 8 W.	7
July	S. 78 53 W.	33	S. 33½ W.	9
Aug.	S. 58 26 W.	19	S. 44 E.	15
Sept.	N. 84 28 W.	24	N. 42½ E.	3
Oct.	N. 85 25 W.	32	N. 60 W.	4
Nov.	N. 76 6 W.	32	N. 20 W.	8
Dec.	N. 73 58 W.	36	N. 31½ W.	11

SERIES D.—*Continued.*

Average duration of winds, in each month, in the State of Pennsylvania, deduced from observations taken at forty different stations, for an aggregate period of forty-eight years and eleven months.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Resultant.	Rate of Progress.	No. of days.
January	1.17	.47	2.53	.28	1.97	.11	2.73	.17	1.26	.30	4.49	.44	5.41	.79	5.97	.27	2.64	N. 86° 52′ W.	28	31
February	1.13	.24	1.94	.17	1.45	.14	2.02	.06	1.04	.15	4.31	.53	4.94	.57	6.42	.31	2.58	N. 78 5 W.	38	28
March	1.72	.49	2.27	.15	1.85	.11	2.36	.12	1.62	.32	4.63	.51	5.45	.61	5.66	.18	2.95	N. 82 58 W.	30	31
April	1.63	.45	2.56	.18	2.19	.09	3.04	.23	2.20	.35	4.29	.35	4.64	.58	5.01	.34	1.87	S. 89 9 W.	20	30
May	1.16	.28	1.83	.21	1.34	.19	2.61	.29	1.96	.54	4.84	.37	4.97	.70	6.29	.54	2.88	S. 88 45 W.	33	31
June	1.24	.10	1.61	.11	1.47	.20	2.45	.13	2.03	.27	4.88	.45	5.20	.59	5.18	.30	3.79	S. 83 31 W.	33	30
July	1.21	.19	1.41	.11	1.46	.11	1.91	.27	2.01	.44	5.12	.54	6.52	.93	4.89	.22	3.66	S. 82 32 W.	41	31
August	1.13	.22	1.91	.14	2.18	.36	2.78	.25	2.59	.18	4.97	.34	5.42	.63	3.55	.19	4.16	S. 64 10 W.	26	31
September	1.47	.18	1.43	.15	2.05	.10	1.98	.34	2.20	.23	3.84	.33	5.33	.63	5.45	.37	3.92	N. 89 3 W.	31	30
October	1.39	.12	1.53	.05	1.58	.15	2.42	.13	1.78	.37	4.40	.48	6.00	.55	6.44	.45	3.16	N. 88 24 W.	37	31
November	1.48	.14	1.55	.18	1.96	.05	1.84	.09	1.30	.19	3.76	.47	6.84	.74	6.19	.43	2.79	N. 79 3 W.	39	30
December	1.64	.28	2.03	.11	1.71	.06	1.89	.10	1.26	.21	4.36	.77	6.39	.85	6.60	.24	2.50	N. 79 10 W.	44	31
Total	16.37	3.16	22.60	1.84	21.21	1.67	28.03	2.18	21.25	3.55	53.89	5.58	67.11	8.17	67.65	3.84	36.90	N. 88 15 W.	32	365

No. 33.—Girard College, Philadelphia.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
January	N. 49° 20′ W.	29½	N. 9° W.	18
February	N. 65 47 W.	32½	N. 52 W.	12
March	N. 64 28 W.	20	N. 30 E.	8
April	N. 6 55 E.	8	N. 85 E.	21
May	S. 78 36 W.	23	S. 15 W.	11
June	S. 58 5 W.	29	S. 11½ W.	21
July	S. 58 38 W.	27	S. 9 W.	20
August	S. 30 53 W.	10	S. 45 E.	21
September	N. 42 10 W.	16	N. 56 E.	11
October	N. 71 50 W.	31	N. 65 W.	10
November	N. 54 15 W.	36	N. 31 W.	18
December	N. 60 30 W.	36	N. 43 W.	16
The year	N. 74 5 W.	21		

No. 34.—Fort McHenry, near Baltimore.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
January	N. 81° 0′ W.	35	N. 11½° W.	22
February	N. 55 38 W.	31	N. 49 W.	18
March	N. 18 41 E.	9	N. 86 E.	17
April	N. 55 26 E.	18½	N. 87 E.	27
May	S. 18 32 W.	18	S. 17 E.	25
June	S. 71 57 W.	15	S. 8½ W.	13
July	S. 55 8 W.	41	S. 84 W.	38
August	S. 59 22 W.	18½	S. 4 E.	16
September	S. 82 47 W.	19	S. 82 W.	13
October	N. 40 34 W.	16½	N. 15 E.	5
November	N. 21 46 W.	26	N. 9 E.	17
December	N. 41 17 W.	45	N. 82 W.	30
The year	N. 59 6 W.	15½		

No. 35.—Average duration of winds in each month, in Delaware, Maryland, and Eastern Virginia, deduced from observations taken at fourteen different stations, for an aggregate period of 25½ years.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.		No. of days.
																				Direction.	Am't.	
Jan.	2.81	.02	4.73	.01	1.46	.00	2.49	.05	1.56	.03	4.69	.01	3.29	.08	8.82	.03	.92	N. 47° 47′ W.	27	N. 20° W.	18	31.00
Feb.	1.78	.00	4.53	.00	1.36	.02	2.47	.07	1.44	.03	5.11	.03	2.46	.07	7.93	.04	.90	N. 56 32 W.	21	N. 15½ W.	12	28.24
March	2.05	.01	4.65	.00	2.28	.00	4.13	.01	2.19	.01	5.28	.02	2.92	.06	7.13	.05	.21	N. 64 25 W.	12	N. 15 E.	6	31.00
April	1.85	.00	4.61	.00	2.75	.00	4.13	.04	2.81	.00	5.14	.00	2.85	.01	6.81	.00	.00	N. 77 23 W.	5	N. 75 E.	6	30.00
May	1.15	.04	4.48	.00	2.32	.00	5.79	.04	4.65	.00	5.61	.00	2.50	.00	4.60	.03	.39	S. 1 29 W.	14½	S. 41 E.	18	31.00
June	1.10	.00	3.94	.01	2.30	.00	4.65	.01	3.42	.02	7.23	.00	2.58	.00	4.39	.00	.35	S. 26 26 W.	18	S. 16 E.	17	30.00
July	1.05	.01	3.75	.00	1.02	.00	4.69	.00	3.63	.00	9.37	.00	2.48	.00	4.97	.00	.03	S. 41 41 W.	27	S. 10 W.	19	31.00
Aug.	1.85	.01	4.87	.00	1.61	.00	5.16	.01	3.07	.00	7.31	.00	2.63	.00	4.35	.01	.12	S. 31 20 W.	13	S. 26 E.	13	31.00
Sept.	2.29	.00	5.90	.00	2.00	.00	3.51	.00	3.14	.00	6.07	.00	1.94	.00	4.79	.01	.35	S. 87 21 W.	3	S. 88 E.	10	30.00
Oct.	2.07	.00	5.50	.00	1.73	.00	3.46	.00	2.65	.00	5.63	.02	2.55	.00	7.39	.00	.00	N. 55 33 W.	12	N. 21 E.	6	31.00
Nov.	1.96	.00	3.96	.00	1.41	.00	2.59	.01	2.32	.00	5.91	.00	3.01	.00	8.50	.04	.29	N. 70 58 W.	25	N. 51 W.	12	30.00
Dec.	2.17	.00	4.88	.00	1.12	.03	2.55	.05	2.16	.00	5.98	.00	2.58	.00	9.40	.08	.00	N. 86 57 W.	23	N. 85 W.	10	31.00

SERIES D.—*Continued.*

No. 36.—Washington City, D. C.

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 66° 24′ W.	20
February	N. 51 14 W.	20
March	N. 30 54 W.	15
April	N. 64 12 W.	20
May	S. 25 12 W.	17
June	S. 58 20 W.	17
July	S. 55 18 W.	25½
August	S. 45 42 W.	9
September	N. 11 16 W.	10½
October	N. 88 6 W.	16
November	N. 76 34 W.	30
December	N. 85 52 W.	25
The year	N. 85 12 W.	17

No. 37.—Old Point Comfort, Virginia.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 21° 33′ W.	32
February	N. 9 55 E.	7
March	S. 66 18 W.	5
April	S. 1 16 E.	12
May	S. 60 25 E.	23
June	S. 8 37 E.	25
July	S. 6 40 W.	34
August	S. 14 9 W.	17½
September	N. 34 1 E.	18
October	N. 17 25 W.	20
November	N. 85 8 W.	14
December	N. 74 58 W.	15
The year	S. 43 15 W.	8

No. 38.—Chapel Hill, North Carolina.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 78° 8′ W.	32
February	N. 71 28 W.	22
March	S. 68 42 W.	12
April	S. 30 16 E.	17
May	S. 48 27 E.	18
June	S. 63 15 W.	21
July	S. 16 42 E.	9
August	S. 86 59 E.	14
September	N. 27 56 E.	19
October	N. 31 6 E.	17
November	S. 84 49 W.	16
December	N. 84 35 W.	21
The year	S. 76 5 W.	6

No. 39.—Nashville, Tennessee.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 39° 41′ W.	30
February	S. 65 22 W.	22
March	S. 70 35 W.	21
April	S. 57 38 W.	41
May	S. 57 29 W.	38½
June	S. 45 1 W.	49
July	S. 39 18 W.	27
August	S. 20 31 W.	25
September	S. 34 30 W.	18
October	S. 31 13 W.	27
November	S. 62 42 W.	23
December	S. 60 59 W.	39½
The year	S. 57 20 W.	30

No. 40.—North Carolina, north of latitude 35°, and Tennessee.—7 stations.

5 5-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	S. 69° 53′ W.	29	N. 61° W.	6
Feb.	S. 82 5 W.	17	N. 21½ E.	10
March	S. 76 46 W.	20	N. 8 E.	7
April	S. 46 30 W.	29	N. 6 W.	8
May	S. 62 19 W.	29	S. 62 W.	4
June	S. 54 51 W.	45½	S. 46 W.	21
July	S. 31 59 W.	20	S. 58 E.	13
Aug.	S. 15 23 W.	19	S. 81 E.	18
Sept.	S. 56 21 W.	21½	East	5
Oct.	N. 83 47 W.	15	N. 27 E.	14
Nov.	S. 69 20 W.	32	N. 89 W.	10
Dec.	S. 68 6 W.	32	S. 87 W.	9

No. 41.—Latitude 34° to 35° in North Carolina, Georgia, Alabama, and Arkansas.—5 stations.

8 5-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Directions.	Am't.
Jan.	N. 66° 39′ W.	21	N. 23° W.	8
Feb.	N. 59 54 W.	24	N. 23 W.	12
March	S. 69 19 W.	22	S. 40 W.	14
April	S. 40 51 W.	13½	S. 22 E.	14
May	S. 55 8 W.	21	S. 1 E.	11
June	S. 19 23 W.	28	S. 13 E.	28
July	S. 39 48 W.	35	S. 15 W.	28
Aug.	S. 86 57 W.	21	S. 70 W.	5
Sept.	N. 28 11 W.	9	N. 64 E.	13
Oct.	N. 0 27 W.	24	N. 33 E.	28
Nov.	N. 58 31 W.	18	N. 8 W.	12
Dec.	N. 36 19 W.	23	N. 11 W.	26

SERIES D.—*Continued.*

No. 42.—Augusta, Georgia.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	S. 73° 25′ W.	18½	N. 47° W.	7
Feb.	N. 58 2 W.	20½	N. 12 W.	21
March	S. 30 42 W.	24	S. 2 E.	11
April	S. 39 47 W.	38	S. 15 W.	11
May	S. 28 59 W.	30	S. 9 W.	17
June	S. 54 8 W.	21	West	4
July	S. 26 55 W.	43	S. 9 W.	31
Aug.	S. 24 46 E.	18	S. 74 E.	23
Sept.	S. 41 8 E.	5	N. 76 E.	17
Oct.	N. 25 27 W.	21	N. 12 E.	27
Nov.	S. 61 48 W.	31	S. 72½ W.	15
Dec.	S. 79 44 W.	16	N. 20 W.	7
The year	S. 52 40 W.	16		

No. 43.—Lat. 33° to 34° in Georgia and Alabama.[1] 4 stations.

5½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 86° 49′ W.	16
February	N. 67 51 W.	19
March	S. 45 2 W.	22
April	S. 39 47 W.	38
May	S. 28 59 W.	30
June	S. 54 8 W.	21
July	S. 26 55 W.	43
August	S. 24 46 E.	18
September	S. 41 8 E.	5
October	N. 25 27 W.	21
November	S. 64 16 W.	29
December	S. 79 44 W.	16

No. 44.—Average duration of winds in each month, between the parallels of latitude 32° and 33°, deduced from observations taken at nine different stations in South Carolina, Georgia, Alabama, and Mississippi, for an aggregate period of 8½ years.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Mean direction of Wind.	Rate of Progres.	No. of days.
Jan.	3.06	.08	5.53	.12	3.55	.12	2.04	.12	3.80	.45	3.22	.00	3.31	.53	3.96	.49	.62	N. 0° 7′ W.	8	31.00
Feb.	3.01	.35	2.32	.07	2.28	.04	2.10	.04	4.54	.20	3.00	.11	4.00	.20	4.05	.07	1.86	S. 83 50 W.	30	28.24
March	2.53	.23	4.01	.24	1.98	.30	5.00	.17	3.74	.58	2.62	.37	3.97	.16	3.73	.24	1.13	S. 9 53 W.	5	31.00
April	2.21	.00	3.37	.14	4.26	.14	6.69	.14	5.33	.00	3.29	.00	1.11	.00	1.68	.00	1.64	S. 46 17 E.	32½	30.00
May	2.88	.17	3.86	.19	3.36	.26	4.28	.63	4.93	.26	3.84	.19	1.94	.07	2.25	.19	1.70	S. 38 11 E.	17	31.00
June	.84	.03	2.73	.11	3.33	.24	4.95	.58	5.44	.39	3.59	.28	3.97	.15	2.20	.00	1.17	S. 4 56 E.	27	30.00
July	1.83	.00	2.30	.00	3.05	.13	5.60	.17	4.46	.27	5.03	.40	4.60	.03	2.13	.00	1.00	S. 10 12 W.	25	31.00
Aug.	1.58	.21	4.19	.13	4.45	.09	5.39	.59	5.72	.18	2.40	.24	1.81	.24	2.11	.12	1.55	S. 47 44 E.	27	31.00
Sept.	2.83	.10	6.23	.10	6.40	.57	3.47	.00	3.23	.30	2.47	.10	2.16	.00	.97	.00	1.07	N. 89 57 E.	30	30.00
Oct.	4.25	.11	5.00	.96	6.07	.25	2.97	.57	1.90	.00	1.21	.25	2.17	.00	3.51	.14	1.64	N. 54 0 E.	29	31.00
Nov.	2.14	.07	5.15	.00	2.99	.00	2.70	.04	1.77	.24	2.63	.31	4.80	.36	2.99	.02	3.79	N. 22 26 W.	8	30.00
Dec.	5.79	.21	5.12	.00	3.84	.17	3.47	1.65	2.60	.00	1.98	.00	2.15	.00	2.61	.00	1.41	N. 58 4 E.	20½	31.00

No. 45.—Latitude 31° to 32° in Alabama, Mississippi, and Louisiana.—5 stations.

13 1-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 23° 5′ E.	4
February	S. 55 13 E.	8
March	S. 18 39 E.	12
April	S. 27 34 E.	7
May	S. 11 30 E.	21
June	S. 10 49 E.	29
July	S. 9 39 E.	18½
August	N. 87 18 E.	10
September	N. 61 23 E.	27
October	N. 49 35 E.	19
November	N. 17 44 E.	7
December	N. 51 10 E.	12

No. 46.—Latitude 30° to 31° in Florida, Alabama, and Louisiana.—8 stations.

23 1-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 51° 52′ E.	11
February	N. 81 11 E.	5
March	S. 21 42 E.	13½
April	S. 11 21 W.	22½
May	S. 18 11 W.	24
June	S. 30 50 W.	33
July	S. 37 44 W.	24
August	S. 18 21 W.	8
September	S. 72 53 E.	20
October	N. 56 45 E.	22
November	N. 28 47 E.	7
December	N. 44 48 E.	17

[1] This is the same as No. 42, with the addition of six months' observations at other stations.

SERIES D.—*Continued.*

No. 47.—Latitude 29° to 30° in Florida, Louisiana, and Texas.—6 stations.

8½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 58° 18′ E.	8
February	S. 38 16 E.	16
March	S. 57 7 E.	21
April	S. 51 18 E.	15
May	S. 45 7 E.	24
June	S. 44 9 E.	28
July	S. 35 43 E.	33
August	S. 28 35 E.	25
September	S. 81 49 E.	31½
October	N. 58 51 E.	33
November	N. 45 49 E.	17
December	N. 64 49 E.	16

No. 48.—St. Augustine, Florida.

4 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 9° 27′ E.	26	N. 62° W.	33
Feb.	S. 78 53 E.	25	S. 21 W.	12
March	S. 81 52 E.	27	S. 9 E.	8
April	S. 74 32 E.	35	S. 19½ E.	16
May	S. 65 12 E.	43	S. 22 E.	23
June	S. 85 29 E.	30	S. 16 E.	7
July	S. 61 5 E.	38½	S. 16 E.	24
Aug.	S. 54 48 E.	28	S. 19½ W.	22
Sept.	N. 76 42 E.	50	N. 69 E.	22
Oct.	N. 57 26 E.	56	N. 32 E.	31
Nov.	N. 37 58 E.	26½	N. 38 W.	21
Dec.	N. 56 13 E.	24	N. 47 W.	12
The year	N. 79 19 E.	25		

No. 49.—Fort King and Cedar Keys, Florida.

6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 2° 28′ E.	12
February	S. 39 25 W.	12
March	S. 26 12 E.	25
April	S. 55 9 W.	30
May	S. 50 53 W.	19
June	S. 10 4 W.	38
July	S. 5 51 E.	39
August	S. 0 52 E.	21½
September	S. 41 27 E.	17
October	N. 29 50 E.	13
November	N. 41 48 E.	1½
December	N. 56 36 E.	4

No. 50.—Tampa Bay, Florida.

11 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 9° 17′ E.	10
February	S. 86 14 E.	12
March	S. 51 17 W.	12
April	S. 30 23 W.	10
May	S. 3 56 E.	14
June	S. 18 33 E.	26
July	S. 8 21 E.	35
August	S. 19 58 E.	29
September	S. 80 46 E.	25
October	N. 66 14 E.	22
November	N. 55 2 E.	15
December	N. 27 20 E.	13

No. 51.—Key West, Florida.

4 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 68° 32′ E.	39
February	N. 54 32 E.	37
March	N. 61 49 E.	46
April	S. 81 55 E.	27
May	S. 76 44 E.	40
June	S. 61 50 E.	23
July	S. 61 3 E.	53
August	S. 55 38 E.	30
September	N. 84 59 E.	46
October	N. 47 44 E.	58
November	N. 58 48 E.	68
December	N. 40 53 E.	50
The year	N. 78 6 E.	38

No. 52.—Florida Reefs, lat. 24° to 26°.—5 stations.

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 61° 2′ E.	31	N. 58½° W.	18
Feb.	N. 47 2 E.	30	N. 54½ W.	24
March	N. 68 32 E.	45	N. 2 E.	11
April	S. 75 12 E.	26	S. 54 W.	21
May	S. 61 1 E.	39	S. 15½ W.	27
June	S. 58 7 E.	27	S. 40½ W.	30
July	S. 57 20 E.	61	S. 14 E.	41
Aug.	S. 51 55 E.	34	S. 32 W.	32
Sept.	N. 84 16 E.	21	S. 79 W.	21
Oct.	N. 47 1 E.	47	N. 16 W.	27
Nov.	N. 58 7 E.	60	N. 19 E.	27
Dec.	N. 33 23 E.	40	N. 35½ W.	32
The year	N. 80 8 E.	35		

SERIES D.—*Continued.*

No. 53.—Matanzas, Cuba.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 49° 57′ E.	49
February	N. 29 0 E.	68
March	N. 51 11 E.	42
April	N. 51 0 E.	59
May	N. 50 7 E.	77
June	N. 45 0 E.	42
July	N. 45 0 E.	41
August	N. 56 36 E.	46
September	N. 47 44 E.	29
October	N. 84 41 E.	89
November	N. 45 0 E.	92
December	N. 40 46 E.	62
The year	N. 60 39 E.	65

No. 54.—West Indies, Latitude 18° to 23°.[1]

11-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 50° 44′ E.	57
February	N. 29 0 E.	68
March	N. 59 47 E.	54
April	N. 51 0 E.	59
May	N. 50 7 E.	77
June	N. 45 0 E.	42
July	N. 45 0 E.	41
August	N. 56 36 E.	46
September	N. 47 44 E.	29
October	N. 84 41 E.	89
November	N. 45 0 E.	92
December	N. 40 46 E.	62
The year	N. 60 31 E.	65

No. 55.—Barbadoes and the Northern Coast of South America.[2]—4 stations.

11-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 67° 13′ E.	83
February	N. 71 55 E.	91
March	N. 77 36 E.	91
April	N. 81 35 E.	21
May	S. 66 6 E.	93
June	S. 83 33 E.	94
July	N. 78 13 E.	48
August	N. 85 48 E.	82
September	S. 88 5 E.	77
October	N. 88 5 E.	88
November	N. 72 49 E.	61
December	N. 68 15 E.	97
The year	N. 82 40 E.	84

No. 56.—Fort Wood, Louisiana.

3 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 43° 20′ W.	6½
February	S. 23 49 E.	5
March	S. 13 48 W.	26
April	South	3
May	S. 23 49 W.	11½
June	S. 7 5 E.	81½
July	S. 47 55 E.	31
August	N. 58 11 W.	10
September	N. 72 34 E.	36
October	N. 42 14 E.	27
November	N. 1 41 E.	15
December	N. 7 3 W.	36
The year	S. 86 3 E.	5

No. 57.—Western Reserve College, Hudson, Ohio.[3]

7 YEARS.

Months.	9 O'CLOCK A. M.		3 O'CLOCK P. M.	
	Mean direction of Wind, as indicated by the motion of the clouds.	Rate of Progress.	Mean direction of wind, as indicated by the motion of the clouds.	Rate of Progress.
January	S. 79° 50′ W.	51	S. 76° 44′ W.	52
February	S. 85 31 W.	56	S. 84 36 W.	58
March	N. 83 0 W.	42	N. 86 13 W.	49
April	S. 86 17 W.	41	N. 89 4 W.	48
May	S. 87 11 W.	46	S. 85 24 W.	49
June	N. 89 40 W.	47	S. 86 30 W.	52
July	N. 79 44 W.	49	N. 84 31 W.	48
August	N. 77 40 W.	37	N. 89 37 W.	31
September	N. 81 15 W.	37	S. 87 17 W.	39
October	S. 89 23 W.	47	N. 86 28 W.	53
November	S. 81 50 W.	41	S. 80 58 W.	48
December	S. 85 59 W.	45	S. 85 9 W.	48
The year	S. 89 57 W.	52	S. 87 18 W.	54

[1] Same as No. 53, with the addition of two months' observations at other islands.

[2] These results are obtained from observations for nine months at Barbadoes, three months at Porto Cabello, Venezuela, one month at Chagres, New Grenada, and twenty-six days at sea near the coast.

[3] The mean directions are copied from Professor Loomis's article in the Journal of Science and Arts. The numbers in the columns headed "Rate of Progress," express the ratio that the resultants bear to the sum of the winds, *after being resolved in the direction of the cardinal points*, and are somewhat less than if they had been computed from the original observations.

SERIES D.—*Continued.*

No. 58.—Steubenville, Ohio.

14 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 88° 54′ W.	49
February	N. 82 49 W.	53
March	N. 78 3 W.	58
April	N. 79 37 W.	49
May	N. 80 3 W.	50
June	N. 84 52 W.	55
July	N. 88 44 W.	51
August	N. 78 57 W.	57
September	N. 75 58 W.	59
October	N. 81 3 W.	53
November	N. 80 14 W.	51
December	N. 76 49 W.	53
The year	N. 80 58 W.	55

No. 59.—State of Ohio.—17 stations.

28 7-12 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	S. 77° 42′ W.	47	S. 5° E.	12
Feb.	S. 89 8 W.	51	S. 48 W.	5
March	N. 86 5 W.	50	N. 70 W.	3
April	N. 81 7 W.	43	N. 48 E.	6
May	N. 84 26 W.	41	N. 76 E.	6
June	S. 84 38 W.	48	S. 10½ W.	7
July	N. 86 12 W.	52	N. 78 W.	5
Aug.	N. 82 39 W.	44	N. 86 E.	5
Sept.	N. 84 28 W.	40	N. 76 E.	7
Oct.	N. 85 18 W.	49	N. 63 W.	3
Nov.	N. 89 6 W.	50	S. 65 W.	4
Dec.	N. 83 5 W.	50	N. 41 W.	5

No. 60.—No. 59 exclusive of No. 58. 16 stations.

14½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 65° 26′ W.	46
February	S. 83 46 W.	50
March	S. 89 25 W.	45
April	N. 83 44 W.	40
May	N. 89 9 W.	34
June	S. 77 57 W.	42
July	N. 82 39 W.	51
August	N. 86 58 W.	33
September	S. 87 2 W.	23
October	S. 87 14 W.	44
November	S. 82 2 W.	50
December	S. 87 8 W.	44

No. 61.—Lat. 41° to 45° in Michigan, Wisconsin, and Iowa.—18 stations.

42 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 79° 52′ W.	32
February	S. 87 10 W.	33
March	N. 89 59½ W.	21
April	N. 89 14 W.	13
May	S. 86 41 W.	16
June	S. 45 25 W.	23
July	S. 49 59 W.	22
August	S. 42 26 W.	21
September	S. 53 40 W.	21
October	S. 62 15 W.	27
November	N. 85 28 W.	26
December	S. 85 7 W.	26

No. 62.—Indiana and Illinois, north of lat. 39°. 14 stations.

13½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 61° 49′ W.	30
February	N. 88 3 W.	30
March	S. 59 30 W.	19½
April	N. 29 31 W.	10
May	S. 43 12 W.	5
June	S. 49 39 W.	24
July	S. 58 26 W.	22
August	S. 21 30 W.	9
September	N. 50 41 W.	4
October	S. 63 35 W.	19
November	S. 78 11 W.	30
December	S. 49 37 W.	23

No. 63.—Lat. 37° to 39° in Kentucky, Illinois, and Missouri.—11 stations.

5½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 72° 43′ W.	36
February	S. 83 47 W.	34
March	N. 79 18 W.	26½
April	S. 49 10 W.	27
May	S. 89 16 W.	27
June	S. 55 34 W.	47
July	N. 88 21 W.	11½
August	S. 19 40 W.	49
September	S. 55 46 W.	14
October	N. 58 29 W.	12
November	N. 87 49 W.	8
December	S. 60 50 W.	10
The year	S. 67 30 W.	23

SERIES D.—*Continued.*

No. 64.—Fort Leavenworth, on the Missouri.

4 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 88° 9′ W.	21
February	N. 86 23 W.	15
March	S. 25 2 W.	27
April	S. 17 14 W.	32
May	S. 6 40 W.	42
June	S. 3 30 W.	54½
July	S. 3 54 E.	57
August	S. 4 7 E.	40
September	S. 1 3 E.	30
October	S. 42 51 W.	21
November	S. 40 31 W.	28
December	N. 59 44 W.	4
The year	S. 36 43 W.	12

No. 65.—Fort Towson, on Red River.

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 34° 1′ W.	17
February	S. 65 42 W.	22
March	S. 31 11 W.	26
April	S. 6 40 W.	31
May	S. 5 33 W.	47
June	S. 4 53 W.	49
July	S. 6 21 W.	56
August	S. 13 38 W.	40
September	S. 5 13 W.	17
October	S. 47 37 W.	16
November	S. 44 46 W.	28
December	S. 27 5 W.	21
The year	S. 17 48 W.	29

No. 66.—Washington, Arkansas, combined with No. 65.—2 stations.

8 5-12 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 34° 1′ W.	17
February	S. 65 42 W.	22
March	S. 31 11 W.	26
April	S. 6 40 W.	31
May	S. 5 33 W.	47
June	S. 10 23 W.	49
July	S. 6 57 W.	55
August	S. 7 44 W.	37½
September	S. 14 1 E.	18
October	S. 35 57 W.	19
November	S. 44 46 W.	28
December	S. 27 5 W.	21

No. 67.—Forts Gibson, Smith, and Wayne.[1] 8 stations.

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 61° 8′ E.	10
February	S. 46 18 E.	20
March	S. 46 45 E.	18
April	S. 24 52 E.	28
May	S. 29 20 E.	60
June	S. 31 31 E.	66½
July	S. 33 44 E.	37
August	S. 40 28 E.	34
September	S. 79 40 E.	31½
October	S. 70 43 E.	18
November	N. 2 6 W.	19
December	S. 8 57 W.	2

No. 68.—Fort Vancouver, Oregon.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 52° 58′ E.	54
February	S. 9 14 W.	27
March	S. 18 44 E.	23½
April	S. 2 32 W.	31
May	S. 25 45 W.	46
June	S. 7 20 W.	39
July	S. 16 2 W.	35
August	S. 18 57 W.	58
September	S. 12 5 E.	59
October	S. 24 10 E.	49
November	S. 51 27 E.	70½
December	S. 47 47 E.	66
The year	S. 15 37 E.	41

No. 69.—Hamilton, Bermudas.

3½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 52° 17′ W.	15
February	S. 72 16 W.	16½
March	S. 82 29 W.	38
April	S. 51 39 W.	23
May	S. 38 22 W.	30
June	S. 34 20 W.	55
July	S. 9 43 W.	43
August	S. 25 14 E.	44
September	S. 20 54 E.	16
October	N. 59 49 E.	30
November	N. 17 49 W.	18
December	S. 89 29 W.	29
The year	S. 45 48 W.	20

[1] Near the N. W. corner of Arkansas.

SERIES D.—*Continued.*

No. 70.—Ireland Isle, Bermudas.

4 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March		
April		
May		
June		
July		
August	S. 6° 47′ W.	41
September	S. 9 37 W.	17
October	N. 35 22 E.	28½
November	N. 38 13 W.	35
December		

No. 71.—Bermuda Islands.—2 stations.

3 5-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 52° 17′ W.	15	North	23
Feb.	S. 72 16 W.	16½	N. 16° W.	8
March	S. 82 29 W.	38	N. 70 W.	25
April	S. 51 39 W.	23	N. 67½ W.	3
May	S. 38 22 W.	30	S. 25½ W.	12
June	S. 34 20 W.	55	S. 30 W.	38
July	S. 9 43 W.	43	S. 15 E.	30
Aug.	S. 17 57 E.	42	S. 42 E.	38
Sept.	S. 14 42 E.	16	S. 83 E.	20
Oct.	N. 51 51 E.	29	N. 50 E.	55
Nov.	N. 27 56 W.	23	N. 3½ E.	34
Dec.	S. 89 29 W.	29	N. 49 W.	21

No. 72.—North Atlantic Ocean, Lat. 50° to 55°.

1202 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	S. 45° 57′ W.	28	S. 38½° E.	8
Feb.	S. 40 14 W.	33	S. 14 W.	11
March	S. 31 58 W.	28	S. 20 E.	10
April	S. 17 40 W.	17	S. 80 E.	18
May	S. 4 45 E.	10	N. 80 E.	20
June	S. 35 5 W.	25½	S. 26 E.	8
July	S. 65 29 W.	36	S. 87 W.	14
Aug.	S. 67 16 W.	33	N. 88 W.	12
Sept.	S. 43 1 W.	18	N. 86 E.	6
Oct.	S. 6 5 E.	13	N. 87 E.	20
Nov.	S. 87 22 W.	34	N. 51 W.	20
Dec.	N. 85 17 W.	36	N. 45 W.	24
The year	S. 52 41 W.	23		

No. 73.—North Atlantic Ocean, Lat. 45° to 50°.

2829 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 60° 25′ W.	32
February	S. 52 59 W.	28
March	S. 78 59 W.	23
April	S. 86 42 W.	18
May	S. 59 28 W.	17
June	S. 63 36 W.	34
July	S. 78 32 W.	32
August	S. 81 45 W.	33
September	S. 65 31 W.	19
October	N. 82 13 W.	27
November	N. 89 8 W.	33
December	S. 72 52 W.	41
The year	S. 74 19 W.	27

No. 74.—North Atlantic Ocean, Lat. 40° to 45°, Lon. from Greenwich, 45° to 75°.

3757 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 73° 28′ W.	22	N. 8° 20′ W.	8
Feb.	N. 51 48 W.	32	N. 13 41 W.	21
Mar.	S. 82 8 W.	16	S. 79 33 E.	3
April	N. 86 53 W.	19	N. 19 27 E.	3
May	S. 56 29 W.	15	S. 48 16 E.	10
June	S. 52 10 W.	35	S. 20 20 W.	22
July	S. 50 32 W.	34	S. 0 55 W.	20
Aug.	S. 18 52 W.	22	S. 33 47 E.	23
Sept.	N. 68 44 W.	16	N. 33 56 E.	9
Oct.	N. 67 33 W.	23	N. 12 29 W.	10
Nov.	N. 68 51 W.	26	N. 21 22 W.	12
Dec.	N. 82 22 W.	24	N. 38 27 W.	6
The year	S. 85 8 W.	19		

No. 75.—North Atlantic Ocean, Lat. 40° to 45°, Lon. from Greenwich 0° to 45°.

5424 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	S. 57° 49′ W.	43	S. 30° W.	19
Feb.	S. 72 6 W.	38	S. 63 W.	11
March	N. 79 24 W.	32	N. 22 W.	14
April	S. 70 0 W.	25	S. 68 W.	3
May	S. 83 53 W.	31	N. 50 W.	7
June	S. 68 4 W.	33	S. 40 W.	7
July	S. 14 34 W.	30	S. 40 E.	28
Aug.	S. 48 8 W.	21	S. 57 E.	12
Sept.	N. 17 15 W.	6	N. 61 E.	25
Oct.	N. 78 53 W.	31	N. 18 W.	14
Nov.	S. 71 46 W.	35	S. 64 W.	8
Dec.	N. 86 59 W.	31	N. 27 W.	11
The year	S. 73 8 W.	27		

SERIES D.—*Continued.*

No. 76.—North Atlantic Ocean, Lat. 35° to 40°, Lon. from Greenwich 45° to 75°.

4790 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	N. 86° 22′ W.	32	N. 74° 6′ W.	14
Feb.	N. 56 24 W.	28	N. 18 33 W.	18
March	N. 76 10 W.	29	N. 48 4 W.	13
April	N. 75 6 W.	16	N. 26 29 E.	7
May	S. 43 3 W.	12	S. 55 49 E.	14
June	S. 50 40 W.	29½	S. 14 85 W.	17
July	S. 45 2 W.	86	S. 16 39 W.	25
Aug.	S. 24 1 W.	21	S. 29 87 E.	20
Sept.	S. 68 4 W.	5	S. 89 59 E.	14
Oct.	N. 11 32 E.	4	N. 83 47 E.	19
Nov.	N. 76 40 W.	30	N. 50 56 W.	14
Dec.	N. 64 30 W.	30	N. 30 27 W.	17
The year	S. 84 0 W.	18½		

No. 77.—North Atlantic Ocean, Lat. 35° to 40°, Lon. from Greenwich, 0° to 45°.

2590 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 57° 13′ W.	24½
February	S. 55 7 W.	30
March	S. 79 21 W.	7
April	S. 72 57 W.	10
May	N. 64 44 W.	12
June	S. 56 51 W.	16
July	S. 45 33 W.	24
August	S. 37 22 W.	20
September	S. 44 38 W.	7
October	S. 26 48 W.	11
November	S. 9 30 E.	35
December	S. 40 56 W.	9
The year	S. 44 26 W.	15

No. 78.—Atlantic Ocean, North of Lat. 36°.[1]

7 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 58° 57′ W.	16
February	N. 77 20 W.	32
March	N. 81 14 W.	27
April	S. 89 41 W.	46
May	N. 84 8 W.	26½
June	S. 67 37 W.	34
July	S. 87 31 W.	42
August	N. 88 41 W.	46
September	N. 77 37 W.	38
October	N. 78 47 W.	38
November	N. 88 33 W.	23
December	S. 82 15 W.	30
The year	N. 87 34 W.	30

No. 79.—North Atlantic Ocean, Lat. 30° to 35°, Lon. from Greenwich, 5° to 45°.

1749 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 46° 8′ E.	12
February	S. 2 47 E.	25
March	S. 27 53 E.	9½
April	S. 1 29 W.	31
May	N. 88 32 E.	8
June	N. 30 9 W.	1
July	N. 32 35 E.	22½
August	S. 76 18 E.	11½
September	N. 14 40 E.	18
October	N. 45 21 E.	8
November	S. 21 58 E.	29
December	S. 42 25 E.	26
The year	S. 44 27 E.	10

No. 80.—North Atlantic Ocean, Lat. 30° to 35°, Lon. from Greenwich, 45° to 75°.

2564 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	S. 80° 10′ W.	16	N. 56° 27′ W.	12
Feb.	S. 79 16 W.	30	N. 80 59 W.	24
March	S. 73 19 W.	21	N. 76 54 W.	15
April	S. 49 3 W.	11	N. 49 44 W.	3
May	S. 62 43 E.	14	N. 80 48 E.	18
June	S. 22 27 W.	29	S. 16 58 W.	18
July	S. 8 41 E.	35	S. 23 38 E.	28
Aug.	S. 7 11 E.	19	S. 40 38 E.	13
Sept.	S. 49 8 E.	19	S. 81 23 E.	20
Oct.	N. 85 7 E.	18	N. 65 17 E.	26
Nov.	S. 84 32 W.	10	N. 63 46 W.	9
Dec.	N. 81 21 W.	29	N. 59 4 W.	27
The year	S. 31 35 W.	11		

No. 81.—North Atlantic Ocean, Lat. 25° to 30°, Lon. from Greenwich, 15° to 45°.

1622 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	N. 78° 26′ E.	19	S. 18° W.	9
Feb.	N. 43 35 E.	11	S. 76 W.	16
March	N. 80 19 E.	3	S. 60 40′ W.	24
April	N. 79 39 E.	8	S. 55 46 W.	19
May	N. 67 39 E.	8	S. 60 42 W.	18
June	N. 42 48 E.	35	N. 5 E.	15
July	N. 44 35 E.	67	N. 30 E.	45
Aug.	N. 53 11 E.	61	N. 45 E.	38
Sept.	N. 62 36 E.	33	N. 61 32 E.	7
Oct.	N. 73 31 E.	27	S. 28 E.	5
Nov.	N. 78 50 E.	20	S. 15½ W.	9
Dec.	S. 70 27 E.	38	S. 24 E.	27
The year	N. 62 53 E.	26		

[1] The results in this table do not include those in any of the preceding ones, being computed from entirely different data. All the others, from No. 72 to No. 90 inclusive, were obtained from data contained in Lieutenant Maury's valuable Wind and Current Charts of the North Atlantic, a copy of which did not reach me till after this table had been computed from data previously in my possession, and the sheets made ready for the press.

SERIES D.—*Continued.*

No. 82.—North Atlantic Ocean, Lat. 25° to 30°, Lon. from Greenwich, 45° to 80°.

2906 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 42° 50′ E.	15	N. 46° 46′ W.	24
Feb.	N. 55 7 E.	10	N. 60 0 W.	22
March	N. 74 23 E.	3	N. 76 3 W.	25
April	N. 78 31 E.	25	N. 15 16 W.	11
May	S. 63 52 E.	43	S. 39 11 E.	18
June	S. 43 17 E.	44	S. 5 42 E.	27
July	S. 67 2 E.	57	S. 55 52 E.	30
Aug.	S. 74 51 E.	47	S. 68 42 E.	19
Sept.	S. 81 43 E.	35	N. 87 50 E.	7
Oct.	S. 69 14 E.	39	S. 46 28 E.	12
Nov.	N. 66 16 E.	45	N. 30 20 E.	16
Dec.	N. 70 26 E.	2	N. 76 51 W.	26
The year	S. 79 4 E.	28		

No. 83.—North Atlantic Ocean, Lat. 20° to 25°, Lon. from Greenwich, 15° to 45°.

1334 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 64° 9′ E.	38	S. 24½° W.	23
Feb.	N. 56 50 E.	53	S. 21½ E.	8
March	N. 26 6 E.	21	S. 62 W.	39
April	N. 43 0 E.	51½	S. 88 W.	10
May	N. 45 34 E.	67	N. 20 E.	10
June	N. 48 49 E.	74	N. 45 22′ E.	19
July	N. 37 45 E.	85	N. 10 E.	28
Aug.	N. 42 1 E.	84	N. 20 E.	26
Sept.	N. 51 8 E.	71	N. 64½ E.	15
Oct.	N. 57 58 E.	50	S. 8 W.	11
Nov.	N. 67 7 E.	53	S. 14½ E.	19
Dec.	N. 65 9 E.	59	S. 27 E.	17
The year	N. 55 20 E.	58		

No. 84.—North Atlantic Ocean, Lat. 20° to 25°, Lon. from Greenwich, 45° to 80°.

1573 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 65° 29′ E.	35	N. 76½° W.	24
Feb.	N. 75 53 E.	50½	N. 72 W.	5
March	N. 72 33 E.	37½	N. 84 W.	18
April	N. 82 4 E.	46	S. 66 1′ W.	9
May	N. 80 1 E.	65	N. 83 28 E.	10
June	N. 80 42 E.	65	N. 87 51 E.	10
July	N. 78 24 E.	81	N. 76 18 E.	26
Aug.	N. 72 6 E.	76	N. 53 E.	24
Sept.	N. 83 0 E.	54	S. 3 W.	4
Oct.	S. 68 49 E.	55	S. 5½ W.	31
Nov.	N. 79 1 E.	52	S. 85 38 W.	8
Dec.	N. 69 52 E.	57	North	13
The year	N. 79 23 E.	55		

No. 85.—North Atlantic Ocean, Lat. 15° to 20°, Lon. from Greenwich, 45° to 80°.

1190 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 64° 21′ E.	78	N. 7° 40′ W.	8
Feb.	N. 58 25 E.	86	N. 6 W.	17
March	N. 67 21 E.	75	N. 52 30 W.	4
April	N. 77 27 E.	64	S. 86 W.	20
May	N. 68 21 E.	84	N. 64 23 E.	7
June	N. 60 20 E.	95	N. 24 15 E.	23
July	N. 62 25 E.	87½	N. 21 45 E.	15
Aug.	N. 70 38 E.	80	S. 38 E.	5
Sept.	N. 83 32 E.	73	S. 2 W.	20
Oct.	N. 83 49 E.	70	S. 8 W.	18
Nov.	N. 75 48 E.	72	S. 7 W.	12
Dec.	N. 61 5 E.	73	N. 40 30 W.	10
The year	N. 68 43 E.	77		

No. 86.—North Atlantic Ocean, Lat. 15° to 20°, Lon. from Greenwich, 15° to 45°.

1332 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 50° 42′ E.	75	S. 1° 32′ W.	3
Feb.	N. 46 48 E.	71	S. 74 8 W.	7
March	N. 49 29 E.	68	S. 45 27 W.	8
April	N. 49 28 E.	80	N. 60 56 E.	8
May	N. 43 50 E.	81	N. 35½ W.	7
June	N. 42 8 E.	90	N. 3½ E.	16
July	N. 41 26 E.	99	N. 14 E.	23
Aug.	N. 40 49 E.	75	N. 54 W.	11
Sept.	N. 54 14 E.	76	S. 15 E.	9
Oct.	N. 54 50 E.	67	S. 13 W.	13
Nov.	N. 60 50 E.	78	S. 87½ E.	15
Dec.	N. 58 5 E.	75	S. 16 E.	13
The year	N. 49 1 E.	77½		

No. 87.—North Atlantic Ocean, Lat. 10° to 15°, Lon. from Greenwich, 45° to 75°.

662 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.	
			Direction.	Am't.
Jan.	N. 55° 0′ E.	87	North	10
Feb.	N. 52 12 E.	90	N. 3½° E.	15
March	N. 58 14 E.	87	N. 20 E.	12
April	N. 59 59 E.	83	N. 65½ E.	1
May	N. 63 8 E.	89	S. 79 E.	8
June	N. 51 50 E.	96	N. 12 E.	22
July	N. 56 49 E.	89	S. 25½ E.	7
Aug.	N. 65 14 E.	85	S. 67 E.	10
Sept.	N. 82 29 E.	55	S. 25½ W.	38
Oct.	N. 73 52 E.	67	S. 17 W.	24
Nov.	N. 57 37 E.	89	N. 27 E.	11
Dec.	N. 54 38 E.	74	N. 72½ W.	13
The year	N. 59 55 E.	82		

SERIES D.—*Continued.*

No. 88.—North Atlantic Ocean, Lat. 10° to 15°, Lon. from Greenwich, 15° to 45°.

1850 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Am't.
Jan.	N. 55° 30′ E.	85	N. 21° 2′ E.	7
Feb.	N. 54 41 E.	81	N. 26 58 W.	4
March	N. 55 51 E.	89	N. 37 30 E.	9
April	N. 56 44 E.	88	N. 44 19 E.	7
May	N. 49 14 E.	90	N. 2 0 E.	15
June	N. 55 0 E.	75	N. 84 23 W.	6
July	N. 57 2 E.	42	S. 59 4 W.	38
Aug.	N. 49 18 E.	17	S. 61 W.	47
Sept.	N. 46 6 E.	23	S. 63 W.	59
Oct.	N. 69 20 E.	55	S. 28½ W.	29
Nov.	N. 68 54 E.	78	S. 9½ E.	18
Dec.	N. 61 33 E.	78	S. 9 W.	13
The year	N. 57 25 E.	66		

No. 89.—North Atlantic Ocean, Lat. 5° to 10, Lon. from Greenwich, 10° to 55°.

3339 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.[1] Direction.	Am't.
Jan.	N. 47° 5′ E.	65	N. 17° W.	25
Feb.	N. 44 56 E.	72	N. 9 W.	27
March	N. 45 3 E.	74	N. 7 W.	29
April	N. 44 50 E.	82	N. 10 E.	36
May	N. 55 38 E.	69	N. 18½ E.	15
June	S. 89 1 E.	30	S. 43 W.	83
July	S. 7 1 E.	45	S. 36 W.	86
Aug.	S. 4 59 W.	71	S. 26 W.	104
Sept.	S. 8 26 W.	58	S. 28 W.	94
Oct.	S. 88 2 E.	30	S. 36 W.	61
Nov.	S. 82 15 E.	55	S. 1½ E.	32
Dec.	N. 60 25 E.	52	N. 86 W.	9
The year	N. 80 32 E.	34		

No. 90.—North Atlantic, Lat. 0° to 5°.

3065 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.[1] Direction.	Am't.
Jan.	S. 81° 46′ E.	58	S. 56° W.	17
Feb.	N. 88 31 E.	54	N. 70 W.	15
March	N. 63 18 E.	52	N. 43½ W.	30
April	N. 52 18 E.	56	N. 35½ W.	39
May	S. 89 59 E.	48	S. 81 W.	17
June	S. 47 45 E.	69	S. 19½ W.	50
July	S. 37 17 E.	82	S. 14 W.	70
Aug.	S. 20 52 E.	84	S. 24 W.	87
Sept.	S. 20 15 E.	79	S. 25½ W.	86
Oct.	S. 38 0 E.	72	S. 20 W.	65
Nov.	S. 58 28 E.	80	S. 2 E.	45
Dec.	S. 68 23 E.	56	S. 28½ W.	28
The year	S. 60 2 E.	55		

No. 91.—Funchal, Island of Madeira.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces.[1] Direction.	Am't.
Jan.	N. 9° 43′ E.	11	S. 24° W.	35
Feb.	N. 6 8 W.	45	S. 84 W.	25
March	N. 18 28 E.	43	S. 62½ W.	5
April	N. 18 38 E.	31	S. 31 W.	19
May	N. 11 2 E.	52	N. 47 W.	11
June	N. 14 18 E.	50	N. 54½ W.	7
July	N. 28 29 E.	62	N. 54 E.	16
Aug.	N. 48 17 E.	96	N. 75 E.	54
Sept.	N. 24 46 W.	27	S. 61 W.	34
Oct.	N. 87 43 E.	47	S. 68 E.	16
Nov.	N. 8 49 E.	50	N. 32 W.	17
Dec.	N. 30 22 E.	63	N. 3 E.	25
The year	N. 23 50 E.	45		

No. 92.—Azores and vicinity.[2]—6 stations.

581 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	N. 81° 41′ W.	19
February . .	S. 52 13 W.	78
March . . .	N. 17 35 E.	53
April . . .	S. 15 4 W.	35
May . . .	N. 72 20 W.	22
June . . .	N. 45 5 W.	16
July . . .	N. 45 5 W.	16
August . .	S. 50 15 W.	35
September . .	S. 44 10 W.	41
October . .	S. 41 38 W.	48
November . .	S. 15 58 W.	56
December . .	N. 21 37 W.	26
The year . .	S. 63 21 W.	21

No. 93.—Gibraltar and vicinity.[3]

586 DAYS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	N. 39° 52′ W.	16
February . .		
March . . .	N. 2 40 W.	79
April . . .	S. 78 10 W.	12
May . . .	N. 12 30 E.	15
June . . .	S. 89 24 W.	39½
July . . .	N. 74 10 E.	44
August . .	N. 86 48 E.	54
September . .	N. 16 20 W.	22
October . .	N. 67 55 E.	27
November . .	N. 61 37 E.	92
December . .	S. 84 35 E.	36
The year . .	N. 38 18 E.	23

[1] In computing these deflecting forces, the mean annual direction of the wind in the same latitude in *mid ocean* was taken as the standard of comparison, on account of the influence of the Great Desert, which affects the annual results all along the African coast in these latitudes, as may be readily seen by inspecting the length and position of the arrows on Plate XIII.

[2] These results are obtained from observations taken at five different islands for a joint period of 205 days, and on board ships in the vicinity for 376 days.

[3] These results are obtained from observations taken at Gibraltar for 76 days, and on board ships in the vicinity of the straits for 510 days.

SERIES D.—*Continued.*

No. 94.—St. Petersburg, Russia.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 40° 16′ W.	38
February	S. 16 48 W.	38
March	S. 5 3 E.	35
April	S. 20 49 E.	22
May	N. 65 49 W.	6
June	N. 4 7 W.	3
July	S. 62 54 W.	17
August	S. 84 23 W.	10½
September	S. 30 17 W.	12
October	S. 1 52 W.	32
November	S. 18 19 E.	35
December	S. 1 13 W.	33½

No. 95.—Cronberg, Sweden.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 84° 28′ E.	41
February	S. 31 57 W.	14
March	N. 85 33 W.	50
April	N. 62 57 E.	77
May	N. 35 43 E.	33
June	N. 74 7 W.	24
July	N. 87 26 W.	35
August	N. 60 33 E.	25
September	S. 64 37 W.	9
October	S. 65 11 W.	22
November	N. 50 25 W.	30½
December	N. 45 33 W.	23½
The year	N. 17 48 W.	9

No. 96.—Dantzic, Prussia.

13 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 50° 24′ W.	
February	S. 19 0 W.	
March	S. 84 20 W.	
April	N. 69 7 W.	
May	N. 88 30 W.	
June	N. 41 31 W.	
July	N. 72 38 W.	
August	S. 82 43 W.	
September	S. 71 46 W.	
October	S. 37 16 W.	
November	S. 54 47 W.	
December	S. 48 1 W.	
The year	S. 68 7 W.	11

No. 97.—Berlin, Prussia.

11 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 48° 26′ E.	24
February	S. 40 14 W.	36
March	S. 67 27 W.	45
April	S. 70 54 W.	50
May	S. 60 54 W.	21
June	West	57
July	N. 80 29 W.	95½
August	West	84
September	S. 78 20 W.	58
October	S. 22 28 W.	37½
November	S. 7 47 W.	21½
December	S. 45 0 W.	33
The year	S. 78 17 W.	29

No. 98.—Posen, Poland (combined with No. 97).

11½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 77° 48′ E.	42
February	S. 37 38 W.	42
March	S. 53 37 W.	21
April	S. 70 54 W.	50
May	S. 60 54 W.	21
June	West	57
July	N. 80 29 W.	95½
August	West	67½
September	S. 77 57 W.	58½
October	S. 41 13 W.	50
November	S. 21 13 W.	26
December	S. 41 21 W.	31

No. 99.—Carlsruhe, Baden, Germany.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 47° 58′ W.	34½
February	S. 56 7 W.	35
March	N. 59 23 W.	15
April	N. 0 45 W.	29
May	S. 76 31 W.	14½
June	S. 74 33 W.	9
July	S. 44 26 W.	16
August	S. 63 59 W.	23
September	S. 51 17 W.	5½
October	S. 46 50 W.	30
November	S. 48 59 E.	6
December	S. 78 57 W.	6
The year	S. 73 19 W.	17

SERIES D.—*Continued.*

No. 100.—Average duration of winds in each month, in Germany, deduced from observations taken at nineteen different stations, for an aggregate period of 19½ years.

Months.	N.	N. N. E.	N. E.	E. N. E.	E.	E. S. E.	S. E.	S. S. E.	S.	S. S. W.	S. W.	W. S. W.	W.	W. N. W.	N. W.	N. N. W.	Calm.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	1.72	.19	2.49	.18	2.07	.42	3.93	.40	2.27	.19	7.47	.05	6.30	.19	2.52	.42	.19	S. 51° 28′ W.	28	S. 18° E.	11
Feb.	1.94	.15	3.75	.23	4.24	.12	2.98	.17	1.92	.15	4.35	.17	3.67	.20	3.74	.43	.03	N. 48 56 W.	2	N. 79 E.	18
Mar.	1.90	.28	3.57	.33	5.03	.13	2.41	.17	2.65	.13	4.68	.15	4.42	.19	4.56	.39	.01	N. 77 47 W.	5	N. 78 E.	14
April	3.42	.40	3.84	.20	3.86	.17	1.83	.07	1.67	.10	3.00	.07	6.34	.28	4.00	.62	.13	N. 36 23 W.	20	N. 21 E.	19
May	2.38	.50	4.33	.43	4.61	.17	2.27	.22	1.49	.18	4.66	.27	5.70	.35	3.06	.28	.10	N. 47 3 W.	8	N. 60½ E.	15
June	3.18	.25	2.84	.15	1.83	.23	1.44	.17	1.24	.22	4.79	.43	6.58	.72	5.28	.55	.00	N. 68 55 W.	35	N. 43 W.	20
July	1.99	.12	1.79	.12	1.72	.27	1.51	.08	1.63	.20	5.87	.63	8.97	.51	5.21	.33	.05	N. 89 24 W.	44	N. 85 W.	25
Aug.	1.66	.08	2.35	.12	3.78	.39	2.37	.33	2.54	.48	4.72	.43	6.85	.46	4.24	.12	.08	S. 73 7 W.	21	S. 15 W.	4
Sept.	1.94	.07	2.90	.21	5.42	.48	2.08	.20	2·08	.30	4.03	.21	5.91	.31	3.68	.16	.02	S. 87 7 W.	8	N. 83 E.	11
Oct.	.79	.12	1.71	.29	2.59	.72	2.81	.21	1.68	.45	6.57	.32	9.54	.34	2.63	.21	.02	S. 63 56 W.	36	S. 43 W.	19
Nov.	1.54	.25	2.51	.20	4.04	.48	2.90	.30	2.82	.28	6.92	.23	5.08	.27	1.84	.27	.07	S. 31 31 W.	21	S. 27 E.	18
Dec.	1.03	.48	3.04	.61	2.55	.29	3.54	.21	1.91	.30	6.29	.23	7.76	.43	2.07	.20	.06	S. 76 51 W.	27	S. 60 W.	6
Total.	23.49	2.89	35.12	3.07	41.74	3.87	30.07	2.53	23.90	2.98	63.35	3.19	77.12	4.25	42.83	3.98	.86	S. 82 4 W.	20		

No. 101.—Franeker, Holland.

13 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 38° 49′ W.	8
February	S. 37 20 W.	84
March	N. 60 59 W.	16
April	N. 64 32 W.	33
May	N. 61 21 W.	33
June	N. 63 42 W.	45
July	N. 88 46 W.	50
August	S. 82 43 W.	46½
September	S. 62 4 W.	25
October	S. 49 17 W.	33
November	S. 45 55 W.	15
December	S. 46 27 W.	24
The year	S. 81 29 W.	27

No. 102.—Brussels, Belgium.

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 74° 48′ W.	80½
February	S. 47 19 W.	68
March	S. 60 7 W.	8
April	S. 77 88 W.	13
May	N. 62 26 W.	32
June	N. 60 8 W.	41
July	S. 83 85 W.	77
August	S. 45 0 W.	23
September	S. 61 34 W.	53
October	S. 25 30 W.	66
November	S. 45 0 W.	71
December	S. 66 42 W.	55½
The year	S. 64 22 W.	39

No. 103.—Holland and Belgium.—3 stations.

28 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
January	S. 59° 58′ W.	15	N. 89° E.	16
February	S. 46 56 W.	47	S. 12 W.	24
March	N. 78 54 W.	11	N. 59 E.	21
April	N. 63 46 W.	21	N. 29 E.	20
May	N. 61 38 W.	32	N. 1½ E.	24
June	N. 61 26 W.	43	N. 17 W.	31
July	S. 88 21 W.	59½	N. 79 W.	30
August	S. 73 54 W.	34	S. 74 W.	4
September	S. 60 36 W.	34½	S. 10 W.	8
October	S. 38 33 W.	44	S. 4 E.	26
November	S. 44 9 W.	32	S. 24 E.	16
December	S. 51 47 W.	37	S. 2 W.	14

No. 104.—Elgin, Scotland.

3 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 46° 18′ W.	50½
February	S. 50 21 W.	61
March	S. 49 34 W.	54
April	S. 51 37 W.	33
May	N. 70 23 W.	31
June	S. 82 8 W.	27
July	S. 44 17 W.	43
August	S. 46 17 W.	39
September	S. 12 55 W.	48½
October	S. 45 7 W.	58
November	S. 23 12 W.	66
December	S. 40 18 W.	48
The year	S. 44 47 W.	44

SERIES D.—*Continued.*

No. 105.—Great Britain.—5 stations.

16½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.	Deflecting forces. Direction.	Deflecting forces. Am't.
Jan.	S. 66° 36′ W.	20	S. 29½° E.	4
Feb.	S. 51 19 W.	35	S. 18½ W.	19
March	S. 70 58 W.	8	N. 83 E.	12
April	N. 58 58 W.	10	N. 53 E.	15
May	N. 74 2 W.	5	N. 70 E.	16½
June	N. 69 33 W.	25	N. 12 W.	13
July	N. 87 49 W.	38	N. 72 W.	18
Aug.	S. 84 34 W.	37	N. 89 W.	16
Sept.	S. 37 42 W.	10½	S. 73 E.	15
Oct.	S. 57 57 W.	21	S. 23 E.	7
Nov.	S. 77 28 W.	24	S. 63½ W.	3
Dec.	S. 68 59 W.	26	S. 37 W.	6

No. 106.—London, England.[1]

12 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 86° W.	
February	S. 63 W.	
March	N. 20 W.	
April	N. 12 E.	
May	S. 51 E.	
June	N. 65 W.	
July	N. 89 W.	
August	N. 86 W.	
September	S. 77 W.	
October	S. 51 W.	
November	S. 88 W.	
December	S. 89 W.	
The year	N. 89 2′ W.	16

No. 107.—Northern France.[2]—7 stations.

116 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 83° 54′ W.	5
February	S. 66 52 W.	17
March	N. 56 48 W.	10
April	N. 11 2 W.	13
May	N. 87 9 W.	11
June	N. 52 27 W.	15
July	S. 62 54 W.	30½
August	S. 79 20 W.	21
September	S. 6 17 W.	14
October	S. 26 21 W.	21
November	S. 41 2 W.	22
December	S. 37 11 W.	11

No. 108.—Paris, France.

40 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 50° 55′ W.	14½
February	S. 59 4 W.	20½
March	N. 76 7 W.	13½
April	N. 51 42 W.	10
May	S. 79 26 W.	11
June	N. 88 0 W.	27
July	S. 85 49 W.	37
August	S. 79 27 W.	34½
September	S. 53 46 W.	17
October	S. 37 29 W.	24
November	S. 39 25 W.	30
December	S. 39 15 W.	24

No. 109.—Mount St. Gothard, Switzerland.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 17° 47′ E.	20
February	N. 47 35 W.	49
March	S. 54 47 W.	26
April	N. 52 58 W.	52
May	N. 49 52 W.	38
June	N. 47 44 W.	59½
July	N. 55 48 W.	40
August	S. 87 56 W.	20
September	S. 23 19 E.	8½
October	N. 49 33 W.	36
November	S. 8 50 W.	12
December	S. 30 27 E.	49
The year	N. 82 56 W.	26

No. 110.—Parma and Genoa, Italy.

13 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 48° 42′ W.	34
February	N. 6 36 E.	34
March	N. 11 22 E.	32
April	N. 20 37 E.	25
May	N. 9 21 E.	23
June	S. 65 35 W.	1½
July	S. 47 31 W.	15
August	N. 4 42 E.	36
September	N. 21 38 W.	7
October	N. 9 47 E.	4
November	N. 63 48 W.	47
December	N. 38 32 W.	44

[1] Copied from Kaempts's Meteorology.

[2] An inspection of the data on pages 96 and 100, from which this table is computed, will show that no great reliance can be placed on the results, less so, probably, than in those at Paris alone (No. 108).

SERIES D.—*Continued.*

No. 111.—Rome and Naples, Italy.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	N. 11° 7′ E.	35
February . .	N. 14 53 E.	29
March . . .	S. 89 16 W.	21
April . . .	N. 35 50 W.	14
May . . .	S. 51 51 W.	25
June . . .	S. 61 33 W.	17
July . . .	S. 47 28 W.	35
August . .	S. 45 1 W.	43
September . .	S. 74 28 W.	25
October . .	N. 34 48 W.	14
November . .	N. 40 35 W.	5
December . .	N. 35 49 E.	36

No. 112.—Vienna and Schoenthal, Austria.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	S. 78° 24′ W.	45
February . .	N. 73 47 E.	39
March . . .	S. 50 50 W.	24
April . . .	N. 20 35 W.	17
May . . .	N. 5 18 W.	20
June . . .	N. 83 7 W.	35
July . . .	N. 86 48 W.	50
August . .	S. 65 48 W.	27
September . .	S. 51 7 W.	18
October . .	S. 37 40 W.	46
November . .	S. 34 48 W.	35
December . .	S. 42 4 W.	30

No. 113.—Graetz, Austria.[1]

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	S. 41° 56′ E.	
February . .	S. 52 35 E.	
March . . .	S. 80 55 E.	
April . . .	S. 77 1 E.	
May . . .	69 13 E.	
June . . .	N. 69 57 E.	
July . . .	S. 49 32 E.	
August . .	S. 56 53 E.	
September . .	S. 66 54 E.	
October . .	S. 85 23 E.	
November . .	S. 82 37 W.	
December . .	S. 14 36 E.	
The year . .	S. 75 58 E.	

No. 114.—Lougan, Southern Russia.

2 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	S. 28° 9′ E.	13
February . .	S. 24 59 W.	15
March . .	S. 68 29 E.	45
April . . .	S. 69 46 E.	32
May . . .	S. 71 46 E.	37
June . . .	N. 44 18 W.	14
July . . .	N. 86 24 E.	7
August . .	S. 25 33 W.	5
September . .	S. 88 13 E.	44
October . .	S. 81 44 E.	17
November . .	S. 4 10 E.	13
December . .	S. 70 50 E.	21

No. 115.—Turkey, Asia Minor, Armenia, and Georgia.—5 stations.

5 1-6 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	S. 83° 12′ E.	21
February . .	S. 74 21 E.	21
March . . .	N. 40 17 E.	26
April . . .	N. 36 36 E.	32
May . . .	N. 8 57 W.	17
June . . .	N. 19 19 E.	24
July . . .	N. 44 2 E.	33
August . . .	N. 42 22 E.	36
September . .	N. 36 30 E.	20
October . .	N. 17 23 E.	19
November . .	S. 59 34 W.	5
December . .	N. 27 38 E.	4

No. 116.—Syria.—2 stations.

19 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	N. 50° 49′ W.	55
February . .	S. 67 14 W.	50½
March . . .	S. 84 14 W.	32
April . . .	S. 46 9 W.	42½
May . . .	S. 72 37 W.	52
June . . .	S. 78 56 W.	58
July . . .		
August . .		
September . .		
October . .		
November . .	S. 84 8 W.	41
December . .	S. 51 24 W.	32
Total . .	S. 77 38 W.?	40½

[1] Copied from some source not now recollected.

SERIES D.—*Continued.*

No. 117.—Jerusalem, Palestine.

17 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 0° 35′ W.	44
February	N. 39 50 W.	59
March		
April	N. 50 44 W.	44
May	N. 40 54 W.	52
June	N. 39 36 W.	80
July	N. 46 2 W.	92
August	N. 40 38 W.	90
September	N. 14 2 W.	91½
October	N. 6 11 W.	78½
November	N. 38 28 W.	62
December	N. 36 57 E.	47
The year	N. 26 12 W.	62?

No. 118.—Bagdad (on the Euphrates).

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 66° 23′ W.	83
February	N. 21 53 W.	59
March	N. 74 30 W.	30
April	S. 80 11 W.	66
May	S. 65 48 W.	54
June	S. 73 59 W.	93½
July	N. 89 48 W.	98
August	S. 72 43 W.	86
September	S. 63 45 W.	71
October	N. 54 14 W.	87
November	N. 69 5 W.	66
December	N. 69 3 W.	56
The year	N. 84 49 W.	65

No. 119.—Bassora (head of Persian Gulf).

5 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February	S. 44° 16′ W.	39
March	N. 76 24 W.	36
April	S. 88 0 E.	27
May	N. 46 12 W.	72
June	N. 45 41 W.	100
July		
August		
September		
October		
November		
December		

No. 120.—Ooroomiah, Persia.

19 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 44° 25′ W.	49
February	S. 60 2 W.	64
March	S. 56 30 W.	64
April	S. 44 7 W.	48
May	S. 56 56 W.	50
June	N. 62 36 W.	34
July	S. 70 46 W.	48
August	N. 56 21 W.	48
September	S. 84 35 W.	28
October	S. 44 37 W.	58½
November	N. 88 57 W.	48
December	N. 51 25 W.	47½

No. 121.—Northern Persia.—3 stations.

27 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 44° 25′ W.	49
February	S. 86 54 W.	36
March	S. 62 33 W.	56
April	S. 74 40 W.	49
May	S. 46 48 W.	55
June	N. 62 36 W.	34
July	S. 70 46 W.	48
August	N. 56 21 W.	43
September	N. 81 32 W.	22
October	S. 56 49 W.	35
November	S. 85 43 W.	32
December	N. 74 16 W.	25

No. 122.—Persia and Mesopotamia.—5 stations.

44 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 86° 34′ W.	50
February	N. 78 39 W.	34
March	S. 76 49 W.	41
April	S. 74 18 W.	35
May	S. 74 55 W.	46
June	N. 73 19 W.	68
July	S. 83 38 W.	71
August	N. 88 55 W.	59
September	S. 77 7 W.	38
October	N. 83 20 W.	44
November	N. 81 44 W.	43
December	N. 71 37 W.	34

SERIES D.—*Continued.*

No. 123.—Patna, Futtehpore, and on the Ganges, Hindoostan.

8 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March		
April		
May	N. 81° 52′ E.	28
June	S. 78 41 E.	4
July	N. 88 34 E.	65
August	S. 84 28 W.	50
September	N. 78 41 W.	8
October	West	61
November	West	50
December	N. 58 14 W.	17

No. 124.—Calcutta, Hindoostan.[1]

8 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 23° W.	44
February	N. 37 W.	15
March	S. 10 W.	38
April	S. 17 W.	61
May	S. 12 E.	63
June	S. 10 E.	45
July	S. 12 E.	52
August	S. 25 E.	42
September	S. 31 E.	40
October	N. 46 W.	31
November	N. 19 W.	71
December	N. 25 W.	73
The year	S. 26 W.	13

No. 125.—Duklum, Hindoostan.

5 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 75° 36′ E.	18
February	N. 4 15 W.	5
March	N. 78 16 W.	19
April	N. 85 57 W.	50
May	S. 88 6 W.	62
June	S. 77 46 W.	72½
July	S. 78 29 W.	83
August	S. 87 39 W.	71
September	S. 86 30 W.	72
October	N. 13 30 E.	8
November	N. 80 36 E.	46
December	N. 88 54 E.	42
The year	S. 89 7 W.	26

No. 126.—Western Siberia (near Ural M'ts.). 8 stations.

4 YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 66° 32′ W.	41
February	S. 87 32 W.	85
March	S. 72 51 W.	29
April	N. 63 11 W.	14½
May	S. 56 53 W.	25
June	S. 75 54 W.	24
July	N. 70 10 W.	20
August	N. 27 8 W.	4
September	N. 80 10 W.	19
October	N. 88 9 W.	48
November	S. 72 43 W.	24
December	S. 78 40 W.	33

No. 127.—Barnoule, Siberia.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 41° 9′ W.	23
February	S. 22 15 W.	27
March	S. 32 56 W.	23
April	N. 23 53 W.	13
May	N. 37 46 W.	8
June	S. 38 42 W.	23
July	S. 6 54 W.	24
August	N. 69 31 E.	7
September	N. 53 58 E.	29
October	N. 24 14 E.	16
November	S. 34 29 E.	53
December	S. 22 33 W.	62
The year	S. 35 3 W.	19

No. 128.—Nertchinsk, Siberia.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 66° 20′ W.	6
February	S. 83 31 W.	10
March	S. 89 47 W.	17
April	N. 52 6 W.	35
May	N. 54 17 W.	31½
June	N. 4 54 E.	23½
July	S. 27 27 W.	6
August	S. 33 51 W.	11
September	S. 87 5 W.	18
October	N. 68 23 W.	36
November	N. 71 8 W.	24
December	N. 76 23 W.	8½
The year	N. 72 56 W.	19

[1] Copied from Kaempts's Meteorology.

SERIES D.—*Continued.*

No. 129.—Yacoutsk, Siberia.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 43° 45′ W.	68
February	N. 44 43 W.	52
March	N. 85 37 W.	59
April	N. 43 6 W.	64
May	N. 48 29 W.	45
June	N. 2 2 W.	37½
July	N. 50 0 W.	29
August	N. 19 39 E.	58½
September	S. 87 5 W.	56
October	N. 58 7 W.	53
November	N. 44 3 W.	66
December	N. 35 36 W.	66
The year	N. 45 20 W.	48

No. 130.—Pekin, China.

1 YEAR.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 50° 22′ W.	35
February	N. 68 55 W.	28
March	S. 18 12 W.	20
April	S. 17 20 W.	20
May	S. 10 46 W.	19
June	S. 30 7 E.	17
July	S. 1 28 W.	36
August	S. 9 5 E.	30
September	S. 85 15 W.	13
October	N. 48 37 W.	25
November	N. 43 32 W.	21
December	N. 40 43 W.	44
The year	S. 74 22 W.	11½

No. 131.—Tripoli, Northern Africa.

5 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January		
February		
March	N. 71° 22′ W.	15
April	N. 42 58 W.	14
May	N. 75 9 E.	41
June	N. 60 15 E.	45
July	N. 47 50 E.	52½
August		
September		
October		
November		
December		

No. 132.—Liberia, Sierra Leone, and vicinity.[1]

1½ YEARS.

Months.	Mean direction of Wind.	Rate of Progress.
January	S. 55° 43′ W.	36
February	N. 73 45 W.	38
March	N. 54 31 W.	49
April	S. 76 57 W.	51
May	S. 61 9 W.	46
June	S. 9 8 W.	77½
July	S. 2 25 W.	77½
August	S. 2 15 E.	91
September	S. 40 57 W.	81
October	S. 47 58 W.	70
November	S. 47 40 W.	96
December	S. 26 37 W.	80
The year	S. 39 43 W.	54

No. 133.—Sandwich Islands.[2]—2 stations.

13 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	North-easterly	10
February	Do.	36
March	Do.	58
April	Do.	66
May	Do.	87
June	Do.	87
July	N. 48° 21′ E.	88
August	North-easterly	93½
September	Do.	92
October	Do.	55
November	Do.	13
December	Do.	23

No. 134.—Navigator's Islands (Pago-pago).

10 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January	N. 9° 32′ W.	43
February	N. 26 34 E.	11
March	S. 75 58 E.	39
April	S. 42 8 E.	80
May	S. 45 0 E.	48
June	S. 42 53 E.	90
July	S. 39 34 E.	68
August	S. 42 8 E.	64½
September	S. 59 45 E.	65½
October	S. 45 0 E.	100

[1] These results are obtained from three months' observations at Bassa Cove, two months at Cape Palmas, and eleven months along the coast of Sierra Leone and Liberia.

[2] These results are obtained from observations taken at Oahu for one month, and at Waioli for one year. At the latter station, all the winds were recorded either as North-east or "Variable."

SERIES D.—*Continued.*

No. 135.—Madagascar (Tananarivou).

3 MONTHS.

Months.	Mean direction of Wind.	Rate of Progress.
January . .	N. 62° 5′ E.	28
February . .	S. 82 42 E.	79
March . . .	N. 71 53 E.	53

By combining in succession the resultants for the several months at any place, as given in the preceding series of tables, a general outline is obtained of the track pursued by the wind in the course of a year. The results, at a considerable number of places, are exhibited in Plates VII., VIII., and X. Each of the twelve parts, into which the curve is divided, shows the mean path of the wind in the corresponding month, the curve commencing in all cases with January, and ending with December.

It is obvious that much more extensive data would be needed, to secure accuracy in the form of the annual curve, than in the mean annual direction merely; and hence it was not thought worth while to exhibit in the plates any results based on less than three years' observations, except in a few rare localities. The numbers at the origin of the curves correspond with those in Series D, and may serve as references.

In order to render the form of the curves more distinct to the eye, they are drawn on a scale four times larger than the arrows which represent the mean annual directions, as may, in most cases, be seen by comparing the distance between the two extremities of any curve with the straight arrow for the same place. A few of the curves, however, are not computed from the same data as the mean annual direction, one embracing a greater number of years than the other, which produces slight discrepancies in the results.

In some few instances, where the general form of the curve was obvious, and where combining the results of two or three successive months would cancel irregularities, it has been done, and the tracks for the separate months preserved by means of dotted lines. As, for example, in the curve for Jerusalem (Plate VII. No. 117), the tracks for the months of November and December are united.

DEDUCTIONS AND REMARKS.

1. PLATES VII., VIII., and X. *disclose a system of winds on each side of the Atlantic Ocean possessing monsoon features.* If we represent the mean annual tracks by drawing straight lines from one extremity of each annual curve to the other, we perceive that on the western side of the Atlantic, the actual track falls south of these lines in the fore part of the year, and north of it in the latter part; and that on the eastern side the curvature is generally in the opposite direction. Out of thirty-five curves on the western side, in British America, the Eastern United States, and the western half of the Atlantic, there are but two exceptions; and both of these are between the parallels of latitude 31° and 33°, just on the limit which divides the equatorial winds from the westerly ones.

On the eastern side of the Atlantic, there is a general similarity in the form of the curves, yet by no means so great as on the western side. At sea, we perceive it only between the parallels of latitude 15° and 40°; but on land, all the curves show it, more or less, except that for St. Petersburg on the north, and that for Rome and Naples on the south. The opposite curvature of the latter, also that for Madeira, and the two at sea, south of latitude 10°, will be adverted to hereafter.

2. On the western side, the monsoon character of the winds is much more strongly marked *near the sea-coast* than in the *interior of the country.* Thus, on Plate VIII., the curvature is greater in the New England States (No. 28) than in the State of New York (No. 30) or Pennsylvania (No. 32). Compare, also, the curve for Pompey, in the interior of New York State (No. 29), with the curves east of it, all of which are for places nearer the sea-coast; or No. 40, which is derived from observations taken mostly at Nashville, in Tennessee,[1] with Nos. 33, 34, 35, 36, 37, or 41 near the coast. No. 37 is remarkable—almost equal to the monsoons of India, as may be seen by comparing it with the latter on Plate VII. In Ohio (Nos. 57, 58, and 59), the monsoon feature does not appear to exist at all, though there seems to be slight traces of it still farther west (Nos. 61, 62, and 63).

3. On the western side of the Atlantic, there appears to be considerable uniformity in the *time of the year* when the curves cross the mean annual path, particularly in the zone of westerly winds. Starting from the 1st of January, all the latter, both on sea and land, fall to the right or south of the line that represents the mean

[1] Five years at Nashville, two at Chapel Hill, in North Carolina, and ten months at other places.

direction, recross that line for the most part (thirteen curves out of twenty) in July, and continue on the north side till the end of the year. Four curves cross a little earlier, in June, and of the remaining three, the two at the extreme north (Newfoundland and Canada) cross in August, and the one at the extreme south, near the southern limit of the system, in May. The time seems to vary somewhat with the latitude and the trending of the adjacent coast.

Of the four curves on the limit between the equatorial and westerly systems (Plate VIII. Nos. 44, 45, 71, and 80), two do not cross the line of mean direction at all, but lie to the right of it for the whole year; and the other two cross it in August, lying to the right before and to the left afterwards.

Of the easterly winds of the equatorial system, those north of about latitude 24°. (Plate VIII. Nos. 46, 47, 48, 50, 51, 52, and 82), cross the line of mean direction in April, May, or June, and those farther south (Plate VII. Nos. 84, 85, and 87) in October. The latter are at sea, and may possibly be affected by the proximity of the coast of South America.

4. On the eastern side of the Atlantic there is less uniformity in the time of crossing, though (not including the exceptions already named), it is on an average considerably earlier. Out of eighteen curves (Plates VII. and X.), one crosses in February, one in March, four in April, five in May, two in June, one in July, one in September, and three do not cross it at all, but lie to the south for the whole year. One of these three is at St. Petersburg, in Russia, another at Elgin, in the north of Scotland, and the other at sea (No. 77), on the limit between the equatorial and westerly systems, thus agreeing with its neighbors (Nos. 71 and 80) on the western side of the Atlantic. The curve for the stations in Austria (No. 92) might very properly be added to this list, as it lies south of the line of mean direction over eleven months in the year.

5. The curvature in India and China is the same as in the westerly system on the west side of the Atlantic, while that in Western Siberia corresponds to those of the European stations, so far as it can be said to have any character at all.

6. The stations east of the Mediterranean Sea are as devoid of law or agreement, in the form of the curves described by their winds, as they were shown to be in regard to the mean direction of their winds.

Theoretical Considerations.

The causes of the peculiarities, in the inflection of the curves we have been considering, are more clearly seen by analyzing them in the manner described in the introduction to the foregoing series (D). By thus detaching the deflecting forces from those which determine the mean annual direction of the wind, the law at once becomes apparent that on the sea-coast, and even for some hundreds of miles from it, both on sea and land, the deflecting forces are directed towards the land, in the warmer parts of the year, and towards the sea, in the colder; a most convincing proof (if any more were needed) of the influence of heat in the production of winds, and that, too, upon an extensive scale.

Plates XI. and XII. show the truth of the law just stated more clearly than any verbal explanations. The directions and lengths of the arrows show the directions and amounts of the forces which deflect the wind from its mean annual direction in the several months of the year. These arrows are drawn on a scale twelve times greater than those which represent the mean annual directions, in Plates VII. to X. inclusive; but as the latter represent the mean progress of the wind for the *entire year*, while the mean *monthly* progress, if there were no deflection, would be only one-twelfth as great, both may be regarded, for the purpose of comparison, as drawn *on the same scale.* So that the length of an arrow on one of those plates, is to the length of one for the same place on Plate XI. or XII., as the force which determines the mean annual direction of the wind is to that which deflects it in the particular month to which the latter arrow relates; and the length of the corresponding portion of the curve (increased threefold, because the curves are drawn upon a less scale)[1] is proportional to the resultant of the two forces. Thus, for example, at Hampden, in Maine, the force which determines the mean annual direction, the deflecting force in the month of January, and the resultant of the two, are to each other as the numbers 33, 22, and 42; and by measuring the arrow, No. 50, on Plate VIII., that for January on Plate XI., No. 25, and the first division of the curve No. 25, on Plate VIII., increased threefold, it will be seen that their lengths are to each other in the ratio of these numbers.

Now, if with the light of these explanations we examine Plate XI., we shall notice that the arrows point with great uniformity toward the land in the warmer months, and toward the sea in the colder. The cause is to be found in the difference of the temperature of the two. It is well known that the surface of large bodies of water, and particularly the ocean, is much more uniform in its temperature throughout the year than that of land, and consequently must be colder in summer and warmer in winter. Hence, we may account for the monsoon character of the winds on the opposite shores of the Atlantic, just as we do for the well known phenomena of land and sea breezes on the sea-coast; the only difference being that the former are on a more extensive scale.

These views are confirmed, when we examine particular localities and sections of country. The decrease in the curvature of the curves, as we recede from the seashore, has been already adverted to, the examples mentioned being 29, 30, 32, and 40, on Plate VIII., as compared with places near the coast. If we now look at the same numbers on Plate XI., we shall see by the shortness of the arrows that the deflecting forces, though conformable to the theory, are much less than at places nearer the sea.[2] The absence of the monsoon character in the winds of Ohio is probably to be ascribed to the fact that that State lies directly between the ocean and the great lakes, so that the latter, being nearer, neutralize the influence of the

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[1] It would be more convenient for comparison if all could be drawn on the same scale, *i. e.* if the curves could be drawn upon a scale three times larger than they are; but they could not in that case be represented upon the maps without making the latter of unwieldy size.

[2] No. 30 should properly be placed farther west, as the places whose results it represents are scattered pretty uniformly over the southern half of the State of New York.

former. The same reason does not exist in the States farther west, and accordingly we find, even there, slight traces of the oceanic influence, as already remarked.

That the lakes are capable of exerting considerable influence upon the direction of the surface-wind, is proved from the fact that at the Western Reserve College, in Ohio, some twenty-five miles south of Lake Erie, the mean direction is uniformly more northerly by several degrees in the afternoon than in the forenoon, as may be seen by the following statement.[1]

Months.	9 o'clock A. M.	3 o'clock P. M.	More northerly in the afternoon by
January	S. 71° 32′ W.	S. 82° 34′ W.	+ 11° 2′
February	S. 79 41 W.	S. 86 17 W.	+ 6 36
March	N. 75 20 W.	N. 68 28 W.	+ 6 52
April	N. 78 12 W.	N. 59 50 W.	+ 18 22
May	N. 85 19 W.	N. 61 44 W.	+ 23 35
June	S. 81 55 W.	N. 77 6 W.	+ 4 49
July	N. 84 50 W.	N. 61 45 W.	+ 23 5
August	N. 81 41 W.	N. 48 24 W.	+ 33 17
September	S. 69 33 W.	N. 75 15 W.	+ 35 12
October	S. 73 19 W.	N. 89 29 W.	+ 17 12
November	S. 70 14 W.	S. 82 52 W.	+ 12 38
December	S. 82 20 W.	N. 87 11 W.	+ 10 29
The year	S. 83 46 W.	N. 77 7 W.	+ 19 7

The peninsular form of South-western Europe no doubt prevents the full development there of the general law we have been discussing; yet we have already had proof of its existence in the general similarity of form in the annual curves (Plate X.). We can see traces of it also in the deflecting forces (Plate XII. Nos. 80, 83, and 85). In all three, the arrows for June, July, and August point toward the land, and those for the colder months generally toward some neighboring body of water. No. 80, being so nearly equidistant between the North Sea, the Baltic, the Mediterranean, and the Bay of Biscay, shows more irregularity. No. 72 ought to afford evidence of the law, and I am unable to account for its failure to do so. No. 75 fails also, which is not surprising, since over half of the observations from which it was computed were taken more than 1200 miles from the nearest point in Europe, and so nearly in the middle of the Atlantic as not to feel the influence we are speaking of.

The peculiar curvature at Rome and Naples (Plate VII. No. 3), is easily explained. Both places are near a sea-coast, whose general direction is from N. W. to S. E., and have in their rear the range of the Apennines, running nearly in the same direction, and rising to an elevation of several thousand feet. The mean direction of the wind for the two places is from W. N. W. to E. S. E., which, combined with deflecting forces acting at right angles with the coast (landward in summer, and seaward in winter) must plainly give us a curve of the same general form as that which we find to be actually described.

Nos. 81, 83, 86, and 91 (Plates VII. and XII.) have caused me much perplexity. The arrows for the warmer months evidently indicate a point of rarefaction situated

[1] Loomis on the Meteorology of Hudson, Ohio, published in the American Journal of Science and Arts.

to the *south* or *south-west*, and yet, all the observations from which they were computed were taken within a few hundred miles of the African coast and Desert of Sahara, a region the annual range of whose temperature must be exceedingly great. The only way in which I can account for a fact so astonishing, is by supposing the deflecting forces at these numbers to be secondary to the influence which we see so strongly marked in Nos. 88, 89, and 90. Let us, then, first devote our attention to these.

The intense heat of the Great Desert rarefies the air exceedingly from June to October, inclusive, and hence the arrows of unparalleled length (Plate XII.) pointing toward it during those months, the longest being longer than that which represents the most uniform of the trade-winds in the ratio of 104 to 89. The influence of this rarefaction is sufficient to curve the powerful current of the trade-winds in the manner exhibited on Plate VII. Nos. 89 and 90, and to produce the not less remarkable change in No. 88, holding the current back and retarding it, so that its progressive motion in the *three* months of July, August, and September united hardly exceeds that during any *one* of the colder months of the year. But while this is so, the trades on the western side of the Atlantic are pursuing nearly their regular track, being but slightly affected by these influences. As a consequence, the latter must leave, as it were, a partial vacuum behind them, which is filled by air flowing in from the north-east and south-east. This will account for the seeming anomaly of having a somewhat strong deflecting force directed toward mid-ocean in the hottest part of the year, as in the numbers above referred to. And yet it may be very naturally asked, Why does not the air from these parts supply the Great Desert *directly*, instead of taking a circuitous route to supply the region that supplies it? A question which, I confess, it seems difficult to answer.

The following table, and Plate XIII. will assist in affording a clear idea of the winds off the west coast of Africa during the warmer months. The arrows show the mean direction and progress of the wind in each square of 5°, for the months of July, August, and September, the months when the influence of the Desert is greatest. The numbers affixed to the arrows show the number of observations from which they were computed, as contained in Maury's Pilot Chart of the North Atlantic:—

Longitude.	Lat. 0° to 5°.			Lat. 5° to 10°.			Lat. 10° to 15°.			Lat. 15° to 20°.			Lat. 20° to 25°.		
	Mean direction of Wind.	Rate of Progress.	No. of Obs.	Mean direction of Wind.	Rate of Progress.	No. of Obs.	Mean direction of Wind.	Rate of Progress.	No. of Obs.	Mean direction of Wind.	Rate of Progress.	No. of Obs.	Mean direction of Wind.	Rate of Progress.	No. of Obs.
10° to 15° W.	S. 2° 55′ E.	89	446	S. 12° 0′ W.	88½	179									
15 20 W.	S. 12 41 E.	86	1262	S. [redacted] 7 W.	82	1273	S. 85° 7′ W.	36	47	N. 19° 39′ E.	60	15	N. 21° 50′ E.	73	21
20 25 W.	S. 34 25 E.	90	529	S. 5 W.	71	1034	N. 2 12 E.	14½	626	N. 32 8 E.	76	456	N. 29 29 E.	81	304
25 30 W.	S. 49 50 E.	82	221	S. 11 40 W.	41	385	N. 62 42 E.	35	504	N. 38 51 E.	81	476	N. 36 22 E.	84	396
30 35 W.	S. 58 26 E.	79	196	S. 0 55 E.	40½	224	N. 69 56 E.	39	247	N. 51 46 E.	87	192	N. 47 57 E.	84	243
35 40 W.	S. 45 9 E.	84	203	S. 46 39 E.	17	269	N. 57 15 E.	40	300	N. 55 1 E.	85½	149	N. 61 42 E.	89	163
40 45 W.	S. 52 42 E.	86½	123	S. 58 2 E.	36	262	N. 54 47 E.	52	287	N. 65 21 E.	88	156	N. 68 4 E.	87	90
45 50 W.	S. 69 28 E.	76	19	N. 89 43 E.	54	99	N. 63 31 E.	61	184	N. 67 41 E.	72	251			

SERIES E.

THE following tables show the average relative force and velocity of winds from the different points of compass. At five of the stations, viz. Toronto, Girard College, Devonport, Greenwich, and Sturbington, the pressure was obtained in pounds per square foot, by means of an anemometer; and the velocity computed therefrom by Rouse's Table. At the other stations, the force was merely estimated, and represented by numbers, ordinarily from 0 to 10, 0 denoting a calm, and 10 a hurricane, and the velocity computed according to the following scale, which has been adopted at the Smithsonian Institution:—

SCALE OF WINDS.

No.	Miles per hour.	Force in pounds per square foot.	Character.	No.	Miles per hour.	Force in pounds per square foot.	Character.
1	2	.02	Very light breeze.	6	45	10.00	Gale.
2	4	.08	Gentle breeze.	7	60	18.00	Strong gale.
3	12½	.75	Fresh wind.	8	75		Violent gale.
4	25	3.00	Strong wind.	9	90		Hurricane.
5	35	6.00	High wind.	10	100		Most violent hurricane.

Toronto, Canada.

Course.	By Osler's Anemometer.							By estimation.[1]					Velocity in miles per hour.[2]		No. of miles travelled.	
	Time in hours.			Pressure in pounds per square foot.				Time in hours.			Pressure in lbs. per foot.					
	1841.	1842.	Total.	1841.	1842.	Total.	Average.	1841.	1842.	Total.	Total pressure for 1841–42.	Average.	Anemometer.	Estimation.	Anemometer.	Estimation.
North	795	450	1245	543.1	512.8	1055.9	.84	826	679	1505	771.9	.512	12.88	10.24	16036	15411
N. N. E.	348	333	681	222.0	341.3	564.3	.83	116	83	199	90.4	.454	12.80	9.56	8717	1902
N. E.	330	208	538	164.3	202.5	366.8	.68	484	254	685	376.6	.547	11.61	10.56	6246	7265
E. N. E.	310	470	780	181.6	317.6	449.2	.58	116	186	302	288.1	.954	10.82	13.79	8440	6165
East	460	519	979	324.0	428.4	752.4	.77	506	673	1179	946.9	.803	12.32	12.61	12061	14867
E. S. E.	395	278	673	135.7	295.9	433.6	.64	66	28	94	52.8	.562	11.29	10.67	7598	1008
S. E.	326	333	659	235.0	137.8	372.8	.57	362	281	643	288.8	.441	10.74	9.41	7078	6051
S. S. E.	301	264	565	49.3	51.4	100.7	.18	166	140	306	116.1	.379	5.92	8.67	3348	2653
South	315	373	688	86.6	103.0	189.6	.28	342	646	988	418.0	.423	7.51	9.19	5167	9060
S. S. W.	363	547	910	178.7	254.9	433.6	.48	116	92	208	138.6	.666	9.86	11.50	8973	2392
S. W.	306	448	753	204.5	578.1	782.6	1.04	444	582	1026	608.4	.593	14.47	10.92	10896	11204
W. S. W.	282	346	628	228.6	752.2	980.8	1.56	170	113	283	252.6	.893	17.63	13.30	11072	3764
West	384	356	740	315.7	297.6	613.3	.83	326	350	676	485.1	.718	12.80	11.91	9472	8051
W. N. W.	326	400	726	589.5	418.9	958.4	1.32	34	65	99	130.3	1.316	16.24	16.21	11790	1605
N. W.	357	412	769	503.1	668.6	1171.7	1.52	636	605	1241	950.9	.766	17.40	12.29	13381	15252
N. N. W.	413	513	926	385.0	886.0	1271.0	1.37	416	380	796	758.8	.953	16.53	13.78	15307	10969
Calm	2669	2409	5078					2596	2474	5060						

[1] Some of these observations were taken hourly, and others bi-hourly, and to obtain a proper average for the entire years, they have all been reduced to hourly observations by doubling the number of bi-hourly ones, together with the corresponding pressures.

[2] By Rouse's Table.

SERIES E.—*Continued.*

	Anemometer.	Estimation.
Total number of miles travelled in the two years at Toronto	155579	117634
Average rate per hour	8.98	7.69
Do. in mean direction	1.49	.72

Course.	Boothia Felix.—3 stations. 2½ years.			Cambridge, Mass. 10 months.		
	No. of Obs.	Sums of numbers representing forces.	Mean force.	No. of Obs.	Sums of numbers representing forces.	Mean force.
North	2548½	8586	3.37	35	48½	1.39
N. by E.	125	640	5.12	8	12½	1.59
N. N. E.	1116	2917	2.61	39	65½	1.68
N. E. by N.	202	528	2.61	8	14	1.75
N. E.	765	1735	2.26	89	147	1.65
N. E. by E.	63	143	2.26	5	10	2.00
E. N. E.	123	277	2.25	15	21½	1.43
E. by N.	55	230	4.18	8	9	1.12
East	679	1284	1.89	19	19	1.00
E. by S.	49	82	1.67	5	8	1.60
E. S. E.	149	378	2.53	6	11½	1.92
S. E. by E.	35	89	2.54	0	0	?
S. E.	715	1253	1.75	38	55½	1.47
S. E. by S.	29	59	2.03	0	0	?
S. S. E.	398	819	2.05	3	6	2.00
S. by E.	130	338	2.60	6	6½	1.08
South	1749	3102	1.77	70	123½	1.76
S. by W.	153	341	2.22	5	9	1.80
S. S. W.	645	1562	2.42	57	96½	1.70
S. W. by S.	45	127	2.82	5	13½	2.70
S. W.	1845	3199	2.37	221	342	1.55
S. W. by W.	32	106	3.31	14	23	1.64
W. S. W.	385	1107	2.87	17	21½	1.26
W. by S.	77	207	2.68	12	17½	1.46
West	1203	2851	2.36	62	91	1.47
W. by N.	107	355	3.31	6	12½	2.08
W. N. W.	493	1317	2.67	10	20	2.00
N. W. by W.	59	162	2.74	10	10½	1.05
N. W.	1788½	4732	2.65	135	246½	1.83
N. W. by N.	224	919	4.10	9	16½	1.83
N. N. W.	2738	12584	4.57	61	105½	1.73
N. by W.	524	2324	4.43	4	5	1.25

Course.	North Carolina.—3 stations. 2 1-6 years.			Hudson, Ohio. Mean force.		Bermudas. One year.		
	No. of Obs.	Sums of numbers representing forces.	Mean force.	Part of 1838 and 1840.	1841.	No. of Obs.	Sums of numbers representing forces.	Mean force.
North	375	529	1.41	1.83	2.42	912	3830	4.20
N. by E.	7	9	1.29	2.38	2.39	84	396	4.71
N. N. E.	60	82	1.37	2.00	2.40	96	456	4.75
N. E. by N.	0	0	?	1.80	2.38	60	216	3.60
N. E.	319	442	1.39	2.14	2.38	552	2064	3.74
N. E. by E.	0	0	?	2.00	2.00	0	0	?
E. N. E.	42	48	1.14	1.87	1.73	24	72	3.00
E. by N.	6	6	1.00	1.78	1.80	0	0	?

SERIES E.—*Continued.*

Course.	North Carolina.—3 stations. 2 1-6 years.			Hudson, Ohio, Mean force.		Bermudas. One year.		
	No. of Obs.	Sums of numbers representing forces.	Mean force.	Part of 1838 and 1840.	1841.	No. of Obs.	Sums of numbers representing forces.	Mean force.
East	377	437	1.16	2.00	2.00	396	1366	3.45
E. by S.	2	2	1.00	2.20	2.12	24	60	2.50
E. S. E.	18	19	1.06	1.62	1.79	24	120	5.00
S. E. by E.	0	0	?	1.62	2.10	24	120	5.00
S. E.	158	171	1.08	1.47	1.87	720	2354	3.27
S. E. by S.	0	0	?	1.00	1.75	84	324	3.86
S. S. E.	20	24	1.20	1.62	1.56	252	960	3.81
S. by E.	5	4	.80	1.40	2.15	36	84	2.33
South	337	405	1.20	1.50	2.21	152	593	3.90
S. by W.	10	11	1.10	1.64	1.89	204	1044	5.12
S. S. W.	85	118	1.39	1.87	1.72	276	900	3.26
S. W. by S.	8	8	1.00	2.00	1.31	240	1092	4.55
S. W.	423	585	1.38	2.06	2.00	1404	5954	4.24
S. W. by W.	4	5	1.25	1.84	2.12	72	168	2.33
W. S. W.	50	60	1.20	2.12	2.28	252	1081	4.29
W. by S.	10	11	1.10	2.25	2.58	36	115	3.20
West	440	639	1.45	2.41	2.50	492	1624	3.30
W. by N.	6	6	1.00	2.75	2.91	132	444	3.36
W. N. W.	15	20	1.33	2.84	2.97	192	839	4.37
N. W. by W.	1	1	1.00	2.60	3.13	0	0	?
N. W.	249	415	1.67	2.65	3.04	312	1441	4.62
N. W. by N.	0	0	?	2.04	2.82	72	252	3.50
N. N. W.	19	21	1.11	2.29	2.75	264	1188	4.50
N. by W.	2	2	1.00	2.36	2.25	156	733	4.70

Southern Maine, New Hampshire, and Vermont.—13 stations.

39 MONTHS.

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Total number of observations.	Total numbers representing forces.	Mean forces.	Total number of miles.	Mean velocity in miles per hour.
North	0	146	148	115	87	1	1	0	448	946	2.11	3326½	7.43
N. N. E.	0	11	16	10	1	1	0	0	39	82	2.10	271	6.95
N. E.	1	325	214	123	41	13	5	1	723	1388	1.92	4809½	6.65
E. N. E.	0	1	2	0	0	1	0	0	4	10	2.50	45	11.25
East	0	95	50	25	18	5	0	0	193	367	1.90	1327½	6.88
E. S. E.	0	1	3	1	0	2	0	0	7	20	2.86	96½	13.79
S. E.	9	242	149	90	35	21	9	1	556	1116	2.01	4289	7.71
S. S. E.	0	3	3	1	1	3	0	0	11	31	2.82	160½	14.59
South	0	142	90	43	27	5	2	0	309	596	1.93	2121½	6.87
S. S. W.	0	9	5	10	10	1	0	0	35	94	2.69	448	12.80
S. W.	0	567	382	150	48	12	0	0	1159	2033	1.75	6157	5.31
W. S. W.	0	13	10	4	1	0	0	0	28	49	1.75	141	5.04
West	0	265	292	156	62	11	1	0	787	1626	2.07	5628	7.15
W. N. W.	0	4	8	8	5	1	0	0	26	69	2.65	300	11.54
N. W.	42	532	362	377	144	22	1	0	1480	3079	2.09	11681½	7.89
N. N. W.	0	21	14	24	0	4	0	0	63	141	2.24	538	8.54
Total	52	2377	1748	1137	430	103	19	2	5868	11647	1.98	41340½	7.04
Add calms									625	0	.00	0	.00
Total including calms									6493	11647	1.79	41340½	6.37

SERIES E.—*Continued.*

Massachusetts, Rhode Island, and Connecticut.—11 stations.[1]

30 MONTHS.

Course.	Number of naught.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Total number of observations.	Total numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	14	143	124	38	5	0	0	1	325	532	1.64	1456	4.48
N. N. E.	0	18	35	27	3	0	0	0	78	176	2.26	578½	7.42
N. E.	15	180	95	46	18	4	0	0	308	550	1.79	1820	5.91
E. N. E.	0	21	49	24	1	0	0	0	95	195	2.05	563	5 93
East	15	167	85	26	3	0	0	0	296	427	1.44	1089	3.68
E. S. E.	0	11	21	7	0	1	0	0	40	79	1.98	228½	5.71
S. E.	8	64	44	19	12	4	0	0	151	277	1.83	989½	6.55
S. S. E.	0	11	13	1	1	0	0	0	26	44	1.69	111½	4.29
South	7	117	72	31	9	1	1	0	238	401	1.69	1221½	5.13
S. S. W.	0	22	32	12	2	0	0	0	68	130	1.91	372	5.47
S. W.	21	241	221	98	28	1	1	0	611	1100	1.80	3392	5.55
W. S. W.	0	28	47	67	4	0	0	0	146	339	2.32	1181½	8.09
West	25	449	263	89	34	1	0	0	861	1383	1.61	3972½	4.61
W. N. W.	0	35	59	19	5	0	0	0	118	230	1.95	668½	5.67
N. W.	32	273	199	113	27	7	0	0	651	1153	1.77	3706½	5.70
N. N. W.	0	16	31	10	2	0	0	0	59	116	1.97	331	5.61
Total	187	1741	1390	627	154	19	2	1	4071	7132	1.75	21681½	5.33
Add calms									110	0	0.00	0	0.00
Total including calms									4181	7132	1.71	21681½	5.18

Mean force at Amherst and Williams Colleges, Massachusetts, for one year each, viz.:—

	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.
Amherst (1849)		1.8		1.4		1.4		1.5
Williams (1888)	2.33	2.34	3.15	2.74	3.29	2.87	3.71	3.23

New York State.—11 stations.

16 MONTHS.

Course.	Number of naught.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Number of eights.	Number of nines.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	158	64	20	7	2	0	0	0	0	251	384	1.53	1067	4.25
N. N. E.	1	1	0	0	0	0	0	0	0	2	3	1.50	6	3.00
N. E.	135	53	29	11	7	6	0	1	0	242	451	1.86	1709½	7.06
E. N. E.	0	0	0	0	0	0	0	0	0	0	0	?	0	?
East	48	44	12	18	5	5	2	1	0	185	321	2.38	1467	10.87
E. S. E.	0	0	0	0	0	0	0	0	0	0	0	?	0	?
S. E.	140	74	42	20	3	0	0	1	0	280	517	1.85	1781	6.36
S. S. E.	0	0	1	0	0	1	0	0	0	2	9	4.50	57½	28.75
South	149	68	54	13	3	0	0	0	1	288	523	1.82	1765	6.13
S. S. W.	3	0	0	0	0	0	0	0	0	3	3	1.00	6	2.00
S. W.	261	171	79	48	35	16	9	8	6	633	1484	2.34	7018½	11.09
W. S. W.	7	0	0	0	0	0	0	0	0	7	7	1.00	14	2.00
West	227	119	38	26	23	13	6	3	3	458	969	2.12	4300	9.39
W. N. W.	3	4	2	1	1	0	0	0	0	11	26	2.36	107	9.73
N. W.	343	258	145	54	15	1	0	2	5	823	1652	2.01	6050½	7.35
N. N. W.	2	0	0	0	0	0	0	0	0	2	2	1.00	4	2.00
Total	1477	856	422	198	94	42	17	16	15	3137	6351	2.02	25353	8.08
Add calms										88	0	.00	0	.00
Total including calms										3225	6351	1.97	25358	7.86

[1] Cambridge, Amherst, and Williams Colleges not included.

SERIES E.—*Continued.*

New Jersey and Pennsylvania.—15 stations.[1] 38 months.[1]														Somerset, Penn. Mean force. 8 months.	
Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.	Lower current.	Upper current.
North	1	173	59	53	23	4	0	0	313	562	1.80	1960½	6.26	1.08	1.17
N. N. E.	0	3	7	6	0	0	0	0	16	35	2.19	109	6.81	1.00	1.00
N. E.	4	260	69	37	10	1	1	0	382	560	1.47	1592½	4.17	1.50	1.67
E. N. E.	0	4	10	1	0	0	0	0	15	27	1.80	60½	4.03	1.56	3.00
East	4	194	65	35	7	1	0	0	306	462	1.51	1299½	4.25	1.33	2.50
E. S. E.	0	8	1	2	0	0	0	0	11	16	1.45	45	4.09	1.00	1.58
S. E.	4	109	43	30	17	2	4	0	209	387	1.85	1444	6.91	1.28	1.18
S. S. E.	0	10	6	2	1	0	0	0	19	32	1.68	94	4.95	2.00	1.00
South	5	229	87	68	23	9	0	0	421	744	1.77	2551	6.06	1.38	1.47
S. S. W.	0	6	15	5	1	1	0	0	28	60	2.14	194½	6.95	1.43	1.00
S. W.	4	367	138	90	29	3	0	1	632	1051	1.66	8305	5.23	1.43	1.33
W. S. W.	1	18	8	3	3	0	0	0	33	55	1.67	181½	5.55	1.57	1.61
West	6	953	314	134	54	20	5	0	1486	2329	1.57	7118	4.12	1.56	1.23
W. N. W.	0	17	13	11	8	5	1	0	55	139	2.53	643½	11.70	1.53	1.37
N. W.	7	369	169	165	91	18	2	0	821	1668	2.03	6478½	7.89	1.79	1.28
N. N. W.	0	10	11	10	0	1	0	0	32	67	2.10	224	7.00	2.20	1.67
Total	36	2730	1015	652	267	65	13	1	4779	8194	1.71	27301	5.71	1.47	1.32
Add calms and variable . . .									468	0	.00	0	.00		
Total including calms and variable . .									5247	8194	1.56	27301	5.20	1.02	1.01

Girard College, Philadelphia.																		
Course.	1843.			1844.			Number of miles travelled in the separate months of 1843.											
	No. of hours.	No. of miles travelled.	Miles per hour.	No. of hours.	Sums of forces.	Mean force.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
North	357	1509	4.23	426	330.73	.78	0	50	106	61	51	15	119	46	548	160	176	177
N. N. E.	311	1471	4.73	326	235.80	.70	0	41	56	147	8	0	74	96	486	190	241	132
N. E.	435	2168	4.98	310	240.16	.77	0	53	74	378	28	10	85	218	624	128	245	325
E. N. E.	582	5155	8.86	516	235.47	.46	51	522	1024	711	401	0	28	289	1446	94	115	474
East	317	1328	4.19	346	275.71	.80	7	4	30	44	257	8	7	205	386	98	60	227
E. S. E.	189	972	5.14	198	95.19	.48	186	56	7	31	52	0	0	205	38	64	246	87
S. E.	176	605	3.44	265	92.19	.35	28	4	39	32	55	8	12	47	119	8	223	30
S. S. E.	199	1183	5.94	255	171.03	.67	4	25	232	30	166	17	23	182	230	41	218	15
South	287	1179	4.11	521	266.12	.51	209	62	68	0	95	28	61	241	196	53	139	27
S. S. W.	579	2974	5.14	700	393.87	.56	84	74	60	13	250	149	205	389	717	627	393	18
S. W.	792	3494	4.41	761	391.64	.51	139	27	149	0	42	656	425	180	541	358	592	385
W. S. W.	502	2095	4.17	412	193.48	.47	94	68	57	0	19	375	79	108	234	440	487	134
West	465	3037	6.53	440	438.70	.99	217	161	742	10	66	93	78	122	125	728	575	125
W. N. W.	939	9328	9.92	630	778.21	1.24	886	2640	703	348	394	225	155	147	128	1411	1508	783
N. W.	712	6349	8.92	713	701.66	.98	673	180	763	475	60	196	89	377	260	1355	1051	870
N. N. W.	598	4727	7.91	503	450.87	.90	151	236	703	315	52	13	210	155	375	308	846	1363

Total distance travelled in 1843	47574	miles.
Average rate per hour	6.39	do.
Do. in mean direction	2.24	do.

[1] Somerset and Girard College not included.

SERIES E.—*Continued.*

Delaware, Maryland, and Eastern Virginia.—5 stations.

24 MONTHS.

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	1	205	58	37	12	0	0	313	480	1.53	1405½	4.49
N. N. E.	0	0	0	0	0	0	0	0	0	0?	0	0?
N. E.	0	153	80	51	14	0	0	298	522	1.75	1618½	5.41
E. N. E.	0	2	0	0	0	0	0	2	2	1.00	4	2.00
East	0	72	37	12	12	0	0	133	230	1.73	742	5.58
E. S. E.	0	0	0	1	0	0	0	1	3	3.00	12½	12.50
S. E.	0	91	48	24	8	0	1	172	297	1.73	919	5.34
S. S. E.	0	6	3	1	0	0	0	10	15	1.50	36½	3.65
South	0	88	79	27	55	61	1	311	858	2.76	4384½	14.10
S. S. W.	0	2	2	0	1	1	1	7	21	3.00	117	16.71
S. W.	0	463	221	103	41	1	0	829	1383	1.67	4157½	5.01
W. S. W.	0	0	2	2	0	0	0	4	10	2.50	33	8.25
West	1	208	108	49	15	4	0	385	651	1.70	1976½	5.13
W. N. W.	0	2	2	8	2	1	0	15	43	2.87	197	13.13
N. W.	0	271	167	105	91	20	2	656	1396	2.13	5587½	8.52
N. N. W.	0	5	0	4	0	0	0	9	17	1.89	60	6.67
Total	2	1568	807	424	251	88	5	3145	5928	1.88	21246	6.76
Add calms								268	0	.00	0	.00
Total including calms								3413	5928	1.44	21246	6.23

Georgia, Alabama, Mississippi, and Northern Florida.—12 stations.[1]

67 MONTHS.[1]

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Number of eights.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	9	220	245	178	52	15	3	0	0	722	1545	2.14	5614	7.78
N. N. E.	0	8	15	12	4	1	0	0	0	40	95	2.37	361	9.02
N. E.	1	176	192	155	50	11	2	4	0	591	1320	2.23	5023½	8.50
E. N. E.	0	1	2	7	2	0	0	0	0	12	34	2.83	147½	12.29
East	1	161	223	68	17	8	7	2	0	482	950	1.97	3080	6.29
E. S. E.	0	4	6	5	0	0	0	0	0	15	31	2.07	94½	6.30
S. E.	3	297	291	137	27	6	1	1	0	763	1441	1.89	4463½	5.85
S. S. E.	0	12	4	4	0	0	0	0	0	20	32	1.60	90	4.50
South	0	193	410	268	49	8	1	0	0	929	2059	2.23	6926	7.49
S. S. W.	0	17	15	2	2	0	0	0	0	36	61	1.69	169	4.69
S. W.	0	235	303	199	32	8	2	4	0	783	1646	2.10	5579½	7.13
W. S. W.	0	34	27	10	5	0	0	0	0	76	138	1.82	426	5.61
West	3	533	266	148	55	22	4	7	7	1095	2018	1.84	7353	6.72
W. N. W.	0	12	19	9	0	0	0	0	0	40	77	1.92	212½	5.31
N. W.	1	357	229	108	25	10	0	0	0	730	1289	1.77	3956	5.42
N. N. W.	0	8	3	0	2	0	0	0	0	13	22	1.69	78	6.00
Total	18	2318	2250	1310	322	84	20	18	7	6347	12758	2.01	43524	6.86
Add calms										580	0	.00	0	.00
Total including calms										6927	12758	1.84	43524	6.28

Savannah, Georgia.

6 MONTHS.

Number of obs.	Sums of forces.	Mean force.
61	93	1.52
8	10	1.25
34	55	1.62
14	31	2.21
50	82	1.64
33	43	1.30
27	37	1.37
16	28	1.75
134	194	1.45
8	14	1.75
40	61	1.52
18	25	1.39
60	71	1.18
8	9	1.12
20	27	1.35
5	8	1.60
536	788	1.47

[1] Not including Savannah.

SERIES E.—*Continued.*

Ohio.—13 stations.[1]

68 MONTHS.[1]

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of sevens.	Number of eights.	Number of nines.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	61	286	187	92	41	3	2	0	0	0	672	1127	1.68	8751	5.60
N. N. E.	3	19	24	13	4	1	0	0	0	0	64	127	1.98	434½	6.79
N. E.	29	311	221	82	23	10	0	0	0	0	676	1141	1.69	8485	5.16
E. N. E.	0	34	16	14	6	2	0	0	0	0	72	142	1.97	527	7.32
East	14	270	126	54	21	5	2	0	0	0	492	805	1.64	2523	5.13
E. S. E.	0	18	18	6	0	0	0	0	0	0	37	62	1.68	163	4.41
S. E.	12	301	176	50	7	2	0	0	0	0	548	841	1.53	2188	3.99
S. S. E.	2	28	17	3	0	0	0	0	0	0	50	71	1.42	163½	3.27
South	68	566	237	104	26	3	3	1	0	1	1009	1505	1.49	4488	4.45
S. S. W.	5	58	49	30	2	1	0	0	0	0	145	259	1.79	777	5.36
S. W.	70	976	829	357	113	24	4	0	1	1	2375	4318	1.72	13810½	5.81
W. S. W.	0	43	66	52	8	5	1	0	0	0	175	394	2.25	1420	8.11
West	65	1040	858	365	144	48	17	3	0	0	2540	4790	1.89	16864½	6.44
W. N. W.	6	37	67	42	20	5	1	0	1	0	179	416	2.32	1668	9.32
N. W.	33	497	483	279	106	31	16	2	1	0	1448	2997	2.07	11096½	7.66
N. N. W.	0	13	21	22	18	1	1	0	0	0	71	184	2.59	790	11.13
Total	368	4497	3390	1565	584	141	47	6	3	2	10553	19179	1.82	68649½	6.31
Add calms											435	0	.00	0	.00
Total including calms											10988	19179	1.75	68649½	5.79

Kentucky and Tennessee.—9 stations.

29 MONTHS.

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	0	145	28	16	0	0	189	249	1.32	602	3.19
N. N. E.	0	9	4	3	0	0	16	26	1.62	71½	4.47
N. E.	0	131	20	5	0	0	156	186	1.19	404½	2.59
E. N. E.	2	10	6	0	0	0	18	22	1.22	46	2.56
East	1	138	20	4	0	0	163	190	1.17	407	2.50
E. S. E.	0	9	3	0	0	0	12	15	1.25	30	2.50
S. E.	1	158	35	12	1	0	202	263	1.30	622	3.08
S. S. E.	0	17	3	0	0	0	20	23	1.15	46	2.30
South	5	251	95	28	12	8	399	613	1.54	1817	4.55
S. S. W.	1	59	26	21	2	0	109	182	1.67	535½	4.91
S. W.	3	769	272	60	11	0	1115	1537	1.38	3654	3.28
W. S. W.	1	20	6	9	4	0	40	75	1.87	277½	6.94
West	10	642	258	96	8	3	1017	1493	1.47	3831	3.77
W. N. W.	0	13	9	1	0	0	23	34	1.48	74½	3.24
N. W.	0	279	96	30	7	0	412	589	1.43	1492	3.62
N. N. W.	0	23	7	7	0	0	37	58	1.57	161½	4.36
Total	24	2668	888	292	45	11	3928	5555	1.41	14072	3.58
Add calms							352	0	.00	0	.00
Total including calms							4280	5555	1.30	14072	3.29

[1] Hudson not included.

SERIES E.—*Continued.*

Indiana, Illinois, Michigan, Wisconsin, and Iowa.—11 stations.

26 months.

Course.	Number of zeros.	Number of ones.	Number of twos.	Number of threes.	Number of fours.	Number of fives.	Number of sixes.	Number of eights.	Number of nines.	Total number of observations.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.
North	5	72	50	18	19	21	5	0	1	191	446	2.34	2099	10.99
N. N. E.	0	3	1	0	0	0	0	0	0	4	5	1.25	10	2.50
N. E.	0	182	93	49	32	6	8	0	0	370	721	1.95	2718½	7.35
E. N. E.	0	1	0	0	0	0	0	0	0	1	1	1.00	2	2.00
East	0	93	34	24	6	6	2	0	0	165	299	1.81	1072	6.50
E. S. E.	0	3	1	0	0	0	0	0	0	4	5	1.25	10	2.50
S. E.	0	127	122	52	15	5	1	0	0	322	618	1.92	1987	6.17
S. S. E.	0	1	1	0	0	0	0	0	0	2	3	1.50	6	3.00
South	1	219	125	57	19	10	5	0	0	436	796	1.83	2701½	6.20
S. S. W.	0	7	4	0	0	0	0	0	0	11	15	1.36	30	2.73
S. W.	5	558	346	111	59	9	0	0	0	1088	1864	1.71	5682½	5.22
W. S. W.	0	2	2	2	0	0	0	0	0	6	12	2.00	37	6.17
West	3	306	291	114	36	15	3	0	0	768	1467	1.91	4764	6.20
W. N. W.	0	2	1	0	0	0	0	0	0	3	4	1.33	8	2.67
N. W.	0	278	172	118	73	18	1	1	0	661	1372	2.08	5294	8.01
N. N. W.	0	3	0	0	0	0	0	0	0	3	3	1.00	6	2.00
Total	14	1857	1243	545	259	90	25	1	1	4035	7631	1.89	26427½	6.55
Add calms	.	.	.	.	.	.	.	.	.	169	0	.00	0	.00
Total including calms	.	.	.	.	.	.	.	.	.	4204	7631	1.82	26427½	6.29

Course.	Ponce, Porto Rico. 1 month.			Turk's Island, Bahamas. 1 month.			Porto Cabello, Venezuela. 3 months.					Sturbington, England. 1 year.[1]		
	Number of obs.	Total of numbers representing forces.	Total number of miles.	Number of obs.	Total of numbers representing forces.	Mean force.	Number of obs.	Total of numbers representing forces.	Mean force.	Total number of miles.	Mean velocity in miles per hour.	Number of hours.	Miles per hour.	Integral effect.
North	91	92	185	22	46	2.09	46	61	1.33	174	3.78	42	10.3	432
N. N. E.	0	0	0	6	11	1.83	2	3	1.50	6	3.00	354	10.6	2328
N. E.	31	42	107½	53	101	1.91	190	333	1.75	982½	5.17	317	14.2	4468
E. N. E.	2	7	37½	26	57	2.19	13	11	.85	27	2.08	147	17.0	2491
East	74	110	397	34	82	2.41	142	183	1.39	485	3.42	75	12.6	948
E. S. E.	0	0	0	20	41	2.05	0	0	?	0	?	68	12.5	854
S. E.	26	47	162	20	36	1.80	59	50	.85	136	2.31	81	8.6	699
S. S. E.	0	0	0	2	2	1.00	14	14	1.00	29	2.07	77	14.6	1125
South	1	1	2	3	3	1.00	48	39	.81	100½	2.09	136	13.3	1811
S. S. W.	0	0	0	0	0	?	6	5	.83	11	1.83	149	18.7	2787
S. W.	0	0	0	2	2	1.00	48	50	1.04	121	2.52	265	21.8	5773
W. S. W.	0	0	0	0	0	?	0	0	?	0	?	609	17.0	10227
West	2	2	4	1	1	1.00	25	29	1.16	67½	2.70	383	17.0	6836
W. N. W.	0	0	0	0	0	?	2	2	1.00	4	2.00	877	18.5	16301
N. W.	1	1	2	10	14	1.40	23	31	1.35	93	4.04	412	16.2	6695
N. N. W.	0	0	0	3	5	1.67	0	0	?	0	?	298	10.1	3011
Calms	3	0	0				11	0	0	0	0			

Total number of miles travelled in the year at Sturbington 66786
Average rate per hour 15.56
Do. in mean direction 7.62

[1] By Foster's Anemometer.

SERIES E.—*Continued.*

Course.	Inchkeith, Scotland, 10 years.						Calton Hill, Scotland, 10 years.						
	Light airs.	Breezes.	Gales and storms.	Total number of obs.	Total number of miles.	Mean velocity in miles per hour.	Moderate and calm.	Brisk and sharp.	High.	Very high.	Total number of obs.	Total number of miles.	Mean velocity in miles per hour.
N.	26	105	21	152	2047	13.47	61	10	17	5	93	1117	12.00
N. E.	68	90	47	205	3151	15.37	122	13	21	2	158	1274	8.06
E.	334	345	60	739	6818	9.23	381	41	45	4	471	3152	6.69
S. E.	104	109	11	224	1793	8.00	131	11	14	2	158	1017	6.44
S.	96	165	31	292	3247	11.12	85	2	17	7	111	1145	10.32
S. W.	42	181	116	339	7114	20.99	310	44	178	98	630	12410	19.70
W.	275	807	289	1371	21625	15.77	444	57	235	62	798	13068	16.38
N. W.	44	157	16	217	2378	10.96	207	87	143	57	444	8824	19.87
Variable	101	12	0	113	322	2.85	588	48	119	34	789	7761	9.84
Total	1090	1971	591	3652	48495	13.27	2329	263	789	271	3652	49768	13.63

Devonport, England.

Course.	1841.[1]					1842.[1]					Number of miles travelled.[2]			
	Number of hours.	Sums of forces.	Mean force.	Miles per hour.	Number of miles travelled.	Number of hours.	Sums of forces.	Mean force.	Miles per hour.	Number of miles travelled.	1841.	1842.	1843.	Mean.
North	400	68.7	2.29	21.50	8600	479	32.0	1.00	14.26	6829	751.5	267.0	429.5	482.7
N. N. E.	106	12.0	3.00	24.70	2618	255	47.5	1.40	16.87	4289	433.0	515.0	306.0	418.6
N. E.	267	89.0	1.85	19.40	5179	430	43.8	1.50	17.40	7482	471.5	444.5	396.5	437.5
E. N. E.	80	16.4	1.82	19.23	1538	170	19.5	1.02	14.40	2448	131.0	760.3	296.0	395.7
East	430	700.0	3.50	26.50	11395	468	70.5	1.24	15.87	7427	688.5	1390.5	908.0	995.7
E. S. E.	231	44.0	1.33	16.40	3952	340	17.5	.73	12.19	4144	105.5	97.0	200.0	134.1
S. E.	590	341.5	2.37	21.70	12803	622	191.0	1.68	18.47	11488	77.0	101.5	81.5	86.7
S. S. E.	273	133.0	1.68	18.47	5042	500	232.0	2.55	23.00	11500	258.0	215.0	215.5	229.5
South	780	593.0	2.50	22.54	17581	680	519.3	3.05	25.00	17000	2998.2	3229.8	1478.5	2568.8
S. S. W.	390	289.0	2.22	21.24	8283	360	152.3	2.10	20.66	7437	2880.0	2108.5	2757.5	2582.0
S. W.	772	707.8	2.83	23.98	18512	685	564.0	3.36	26.12	16586	284.5	171.0	122.5	192.7
W. S. W.	320	179.2	2.21	21.20	6784	270	182.8	2.57	22.80	6156	17.5	16.0	5.0	12.8
West	780	390.0	2.20	21.10	16458	435	196.5	1.93	19.77	8599	697.5	809.5	180.5	395.8
W. N. W.	530	149.5	1.77	18.96	10048	460	309.5	3.86	27.80	12788	317.5	588.0	522.5	476.0
N. W.	1390	413.3	2.65	23.18	32220	1000	542.0	3.98	28.40	28400	220.5	184.5	203.0	202.7
N. N. W.	330	82.7	1.80	19.12	6309	464	42.3	1.24	15.90	7377	401.5	210.0	165.0	258.8

	By Osler's Anemometer.
Total number of miles travelled in 1841 and 1842	327272
Average rate per hour	21.48
Do. in mean direction	4.84

[1] By Osler's Anemometer.

[2] By Whewell's Anemometer.

SERIES E.—*Continued.*

Course.	Greenwich, England. 1841. Number of hours.	Sums of forces.	Mean force.	Miles per hour.	No. miles travelled.	1842. Number of hours.	Sums of forces.	Mean force.	Miles per hour.	No. miles travelled.	Oporto, Portugal. 1 month. Total number of observations.	Total of numbers representing forces.	Total number of miles.	Tripoli, Barbary. 5 months. Number of obs.	Sums of numbers representing forces.	Mean force.
North	418	404.5	2.00	20.56	8594	482	174.5	1.47	17.28	8329	12	22	100½	74	136	1.84
N. N. E.	136	81.5	2.00	20.16	2768	168	78.0	1.14	15.22	2557	0	0	0	5	12	2.40
N. E.	420	72.7	1.48	17.34	4161	454	153.7	1.35	16.56	7518	1	1	2	77	165	2.14
E. N. E.	234	430.7	3.65	27.23	6371	210	93.7	1.53	17.63	3702	0	0	0	31	90	2.90
East	204	43.3	1.88	19.54	3987	438	68.0	1.17	15.42	6754	5	14	86	97	224	2.31
E. S. E.	74	3.5	.87	13.33	986	62	1.2	.42	9.20	570	7	7	14	20	56	2.80
S. E.	78	4.7	.68	11.75	916	80	20.0	2.22	21.24	637	4	4	8	40	90	2.25
S. S. E.	136	137.0	1.93	19.80	2692	46	68.5	1.70	18.59	855	2	6	37	13	29	2.23
South	508	403.7	2.16	20.94	10637	480	139.0	1.61	18.10	8688	14	27	137	46	101	2.20
S. S. W.	684	1104.0	2.64	23.17	15848	432	400.0	1.71	18.63	8048	5	8	33	5	11	2.20
S. W.	1196	1191.7	2.45	22.31	26682	916	1244.0	2.58	22.90	20976	20	40	186½	18	41	2.28
W. S. W.	808	889.5	2.37	21.70	17541	792	819.0	2.35	21.85	17805	8	8	16	11	39	3.54
West	798	821.5	2.00	20.16	16087	538	224.0	2.33	21.76	11706	4	4	8	32	55	1.72
W. N. W.	220	118.7	1.88	19.54	4298	118	102.5	2.93	24.40	2879	9	13	51	1	2	2.00
N. W.	200	136.2	2.47	22.40	4480	86	64.0	2.20	21.14	1818	20	47	237	80	159	1.99
N. N. W.	164	197.7	2.40	22.00	3608	142	102.0	1.79	19.00	2698	8	33	212	11	32	2.91

Total number of miles travelled in the two years	235196
Average rate per hour	20.15
Do. in mean direction	7.25

SUMMARY.

Place of observation.	Number of stations.	Mean force of wind.[1]	Mean velocity of wind in miles per hour.
Boothia Felix	3	2.44	
Toronto (by anemometer)	1	.61	8.98
Do. (by estimation)	1	.44	7.69
Southern Maine, New Hampshire, and Vermont	13	1.79	6.37
Cambridge, Massachusetts	1	1.62	
Williams College, Massachusetts	1	3.17	
Massachusetts, Rhode Island, and Connecticut	11	1.71	5.18
New York State	11	1.97	7.86
New Jersey and Pennsylvania	15	1.56	5.20
Girard College, Pennsylvania	1	.72	6.39
Somerset, Pennsylvania	1	1.02	
Delaware, Maryland, and Eastern Virginia	5	1.44	6.23
North Carolina	3	1.34	
Savannah, Georgia	1	1.47	
Georgia, Alabama, Mississippi, and Northern Florida	12	1.84	6.28
Tennessee and Kentucky	9	1.30	3.29
Ohio	13	1.75	5.79
Indiana, Illinois, Michigan, Wisconsin, and Iowa	11	1.82	6.29
Porto Cabello, Venezuela	1	1.29	3.55
Ponce, Porto Rico	1	1.31	3.88
Turk's Island, Bahamas	1	1.99	
Bermudas	1	3.45	
Inchkeith, Scotland	1		13.27
Calton Hill, Scotland	1		13.63
Sturbington, England	1		15.56
Greenwich, England	1	1.37	20.15
Devonport, England	1	1.46	21.48
Oporto, Portugal	1	1.96	9.41
Tripoli, Barbary	1	2.21	

[1] For Toronto, Girard College, Greenwich, and Devonport, the force in this column is expressed in pounds of pressure per square foot; for all the other places, it is expressed in terms of the numbers 0, 1, 2, 3, &c., 0 denoting a calm, and 10 a hurricane, except that, for Boothia Felix and Bermuda, the maximum is 12 instead of 10.

SERIES F.

THE following table is designed to elucidate the last of the series of questions proposed at the outset of this discussion, and shows the effect of combining the element of *force*, or *velocity*, with that of *time*, in computing the mean direction of the wind. The question itself is a highly important one, for since the real point that we wish to arrive at is the mean direction and amount of the actual motion, or transfer, of the air that passes over any given place or section of country, it is obvious, that if there is a difference in the velocity of winds from the different points of compass, or over different sections of country, such as to materially affect the results that would be obtained if it were always and everywhere the same, all the computations in the foregoing pages must require correction, if they be not rendered in great measure worthless; for they were all made on the assumption that the velocity was uniform, or, which is the same thing, without any reference to the velocity. And not only so, but nearly all the observations that have ever been taken, both by land and sea, must be thrown aside (for in very few of them has the force of the wind been recorded), and the whole work of observation must be commenced anew.

The question admits of being considered under two aspects: 1st, in regard to the effect of difference in the mean velocities of winds *from the different points of compass*, which obviously might affect both the direction and amount of the resultant, at any given place of observation; and 2d, a difference in the *mean velocity of the whole, in different regions or sections of country*, which might affect the amount of the resultant, but not its direction. Viewed in either aspect, the question is one that can be determined only by observation and experiment. We can know nothing about it *à priori*. Difference of velocity may produce a very great effect upon the mean resultant, or very little, or none at all.

As, in the absence of anemometers, different meteorologists have employed different measures for the velocity of the wind, some making use of the numbers themselves which represent the forces,[1] instead of interpreting them into miles per hour, as is done at the Smithsonian Institution, it seemed best, in examining the question, to compare the results by each of these methods, with those for time only. The data for the computations are contained in the columns of Series E, headed respectively "Total Number of Observations," or Number of Hours;" "Sums of Forces," or "Total of Numbers representing Forces;" and "Integral Effect," or "Total Number of Miles;" and, for convenience of comparison, the resultants, both in regard to direction and amount, are placed in parallel columns. In order to express the ratio for time only, in terms of force and velocity, I first found, as in former tables, the ratio that it bore to the total of the winds observed at the stations (which must evidently hold true, whatever be the measure adopted for the velocity),

[1] See Prof. Loomis's articles on the Meteorology of Hudson, Ohio, published in the American Journal of Science and Arts.

and then multiplied the total force and distance by this ratio. Farther, as some of the resultants were computed from a greater number of observations than others, it became necessary to reduce them to a common standard, so as to render them capable of comparison. This was effected by dividing each resultant by the number of observations from which it was computed.

Place of observation.	Number of stations.	Direction of resultant.			Amount of resultant.				Ratio of resultant to total winds, being as the Nos. in this column to 100.
		Time.	Force.	Distance.	In terms of force.[1]		In miles per hour.		
					Time.	Force.	Time.	Distance.	
Boothia Felix	8	N. 85° 10′ W.	N. 27° 10′ W.	— — —	.71	1.15	—	—	29
Toronto (by anemometer)	1	N. 10 28 W.	N. 41 53 W.[2]	N. 34° 29′ W.	.04	.18	.54	1.49	6
Toronto (by estimation)	1	N. 21 30 W.	N. 21 21 W.[2]	N. 12 47 W.	.04	.08	.69	1.23	9
Southern Maine, New-Hampshire, and Vermont	18	N. 71 42 W.	N. 66 56 W.	N. 63 22 W.	.47	.54	1.66	1.89	26
Cambridge, Mass.	1	S. 87 21 W.	S. 87 37 W.	— — —	.44	.47	—	—	27
Williams College, do.	1	N. 77 47 W.	N. 79 39 W.	— — —	.98	1.01	—	—	31
Massachusetts, Rhode Island, and Connecticut	11	N. 77 31 W.	N. 78 6 W.	N. 78 49 W.	.53	.55	1.61	1.68	31
New York State	11	N. 85 56 W.	N. 88 17 W.	S. 81 35 W.	.61	.68	2.44	3.04	31
New Jersey and Pennsylvania	15	N. 85 8 W.	N. 73 12 W.	N. 80 5 W.	.55	.66	1.82	2.19	35
Girard College, Pennsylvania (1843)	1	N. 68 58 W.	— — —	N. 54 20 W.	—	—	1.53	2.24	24
Do. do. (1844)	1	S. 89 37 W.	N. 63 16 W.	— — —	.13	.24	—	—	18
Delaware, Maryland, and East. Virginia	5	S. 87 47 W.	S. 83 24 W.	S. 77 8 W.	.40	.55	1.81	1.98	29
North Carolina	8	S. 88 5 W.	N. 74 9 W.	— — —	.10	.17	—	—	7
Savannah, Georgia	1	S. 5 21 E.	S. 21 24 E.	— — —	.29	.29	—	—	20½
Georgia, Alabama, Mississippi, and Northern Florida	12	S. 62 57 W.	S. 57 1 W.	S. 66 13 W.	.24	.23	.82	.73	13
Tennessee and Kentucky	9	S. 65 6 W.	S. 65 13 W.	S. 64 13 W.	.59	.68	1.48	1.77	45
Ohio	13	S. 77 12 W.	S. 82 42 W.	S. 85 57 W.	.68	.77	2.26	2.73	39
Athens, Illinois	1	S. 61 49 W.	S. 65 50 W.	S. 70 53 W.	—	—	.99	1.17	31
Indiana, Illinois, Michigan, Wisconsin, and Iowa	11	S. 69 0 W.	S. 75 47 W.	S. 87 14 W.	.63	.62	1.97	1.94	34½
Porto Cabello, Venezuela	1	N. 76 25 E.	N. 59 1 E.	N. 57 24 E.	.54	.70	1.49	2.05	42
Ponce, Porto Rico	1	N. 50 3 E.	N. 62 47 E.	N. 71 10 E.	.84	.86	2.48	3.14	64
Turk's Isl'd, Bahamas	1	N. 64 46 E.	N. 66 3 E.	— — —	1.29	1.41	—	—	65
Bermudas	1	S. 37 11 W.	S. 75 41 W.	— — —	.79	.66	—	—	23
Inchkeith, Scotland	1	S. 71 38 W.	— — —	S. 79 21 W.	—	—	2.79	5.02	21
Calton Hill, do.	1	S. 80 10 W.	— — —	S. 83 10 W.	—	—	3.27	6.43	24
Sturbington, England	1	N. 67 35 W.	— — —	N. 76 48 W.	—	—	6.69	7.62	43
Greenwich, do. (1841)	1	S. 59 25 W.	— — —	S. 61 30 W.	—	—	—	—	42
Do. do. (1842)	1	S. 61 44 W.	— — —	S. 63 0 W.	—	—	—	—	25
Do. for the two years	1	S. 60 14 W.	S. 52 38 W.	S. 62 24 W.	.47	.74	6.95	7.25	34½
Devonport, England (1841)	1	S. 79 19 W.	— — —	S. 78 30 W.	—	—	5.46	5.50	25
Do. do. (1842)	1	S. 71 33 W.	— — —	S. 70 41 W.	—	—	1.69	4.18	8
Do. for the two years	1	S. 77 24 W.	S. 54 39 W.	S. 75 9 W.	.25	.39	3.65	4.84	17
Oporto, Portugal	1	S. 84 35 W.	N. 77 44 W.	N. 68 38 W.	.67	.64	3.20	3.09	34
Tripoli, Barbary	1	N. 50 3 E.	N. 60 10 E.	— — —	.54	.62	—	—	24½

[1] For Toronto, Girard College, Greenwich, and Devonport, the force in this column is expressed in pounds of pressure per square foot; for all other places, it is expressed in terms of the numbers 0, 1, 2, 3, &c., 0 denoting a calm, and 10 a hurricane, except that, for Boothia Felix and Bermuda, the maximum is 12 instead of 10.

[2] Computed from the published abstracts, in which the force on pressure is resolved in the four cardinal directions.

The modifications occasioned by introducing the element of force, or velocity, may perhaps be more clearly seen in the following table, which is deduced from the preceding one, and shows the difference of the resultants, both in direction and amount, from what they are when computed from time only. In the columns headed "Difference in Direction of Resultant," the sign + denotes that the direction is farther to the right than it would be if computed from time only, and the sign —, that it is farther to the left. In those headed "Difference per cent. in Amount of Resultant," the sign + denotes that it is greater than if computed from time only, and the sign —, that it is less.

Place of observation.	Difference in direction of resultant.		Difference in amount of resultant.	
	Force.	Distance.	Force.	Distance.
Boothia Felix	+ 8° 0′		+ 62	
Toronto (by anemometer)	— 31 30	— 24° 6′	+ 350	+ 176
Do. (by estimation)	+ 0 9	+ 8 48	+ 100	+ 78
Southern Maine, New Hampshire, and Vermont	+ 4 46	+ 8 20	+ 15	+ 14
Cambridge, Massachusetts	+ 0 16		+ 7	
Williams College, Do.	— 1 52		+ 8	
Massachusetts, Rhode Island, and Connecticut	— 0 35	— 1 18	+ 4	+ 4
New York State	— 2 21	— 12 29	+ 11½	+ 24½
New Jersey and Pennsylvania	+ 11 56	+ 5 8	+ 20	+ 20
Girard College, Pennsylvania (1843)		+ 14 38		+ 46
Do. do. (1844)	+ 27 7		+ 86	
Delaware, Maryland, and Eastern Virginia	— 4 28	— 10 39	+ 37½	+ 9½
North Carolina	+ 17 46		+ 70	
Savannah, Georgia	— 16 8		0	
Georgia, Alabama, Mississippi, and Northern Florida	— 5 56	+ 3 16	— 4	— 11
Tennessee and Kentucky	+ 0 7	— 0 53	+ 15	+ 19½
Ohio	+ 5 30	+ 8 45	+ 13	+ 21
Athens, Illinois	+ 4 1	+ 9 4	+ 18	+ 18
Indiana, Illinois, Michigan, Wisconsin, and Iowa	+ 6 47	+ 18 14	— 1½	— 1½
Porto Cabello, Venezuela	— 17 24	— 19 1	+ 30	+ 37½
Ponce, Porto Rico	+ 12 44	+ 21 7	+ 2½	+ 27
Turk's Island, Bahamas	+ 1 17		+ 9	
Bermudas	+ 38 30		— 16½	
Inchkeith, Scotland		+ 7 48		+ 80
Calton Hill, do.		+ 3 0		+ 97
Sturbington, England		— 9 13		+ 14
Greenwich, do.	— 7 36	+ 2 10	+ 57½	+ 4
Devonport, do.	— 22 45	— 2 15	+ 56	+ 33
Oporto, Portugal	+ 17 41	+ 26 47	— 4½	— 8½
Tripoli, Barbary	+ 10 7		+ 15	

In the series of wind-roses on Plate XIII., the width of the shading, in different parts of the circumference, is proportional to the average force of the winds from those directions, as given in Series E. The arrows exhibit to the eye the direction and amount of most of the resultants contained in Series F, No. 1 being that for time, No. 2 for force, and No. 3 for distance.

An inspection of the foregoing tables and plate shows very clearly that, as a general thing, *the difference in the velocity of the winds from different points of compass* affects the resultant but slightly, either in direction or amount. This is especially true, when observations, taken at a considerable number of stations, are combined, so as to neutralize the effect of local influences, to which almost every

single station is more or less subject, causing the velocity of winds from certain points of compass to be greater or less than naturally belongs to them. The only apparent exception is in North Carolina, and there it is only apparent, for twenty-four out of the twenty-six months' observations reported came from one place. If we combine all the places in the United States, at which the velocity has been estimated by the use of the numbers 0, 1, 2, 3, &c., the mean resultant obtained from the actual distances is S. 87° 44′ W. 1.74 miles per hour; while, if we take the same observations, and give the same mean velocity to each, it is S. 85° 59′ W. 1.53 miles per hour—a difference of only 1° 45′ in direction, and 21 hundredths of a mile in amount. . . . Nor is there any uniformity in the operation of this slight influence of velocity on the mean direction. If we look over the list, we notice that in some cases it makes it more northerly, and in others more southerly; though it almost invariably increases the amount more or less; showing that the mean velocity of air moving in the same direction as the main current, is, on the whole, a little greater than of that moving in the opposite direction. This is what we should expect; for, in the case of any local disturbance or eddy in the atmosphere, the velocity of those parts which move in the same direction as the main current is equal to the *sum* of the two motions, while, in the opposite parts, it is equal only to the *difference*.

We can obtain light upon the remaining inquiry, viz.: *the effect of difference in the mean velocity of the wind in different countries or parts of the country*, from the general summary at the end of Series E. The only effect of this difference is, as has already been remarked, to increase or diminish the *amount* of the resultant, without altering its direction. Other things being equal, the amount of the resultant must obviously be exactly proportional to the mean velocity of the wind; so that it is necessary only to compare the velocities, as given in the table just referred to. Turning to it, we perceive that, while the mean velocity of the entire United States is about six miles[1] per hour, there could hardly exist a greater diversity in the geographical distribution of the parts of it where the velocity exceeds or falls short of the mean. Is it not, therefore, more natural to refer the difference to local influences, or errors of observation, and to conclude that, on the whole, there is, throughout the United States, no great difference of velocity?

But if we now cross the Atlantic, and compare American with European observations, there seems to be a remarkable difference between the velocity there and here. If the observations are to be relied on, and there is no apparent reason why they are not, the velocity there is very much greater. We see it not only at those places where the velocity was merely estimated; but at Greenwich and Devonport, in England, as compared with Toronto and Girard College, in this country, at all of which places it was accurately measured with instruments of the same construction, Osler's anemometer being used at them all, and yet the records show the velocity to be nearly three times greater at the former two places than at the latter two. This difference of velocity, if it really exists, will more than compensate for the less ratio that the progressive motion of the winds in Europe bears to the total motion, formerly adverted to, so as, on the whole, to make the progressive motion greater there than in the United States.

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[1] More strictly 5.8 miles.

APPENDIX.

A.

No doubt materials exist, if they could be collected together, for a far more thorough investigation of the laws of atmospheric circulation in the northern hemisphere than I have been able to give in this memoir. In a letter from Mr. Kupffer, Superintendent of the magnetic observations in Russia, to Sir John Herschel, dated May 25, 1845, it is stated that the meteorological archives of the Academy of Sciences, at St. Petersburg, contained, at that date, collections of observations from seventy-five different stations in the Russian empire, while all that I have been able to obtain amounts to but about a dozen, and the names of five more; and, for aught I know, my collections from some other countries may be proportionably meagre, compared with existing materials. Series of meteorological observations (some of them very valuable) have been taken, and no doubt preserved, at all the following places; and might not some of those who have them in charge, do a useful service to the cause of science, by giving them greater publicity?

Name of station.	Observer.
Lesser Slave Lake, British America	Mr. McDougal.
Fort William, do. do.	Mr. McKenzie.
Fort Coulogne, do. do.	Mr. Severight.
Halifax, Nova Scotia	Merchants' Reading Room.
Waterville, Maine, U. S. A.	Professor Keely.
Brunswick, do. do.	Professor Cleaveland.
Pembroke, New Hampshire, U. S. A.	
Concord, do. do.	J. Farmer.
Epping, do. do.	W. Plumer.
Lynn, Massachusetts, do.	
Salem, do. do.	Dr. Holyoke.
Woonsocket, Rhode Island, do.	Mr. Green.
Hartford, Connecticut, do.	W. W. Turner.
West Greenfield, Pennsylvania, do.	S. Campbell.
Charlotteville, Virginia, do.	E. T. Tayloe.
Robertville, South Carolina, do.	Dr. Smith.
Brunswick, Georgia, do.	J. Bancroft.
Huntsville, Alabama, do.	Dr. Allan.
Cahawba, do. do.	Mr. West.[1]
Portsmouth, Ohio, do.	Dr. Hempstead.
New Harmony, Indiana, do.	D. D. Owen.
Lexington, Kentucky, do.	
Nassau, Bahamas	J. C. Lees.
Santa Cruz, West Indies	Dr. Tuckerman.

[1] In possession of E. Pickens, Selma, Alabama.

Name of station.	Observer.
Alten, Lapland	J. F. Cole.
Hammerfest, Norway	
Christiana, do.	J. R. Crowe.
Helsingfors, Sweden	Mr. Nervander.
Upsal, do.	
Baltischport, Russia	Mr. Kalk.
Nicolaieff, do.	
Koursk, do.	Mr. Semenoff.
Taganrog, do.	O. Trebinsky.
Nigereytagnilsk, do. (Ural Mountains)	A. Demidoff.
Edinburgh, Scotland	
Inverness, do.	
Kingussie, do.	
Makerstown, Kelso, Scotland	J. A. Brown.
Kew, England	
Bensberg, Westphalia, Prussia	
Gotha, Saxony	
Leipsic, do.	
Heidelberg, Baden	
Marburg, Hesse Cassel	
Breslau, Silesia	Dr. Boguslawski.
Senftenberg, Austria	
Cadiz, Spain	Mr. Cerquero.
Le Caire	Mr. Alger.
Port Arthur[1]	J. Lempriere.
Cairo, Egypt	Mr. Lambert.
River Niger, Africa[1]	
Algiers, do.	Mr. Aimé.
Simla, Himmaleh Mountains	J. H. Boileau.
Lucknow, Hindoostan[1]	R. Wilcox.
Bombay, do.[1]	G. Buist.
Cochin, do.[1]	
Penang,[1]	J. B. Taylor.
Singapore, Farther India[1]	C. M. Elliott.
Aden, Arabia	
Cape of Good Hope[1]	Lieutenant Wilmot.
St. Helena[1]	Captain Lefroy.
Van Dieman's Land	
Antarctic Expedition[1]	Ross and Crozier.
Ross Bank[1]	Captain Ross.

B.

Extract from a letter from Donald Ross, Esq., Norway House:—

"I may as well mention that this post is situated on a branch of the 'Sea River,' or, more properly speaking, the Nelson River, about twenty miles due north from where it leaves the great Lake Winnipeg, and is, as near as I can judge, about four hundred feet above the level of the sea.

It may be somewhat curious to notice that, although the winds here blow from the South for a greater number of days during the year, than from any other single quarter of the compass, yet the Northerly wind, together with the N. E. and N. W., very far exceeds the Southerly, S. E. and S. W., so that, in reality, the North may be considered as the most prevailing wind; neither the East nor the West prevails much at any season of the year."

[1] In the archives of the Royal Society, London.

C.

Extract from a letter from J. M. Batchelder, Esq., Saco, Maine, accompanying his observations:—

"This place is situated on the Saco River, three miles from the ocean, from whence we have the south wind, which, you will observe, is the prevailing one during the summer months. There are frequently local currents down the valley of the river; but I think that the observations are, in the main, correct."

D.

For a description of the meteorological stations in the State of New York, see the reports of the Regents of the University of that State, as made annually to the legislature.

E.

Lafayette College, where the observations for Easton, Pennsylvania, were taken, is situated on an abrupt bank of the Delaware River, nearly 200 feet above its surface, and distant from it not more than one-fourth of a mile. There is no local cause that can materially affect the direction of the wind, unless it be the Blue Mountains, which are about twenty miles off.

Extract from a letter from George Mowry, Esq., Somerset, Pennsylvania, accompanying his observations:—

"The locality of Somerset is about half way between the Alleghany and Laurel Hill, which mountains run nearly north-east and south-west. There is no other table-land between us and Laurel Hill; but a few miles south and east of us, Negro Ridge lies, flattened down to within fifty or sixty feet of the level of Somerset;—farther south-west, toward the Maryland line, it is a considerable mountain. You are right in your inference that we are at the head of a branch of Youghiogeny; and, on a close inspection of a good map, you will observe that the waters flow north and south from us—consequently we are situated on some of the highest table-land in the State."

G.

Extract from a letter from Professor McCay, Athens, Georgia, accompanying an abstract of his observations:—

"I do not think there is any local cause for our winds. There are no mountains within sixty or seventy miles—no regular ridges for a still greater distance. The country is undulating, with no changes of elevation amounting to five hundred feet, in a circle around of fifty miles. The river near us is very small. Its course very irregular, sweeping round us in a semicircular course. Other streams near us have a general course to the south-east—nearly south."

H.

Extract from a letter from the Rev. H. G. O. Dwight, Constantinople, Turkey, accompanying his observations:—

"In regard to my record of the winds, I must say, that if I had been situated where I had a high vane to guide me, the table would probably have shown some slight veerings to the east or west, which do not now appear. There is, however, no doubt of the fact, that the wind here, as a general thing, blows either from the north-east or the south-west. A wind, from either of the four cardinal points, never continues long in Constantinople. During the fifteen or sixteen years that I have been here, I have noticed that our prevailing wind in summer, is north-east. Indeed, from July to October it is so constantly and regularly from that quarter as to be almost a monsoon; and during that period, the nights are very apt to be calm. The wind begins to blow gently soon after sunrise, and it increases until, say two o'clock, when it not unfrequently blows very strong, and then gradually dies away, and, soon after sunset, it becomes calm again. During the prevalence of this wind *in summer*, the atmosphere is usually clear, or, at least, there are only flying clouds, without rain; but, in winter, the north wind always brings clouds and rain. When the south wind blows in summer, it is usually a mere land breeze, and I have often myself observed, in passing up the Bosphorus on a summer's day, when the wind is south-west at the entrance of the Bosphorus into the Sea of Marmora, it is north-east at the northern end of the same strait, *i. e.* as it issues from the Black Sea. I have known it to blow all day thus in opposite directions, the two winds meeting at the middle of the strait where it was perfectly calm.

"One fact you will probably notice from my table, and that is, that there is far more southerly wind in winter than in summer. And this leads me to say a word in reference to your question, whether I know of any local cause, besides the direction of the straits, that would affect the wind? About seventy or eighty miles south of us is the high range of Mount Olympus (not Thessalian, but Bithynian), whose summit is at least eight thousand feet above the sea level; and, of course, in winter, it is covered with an immense mass of snow. This has been supposed to be the chief cause of our having so much southerly wind in winter. I do not give this as my opinion, however, but I simply state the fact of such a mountain being in such a relative position to the capital, and also an inference that has been drawn from that fact. I have always noticed that our coldest weather in winter comes when the southerly wind first begins to blow, which I account for on the supposition that such a wind brings first over us the frozen atmosphere of Olympus, and other high ranges of mountains in the interior. But if the wind continues two or three days (and it sometimes does *two or three weeks* uninterruptedly in winter), it is sure to bring mild and almost summer weather. The barometer here invariably sinks with a southerly wind, and the rain point is much higher with a northerly than with a southerly wind. I have sometimes noticed an alarming fall in the barometer, but I soon learned not to anticipate any unusual storm from that, if the wind was just coming from the south or south-west. Our heaviest blows, and our most copious rains, ordinarily come just as the wind is changing from a southerly to a northerly direction.

"As you are interesting yourself in the study of the winds, I will just mention one more fact, though an isolated one. (I wish I had more of them.) Three years ago, I was in Smyrna, in the autumn, when we had one of the most dreadful

gales I have experienced on these shores. It came in the night, and blew for four or five hours, I think, with the greatest violence, so that much damage was done to the shipping. I took particular notice of the wind, and found that the same gale had been felt, if possible, still more severely in Constantinople, though somewhat later, *i. e.* two or three hours, perhaps; and an observant sea captain of my acquaintance, who happened to be off this port at the time, informed me that the wind here was from the south-west, *i. e.* directly opposite that in Smyrna. I must say, however, that as I took no note of it at the time, I am not positively certain it was *later* at Constantinople. It may have been so much *earlier* instead of later, though my strong impression is that my first statement is correct. The main point, however, to which my mind was directed, was the fact that in the same gale the wind blew from opposite quarters at Smyrna and at Constantinople. The distance between the two cities, by sea, is estimated at about 350 miles, though by an air line it must be considerably less."

I.

Extract from a letter from Rev. S. H. Calhoun, Mount Lebanon, Syria, accompanying his observations at Smyrna and Bahmdûn:—

"In the summer of 1844, I removed to Syria" (*i. e.* from Smyrna, Asia Minor), "and as you will see by the continuance of sheet No. 1, and the whole of sheet No. 2, was at a village named Bahmdûn, situated S. S. E. from Beirut, and near the Damascus road. Its elevation I suppose to be between thirty-one and thirty-two hundred feet, on Mount Lebanon." * * *

"Sheet No. 3 contains the records of Dr. De Forest's observations at Beirut. You will see that his observations for April, May, and June, 1843, were made at an elevation of 213 1-6 feet above the sea, and the succeeding ones at an elevation of about 80 feet."

K.

Extract from a letter from Rev. N. Benjamin, accompanying a collection of observations at Trebizond:—

"The prevailing winds at Trebizond are north-west winds and easterly winds. The sirocco also sometimes prevails. Rain storms, which are very frequent, are almost invariably with a wind blowing from the north-west. The clear and pleasant weather was almost as uniformly with an easterly wind, and I also quite generally observed, that the barometer was lower with an east wind when quite clear, than with a north-west or a north wind accompanied by an obscured sky, and even with rain. So that we had often the extraordinary phenomenon, of the barometer rising as the storm was coming on, and standing very high during a protracted rain, and sinking on the return of clear weather." * * * * *

"I have not been able to form any satisfactory conclusions in regard to the local causes which affect the direction of the winds at Trebizond, and can only say that the whole country in the rear of that place is mountainous to an unusual degree."

L.

Extract from a letter from Rev. J. F. Lanneau:—

"There are, however, some general remarks which my long residence in Syria and the Holy Land enables me to make concerning the direction of the wind, and other topics alluded to in your letter, and which may be of some interest to you.

"The whole of Palestine is intersected by a chain of hills, or small mountains, rising to an elevation of nearly three thousand feet, and extending north and south nearly midway between the Mediterranean and the Jordan. On the sea-coast, the wind generally blows 'off the land,' or from the east and south-east during the night, and follows the sun, as the day advances, toward the south, south-west, and west, and perhaps one-third of the time continuing on to north and north-west, increasing toward sunset, and, shortly after, dying away to a calm, which lasts until about midnight, when the land-breeze again commences. At Jerusalem, however, and in the hill country of Judea, the direction of the winds is almost always from the north-west during winter and summer, except when the Shileak, the Arabic term for the wind commonly known elsewhere as the Sirocco, or east wind, blows from the desert. So uniformly prevalent is the north-wester, that the olive trees in the interior, situated so as to feel its constant influence, are inclined toward the south-east, and their branches checked in their opposite direction by its force, so that, in some cases, three-fourths, or more of them, are on that side, thus: . This is very strikingly noticed immediately around Jerusalem.

"And this leads me to an obvious answer to one of your questions, viz.: 'Are there any local influences that would affect the direction of the wind?' I have always thought the position of Jerusalem, and that whole region, with the immense evaporation from the Dead Sea, and the Arabian desert to the south-east of it, must be the physical cause of the north-west direction of the wind the greater portion of the year, while the deep gorge in the mountains, extending all the way from the valley of Jehoshaphat and Hinnom to the Dead Sea, occasions a stronger current over the Holy City and the Mount of Olives. The Arabs have a saying, that Jerusalem is the most windy place in the world, the centre of the earth, and thus attracting all the wind there, &c. During the winter, the south-west wind on the coast, and the north-west wind in the interior, generally accompany a rain, though occasionally there is a shower from the south-east. A north wind on the sea-coast always drives away rain, but it is generally a very chilly and uncomfortable one, and is considered by the natives as unwholesome. The rainy season commences about the 1st or 15th of October, and continues until the middle of April. Sometimes a few showers fall in September and May."

M.

For an extract from a letter of the Rev. Justin Perkins, Ooroomiah, Persia, accompanying his observations at that place, see pages 104 and 105.

In regard to the winds at Tabreez, he remarks as follows:—

"At Tabreez, across the lake, which is about seventy miles distant from us (in

a direct line), and nearly east from Ooroomiah, there is daily a strong wind from the Caspian Sea, which is about one hundred and fifty miles north-east of that city. This wind is very invigorating."

N.

Extract from a letter from the same, accompanying observations from Tehran, Persia:—

"Properly to understand these phenomena, it may be well that you have in mind the local situation of Tehran. I will copy a reference to its situation, penned on the spot when I visited it several years ago. 'The local situation of Tehran renders its situation extremely warm, and hemmed in as it is on the north and east by naked mountains, which tower some 5000 or 6000 feet above it in the rear, and the vast extent of arid land in the two opposite directions, reflecting the heat in summer like a burning desert, the city cannot be otherwise than like a great oven during the warm months of the year, not taking into account at all its relative elevation, which is much less than that of Tabreez, and other cities of Azerbijon.'

"I may add to this notice that the Caspian Sea, lying some seventy or eighty miles north of Tehran, though separated from it by a lofty range of mountains, doubtless affects the character and direction of its winds, and still more probably, the immense salt desert that skirts the plain of Tehran, some fifty miles south-east of the town."

O.

When these sheets were first sent to the Smithsonian Institution for publication, the observations from Tehran and Tabreez had not been received, and those previously received from Ooroomiah, gave the mean direction a good deal more southerly. This addition of three new stations, at which the direction of the wind is westerly, may lead us to question whether the southern limit of the zone of westerly winds should not be altered so as to include this region of country.

P.

The reception of Lieutenant Maury's Charts of the North Pacific Ocean, after the entire completion, as was supposed, of the foregoing manuscript, and the kind aid of Mr. Solon Albee, a fellow college officer, in discussing them, and making the necessary computations, has enabled me to add, as an appendix to Series C, Section IV, the following list of resultants, deduced from an aggregate of more than one hundred and sixty-five years' observations. Owing to the probable monsoon character of the winds near the coast, or say within six hundred miles of it, the resultants for each of the several months were computed separately, and from them the mean for the year; but, in mid-ocean, where there was no reason to apprehend any influence of that kind, such precaution was deemed unnecessary, and the resultants were obtained by simply resolving the traverse of all the winds reported, without reference to the time of the year in which they were taken.

The almost entire want of observations during the colder months of the year, north of latitude 40°, necessarily renders the results near the coast doubtful, and

in the vicinity of Sitka and Fort Vancouver, the deficiency was supplied by using observations at those places.

No.	North Latitude.	West Longitude.	Mean direction of Wind.	Rate of Progress.	No. of Observations.
31	55° to 60°	130° to 150°	S. 40° 58′ E.	21½	15633
32	55 60	150 165	S. 62 24 W.?	32	3006
33	50 55	125 145	N. 85 9 W.?	35	6937
34	50 55	145 155	S. 63 12 W.?	28	14347
35	50 55	155 165	S. 41 43 W.?	20	6682
36	45 50	120 145	N. 77 48 W.?	44	2180
37	45 50	145 155	S. 73 11 W.	42	2271
38	45 50	155 165	S. 88 48 W.	34	1989
39	40 45	120 140	N. 64 7 W.	26	1201
40	40 45	140 150	S. 78 29 W.	30	1395
41	40 45	150 165	S. 72 27 W.	26	2425
42	35 40	120 135	N. 19 5 W.	34	4066
43	35 40	135 150	N. 52 41 E.	15	2982
44	35 40	150 165	S. 41 28 W.	13	3588
45	30 35	115 125	N. 28 34 W.	65	1672
46	30 35	125 135	N. 18 56 E.	45	2925
47	30 35	135 150	N. 81 57 E.	30	3878
48	30 35	150 165	S. 44 34 E.	20	7366
49	25 30	105 125	N. 14 51 W.	37½	1766
50	25 30	125 135	N. 36 9 E.	64	1117
51	25 30	135 150	N. 48 6 E.	46	1425
52	25 30	150 165	N. 77 0 E.	48	6606
53	20 25	105 125	N. 28 41 W.	57	3780
54	20 25	125 135	N. 33 40 E.	82	717
55	20 25	135 150	N. 59 16 E.	75	960
56	20 25	150 165	N. 66 2 E.	68	9245
57	15 20	90 110	N. 18 0 W.	37½	1833
58	15 20	110 120	N. 22 9 E.	60	838
59	15 20	120 135	N. 36 7 E.	85	764
60	15 20	135 150	N. 54 8 E.	84	2046
61	15 20	150 165	N. 62 37 E.	72	4656
62	10 15	85 100	N. 28 14 E.	37	944
63	10 15	100 110	N. 39 2 E.	37	1078
64	10 15	110 120	N. 46 2 E.	46	863
65	10 15	120 135	N. 41 28 E.	73	1198
66	10 15	135 150	N. 50 43 E.	86	1569
67	10 15	150 165	N. 65 32 E.	85	2482
68	5 10	75 90	S. 71 54 W.	22	1430
69	5 10	90 105	S. 51 39 E.	47	1826
70	5 10	105 120	S. 42 33 E.	47	2271
71	5 10	120 135	S. 81 51 E.	53	1960
72	5 10	135 150	S. 89 38 E.	57	1612
73	5 10	150 165	S. 89 18 E.	65	3268
74	0 5	75 90	S. 6 18 E.	66½	14358
75	0 5	90 95	S. 18 59 E.	71	7078
76	0 5	95 100	S. 22 38 E.	48	2572
77	0 5	100 105	S. 38 27 E.	84	1617
78	0 5	105 110	S. 39 44 E.	91	1306
79	0 5	110 115	S. 46 42 E.	84	1373
80	0 5	115 120	S. 52 13 E.	84	1816
81	0 5	120 125	S. 56 30 E.	89	2408
82	0 5	125 130	S. 60 31 E.	84	1782
83	0 5	130 135	S. 62 22 E.	82	1566
84	0 5	135 140	S. 75 15 E.	86	968
85	0 5	140 145	S. 78 30 E.	75	447
86	0 5	145 150	S. 79 27 E.	76	738
87	0 5	150 155	S. 69 48 E.	71	1156
88	0 5	155 160	S. 69 4 E.	84	1481
89	0 5	160 165	S. 75 37 E.	81	770

Q.

As Dr. Halley's theory of winds is revived, and advocated with a good deal of ability, in Professor Mitchell's paper, referred to on pages 134 and 138, we will point out some of what we conceive to be objections to it.

1. As applied to the trade-winds, it is entirely inadequate to produce the effects observed. It is on the ocean that the trade-winds are most uniform, and most fully developed. Let us see, then, what the effect would be, if the equatorial parts of the earth were entirely covered with water.

Suppose A B D C to be a section of one of the vortices of Dr. H., or Professor M. (seen from the north side, and drawn in the form of an oblong, instead of an ellipse, for convenience of calculation), in which the lower current moves westward from C toward D, and the upper eastward from B toward A; and let its horizontal length be 100 miles (which is, we presume, as much as they would desire, since the vortices are spoken of as being of "moderate dimensions"), and its height two miles.

Now, the extreme diurnal range of temperature on the surface of that part of the ocean does not ordinarily exceed 1° F., and the difference between the two extremities of the vortex could not amount to $\frac{1}{1000}$ of 1°. Air expands about $\frac{1}{480}$ of its bulk for each degree that its temperature is raised; consequently, the difference in the specific gravity of the columns at the ends of the vortex (A C and B D) would hardly amount to $\frac{1}{480000}$ of the weight of either, or $\frac{1}{48960000}$ of the weight of the air in the entire circuit. But it is this difference only which constitutes the moving force, while the quantity of matter to be moved is the air of the whole circuit. Hence, according to well known principles in mechanical philosophy, the velocity communicated is $\frac{1}{48960000}$ of that with which a body would fall freely, and is precisely the same as that of a body descending on an inclined plane, whose height is to its length as 1 to 48960000. Such an inclination, amounting to no more than about $\frac{1}{800}$ of an inch in a mile, would be insufficient to give the slightest appreciable motion to a fluid placed upon it.

Professor M. attempts to meet this objection by the following remark: "That it (the cause in question) is adequate to the creation of a considerable wind, is proved from the fact that it is upon this that the other, or permanent temperature, depends, and that it is what determines the existence of two winds; the land and sea-breezes blowing in opposite directions every twenty-four hours." But neither of these facts seems to be relevant. The tendency of water to resist *sudden changes* in its temperature, in no way interferes with the *accumulation* of heat in the equatorial regions, and it is on this that the higher temperature of those parts depends. And in regard to land and sea-breezes, it must be borne in mind, that the diurnal change of temperature on land, is at least thirty times greater than on water.

2. We cannot understand how Halley's theory accounts for the westerly winds that prevail beyond the limits of the trades. The following is the explanation, as given by Professor M., after remarking that the explanation of the trade-winds

"applies to such parallels of latitude only as have the amount of heat communicated to the portions of air lying north and south of them nearly the same, or along which the point of greatest heat, or of heat very little below the greatest, may be supposed to travel from east to west. If," he proceeds, "the excess of heat on one side be moderately increased, the plane of the vortex will be inclined in that direction; but if the excess become considerable, as through the greater part of the temperate zone, the equilibrium will be established in a totally different way. Thus, with regard to the United States, the point of greatest heat first passes south of us, and an impulse is given to the under strata of the atmosphere in that direction, and when, some time afterwards, the columns in the meridians west of us come to be expanded, the air that should have supplied the eastern or trade-wind having passed off toward the equator, the upper or western current descends to the earth, creating a westerly wind, or rather, by the composition of motions in consequence of its mingling with the current that is proceeding southward, a north-west wind, which may be regarded as the *natural* wind of the parts of the globe lying on the north side of the equator beyond the thirtieth parallel. The same reasoning applies to the other hemisphere. As, however, the natural and gentle flow of the air in this direction is interrupted by evaporation, condensation, and other causes, the result is simply a predominance in those latitudes of winds from the west, and the direction of the pole, over those from opposite quarters."

This whole reasoning appears to me obscure and unsatisfactory.

3. The theory fails to account for the system of easterly winds which seems to exist in high northern latitudes; for, if the above reasoning is sound for the temperate regions, it will apply just as well all the way to the poles.

4. The cause which Professor M. disregards *must exist*, and he makes no provision for it. We do *certainly know* that a body in motion tends to retain its motion; and that if air, partaking of the easterly motion of the earth due to a higher latitude, were, without any change in its motion, transferred to the equator, it must have a relative motion as from the east. All this we should know even without observation or experiment, and if this cause does not produce appreciable effects, it is incumbent to show how it is neutralized.

The purely cosmical theory, on the other hand, runs to the opposite extreme, and disregards the influence of heat altogether. The views of those who advocate it may, if I understand them, be thus expressed. The absolute motion of a place at midnight, say they, is equal to the *sum* of the annual and diurnal motions of the earth, while, at noon, it is equal only to the *difference;* and hence, that the air, tending to preserve a uniform motion, travels slower than the earth in the former case, and faster in the latter. But the same reasoning would apply if the earth had no annual motion. The place would then move in one direction at midnight, and in the opposite one at noon, making the difference the same as now. We all know that a pail of water whirled around on board a steamboat or railroad car, when the latter was in rapid motion, would present the same phenomena as when at rest. The whole matter is easily understood by recurring to the first principles of central forces. Motion in a circular orbit is neither accelerated nor retarded by a force directed toward the centre of the orbit. Nor will a common motion, communicated

both to the centre and to the revolving body, affect their position relatively to each other. Now, in the case of the atmosphere, the motion in opposite directions just spoken of, is caused solely by the force of gravity, which retains the air about the earth, and prevents it from flying off in a tangent, by virtue of its centrifugal force, but has no effect whatever upon its horizontal motion, nor any tendency to change the relative position of a place on the earth's surface and the superincumbent air. A musket-ball, discharged horizontally with a velocity of about five miles per second, would, if the air were removed, travel round the earth with a uniform velocity, and yet would move in opposite directions at opposite points of its orbit. Nor would its relative position in regard to the surface of the earth be in any way affected by the revolution of the earth around the sun.

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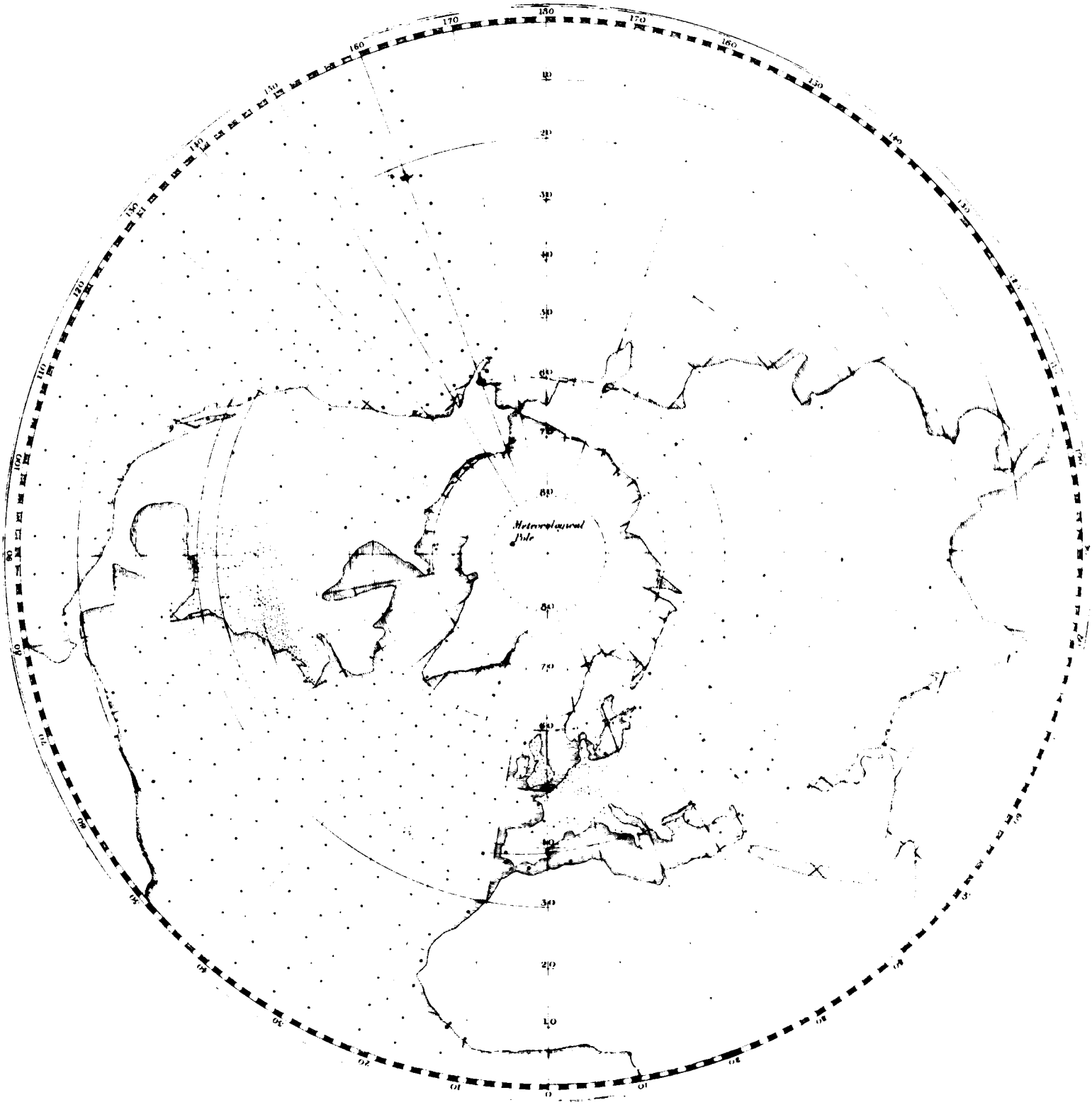
Plate I



METEOROLOGICAL STATIONS IN THE NORTHERN HEMISPHERE

From which collections of observations have been obtained for this memoir
N.B. The dots indicate the stations

Lith. of Varon & Major New York

Plate II

BRITISH AND RUSSIAN AMERICA.

MELVILLE ISLAND
one year
MELVILLE ISLAND
Winter H.r
ARCTIC OCEAN
Rad 112 miles

PORT BOWEN
one year
Port Bowen
R 112 miles

SHERIFF'S HARBOUR
one year
SEE BOOTHIA FELIX
R 112 miles

BOOTHIA FELIX
3 stations 2 years
BOOTHIA FELIX
P. Wales
R 112 miles

FELIX HARBOUR
one year
SEE BOOTHIA FELIX
R 112 miles

IGLOOLIK
one year
COCKBURN I.
MELVILLE PENINSULA
R 112 miles

WINTER ISBAND
one year
Fox Channel
R 112 miles

FORT ENTERPRISE
five months
BRITISH AMERICA
R 112 miles

ILIULUK ALEUTIAN ISLANDS
1 1/2 year
Alaska
Aleutian Is.
PACIFIC OCEAN
R 400 miles

SITKA RUSSIAN AMERICA
one year
N. America
PACIFIC OCEAN
R 150 miles

FORT FRANKLIN G.t BEAR L.
twenty months
BRITISH AMERICA
GREAT BEAR L.
R 75 miles

RELIANCE ON SLAVE LAKE
eight months
BRITISH AMERICA
G. Slave L.
R 112 miles

NORWAY HOUSE
seven years
Nelson's R.
L. Winnipeg
R 50 miles

MICHIPICOTEN
one year
L. SUPERIOR
R 57 miles

ST JOHNS NEWFOUNDLAND
four years
NEWFOUNDLAND
ATLANTIC OCEAN
R 90 miles

NAIN LABRADOR
one year
ATLANTIC OCEAN
LABRADOR
R 100 miles

MONTREAL
three years
St. Lawrence R.
R 30 miles

TORONTO
two years
CANADA
ONTARIO
U. STATES
R 50 miles

WINDSOR NOVA SCOTIA
one year
ATLANTIC O.
R 90 miles

BATH MAINE

Lith. of Sarony & Major N York

Plate III.

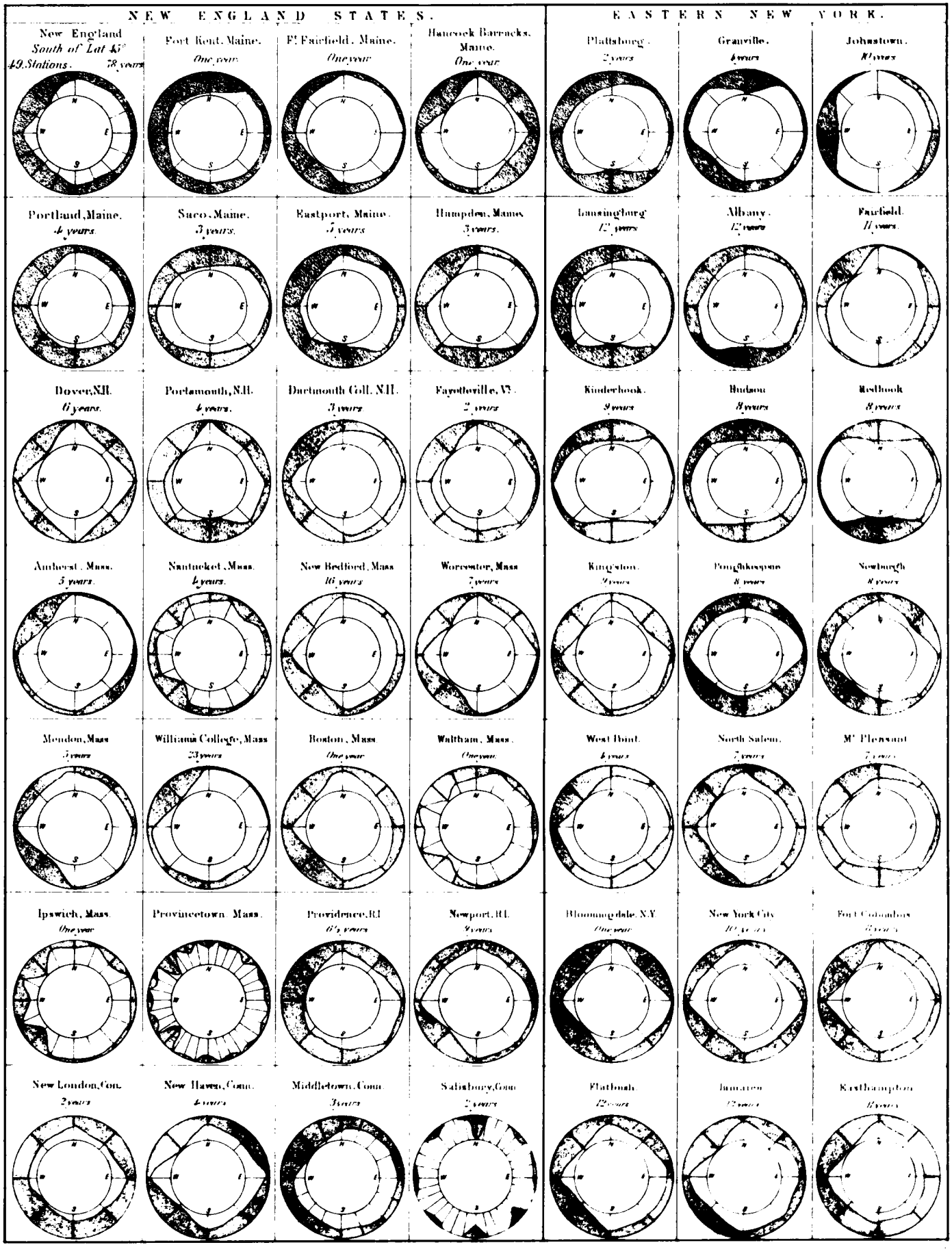

NEW ENGLAND STATES.
EASTERN NEW YORK.
New England South of Lat 45° 49 Stations. 28 years
Port Kent, Maine. One year.
Ft Fairfield, Maine. One year.
Hancock Barracks, Maine. One year.
Plattsburg. 2 years
Granville. 4 years
Johnstown. 10 years
Portland, Maine. 4 years.
Saco, Maine. 3 years.
Eastport, Maine. 5 years
Hampden, Maine. 3 years.
Lansingburg 12 years
Albany. 12 years
Fairfield. 11 years.
Dover, NH. 6 years.
Portsmouth, N.H. 4 years.
Dartmouth Coll. N.H. 3 years
Fayetteville, Vt. 2 years
Kinderhook. 9 years
Hudson 8 years
Rhinebeck 8 years
Amherst, Mass. 5 years.
Nantucket, Mass. 4 years.
New Bedford, Mass 16 years
Worcester, Mass 7 years
Kingston. 9 years
Poughkeepsie 8 years
Newburgh 8 years
Mendon, Mass 5 years
Williams College, Mass 23 years
Boston, Mass One year
Waltham, Mass. One year.
West Point. 4 years
North Salem. 7 years
Mt Pleasant 7 years
Ipswich, Mass. One year
Provincetown, Mass.
Providence, RI 6½ years
Newport, RI. 4 years
Bloomingdale, N.Y. One year
New York City 10 years
Fort Columbus 6 years
New London, Conn. 2 years
New Haven, Conn. 4 years
Middletown, Conn. 3 years
Salisbury, Conn 2 years
Flatbush. 12 years
Jamaica 12 years
Easthampton 8 years

Plate IV.

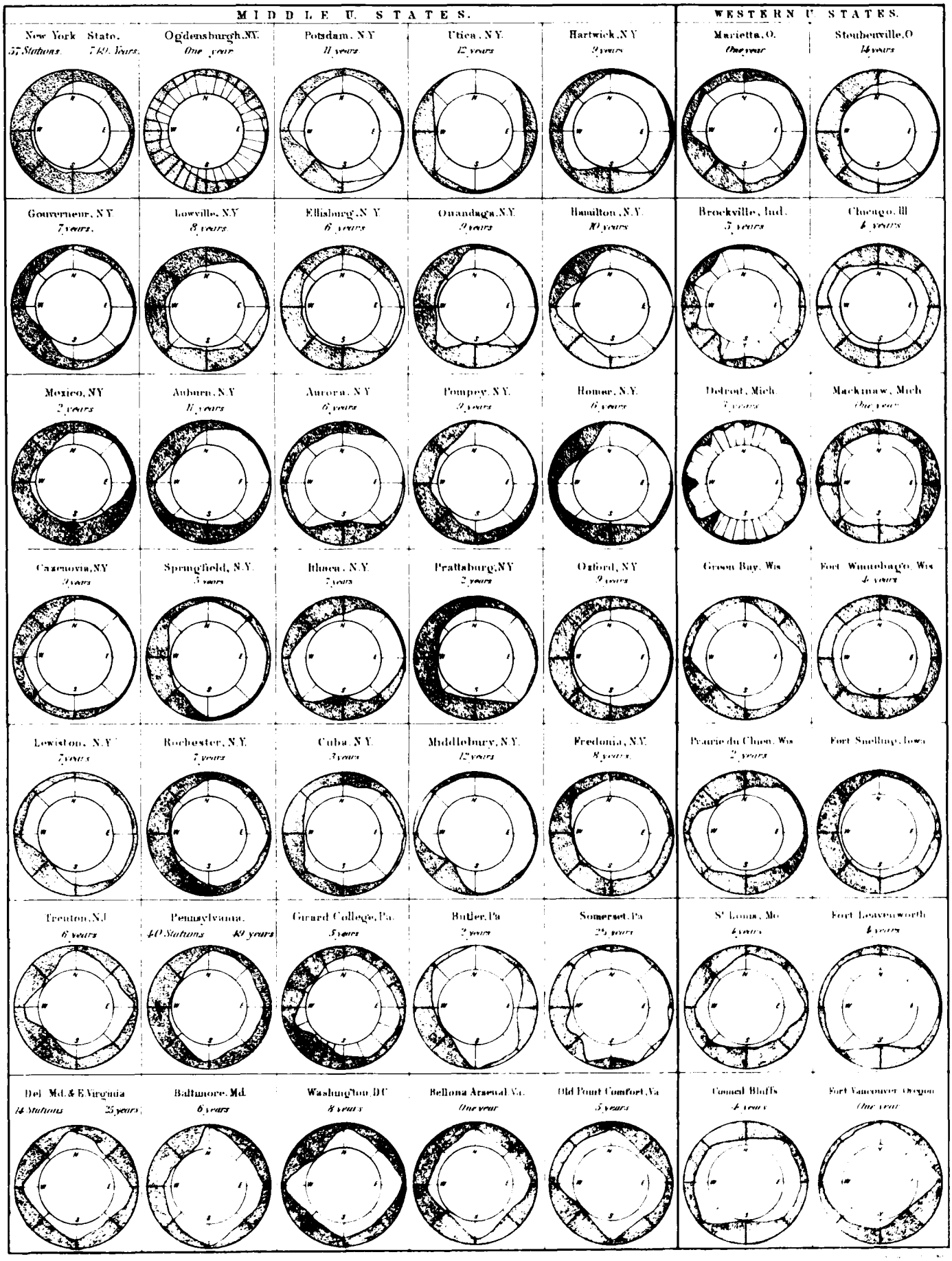

MIDDLE U. STATES.
WESTERN U. STATES.
New York State. 57 Stations. 749 Years.
Ogdensburgh, N.Y. One year
Potsdam, N.Y. 11 years
Utica, N.Y. 12 years
Hartwick, N.Y. 9 years
Marietta, O. One year
Steubenville, O. 14 years
Gouverneur, N.Y. 7 years.
Lowville, N.Y. 8 years
Ellisburg, N.Y. 6 years
Onandaga, N.Y. 9 years
Hamilton, N.Y. 10 years
Brockville, Ind. 5 years
Chicago, Ill. 4 years
Mexico, N.Y. 2 years
Auburn, N.Y. 11 years
Aurora, N.Y. 6 years
Pompey, N.Y. 9 years
Homer, N.Y. 6 years
Detroit, Mich. 3 years
Mackinaw, Mich. One year
Cazenovia, N.Y. 9 years
Springfield, N.Y. 5 years
Ithaca, N.Y. 7 years
Prattsburg, N.Y. 2 years
Oxford, N.Y. 9 years
Green Bay, Wis.
Fort Winnebago, Wis. 4 years
Lewiston, N.Y. 7 years
Rochester, N.Y. 7 years
Cuba, N.Y. 3 years
Middlebury, N.Y. 12 years
Fredonia, N.Y. 8 years
Prairie du Chien, Wis. 2 years
Fort Snelling, Iowa
Trenton, N.J. 6 years
Pennsylvania. 40 Stations 49 years
Girard College, Pa. 5 years
Butler, Pa. 2 years
Somerset, Pa. 2½ years
St. Louis, Mo. 4 years
Fort Leavenworth 4 years
Del. Md. & E. Virginia 14 Stations 25 years
Baltimore, Md. 6 years
Washington, D.C. 8 years
Bellona Arsenal, Va. One year
Old Point Comfort, Va. 5 years
Council Bluffs 4 years
Fort Vancouver, Oregon One year

Plate V.

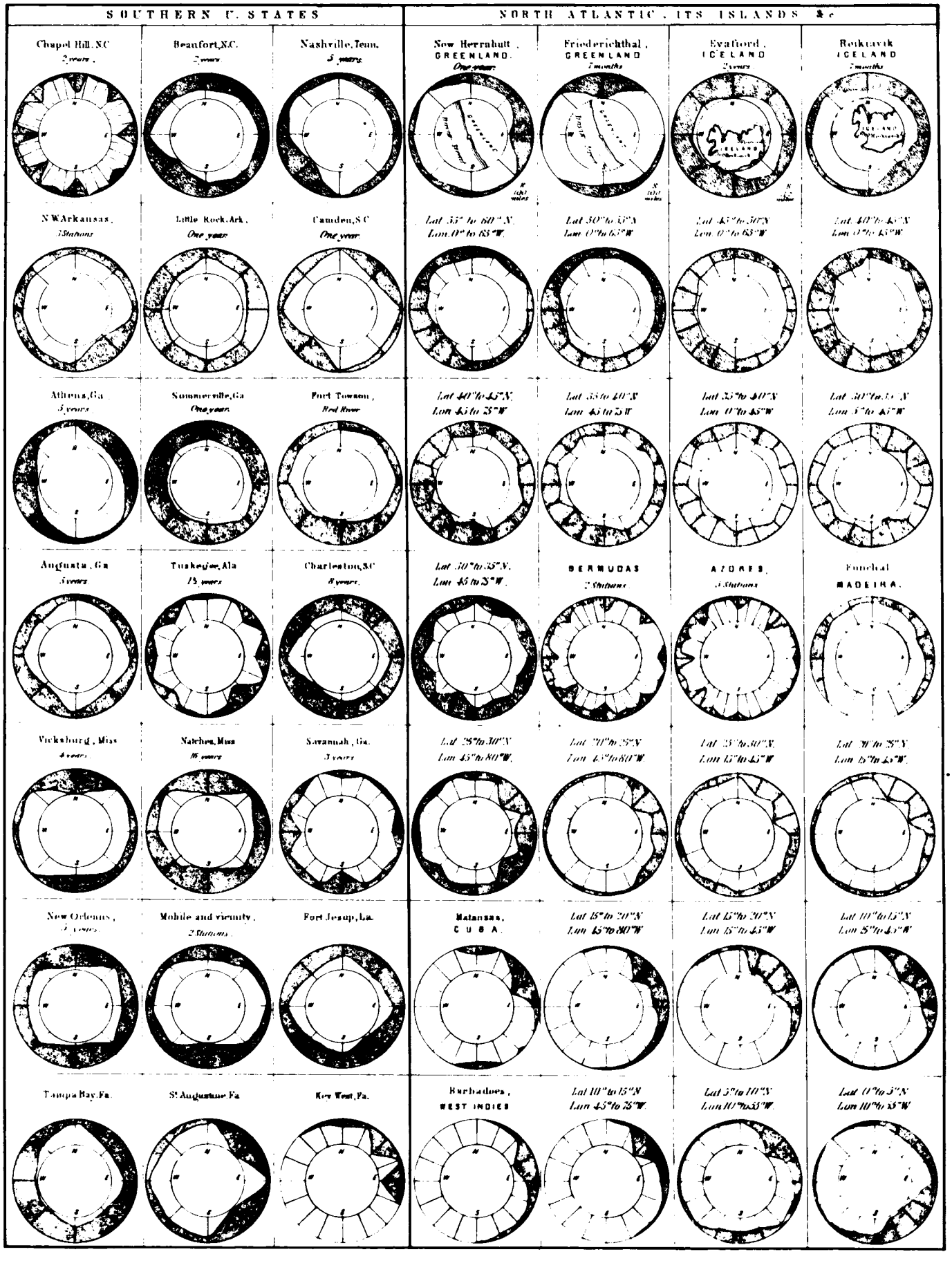

SOUTHERN U. STATES
NORTH ATLANTIC, ITS ISLANDS &c
Chapel Hill, N.C.
2 years.
Beaufort, N.C.
2 years
Nashville, Tenn.
5 years
New Herrnhutt, GREENLAND.
One year.
Friederichthal, GREENLAND
7 months
Evafiord, ICELAND
2 years
Reikiavik ICELAND
7 months
N.W. Arkansas,
15 Stations
Little Rock, Ark.
One year.
Camden, S.C.
One year.
Lat. 55° to 60° N.
Lon. 0° to 65° W.
Lat. 50° to 55° N.
Lon. 0° to 65° W.
Lat. 45° to 50° N.
Lon. 0° to 65° W.
Lat. 40° to 45° N.
Lon. 0° to 45° W.
Athens, Ga.
3 years.
Summerville, Ga.
One year.
Fort Towson,
Red River
Lat. 40° to 45° N.
Lon. 45 to 25° W.
Lat. 35 to 40° N.
Lon. 45 to 25° W.
Lat. 30° to 35° N.
Lon. 0° to 45° W.
Lat. 30° to 35° N.
Lon. 5° to 45° W.
Augusta, Ga.
3 years.
Tuskegee, Ala.
15 years.
Charleston, S.C.
8 years.
Lat. 30° to 35° N.
Lon. 45 to 25° W.
BERMUDAS
2 Stations
AZORES,
3 Stations
Funchal
MADEIRA.
Vicksburg, Miss.
3 years.
Natchez, Miss.
16 years.
Savannah, Ga.
3 years.
Lat. 25° to 30° N.
Lon. 45° to 80° W.
Lat. 20° to 25° N.
Lon. 45° to 80° W.
Lat. 25° to 30° N.
Lon. 15° to 45° W.
Lat. 20° to 25° N.
Lon. 15° to 45° W.
New Orleans,
3 years.
Mobile and vicinity.
2 Stations.
Fort Jessup, La.
Matanzas,
CUBA.
Lat. 15° to 20° N.
Lon. 45° to 80° W.
Lat. 15° to 20° N.
Lon. 15° to 45° W.
Lat. 10° to 15° N.
Lon. 5° to 45° W.
Tampa Bay, Fa.
St. Augustine, Fa.
Key West, Fa.
Barbadoes,
WEST INDIES
Lat. 10° to 15° N.
Lon. 45° to 75° W.
Lat. 5° to 10° N.
Lon. 10° to 35° W.
Lat. 0° to 5° N.
Lon. 10° to 35° W.

Plate VI.

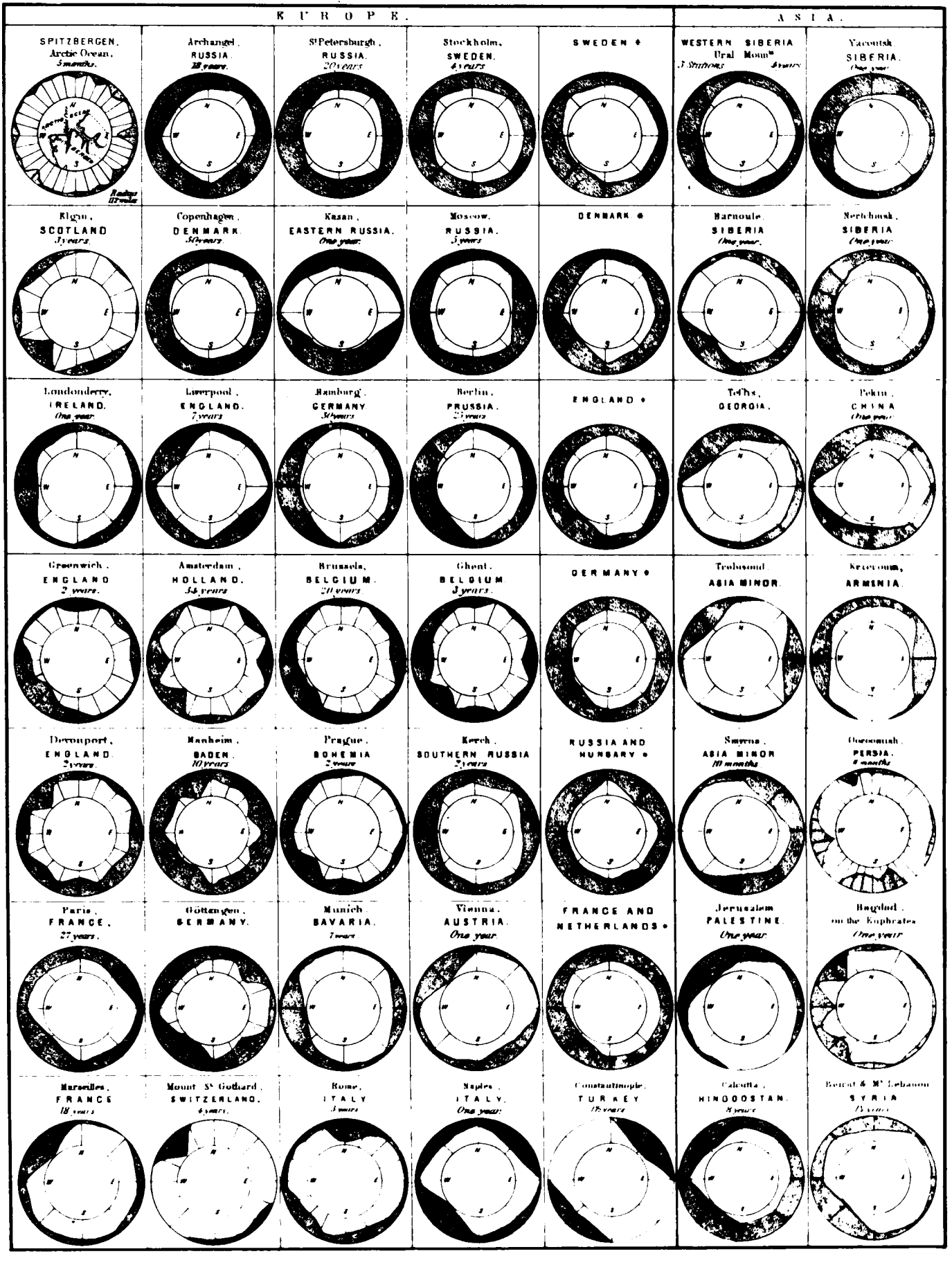

EUROPE.
ASIA.
SPITZBERGEN. Arctic Ocean. 5 months.
Archangel. RUSSIA. 18 years.
St Petersburgh. RUSSIA. 20 years
Stockholm. SWEDEN. 4 years
SWEDEN *
WESTERN SIBERIA Ural Mountn 3 Stations 4 years
Yacoutsk. SIBERIA. One year
Elgin. SCOTLAND 3 years.
Copenhagen. DENMARK. 50 years.
Kasan. EASTERN RUSSIA. One year.
Moscow. RUSSIA. 5 years
DENMARK *
Barnoule. SIBERIA One year.
Nertchinsk. SIBERIA One year
Londonderry. IRELAND. One year.
Liverpool. ENGLAND. 7 years
Hamburg. GERMANY. 30 years
Berlin. PRUSSIA. 25 years
ENGLAND *
Tefhs. GEORGIA.
Pekin. CHINA One year
Greenwich. ENGLAND 2 years.
Amsterdam. HOLLAND. 54 years
Brussels. BELGIUM. 20 years.
Ghent. BELGIUM. 3 years.
GERMANY *
Trebisond. ASIA MINOR.
Erzeroum. ARMENIA.
Devonport. ENGLAND. 2 years.
Manheim. BADEN. 10 years
Prague. BOHEMIA 2 years
Kerch. SOUTHERN RUSSIA 2 years
RUSSIA AND HUNGARY *
Smyrna. ASIA MINOR 10 months
Ooroomiah. PERSIA. 8 months
Paris. FRANCE. 27 years.
Göttingen. GERMANY.
Munich. BAVARIA. 7 years.
Vienna. AUSTRIA. One year.
FRANCE AND NETHERLANDS *
Jerusalem PALESTINE. One year.
Bagdad. on the Euphrates One year
Marseilles. FRANCE 18 years
Mount St Gothard. SWITZERLAND. 4 years.
Rome. ITALY 3 years
Naples. ITALY. One year.
Constantinople. TURKEY 15 years
Calcutta. HINDOOSTAN. 8 years
Beirut & Mt Lebanon SYRIA 15 years

Plate VIII.

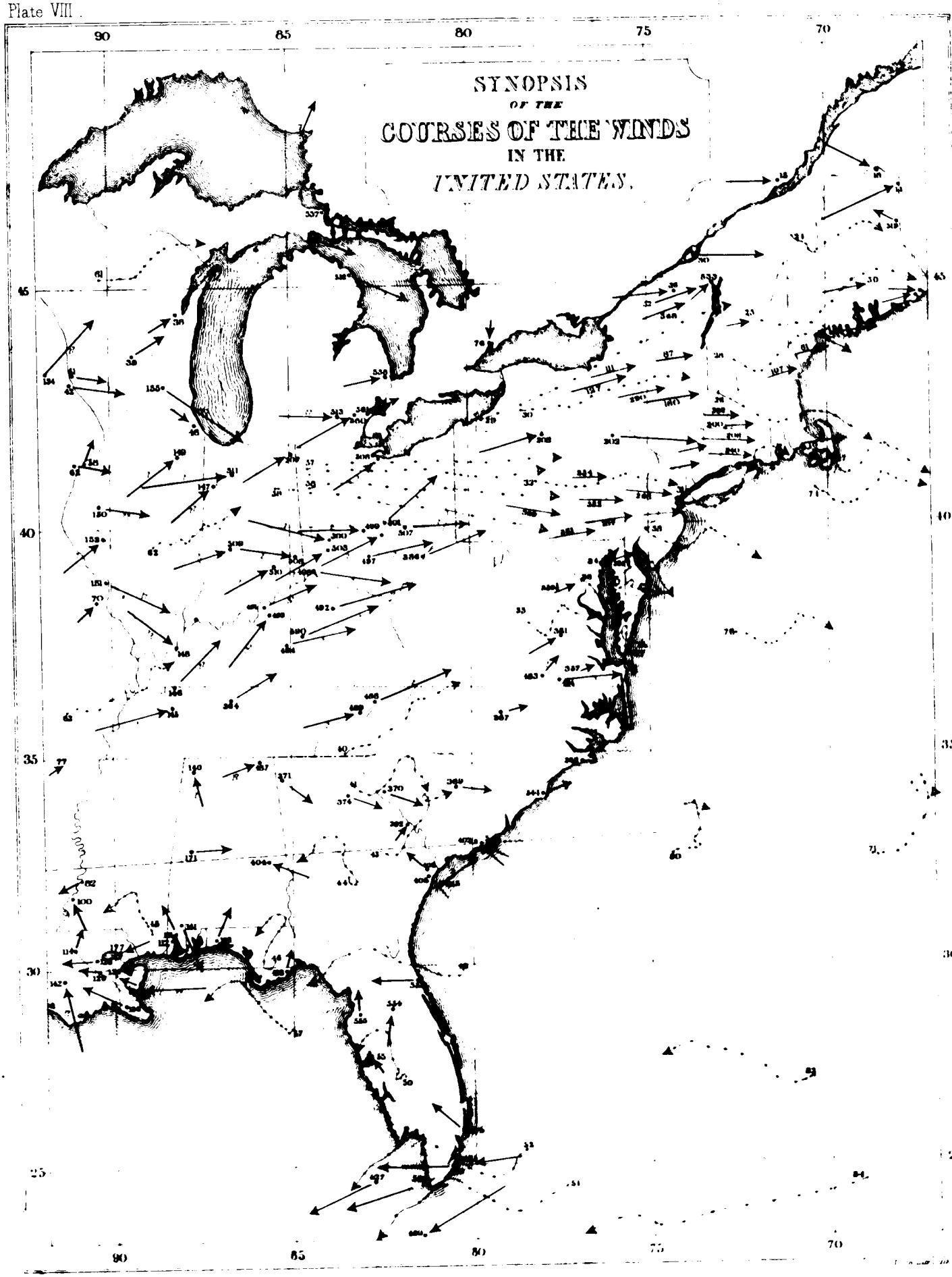

SYNOPSIS
OF THE
COURSES OF THE WINDS
IN THE
UNITED STATES.
90
85
80
75
70
45
40
35
30
25

Plate IX

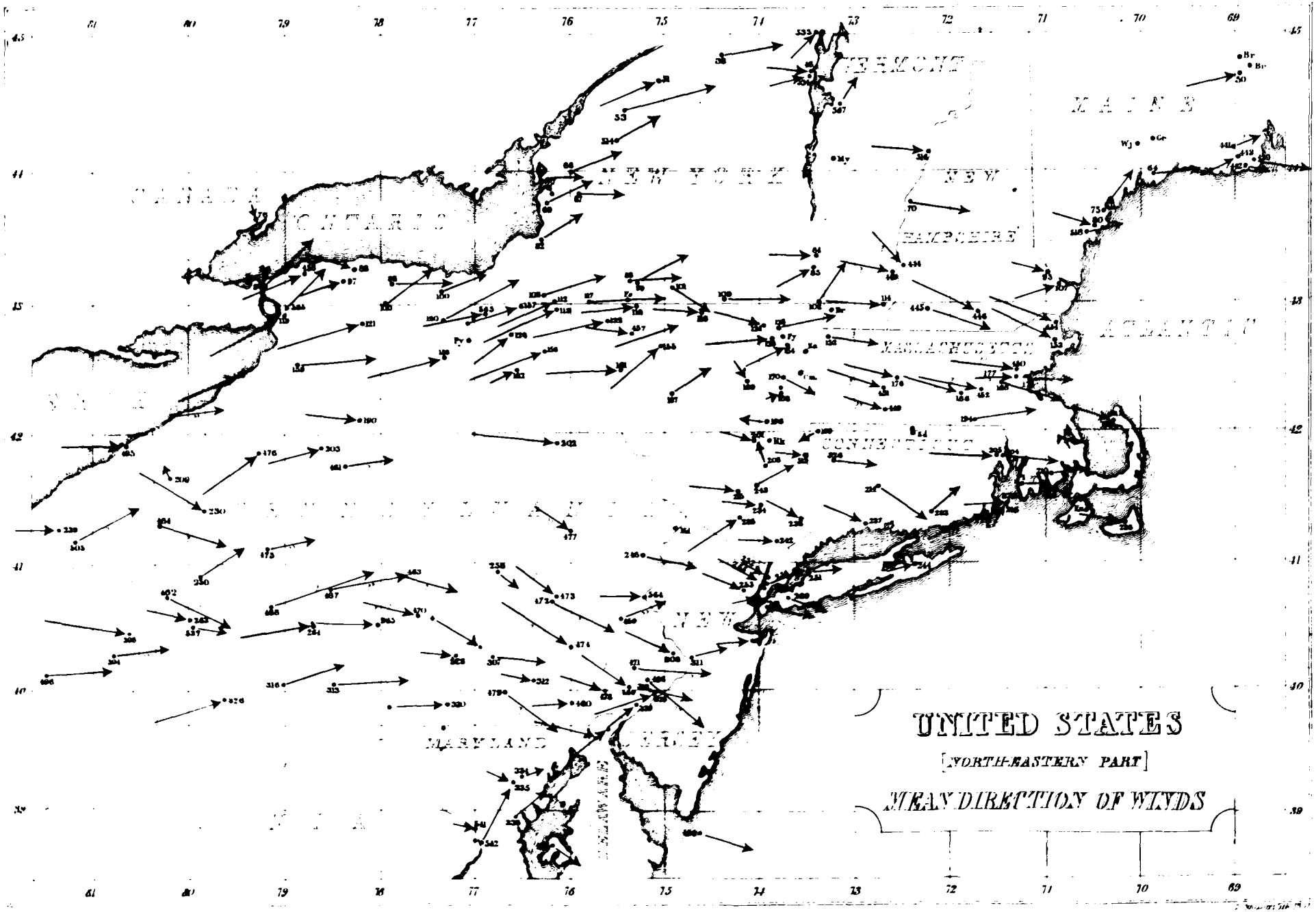

UNITED STATES
[NORTH-EASTERN PART]
MEAN DIRECTION OF WINDS
CANADA
ONTARIO
NEW YORK
VERMONT
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
ATLANTIC
CONNECTICUT
NEW JERSEY
MARYLAND
DELAWARE

Plate I.

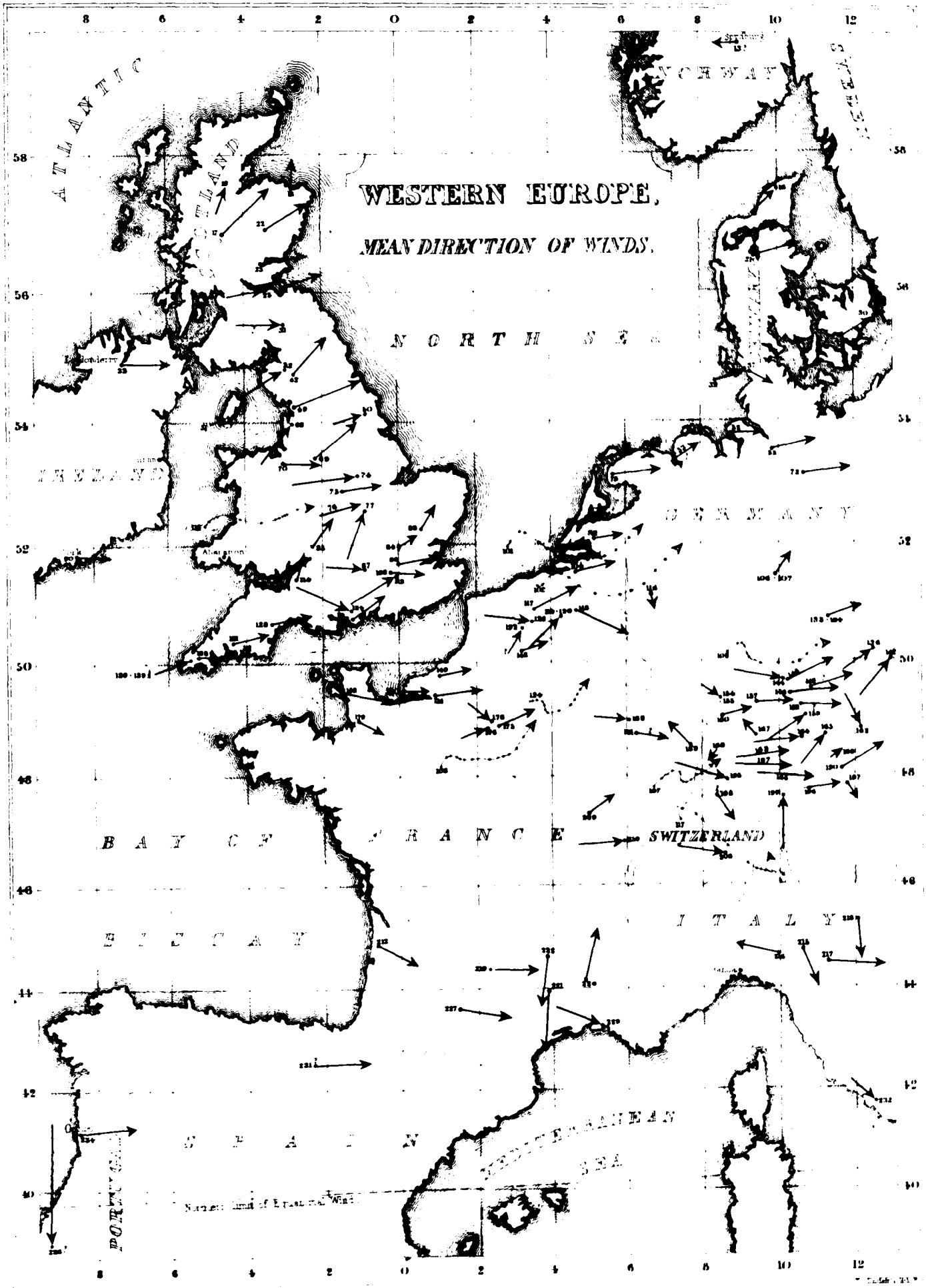
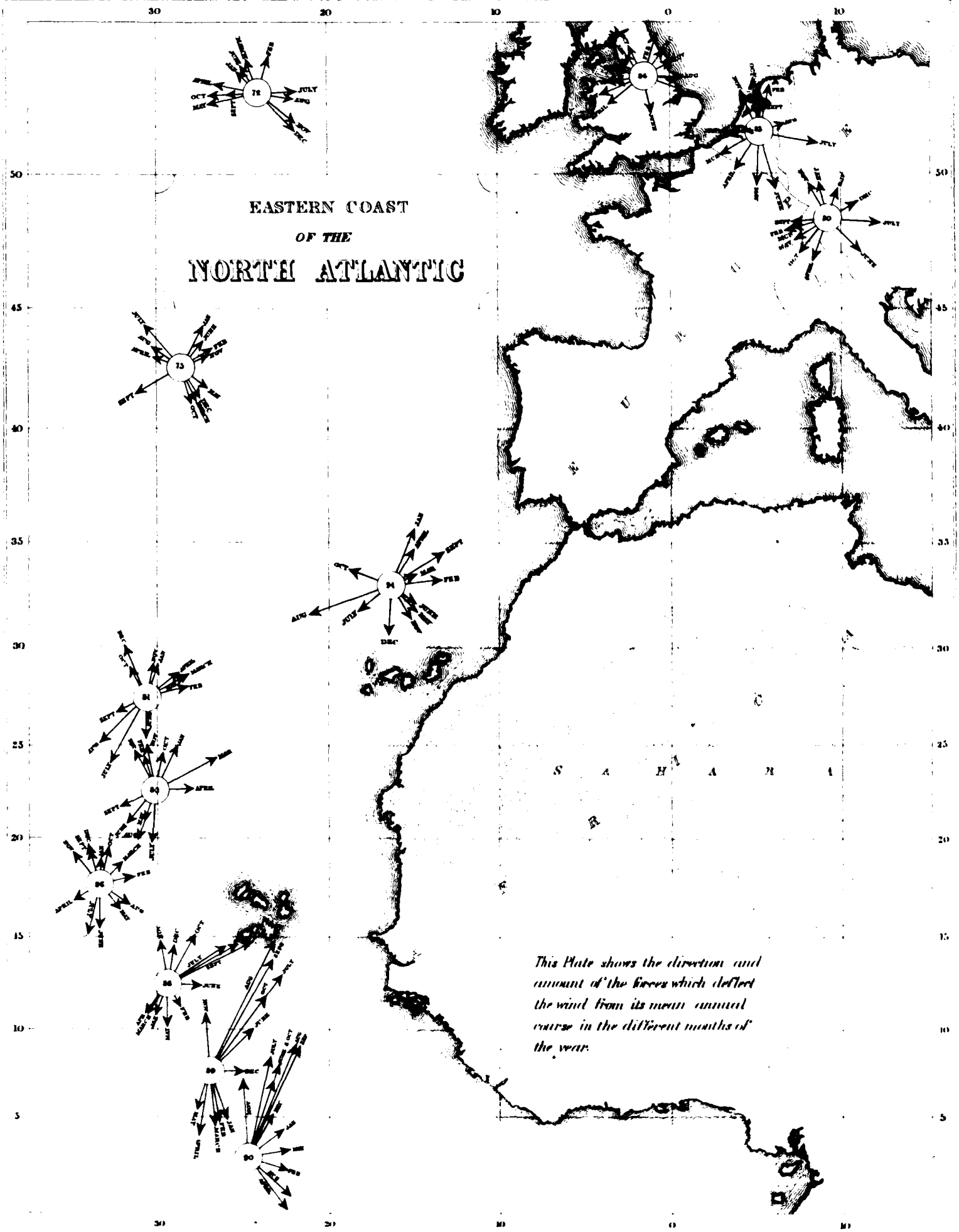

WESTERN EUROPE.
MEAN DIRECTION OF WINDS.
ATLANTIC
NORWAY
NORTH SEA
GERMANY
FRANCE
SWITZERLAND
BAY OF BISCAY
ITALY
SPAIN
MEDITERRANEAN SEA
PORTUGAL

Plate XI

80
70
60
45
40
35
30
25
This Plate shows the direction and amount of the forces which deflect the wind from its mean annual course in the different months of the year.
WESTERN COAST
OF THE
NORTH ATLANTIC

Plate VII

EASTERN COAST
OF THE
NORTH ATLANTIC

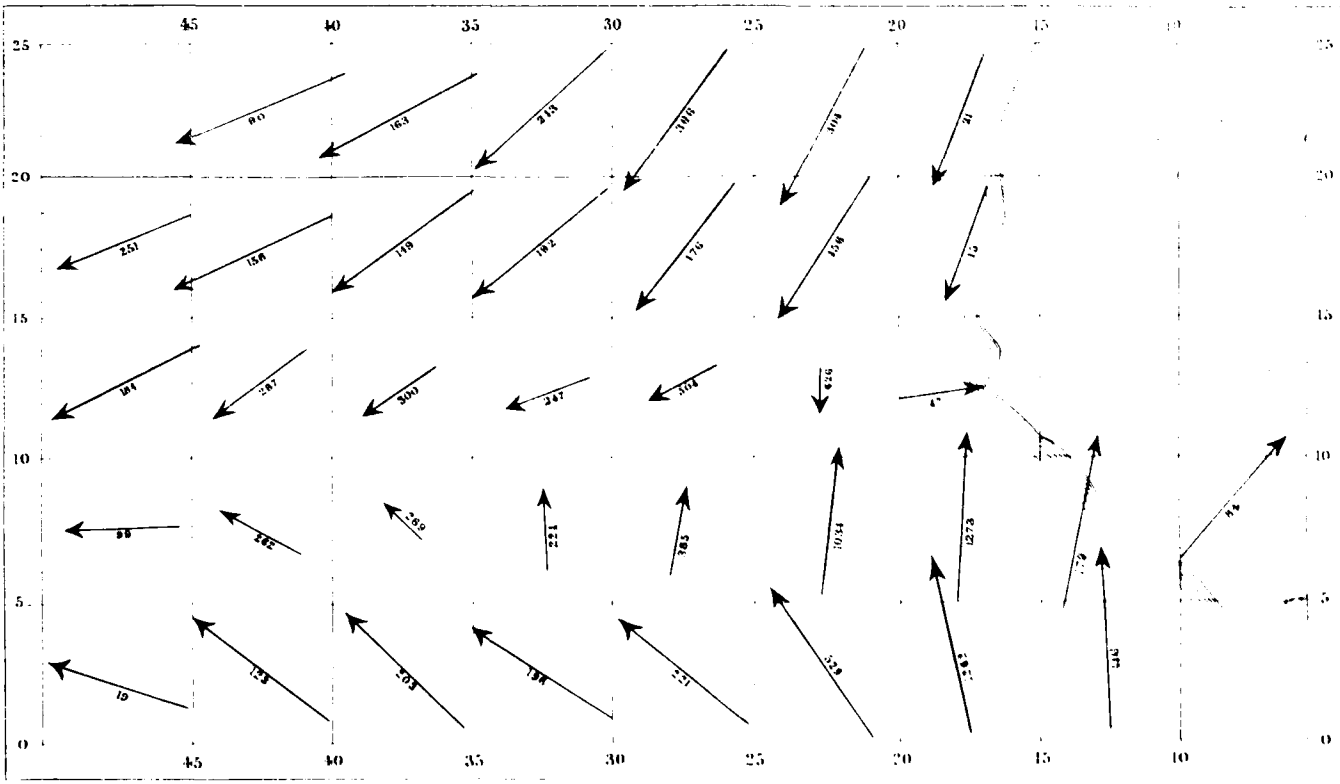


This Plate shows the direction and amount of the forces which deflect the wind from its mean annual course in the different months of the year.

WINDS OFF THE COAST OF AFRICA IN JULY, AUGUST & SEPTEMBER

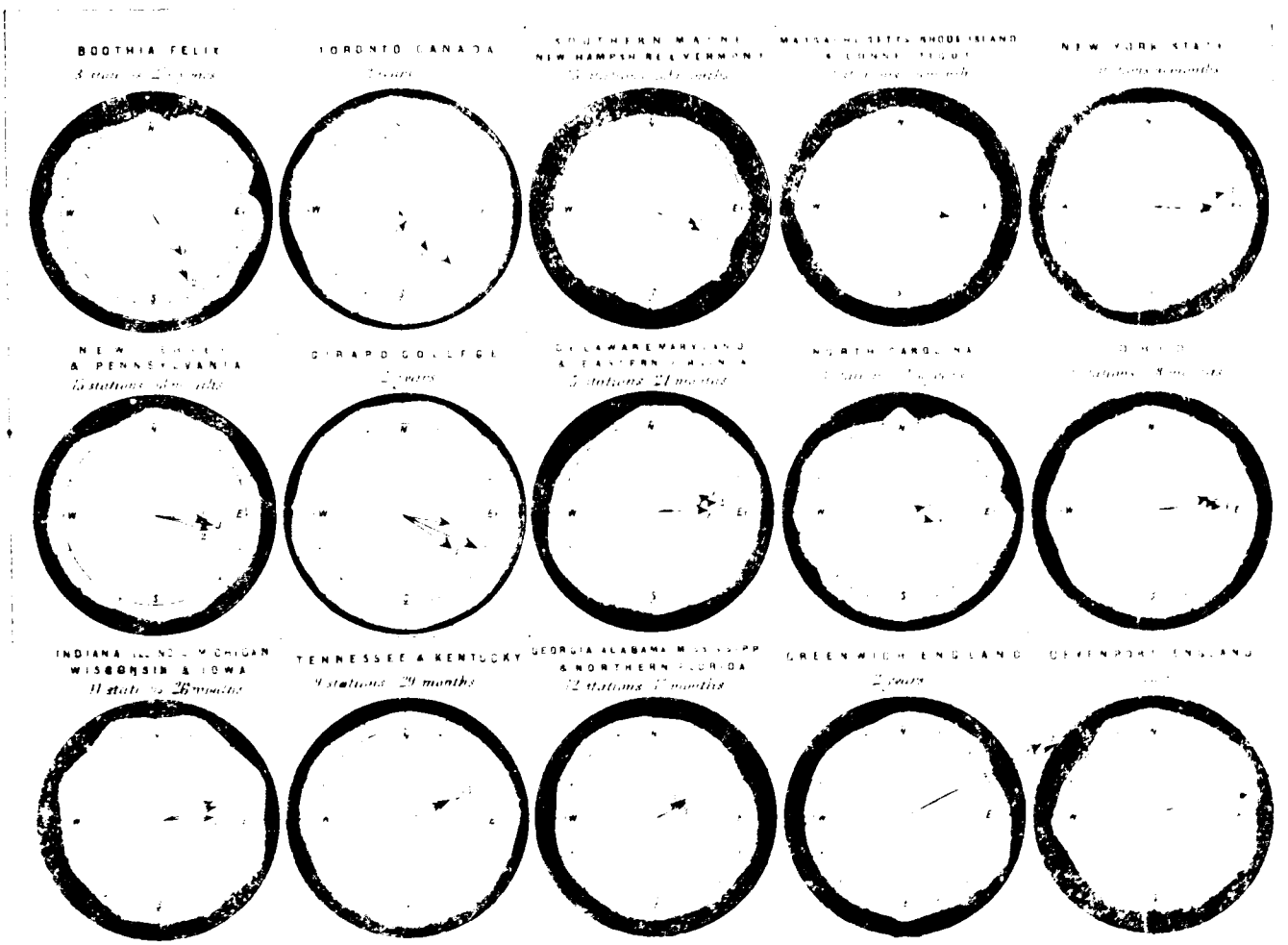
Plate III

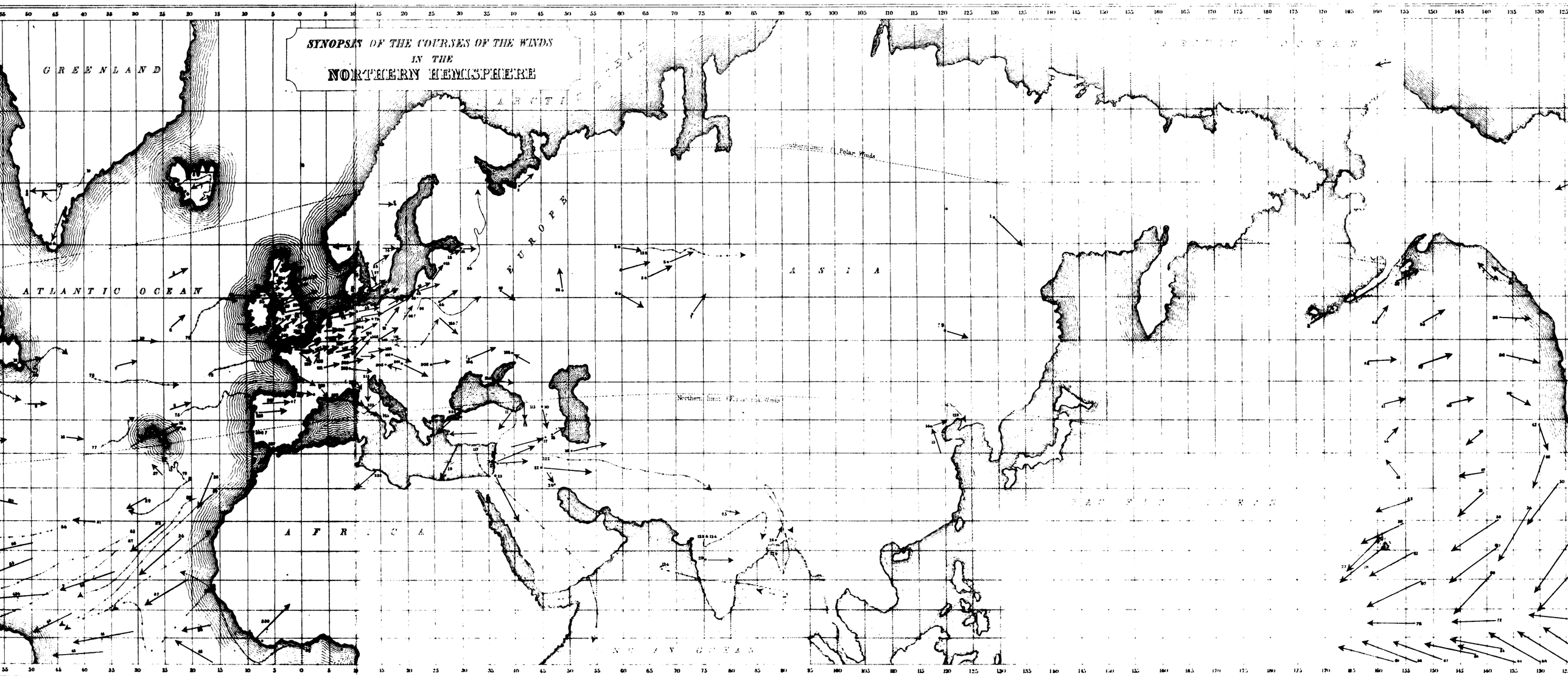
Note The figures annexed to the arrows express the number of observations from which they were computed



FORCE & VELOCITY OF WINDS

N B Scale of the arrows 8 miles to an inch




SYNOPSIS OF THE COURSES OF THE WINDS
IN THE
NORTHERN HEMISPHERE
GREENLAND
ATLANTIC OCEAN
EUROPE
ASIA
AFRICA
Southern limit of Polar Winds
Northern limit of Equatorial Winds