

Climatological Data for December, 1909.
DISTRICT No. 1, NORTH ATLANTIC STATES.

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GENERAL CLIMATOLOGICAL CONDITIONS.

There were two events worthy of note in connection with the weather conditions for the month of December, 1909; (1) the heavy precipitation of the 13th and 14th, which tended to relieve the drought that had been practically continuous over the eastern part of Pennsylvania since the last of June, and caused the first considerable rise in the Delaware and Susquehanna rivers for several months; and (2) the storm of the 25th and 26th that takes its place among the notably severe and destructive storms that have visited the North Atlantic States during the last half century.

The month, as a whole, was colder than usual throughout the district, except along the coast of Maine, and the precipitation was slightly deficient, except over most of the central part of the district, including the lower Delaware and Susquehanna basins.

TEMPERATURE.

The average temperature for the district ranged from 28.3° in New England to 31.3° in the Maryland and Delaware section and, except for a small area on the coast of Maine, was everywhere below normal. The average temperature for the northern part of New England was normal or slightly above, but the deficiency increased gradually southward to the southern limits of the district, the average temperature for that part of Virginia included in the district being 30.3°, which is 4.7° below normal. At some individual stations in that section the average daily deficiency was nearly 7°.

The highest temperatures for the month were generally recorded on the 5th, except in New England and New York, where the 14th was the warmest day of the month at many stations. The lowest temperatures occurred, almost without exception, with the cold weather that followed the storm of the 25th and 26th and were generally recorded from the 29th to the 31st.

The month opened mild, with gradually increasing temperature that reached its maximum generally on the 5th, when the highest temperatures of the month were recorded at most stations in the southern part of the district. Temperatures ranging from 60° to 68° were quite common on this date in Maryland, Delaware, Virginia, and West Virginia, the highest recorded at any individual station being 70° at Upper Tract, Pendleton County, W. Va.

After the passage of this warm period, which was general over the district and resulted from the prevalence of southerly winds occasioned by the presence of an area of low barometric pressure over the Great Lakes, there was a rather abrupt fall in temperature that culminated on the 9th and 10th in moderately low seasonal temperatures, especially over the northern part of the district.

The second warm period of the month occurred on the 13th, when the highest temperatures of the month were recorded at many stations in the central and northern sections of the district.

From the 9th to the 22d the weather was moderately cold, especially in New Jersey and Pennsylvania, where the minimum temperatures at a few points approached zero during this period. Seasonable weather prevailed generally until the 28th, when it was followed by severe cold that marked the closing days of the month.

The temperature during the storm of the 25th and 26th was generally near the freezing point in the southern, and slightly

below freezing over the northern part of the district, but when the wind changed to the west and northwest and the weather cleared, there was a sharp fall in temperature throughout the district, ranging from 20° to 30° or more within the 24 hours. The cold weather spread rapidly and by the morning of the 29th temperatures from zero to 10° below were general over the interior of New York and New England, and by the morning of the 30th the cold had reached the southern limits of the district, resulting in unseasonably low temperatures in that section.

PRECIPITATION.

The average precipitation for the district was 3.25 inches, which is slightly below the December normal. The greatest precipitation occurred in New Jersey, the average for the State being 4.45 inches, and the least in West Virginia where the average was 2.37 inches. There was a slight deficiency in all sections, except Pennsylvania and New Jersey, where the average excess was about half an inch. The most important deficiency occurred over the upper watersheds of the Delaware and Susquehanna rivers, where the total precipitation for the month was comparatively light, ranging from 50 to 75 per cent of the normal amount. Over that part of Pennsylvania, where the drought has been serious during the past few months, the precipitation was generally above normal and in some localities excessive.

The large amount of snow now on the ground in that section of the State, when melted, gives promise of restoring to the soil much of the moisture needed to place it in normal condition and to increase the flow in the streams now at a low stage.

With the exception of light local snows, principally in New England and New York, the weather from the 1st to the 6th was generally fair and pleasant over the entire district. On the morning of the 7th rain began over West Virginia and, during the day, spread to the remainder of the district, except New England, where a moderate snowfall occurred during the night. The precipitation from this storm was not heavy but the distribution was remarkably uniform.

There was a period of fair weather from the 9th to the 12th, but during the early morning of the 13th, a storm set in over the southern part of the district and, advancing northward, reached New England by the evening of that day. The precipitation that accompanied this storm, which was mostly in the form of rain and sleet in the southern, and snow and sleet in the northern parts of the district, was very general, heavy, and in some localities excessive.

Excessive precipitation, 2.50 inches or more in 24 hours, was reported on the 13th and 14th from 22 stations in New Jersey, 15 in Pennsylvania, 8 in Maryland, 4 in New York, 3 in New England, and 1 in Virginia. The greatest amount recorded at any station in 24 hours was 4.21 inches at Coatesville, Chester County, Pa., on the 13th, which was, however, closely followed by a record of 4.20 inches at Scarsdale, Westchester County, N. Y., on the 13th and 14th. Out of the 53 stations reporting excessive precipitation on these dates, 3 recorded 4.00 inches or more and 13 recorded 3.00 inches or more within 24 hours.

This storm was accompanied with high winds which, with the heavy accumulation of ice, caused serious damage to electric wires in the central and northern parts of the district.

The weather was generally fair and pleasant from the 15th to the 25th, when the most notable storm of the month occurred.

The month ended with fair and decidedly cold weather for the season.

RIVER CONDITIONS.

The very low stage of water, which has characterized the condition of practically all streams in the district during the past few months, continued until the rains of the 13th and 14th. The effect of these rains was apparent in the rise that occurred in the Hudson River at Castleton and Stuyvesant from the 9th to the 14th. There was also a slight rise in upper branches of Delaware and Susquehanna rivers at this time, but the most important rise in the Susquehanna occurred at Harrisburg, where it reached a stage of 3.0 feet above the zero of the gage on the 16th, which is the highest recorded since June 23.

The Delaware reached a stage of 4.6 feet at Phillipsburg on the 14th. The rise in these streams was, however, only temporary, but a fairly good flow of water, as compared with the stages since the last of June, was maintained to the close of the month.

MISCELLANEOUS.

The average number of days for the district on which precipitation occurred was 6, and ranged from 7 in New York to 4 in Virginia. The average number of clear days was 13; partly cloudy 9, and cloudy 9. The cloudiness was greatest over Pennsylvania and the southern part of New York, Binghamton reporting only 34 hours of sunshine during the month. The average number of hours of sunshine, as recorded at 13 stations in the district, was 151, an increase over November of about 10 hours. The greatest percentage of sunshine, 69 per cent of the possible, occurred at Washington, D. C., and the least, 12 per cent, at Binghamton, N. Y. There were 10 days during the month when the sunshine averaged 80 per cent or more of the possible, 11 with an average between 20 and 80 per cent, and 10 with 20 per cent or less.

THE CHRISTMAS STORM OF 1909.

The storm of Christmas, 1909, which takes rank among the notably severe and destructive winter storms that have visited the North Atlantic States during the last half century, was first noted on the morning of December 23, as a rather weak cyclonic disturbance, central in southern Arizona. By the morning of the 24th it had advanced eastward to the Texas Panhandle and, although the pressure was but little below the normal, the extensive precipitation area that covered most of the region between the Rocky Mountains and the Mississippi River and extended from the west Gulf coast to the Canadian border, indicated a storm somewhat unusual in character.

During the succeeding 24 hours the center moved from western Texas northeastward to Indiana, a distance of some 1,200 miles, at a rate of about 50 miles per hour, which is about twice the average rate of progress of the ordinary storm. The observations on the morning of the 25th showed that rain or snow had occurred at nearly all points, except in New England, from the Missouri River eastward to the Atlantic coast, and an increase of intensity which, from a somewhat weak disturbance on the previous morning, had developed into a storm that dominated conditions over the entire eastern half of the country.

The advancement of the storm from Indiana eastward to the Atlantic coast, where it appeared on the morning of the 26th, was marked by the same rapid progress that had characterized its previous movement, and by a further increase of intensity that gave a barometric reading at Cape May, N. J., which was probably near the center at that time, of 28.57 inches, the lowest ever recorded at that station. On reaching the coast off New Jersey, the storm made an abrupt turn to the north, passing up the New England coast during the 26th and disappearing from range of observation over the North Atlantic Ocean on the 27th.

A comparison of the conditions incident to this storm with those of the storm of March 11 to 14, inclusive, 1888, shows that, while the two storms were similar in many respects, there was an essential difference, especially as to the rate of movement.

Both storms were of marked intensity and both, after reaching the Atlantic coast, turned abruptly north and followed closely the general trend of the coast line; but the storm of the current month made the turn to the north from near the southern end of New Jersey while its famous predecessor swept the coast from South Carolina to Nova Scotia. Again, the storm of the current month, after making the turn to the north off New Jersey, maintained the rapid movement that had characterized its progress from Texas to the coast, and made the journey from New Jersey to Nova Scotia in about 24 hours, while the storm of 1888 remained practically stationary off Long Island for a like period on the 12th and 13th. Thus, the duration of the storm of 1888 over the North Atlantic States under its influence was about 24 hours longer than the storm of December, 1909. That New England escaped, in the present instance, something like the heavy fall of snow that occurred with the storm of 1888, was not because the storm of the current month was less intense, but because its more rapid movement shortened its duration. The unusually slow movement of the storm of 1888, during March 12 and 13, caused a continuance of easterly gales over the whole of New England, accompanied by blinding snow for a period of 48 hours, and resulted in an accumulation of snow over the interior of New England and New York, amounting to about 40 inches, which is more than twice the total amount that occurred with the storm of the current month. The total snowfall in the district for the two days, December 25 and 26, was greatest over eastern Pennsylvania and Delaware, where it averaged more than 20 inches. It may be noted that here the storm center made its abrupt turn to the north and, as its movement was probably retarded to some extent by the force that changed its direction, the accompanying snow was of longer duration and the accumulation, therefore, greater than elsewhere along its track.

The velocity of the wind during the progress of the storm was not excessively high, the following being the maximum velocities attained, in miles per hour, with the direction, at the several stations along the coast: Eastport, Me., 50, northeast; Portland, Me., 40, north; Boston, Mass., 45, northeast; Nantucket, Mass., 61, east; Block Island, R. I., 72, northeast; Providence, R. I., 37, north; New Haven, Conn., 47, north; New York City, N. Y., 58, northeast; Philadelphia, Pa., 36, northwest; Atlantic City, N. J., 37, northeast and northwest; Cape May, N. J., 40, northwest; and Baltimore, Md., 27, northwest.

Aside from the wrecking of a steamship, near Toms River, N. J., and several smaller vessels that were driven ashore on the New England coast, the damage on the water was comparatively slight.

On land the greatest loss of property occurred with the tidal wave that swept the New England coast; the wrecking of electric lighting, trolley, telegraph, and telephone systems and the general interruption that resulted to transportation and traffic at nearly all points from the Potomac River to Maine.

The loss of life that resulted from this storm can only be estimated. It is known that at least 2 persons near Everett, Mass., were caught in the tidal wave and drowned; that 6 persons died from exposure in the vicinity of New York City; that 12 men were lost in Boston Harbor by the sinking of the schooner *Parker*, and that several were killed by trains during the continuance of the blinding snow; but this is probably only the smallest part of the loss of life that may be traced directly or indirectly to the Christmas storm of 1909.

The following items are of interest in showing the conditions brought about by the storm in various localities:

BOSTON, MASS.

The snow began at 6 p. m., December 25, falling lightly during the following 2 or 3 hours, after which the rate became heavier and averaged about 1 inch per hour during the remainder of the fall, which ended at 7:15 p. m. of the 26th. During

the night of the 25th and forenoon of the 26th the snow was very moist, which, with temperature slightly below the freezing point, caused a great accumulation of snow and ice on poles and wires and all other exposed objects. The wind was east from 6 p. m. of the 25th, becoming northeast at 2 a. m. of the 26th, north at 10 a. m., and northwest at 8 p. m. of the 26th. The velocity gradually increased during the evening and night of the 25th to a maximum of 45 miles northeast at 5:10 a. m. of the 26th, after which time it gradually diminished until evening of the 26th.

The total snowfall of the storm was 12.3 inches, about the average amount that occurs with heavy snowstorms in this section. Since 1891 snowfalls of 10 inches or more in a single storm have occurred 10 times. The greatest fall during this time was 19.0 inches on March 2 and 3, 1892. The wind velocity during the storm of the current month was not unusual or exceptional in any way. The extreme maximum velocities at Boston are about 60 miles per hour, and occur on the average once or twice in 10 years. In comparison with the storm of November 27, 1898, known as the "Portland storm," when the steamer *Portland* with 130 people went down, the snowfall was nearly the same, but the wind in the "Portland storm" was of much longer duration and attained a higher velocity, the maximum being 60 miles per hour, as compared with 45 miles per hour of the storm of December 26, 1909.

The marked feature of the current storm was very high tide, due (1) to there being a high run of tides at this time; (2) the highest wind occurring during the rising tide; and (3) highest velocities at about the time of the flood tide. This favorable combination caused a rise in the tide of 15.40 feet, more than 4 feet higher than normal tide at this time, and is said to have been the highest tide since April 16, 1851, when Minot's Light was destroyed, and 0.4 of an inch higher than the tide that occurred with the "Portland storm" of November 27, 1898. The high tide caused great damage along the shore by flooding cellars and other low-lying property, particularly in Chelsea. The breaking of a dyke caused the flooding of a portion of the residential section of Everett, Mass., to a depth of several feet, and temporarily drove a large number of people from their homes, and caused the death of 2 persons who were caught in the flood.

The storm, occurring on Sunday, caused much less inconvenience to those using local transportation than had it occurred on a week day, as the conditions were such as to greatly hamper, and at times entirely suspend ferry and railroad movements. Great damage was done to poles and wires, hundreds of wires being broken, cross-arms torn off, and large poles prostrated by the high wind and the weight of the accumulated snow and ice. All wire service, electric light, telephone, and telegraph, was put entirely out of commission in many localities, and the damage can not be fully repaired for weeks. The damage to property on land was probably the greatest caused by any storm for many years in Boston and vicinity, and is estimated by some of the local papers to amount to nearly \$5,000,000.

NEW YORK, N. Y.

The barometric pressure fell rapidly on the 25th and the early morning of the 26th, reaching a minimum sea-level reading of 28.81 inches as shown by the barograph trace at 2:30 a. m. Very light snow began at 11 a. m. of the 25th, with light northeast winds; the temperature was about freezing and so remained throughout the storm. The wind velocity and rate of snowfall increased gradually during the afternoon and rapidly after 5 p. m., the snow soon after that time becoming heavy and the wind high, reaching a maximum velocity of 58 miles per hour from the northeast at 12:16 a. m. of the 26th. At first the snow adhered to exposed objects, heavily loading trees, wires,

etc., but before 10 p. m. it became drier and drifted badly. After midnight the fall was light and it so continued during most of the forenoon and part of the afternoon of the 26th, finally ending at 2:35 p. m. The wind backed to northwest between 3 and 5 a. m. and continued high much of the time on the 26th.

The total snowfall was 10.1 inches, practically all of which fell during 24 consecutive hours; with one exception (a fall of 14.0 inches on December 26 and 27, 1890) this is the greatest 24-hour snowfall on record here for December. The greatest fall for any 24-hour period last winter was 4.3 inches, while the record for the winter preceding is 10.2 inches.

Within the city the principal detrimental effect of the storm was to delay transportation. Automobiles and horse-drawn vehicles were stalled in drifts; trains on elevated lines were much behind schedule time; trolley service, especially in outlying districts, was badly crippled, and some lines suspended operations altogether; trains over some railroads entering the city were several hours late, and navigation on the rivers and bay was impeded. As their wires are laid under ground here, telegraph and telephone companies report little hindrance to their business in this city and the large towns in the vicinity; but a number of the smaller communities near by were without means of communication by telegraph and telephone, wires and poles being down on account of the storm. Some accidents due directly to the storm were reported, but largely on account of the high temperature, there were fewer deaths due to exposure and less intense suffering on the part of the poor than usually accompany our great winter storms.

As might be expected from the course of the center, the storm appears to have been more severe a few miles south of the city and over Long Island than in this immediate vicinity.

PHILADELPHIA, PA.

The heaviest 24-hour snowfall on record at Philadelphia occurred on December 25 and 26, 1909. Light, moist snow began to fall at 9:10 a. m. of the 25th and continued all day, with very little wind and no drifting. At 8 p. m. there were about 5 inches of light snow on the ground, and shortly thereafter the wind began to rise and the storm increased in intensity and continued all night. By midnight many street cars were blocked and abandoned in all parts of the city. In some instances the passengers remained in the cars until morning. Trains arrived late during the fore part of the night, and before morning all railroad traffic was effectually stopped. Telegraph and telephone service was badly crippled. The temperature ranged from 29° to 32° during the entire storm, and the snow piled up into heavy wet drifts which were 5 or 6 feet deep in many places. A total of 21.0 inches of snow fell in 23 hours. Some of it melted as it fell, so that only 16.0 remained on the ground at the end of the storm. Four days were required to completely clear the railroad tracks and get the trains to running on schedule time. The street car tracks were cleared in the residence section of the city by piling the snow up in the street on either side, and thus forcing teamsters to occupy the car tracks, which were the only avenues open to travel.

The only storm in Philadelphia during the last 38 years that is comparable with this one, occurred on March 12, 1888. At that time the storm began with rain, which changed to snow, with rapidly falling temperature. There were only 10.5 inches of snowfall, but the wind attained a velocity of 66 miles per hour, and the storm caused so much suffering and loss of life that its occurrence is still vivid in the minds of those who were residents of the city at that time. During the 10-day period, from February 5 to 14, 1899, there was a total snowfall of 30.3 inches, it being the greatest amount accumulated on the ground at any time during the last 38 years.

TABLE 1.—Climatological data for December, 1909. District No. 1, North Atlantic States.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall unmelting), Sky (Number rainy days, Number of clear days, Number of cloudy days, Prevailing wind direction), Observers. Rows are categorized by state: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York.

TABLE 1.—Climatological data for December, 1909. District No. 1—Continued.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall unmelting), Number of rainy days, Number of clear days, Number of partly cloudy days, Number of cloudy days, Prevailing wind direction, Observers. Rows include New York (e.g., Bedford, Binghamton) and Pennsylvania (e.g., Altoona, Bellefonte).

TABLE I.—Climatological data for December, 1909. District No. 1—Continued.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall unmelting, Number of rainy days, Number of clear days, Number of partly cloudy days, Number of cloudy days), Sky, Prevailing wind direction, Observers.

TABLE 1.—Climological data for December, 1909. District No. 1—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
<i>Maryland—Cont'd.</i>																			
Laurel.....	Prince George	150	15	30.0	- 4.2	65	5	5	28	30	4.47	+ 0.77	2.67	10.5	7	13	13	5	Dr. T. M. Baldwin.
Monrovia.....	Frederick	630	22	30.3	- 3.5	60	5	4	30	26	2.78	+ 0.29	1.34	8.6	5	20	5	6	J. H. Lawson.
Ocean City.....	Worcester	10																	J. Alan Massey.
Pocomoke City.....	Worcester	37	16	36.0	- 4.7	60	7	13	30	28	3.37	- 0.05	2.02	2.8	21	5	5	5	R. M. Stevenson.
Porto Bello.....	St. Marys	38	4	35.4		68	6	10	30	35	3.00		1.69		20	6	6	6	Alpheus Hyatt.
Princess Anne.....	Somerset	17	16	32.4	- 4.6	61	7	11	30	37	2.51	- 0.59	1.25	2.4	6	6	18	7	Dr. Geo. E. Lewis.
Rockville.....	Montgomery	421	2	31.5		65	5	4	30	29	3.16		2.08	10.0	6	6	5	5	Dr. W. E. Downing.
Sallisbury.....	Wicomico	23	4	32.6		61	5	9	21	39	3.88		1.55	9.2	12	14	5	5	Dr. W. M. Garrison.
Sanatorium.....	Frederick		1	27.2		60	5	0	30	27	3.77		2.46	10.2	7	14	15	15	Dr. W. H. Marsh.
Solomons.....	Calvert	20	18	34.7	- 3.5	58	4	11	30	21	1.72	+ 1.10	0.77	2.5	4	9	12	10	Dr. W. H. Marsh.
Sudlersville.....	Queen Annes	65	10	31.0	- 4.5	58	5	4	30	28	5.46	+ 1.39	2.00	25.0	9	17	7	7	Jas. E. Higman.
Takoma Park.....	Montgomery	320	11	31.0	- 4.2	65	5	3	30	23	3.54	- 0.68	2.30	6.7	7	14	10	10	L. M. Mooers.
Taneytown.....	Carroll	450	10	29.0	- 4.0	62	5	5	28	37	1.79	- 1.17	0.84	5.6	5	23	3	5	R. A. Nushaum.
Towson.....	Baltimore	475	1	30.6		61	5	5	30	28	4.65		2.40	16.5	5	21	0	10	C. W. Treadwell.
Van Bibber.....	Harford	100	12																H. A. Wroth.
Westernport.....	Allegany	1,000	15	28.4	- 3.2	60	5	3	30	39	1.74	- 0.55	0.96	4.7	5	19	10	2	Prof O. H. Bruce.
Woodstock.....	Baltimore	392	35	32.1	- 1.7	58	5	7	30	32	3.31	+ 0.29	1.56	5.0	5	19	10	2	Rev. A. J. Donlon.
<i>District of Columbia.</i>																			
Washington.....	District of Columbia	112	39	31.8	- 4.3	66	5	8	30	30	3.39	+ 0.23	2.43	5.2	8	14	10	7	U. S. Weather Bureau.
<i>Delaware.</i>																			
Delaware City.....	New Castle	10	7	31.4		57	5	3	30	22	3.31		1.10	17.0	5	23	4	4	U. S. Weather Bureau.
Dover.....	Kent	40	21	31.8	- 4.5	62	5	3	30	30	4.84	+ 1.52	2.40	25.0	14	19	5	4	U. S. Weather Bureau.
Millford.....	Kent	20	25	34.5	- 3.1	60	14	6	30	28	5.19	+ 1.55	2.30	25.5	13	21	8	7	U. S. Weather Bureau.
Millboro.....	Sussex	20	17	32.6	- 4.2	61	5	10	21	31	3.35	- 0.67	1.73	4.0	15	21	0	10	U. S. Weather Bureau.
Seaford.....	Sussex	40	16	32.0	- 4.6	58	8	9	30	34	2.59	- 0.80	0.91	5.0	7	17	8	6	U. S. Weather Bureau.
<i>Virginia.</i>																			
Culpeper.....	Culpeper	450		30.0		58	4	0	30	32	3.58		2.60	7.0	3	18	9	4	Col. H. C. Burrows.
Dale Enterprise.....	Rockingham	1,350	30	28.6	- 6.8	66	5	- 1	31	40	2.73	+ 0.63	1.50	6.0	4	13	13	5	Rev. L. J. Heatwole.
Doswell.....	Hanover	134	8	34.2		67	4	1	30	39					3	17	5	3	R. F. & P. R. R.
Fredericksburg.....	Spottsylvania	100	20	32.2	- 4.7	64	5	3	31	33	3.46	- 0.02	2.21	6.0	5	18	7	6	S. G. Howison.
Lincoln.....	Loudon	500	8	29.6		68	5	5	30	40	3.11		1.87	8.0	13	10	17	4	Dr. George Roberts.
Mt. Weather.....	Loudon	1,726	5	26.4		56	5	- 1	30	33	2.95		1.97	9.1	13	11	7	7	U. S. Weather Bureau.
Nokesville (near).....	Fauquier	350	5	32.7		67	1	6	30	39	2.50		2.00	5.0	12	16	5	10	Andrew Low.
Quantico.....	Prince William	16	12	32.0		60	4	4	30	40	2.87		2.04	4.5	4	21	0	10	R. F. & P. R. R.
Shenandoah.....	Page	937	8								1.89		1.51	3.3	3	23	3	5	N. & W. Ry.
Staunton.....	Augusta	1,380	17	31.2	- 6.5	66	5	7	30	33	2.99	+ 0.51	1.44	4.5	4	17	9	5	Western State Hospital.
Stephens City.....	Frederick	710	17	29.6	- 5.3	59	4	2	30	41	2.23	- 0.68	1.43	6.0	4	26	0	5	B. T. Argenbright.
Warsaw.....	Richmond	160	17	31.8	- 6.4	65	5	4	31	25	2.75	+ 0.01	1.40	5.0	6	11	16	4	C. H. Constable.
Woodstock.....	Shenandoah	927	13	30.0	- 4.6	65	5	2	31	46	2.10	- 0.22	1.26	8.5	5	17	9	5	Miss A. G. Miley.

* Precipitation included in that of the next measurement.
 ** Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.
 † Also on other dates.
 ‡ Separate dates of fall not recorded.
 § Data are from standard instruments not supplied by the U. S. Weather Bureau.
 ¶ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.
 †† Estimated by observer.
 ††† Precipitation for the 24 hours ending on the morning when it is measured.
 †††† Precipitation is less than 0.01 inch rain or melted snow.
 ††††† a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1909. District No. 1, North Atlantic States.

Date.	Maine.														Massachusetts.								Providence, R. I.		Connecticut.				
	Eastport.		Greenville.		Orono.		Portland.		Rumford Falls.		Van Buren.		Concord, N. H.		Amherst.		Boston.		Middleboro.		Nantucket.		Providence, R. I.		Cream Hill.		Hartford.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1...	33	22	30	15	33	14	36	22	36	22			37	18	41	18	40	23	37	18	35	32	40	22	32	18	41	20	
2...	38	32	29	23	34	13	35	28	35	28			37	29	38	29	37	33	38	29	45	33	38	31	33	20	38	29	
3...	38	34	33	27	36	31	40	34	40	32			40	30	38	28	40	34	38	31	41	36	30	32	34	22	39	33	
4...	39	36	34	29	40	31	44	34	40	35			41	28	43	25	48	33	45	28	40	35	44	30	32	23	39	32	
5...	42	38	36	32	48	34	47	35	40	32			41	30	52	28	50	36	51	27	46	35	50	35	43	26	49	34	
6...	39	35	37	31	45	33	46	32	44	27			50	26	50	26	56	36	54	24	50	37	54	33	45	30	50	30	
7...	39	34	34	28	42	25	41	30	39	32			39	24	35	20	42	34	44	29	49	36	47	29	36	29	40	28	
8...	40	32	33	26	40	30	40	26	36	28			36	24	36	24	41	28	41	31	52	33	40	26	33	29	39	25	
9...	32	26	26	17	36	23	31	22	28	22			29	20	30	19	33	23	31	18	33	26	31	20	35	13	31	20	
10...	29	15	20	11	29	17	32	18	28	14			31	19	32	21	34	25	34	17	35	25	33	21	28	14	33	21	
11...	26	14	19	10	27	11	29	16	24	13			27	17	36	18	36	22	36	16	36	26	36	23	29	15	35	24	
12...	29	18	20	14	28	5	25	14	24	10			29	11	30	13	30	18	32	13	36	28	32	18	28	12	27	16	
13...	30	16	19	8	27	9	36	20	21	7			33	13	36	18	41	25	40	27	44	32	44	25	32	21	45	22	
14...	44	30	34	16	43	19	48	35	40	22			44	33	45	34	53	39	51	34	52	37	51	37	36	32	52	36	
15...	42	34	34	28	43	31	41	32	36	29			38	30	40	30	44	35	43	29	42	35	42	33	35	24	40	33	
16...	35	25	39	21	38	28	39	28	32	24			38	28	36	26	42	33	43	21	39	33	39	29	32	20	36	30	
17...	31	23	22	17	33	23	36	24	29	16			33	22	36	24	40	28	38	27	37	32	37	28	30	19	36	25	
18...	27	21	23	9	31	12	32	21	26	14			30	20	30	20	34	26	34	22	37	29	35	24	28	15	34	23	
19...	22	17	16	10	28	12	32	18	26	20			30	14	31	17	34	23	34	19	33	28	33	22	28	18	31	20	
20...	23	12	20	0	28	2	34	19	28	16			30	16	30	14	35	23	34	7	34	26	34	19	27	9	31	18	
21...	27	18	20	13	30	14	32	17	27	23			30	15	30	13	35	21	31	12	33	24	30	18	28	10	30	18	
22...	29	23	20	16	28	19	28	19	25	21			29	18	28	17	31	23	31	17	32	25	30	19	32	18	30	23	
23...	31	22	26	17	33	18	35	22	30	21			32	21	36	23	39	24	49	19	37	25	39	22	29	15	35	23	
24...	25	17	19	8	32	17	31	19	24	16			28	17	36	16	33	23	34	25	33	27	34	21	29	21	35	25	
25...	26	12	21	6	27	5	26	14	23	8			26	8	22	10	33	20	31	4	38	25	33	16	28	15	25	17	
26...	32	23	20	16	24	18	27	22	26	20			27	23	26	22	32	26	33	27	41	30	33	26	25	19	30	24	
27...	24	10	19	6	24	15	27	14	22	13			24	1	29	14	26	21	27	21	30	25	27	17	28	14	28	16	
28...	16	6	15	-1	21	-9	26	10	24	8			25	-6	27	2	29	17	33	2	30	26	31	16	27	9	28	6	
29...	19	14	14	-7	20	-12	20	8	18	0			19	-7	14	-4	24	17	30	-1	33	24	28	9	18	10	19	5	
30...	14	2	5	-8	18	-3	14	-3	8	1			9	-0	11	-8	16	5	24	6	26	12	15	2	11	-7	13	0	
31...	14	3	12	-2	17	-1	22	-1	20	4			22	-2	26	-2	23	4	23	0	24	11	24	1	25	0	25	6	
Mns	30.2	21.4	23.8	14.1	31.7	15.6	33.3	21.1	29.0	18.6			31.9	17.4	33.2	17.9	36.4	25.1	36.9	19.0	37.8	28.6	36.2	22.7	30.4	17.2	34.3	22.0	

Date.	New York.												Pennsylvania.															
	New Haven, Conn.		Addison.		Albany.		Binghamton.		Cooperstown.		Indian Lake.		New York.		Clearfield.		Easton.		Everett.		Harrisburg.		Philadelphia.		Scranton.		Wellsboro.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	44	23	49	18	32	16	43	19	34	12	42	-4	44	26	58	11			50	17	46	32	50	33	42	26	47	17
2...	40	29	45	19	36	26	36	27	34	33	35	17	41	33	54	12			50	14	47	35	41	34	38	29	44	18
3...	40	34	45	32	34	25	40	28	38	32	40	12	40	36	52	25			47	18	46	34	43	37	42	32	42	33
4...	42	32	42	32	38	31	34	28	34	25	37	22	44	34	55	20			49	30	54	32	50	41	37	32	45	28
5...	51	36	45	28	45	30	42	32	38	29	45	26	52	37	57	30			61	30	50	38	57	39	39	33	56	28
6...	54	33	46	28	44	29	42	26	37	24	41	17	54	36	45	30			44	34	45	35	50	42	46	31	46	29
7...	47	31	36	21	36	25	40	23	37	20	35	16	50	35	42	21			39	19	39	30	53	36	43	26	39	24
8...	42	25	37	19	39	24	35	19	37	20	33	18	43	25	44	8			40	25	37	25	41	28	36	20	32	16
9...	31	20	26	13	32	19	25	14	25	20	21	7	30	20	40	12			28	10	26	16	31	23	24	14	21	9
10...	33	21	30	17	32	24	27	19	25	19	23	16	31	21	35	10			25	14	20	20	32	23	28	18	28	15
11...	38	25	35	25	31	19	38	22	24	20	25	9	35	26	40	27			31	18	33	24	37	25	31	24	29	22
12...	30	18	28	21	23	18	31	19	22	14	30	-12	32	24	38	29			33	26	32	27	34	29	32	22	28	20
13...	47	36	40	25	41	19	43	26	38	19	25	-5	32	31	46	30			38	31	47	27	58	29	44	24	40	25
14...	51	37	55	32	44	38	43	30	38	32	35	23	52	36	40	24			40	32	42	35	57	38	43	34	45	30
15...	42	33	33	30	40	32	33	28	32	30	32	25	41	34	41	19			37	29	39	32	44	33	37	30	32	28
16...	36	30	30	27	36	29	30	22	30	24	27	22	37	28	38	15			31	20	32	24	37	30	32	24	30	24
17...	38	26	34	21	35	27	34	22	27	18	30	15	37	26	40	13			44	9	40	23	40	26	38	22	35	17
18...	33	25	29	19	31	23	26	21	24	20	25	14	34	25	29	15			36	16	30	21	37	26	30	20	31	17
19...	34	22	24	18	29	22	22	19	24	18	20	12	30	21	22	12			19	10	24	17	33	23	25	17	25	15
20...	32	19	23	16	27	18	22	19	22	6	22	12	19	20	21	10			20	13	25	16	29	20	25	15	24	12
21...	32	19	25	12	30	16	26	17	24	6	20	12	31	19	30	-1			35	9	34	15	35	20	28	15	24	10
22...	31	25	27	18	29	21	25	19	23	14	21	10	30	26	28	11			31	16	30	23	33	27	26	21	25	15
23...	38	25	34	24	34	24	32	24	28	18	23	13	39	28	31	20			30	19	38	30	43	30	35	24	36	21
24...	37	26	31	28	33	21	32	20	28	25	25	17	40	33	33	24			31	21	32	26	40	33	34	30	32	26
25...	30	22</																										

TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1909. District No. 1—Continued.

Date.	New Jersey.								Martinsburg, W. Va.	Maryland.								D. C.				Virginia.						
	Asbury Park.		Atlantic City.		Hightstown.		Newton.			Baltimore.	Darlington.		Frederick.		Westernport.		Washington, D. C.		Millsboro, Del.		Culpeper.		Fredericksburg.		Staunton.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	43	24	44	26	47	19	41	14	49	21	52	33	46	26	51	22	48	20	51	25	47	21	47	10	52	25	51	23
2...	40	31	30	29	41	26	44	10	47	20	46	37	45	30	49	22	49	20	50	28	43	23	50	18	40	22	53	24
3...	40	30	42	36	41	32	37	25	46	22	47	37	44	29	48	34	58	19	48	36	48	31	46	18	51	21	48	25
4...	45	34	40	35	47	31	38	28	54	26	58	36	51	26	57	30	50	46	58	31	56	24	58	28	62	29	64	34
5...	53	32	57	32	53	30	50	28	57	33	62	43	57	32	60	33	60	30	66	36	61	30	58	28	64	31	66	33
6...	50	35	55	33	40	28	54	26	50	32	50	35	54	36	53	32	52	34	51	30	58	30	55	32	57	37	58	39
7...	48	31	53	31	46	24	40	23	45	25	45	32	42	25	42	24	48	22	43	26	58	28	43	22	44	24	46	29
8...	48	33	42	26	52	32	41	25	37	30	40	32	42	26	42	28	41	27	42	30	50	22	42	24	44	25	38	28
9...	33	20	30	20	32	19	30	13	27	17	32	21	28	16	28	17	28	11	30	20	32	26	37	20	37	21	33	17
10...	31	19	30	20	32	18	30	15	28	17	31	21	29	16	28	19	25	17	31	21	33	18	35	11	35	10	34	16
11...	37	22	38	22	38	20	32	21	35	19	38	24	35	18	36	21	29	16	38	24	42	19	32	15	34	15	37	22
12...	33	26	37	28	33	24	29	17	38	26	35	30	32	19	37	31	35	23	38	33	35	30	38	29	40	30	26	20
13...	48	32	54	37	47	27	38	20	42	31	56	30	50	27	50	30	34	25	58	32	59	34	43	32	56	32	28	30
14...	52	35	49	37	55	35	53	33	43	32	46	38	54	33	44	35	39	32	48	35	58	30	45	32	55	33	41	30
15...	41	33	45	30	42	33	40	30	40	36	45	33	43	32	42	33	38	31	44	28	50	28	40	35	52	34	44	32
16...	36	27	35	26	38	25	35	22	31	30	36	27	35	26	34	26	31	23	35	25	44	20	30	24	40	26	37	26
17...	40	32	41	23	39	21	37	18	47	19	46	24	39	17	45	29	42	15	46	21	40	17	45	15	48	16	44	24
18...	38	25	36	23	37	23	33	20	29	21	38	24	36	22	38	22	35	16	37	22	38	27	42	26	43	27	34	23
19...	31	19	30	18	33	16	31	14	29	15	28	19	28	15	29	17	24	14	27	19	33	17	32	15	36	18	29	18
20...	27	16	26	17	29	15	31	9	27	14	29	19	26	14	28	17	26	16	29	15	30	14	29	16	31	19	33	17
21...	31	16	32	16	31	13	30	12	31	14	37	17	34	10	35	13	35	11	36	13	37	10	35	9	37	10	36	16
22...	30	22	33	26	31	20	27	18	32	20	32	26	29	10	32	24	30	18	30	10	35	17	32	15	34	18	28	18
23...	40	35	42	28	42	25	40	21	35	21	43	28	42	23	39	25	39	20	40	26	45	18	41	21	41	20	42	20
24...	40	34	39	26	42	22	39	30	37	26	37	29	35	23	37	24	39	23	38	26	38	24	38	14	44	15	46	22
25...	38	32	43	25	37	22	33	21	37	25	33	28	32	22	33	25	32	25	34	30	41	23	35	26	34	28	34	23
26...	38	24	30	26	33	27	29	22	35	28	35	30	32	27	33	29	34	26	35	30	36	30	37	30	38	31	34	28
27...	39	20	30	23	30	15	27	15	33	23	32	26	30	18	32	22	31	20	32	16	34	25	34	16	36	16	33	19
28...	30	18	33	22	34	11	32	30	23	32	24	30	15	32	15	28	22	34	17	35	15	35	15	36	19	32	19	19
29...	38	17	27	10	26	3	26	5	23	14	30	14	26	12	25	13	23	12	26	11	36	25	38	18	34	20	21	13
30...	24	4	18	7	23	2	17	2	17	6	22	9	20	3	20	7	17	3	20	8	36	10	21	0	22	4	20	7
31...	24	9	26	13	26	1	25	2	27	9	28	14	25	5	24	13	31	5	28	14	31	15	27	0	31	3	33	8
Mns	38.1	24.7	38.5	24.8	38.2	21.5	35.1	18.4	36.7	22.4	39.4	27.1	37.1	21.1	38.2	23.3	36.2	20.7	39.5	24.1	42.5	22.4	39.6	20.5	42.5	21.9	39.4	23.0