

North Volney, Oswego county: mean temperature, 35°.9, is 0°.4 above the November average for the last seventeen years. The mean autumn temperature, 50°.6, is 2°.2 above the autumn average for the same period; the highest autumn mean, 52°.5, occurred in 1881; the lowest, 44°.0, occurred in 1875.

Ohio.—Wauseon, Fulton county: mean temperature, 35°.5, is 0°.2 above the November average for the last fourteen years.

Pennsylvania.—Dyberry, Wayne county: mean temperature, 35°.2, is 0°.9 above the November average for the last seventeen years.

Vermont.—Woodstock, Windsor county: mean temperature, 32°.7, is 1°.7 above the November average for the last seventeen years; the highest November mean for that period, 36°.6, occurred in 1877; the lowest 22°.5, occurred in 1873.

Virginia.—Variety Mills, Nelson county: mean temperature, 42°.4, is 2° below the November average for the last seven years.

Wytheville, Wythe county: mean temperature, 42°.7, is 1°.0 above the November average for the last twenty years.

West Virginia.—Helvetia, Randolph county: mean temperature, 40°.1, is 0°.7 below the November average for the last eight years.

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature were greatest in northern Dakota, and least along the immediate coast of the Pacific and in southern Florida; they exceeded 70° over the northern portion of the country from the upper lake region to western Montana. The smallest ranges are: 13°.6 at Key West, Florida; 18°.5 at Fort Canby, Washington Territory, and 20° at San Francisco, California. The greatest ranges are: 92°.8 at Fort Yates, 84° at Fort Totten, 80°.8 at Fort Bennett, and 80° at Huron, all of these stations being in Dakota. In the table of miscellaneous meteorological data will be found the monthly, and greatest and least daily ranges at the various stations.

The observer at Red Bluff, California, reports the following: "during the afternoon of the 26th, there came, in puffs, winds from the north, as hot as though heated by an extensive fire, causing the temperature to rise from 36° to 79°—a range of 43°."

LOW TEMPERATURES.

Fort Yates, Dakota: very cold weather prevailed on the 23d; at 7 a. m. the temperature was -7°.5, and at sunset it was -21°.3.

Fort Totten, Dakota: the 23d was a very cold day, the temperature falling to -22°.2.

Dubuque, Iowa: the minimum temperature on the morning of the 24th was -1°.2.

Moorhead, Minnesota: the weather on the 23d was very cold; the temperature was below zero all day, the minimum being -15°.

Columbus, Ohio: on the morning of the 24th, the minimum temperature was 15°3, having fallen 40° during the 24 hours preceding.

FROSTS.

Frosts occurred in the various districts on the following dates:

New England.—1st, 2d, 3d, 5th to 30th.

Frost was also reported at Mount Washington on the following dates: 1st to 8th, 11th to 14th, 16th to 30th.

Middle Atlantic states.—3d, 5th to 22d, 24th to 27th, 29th, 30th.

South Atlantic states.—1st, 2d, 3d, 5th to 17th, 20th, 21st, 22d, 24th, 25th, 27th, 29th, 30th.

Florida.—Newport, 16th, 17th, 25th; Archer, 17th, 18th, 25th; Limona, Jacksonville, and Cedar Keys, 25th.

Eastern Gulf states.—5th to 12th, 15th, 16th, 20th, 21st, 24th, 25th, 27th, 29th.

Western Gulf states.—5th to 11th, 14th, 15th, 18th to 30th.

Tennessee.—2d, 5th to 17th, 20th, 21st, 22d, 24th to 30th.

Ohio valley.—1st, 3d, 5th to 16th, 18th to 22d, 24th to 30th.

Lower lake region.—2d, 3d, 6th to 10th, 13th to 17th, 19th to 22d.

Upper lake region.—1st to 30th.

Extreme northwest.—1st to 21st, 23d, 25th, 26th, 28th, 29th.

Upper Mississippi valley.—2d to 21st, 23d to 30th.

Missouri valley.—1st to 30th.

Northern slope.—1st to 30th.

Middle slope.—1st to 30th.

Southern slope.—6th, 9th, 13th, 19th to 24th, 26th, 29th.

Southern plateau.—4th, 5th, 7th, 9th to 30th.

Middle plateau.—1st to 30th.

Northern plateau.—1st, 2d, 3d, 5th to 14th, 16th to 30th.

North Pacific coast region.—1st, 5th, 18th to 30th.

Middle Pacific coast region.—Sacramento, California, 17th to 30th; Red Bluff, California, 17th to 21st, 22d, 26th; Princeton, California, 21st, 30th; Oakland, California, 25th, 27th to 30th; Hydesville, California, 25th, 27th to 30th; Blue Lake, California, 17th to 26th, 28th, 29th, 30th.

South Pacific coast region.—Poway, California, 19th, 22d to 26th.

ICE.

Ice formed in the southern parts of the country as follows:

Arizona.—Wickenburg, 19th, 20th.

Arkansas.—Fort Smith, 20th; Mount Ida, 4th, 5th, 7th to 10th, 20th, 24th, 25th, 26th; Lead Hill, 6th, 7th, 20th, 21st, 23d to 27th.

California.—Princeton, 21st.

Delaware.—Delaware Breakwater, 6th, 25th.

Georgia.—Athens, 6th to 10th, 25th.

Louisiana.—Shreveport, 24th; Liberty Hill, 20th.

Maryland.—Baltimore, 7th.

New Jersey.—Atlantic City and Sandy Hook, 7th.

North Carolina.—Charlotte, 6th, 7th; New River Inlet, 7th, 25th; Weldon, 7th; Flat Rock, 6th to 11th, 16th.

Ohio.—Cincinnati, 24th.

Tennessee.—Chattanooga, 6th, 7th, 8th, 25th.

Texas.—Fort Elliott, 18th—first ice of season; Clarksville, 23d.

Virginia.—Dale Enterprise, 7th.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada, for the month of November, 1884, as determined by the reports from more than seven hundred stations, is exhibited on chart iii.

The precipitation for November, 1884, has been less than the average over nearly the entire country. The largest deficiencies have occurred on the Pacific coast and over the region extending from the Gulf of Mexico northward to British America. In Tennessee the precipitation was but little more than one-third of the average; in the Ohio valley and east Gulf states it was less than one-half; in the upper Mississippi valley, a little more than one-half; in the lake region, about two-thirds, and in the west Gulf states about three-fourths. While the deficiencies in these districts generally, have been marked, there are a few localities where the precipitation has been excessive, viz: at Brownsville, Texas, the excess over the average was 1.04; at Shreveport, Louisiana, 0.86; at Pensacola, Florida, 0.78; and at Marquette, Michigan, 0.47. On the north Pacific coast where the average precipitation for November, for a series of years has been 6.11; this year it was 1.80, or less than one-third of the average; in the middle Pacific coast region the average for November in previous years has been 2.18, and for the present year it was but 0.10. Out of the reports from one hundred and nineteen stations in California, along the lines of the Central Pacific and Southern Pacific railroads, seventy-four report the entire absence of rain during the month, and the remaining stations report rainfalls averaging about 0.30. On the Atlantic coast the monthly precipitation was excessive over portions of Maine, Delaware, Maryland, Virginia, North Carolina, and Florida; on the sum-

mit of Mount Washington, it exceeded the average for the last thirteen years by 1.47; excesses of 0.10 and 0.65 occurred at New York City, and Atlantic City, New Jersey, respectively. On the North Carolina coast in the vicinities of Kitty Hawk and Hatteras, the monthly precipitation was unusually heavy; at these stations the amounts were 7.14 and 13.02, or excesses over the respective averages of 2.09 and 7.42.

In the following table are shown for each of the several geographical districts, as deduced from Signal Service observations, the average November precipitation for a series of years; the average for November, 1884; and the departures from the normal:

Average precipitation for November, 1884.

Districts.	Average for Nov. Signal-Service observations.		Comparison of Nov., 1884, with the average for several years.
	For several years.	For 1884.	
	Inches.	Inches.	Inches.
New England.....	4.45	3.55	-0.90
Middle Atlantic states.....	3.38	2.70	-0.68
South Atlantic states.....	3.79	4.08	+0.29
Florida peninsula.....	2.89	4.84	+1.95
Eastern Gulf states.....	4.88	3.16	-1.72
Western Gulf states.....	4.68	3.67	-1.01
Rio Grande valley.....	1.71	1.74	+0.03
Tennessee.....	4.60	1.68	-2.92
Ohio valley.....	3.57	1.52	-2.05
Lower lake region.....	3.19	2.17	-1.02
Upper lake region.....	3.35	2.27	-1.08
Extreme northwest.....	0.82	0.54	-0.28
Upper Mississippi valley.....	2.65	1.56	-1.09
Missouri valley.....	1.01	0.42	-0.59
Northern slope.....	0.65	0.51	-0.14
Middle slope.....	0.47	0.70	+0.23
Southern slope.....	0.83	1.20	+0.37
Southern plateau.....	0.51	0.32	-0.19
Northern plateau.....	2.43	0.44	-1.99
North Pacific coast region.....	2.11	1.80	-0.31
Middle Pacific coast region.....	2.18	0.10	-2.08
South Pacific coast region.....	0.56	0.39	-0.17
Mount Washington, N. H.....	6.52	7.99	+1.47
Pike's Peak, Colo.....	2.10	0.12	-1.98
Salt Lake City, Utah.....	1.57	0.50	-1.07

The departures for the months of August, September, and October, as published in the REVIEW for the last-named month, together with those for November and the totals for the four months are given below. These figures show marked deficiencies on the Pacific coast and in all districts east of the Mississippi river, with the exception of the upper lake region, where the precipitation has been about normal. The largest deficiencies are those for Tennessee, the middle Atlantic, south Atlantic and east Gulf states, and the north Pacific coast region. The excess in the Rio Grande valley, as shown in the table published in the October REVIEW, remains unchanged, a normal quantity of rain having fallen during November. The excesses in the western districts have been generally small, the greatest being those of the extreme northwest, upper Mississippi valley and southern slope, where they ranged from 2.00 3.00.

Precipitation departures from normal, August-November, 1884.

Districts.	August.	September.	October.	November.	Total.
	Inches.	Inches.	Inches.	Inches.	Inches.
New England.....	+1.51	-2.51	-1.25	-0.90	-3.15
Middle Atlantic states.....	-0.94	-3.72	-1.48	-0.68	-6.82
South Atlantic states.....	-0.70	-1.63	-3.17	-0.29	-5.21
Florida peninsula.....	-1.98	-0.97	-2.81	+1.95	-3.81
East Gulf states.....	-4.01	-1.97	-0.81	-1.72	-8.51
West Gulf states.....	-1.78	+0.87	-0.64	-1.01	-2.56
Rio Grande valley.....	-5.19	+1.37	+7.37	+0.03	+5.58
Tennessee.....	-1.04	-1.05	-1.12	-2.92	-6.13
Ohio valley.....	-1.21	+1.21	-1.44	-2.05	-3.49
Lower lake region.....	-0.59	-0.51	-1.10	-1.02	-3.22
Upper lake region.....	-0.24	-0.03	+1.17	-1.08	-0.30
Extreme northwest.....	-2.20	+0.64	-0.21	-0.23	-2.77
Upper Mississippi valley.....	-0.60	+3.33	-0.21	-1.09	+2.05
Missouri valley.....	-0.51	-0.06	-0.54	-0.59	-2.10
Northern slope.....	-0.36	+0.27	-0.55	-0.14	-0.09
Middle slope.....	+1.07	-1.17	+0.39	+0.23	+0.49
Southern slope.....	-0.72	+0.37	-2.93	+0.36	-2.95
Southern plateau.....	-0.21	+0.21	-1.01	-1.09	-1.11
Northern plateau.....	-0.12	+0.92	-0.31	-1.99	-1.18
North Pacific coast region.....	-0.18	+1.05	-1.48	-4.31	-4.91
Middle Pacific coast region.....	-0.01	+0.12	+0.64	-2.08	-1.33
South Pacific coast region.....	-0.05	-0.03	-0.21	-0.17	-0.46

The monthly precipitation with the departures from the normal at the several Signal Service stations will be found in the table of miscellaneous meteorological data.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for November, 1884, and in the table of miscellaneous meteorological data for the Signal Service stations. The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 4.71, is 0.31 above the November average for the three preceding years.

California.—Hydesville, Humboldt county: monthly precipitation, 0.69, is 0.99 less than that for November 1883, and is considerably below the average.

Connecticut.—Hartford: monthly precipitation, 2.78, is 2.09 below the November average.

Illinois.—Anna, Union county: monthly precipitation, 2.58, is 1.22 below the November average for the last nine years.

Riley, McHenry county: monthly precipitation, 2.79, is 0.24 below the November average for the last twenty-four years. The total precipitation for the autumn of 1884, is 9.98, or 1.43 more than the autumn average for the last twenty-three years.

Sycamore, DeKalb county: monthly precipitation, 2.48, is 1.68 below the November average for the three preceding years.

Indiana.—Vevay, Switzerland, county: monthly precipitation, 1.13, is 2.03 below the November average for the last nineteen years.

Logansport, Cass county: monthly precipitation, 1.82, is 1.01 below the November average for the last twenty-five years. The monthly snowfall, 4.3, is 0.9 below the average for November.

Wabash, Wabash county: monthly precipitation, 1.64, is 1.55 below the November average for the last nine years.

Kansas.—Independence, Montgomery county: monthly precipitation, 2.58, is 0.29 in excess of the November average for the last twelve years.

Lawrence, Douglas county: monthly precipitation, 0.80, is 1.18 below the November average for the last seventeen years.

Yates Centre, Woodson county: monthly precipitation, 1.62, is 0.42 below the November average for the four preceding years.

Emporia, Lyon county: monthly precipitation, 1.93, is 0.49 in excess of the November average.

Maine.—Gardiner, Kennebec county: monthly precipitation, 3.29, is 1.03 below the November average for the last forty-eight years.

Maryland.—Fallston, Harford county: monthly precipitation, 3.14, is 0.42 below the November average for the last fourteen years. The largest November precipitation for that period, 10.46, occurred in 1877; the smallest, 0.42, occurred in 1882.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 2.27, is 1.44 below the November average for the last forty-three years; the smallest November precipitation for that period, 1.69, occurred in 1858; the largest, 9.82, occurred in 1854.

New Hampshire.—Contoocook, Merrimac county: monthly precipitation, 3.70, is about the average for November.

Antrim, Hillsborough county: monthly precipitation, 3.35, is 0.90 below the November average for the last nine years.

New York.—North Volney, Oswego county: monthly precipitation, 2.40, is 1.21 below the November average for the last thirteen years. The total precipitation (on fifty-five days) for the autumn of 1884 is 7.60, being 2.38 below the autumn average for the last thirteen years. The largest autumn precipitation for that period, 13.05, occurred in 1878; the smallest, 5.40, occurred in 1882.

Palermo, Oswego county: monthly precipitation, 2.18, is 1.59

below the November average for the last thirty-one years. The largest November precipitation of that period, 8.30, occurred in 1863; the smallest, 1.01, occurred in 1882.

Ohio.—Wauseon, Fulton county: monthly precipitation, 1.46, is 1.78 below the November average for the last twelve years, and is the smallest November precipitation for that period; the largest, 5.83, occurred in 1881.

Pennsylvania.—Dyberry, Wayne county: monthly precipitation, 2.48, is 0.29 below the November average for the last thirteen years.

Vermont.—Woodstock, Windsor county: monthly precipitation, 4.35, is 1.32 in excess of the November average for the last sixteen years. The largest November precipitation for that period, 4.95, occurred in 1877; the least, 0.71, occurred in 1882.

Virginia.—Variety Mills, Nelson county: monthly precipitation, 2.42, is 0.18 above the November average for the last six years.

Wytheville, Wythe county: monthly precipitation, 1.41, is 1.40 below the November average for a period of twenty years, and is the smallest November precipitation for that period, with the exception of 0.50 and 1.10 in 1862 and 1879, respectively. The precipitation for the first eleven months of 1884 is but 1.21 below the annual average, although an unprecedented drought prevailed through the greater part of the last four months, the small deficiency being due to the abnormally heavy rains of the earlier months.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 2.66, is 1.93 below the November average for the last eight years.

SNOW.

The dates on which snow fell in the various districts are as follows:

New England.—1st, 19th, 20th, 25th, 26th, 28th.

Middle Atlantic states.—3d, 5th, 6th, 18th, 19th, 20th, 24th to 27th, 30th.

Ohio valley.—5th, 6th, 17th, 18th, 19th, 23d to 30th.

Lower lake region.—4th, 5th, 6th, 18th, 19th, 20th, 23d to 30th.

Upper lake region.—1st to 6th, 11th, 12th, 15th to 30th.

Extreme northwest.—1st, 3d, 4th, 11th, 12th, 16th, 18th to 22d, 24th to 30th.

Upper Mississippi valley.—4th, 5th, 9th, 17th to 30th.

Missouri valley.—1st, 3d, 16th to 27th, 29th, 30th.

Northern slope.—1st, 3d, 15th, 16th, 17th, 19th to 22d, 24th, 26th to 29th.

Middle slope.—17th, 18th, 22d, 30th; snow fell on the summit of Pike's Peak, Colorado, on dates as follows: 14th, 17th, 18th, 21st, 22d, 27th, 28th.

Southern plateau.—Fort Craig, New Mexico, on the 21st, in surrounding mountains. Fort Wingate, New Mexico, 20th.

Middle plateau.—1st, 16th, 17th.

Northern plateau.—15th, 21st 22d.

LARGEST MONTHLY SNOW-FALLS.

[Expressed in inches and tenths.]

Monthly snow-falls of 2 inches or more were reported from the various states and territories during the month as follows:

Connecticut.—Southington, 2.0.

Dakota.—Deadwood, 8.9; Richardton, 8.0; Bismarck, 6.4; Fort Buford, 2.9; Fort Totten, 2.5; Webster, 2.4.

Illinois.—Bunker Hill, 3.1; Mattoon, 3.0; Springfield, 2.6.

Indiana.—Farmland, 6.5; Logansport, 4.4; Spiceland and Sunman, 3.8; Wabash, 3.6; Noblesville, 3.0; Lafayette and Terre Haute, 2.5; Greencastle and Indianapolis, 2.1; Attica and Hancock, 2.0.

Iowa.—Indianola, 4.0; Des Moines, 3.9; West Union, 2.6.

Kansas.—Clay Centre, 5.0; Maud, 4.0; Emporia, 3.0; Atchison, 2.7; Leavenworth, 2.1; Salina, Sherlock, and Holton, 2.0.

Maine.—Gardiner, 8.0; Portland, 5.5; Eastport, 4.1.

Maryland.—Cumberland, 2.0.

Massachusetts.—Rowe, 15.0; Williamstown, 9.0; Boston, 4.8; Princeton and Mendon, 3.0; Worcester, Westborough and Mil- ton, 2.5.

Michigan.—Marquette, 24.0; Boyne, 14.8; Traverse City, 12.5; Mackinaw City, 8.0; Alpena and Northport, 7.5; Grand Haven, 8.8; Hillsdale, 5.3; Ann Arbor, 4.7; Ionia, 4.6; Escanaba, 4.2; Manistique, 3.8; Swartz Creek, 2.3; Lansing, 2.2.

Minnesota.—Duluth, 9.5; Saint Paul, 7.2; Minneapolis, 6.6; Northfield, 6.0; Saint Vincent, 4.7; Moorhead and Chester, 4.0.

Montana.—Fort Custer, 19.2(?); Fort Shaw, 7.4; Helena, 4.6; Fort Assinaboine, 4.2; Fort Benton, 3.6; Fort Maginnis, 2.8.

Nebraska.—Tecumseh, 6.0.

New Hampshire.—Mount Washington, 22.8; Antrim, 10.0.

New York.—Humphrey, 14.5; Oswego, 7.6; North Volney, 7.0; Ithaca, 6.8; Cooperstown, 6.5; Albany, 6.2; Menand Station (near Albany), 6.0; Palermo, 6.5; Penn Yan, 4.5; Port Jervis, 3.0; Le Roy, 2.5.

Ohio.—Hiram, 10.0; Sandusky, 7.7; New Athens, 5.5; Cleveland, 4.7; Columbus, 4.2; Cincinnati, 3.2; College Hill and North Lewisburg, 3.9; Wauseon, 2.5; Ruggles, 2.0.

Pennsylvania.—Erie, 32.0; Grampian Hills, 9.0; Wellsborough, 6.6; Troy, 6.2; Pittsburg, 4.0; Leetsdale, 3.8; Drifton, 2.8; Catawissa, 2.6; Dyberry and Chambersburg, 2.5.

Rhode Island.—Providence, 2.0.

Vermont.—Woodstock, 10.2; Dorset, 10.0; Strafford, 8.0; Lunenburg, 6.0; Newport, 5.8; Burlington, 2.0.

West Virginia.—Helvetia, 6.0.

Wisconsin.—Wausau, 10.0; Neillsville, 7.0; Sussex, 6.5; Embarras, 6.0; La Crosse, 5.7; Madison, 4.4; Beloit, 3.8; Prairie du Chien, 2.5; Franklin, 2.0.

Wyoming.—Cheyenne, 2.0.

DEPTH OF UNMELTED SNOW ON GROUND AT END OF THE MONTH.

[Expressed in inches and tenths.]

Colorado.—Pike's Peak, trace.

Dakota.—Deadwood, 33.

District of Columbia.—West Washington, 0.5.

Illinois.—Mattoon, 2.0; Springfield, 1.1; Riley, 0.5.

Indiana.—Spiceland, 3.0; Lafayette, Logansport, and Terre Haute, 2.0; Indianapolis and Wabash, 1.5; Greencastle, 1.1; Fort Wayne, 0.5.

Iowa.—West Union, 2.0; Independence, Keokuk, and Monticello, 1.0; Guttenberg and Somersset, 0.8; Des Moines, 0.5; Clay Center, Dubuque, and Indianola, trace.

Maryland.—Baltimore, trace.

Michigan.—Marquette, 12.0; Traverse City and Northport, 6; Boyne, 4.5; Grand Haven, 3.5; Ann Arbor and Port Huron, 2.0; Detroit, 1.5; Ionia, 1.0; Escanaba, 0.1.

Minnesota.—Minneapolis, 5.0; Saint Paul, 4.5; Chester, 4.0; Saint Vincent and Northfield, 3.0.

Montana.—Fort Maginnis, trace.

New Hampshire.—Mount Washington, 10.0.

New Jersey.—Readington and South Orange, 0.5.

New York.—Humphrey, 3.0; Oswego, 1.0; Palermo, 0.2; Ithaca, North Volney and Rochester, trace.

Ohio.—Cleveland, 3.2; North Lewisburg, Ruggles, and Hiram, 2.0; New Athens, 1.0; Wauseon, and Westerville, 0.5.

Pennsylvania.—Erie, 4.0; Leetsdale, 1.0; Troy, 0.8; Grampian Hills, 0.5; Wellsborough, trace.

Vermont.—Burlington, 2.0; Newport, 0.2; Dorset, trace.

Virginia.—Variety Mills, 1.0; Wytheville, 0.5; Lynchburg, 0.3; Blacksburg, 0.2.

West Virginia.—Helvetia, 1.5.

Wisconsin.—La Crosse and Sussex, 4.0; Madison, 3.0; Wausau and Prairie du Chien, 2.0; Milwaukee, 1.0; Beloit and Neillsville, 1.5; Embarras, trace.

SLEET.

Arizona.—Prescott, 2d.

Connecticut.—New London, 19th.