

barometer near the centre reading 29.0 (736.0). Strong sw. gales were now reported by vessels between the fiftieth and fifty-third meridian and off the southwest coast of Ireland. On the 25th the depression was northwest of Ireland, and moving northeastward.

V.—This was probably a continuation of low area viii. of chart i. It passed over the maritime provinces of Canada and the gulf of Saint Lawrence as a severe gale on the 25th; and on the following day it was probably central in or near Newfoundland, vessels on the Banks reporting a pressure of 29.6 (751.8), moderate sw. gales. On the 27th the barometric pressure over the ocean between N. 49° and 55° and W. 35° and 40°, was 29.6 (751.8), wind sw.; and on the following day the disturbance disappeared, the pressure over the above-mentioned region having increased to 30.1 (764.5) and above.

OCEAN ICE.

The small number of vessels reporting icebergs in the North Atlantic ice region, indicates that the danger attending vessels bound to and from Europe, through the proximity of icebergs, is now comparatively small; the line showing the limits of icebergs, on chart ii., is therefore discontinued.

The following are the only icebergs reported to have been observed during the month:

The s. s. "State of Indiana," at noon of the 1st, in N. 48° 25', W. 47° 10', saw a large iceberg.

The s. s. "Grecian," on the 7th, in N. 53° 23', W. 49° 20', passed two icebergs.

The s. s. "Nederland," on the 10th, in N. 49° 01', W. 44° 33' passed an iceberg.

The s. s. "Thingvalla," on the 30th, in N. 49° 35', W. 47° 33', passed an iceberg one hundred and fifty feet high.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada, for the month of September, 1883, is exhibited on chart iii., by the dotted isothermal lines.

In the first column of the following table are shown the normal temperatures of September in the several districts, as determined from the Signal Service records; the second column shows the mean temperature of September, 1883, and the third column shows the departures of September, 1883, from the normal:

Average Temperatures for September, 1883.

Districts.	Average for September, Signal-Service observations.		Comparison of Sept., 1883, with the average for several years.
	For several years.	For 1883.	
New England	62.2	59.8	2.4 below.
Middle Atlantic states	68.2	65.8	2.4 below.
South Atlantic states	74.3	72.8	1.5 below.
Florida peninsula	80.1	79.7	0.4 below.
Eastern Gulf	74.8	75.2	0.4 above.
Western Gulf	76.0	75.4	0.6 below.
Rio Grande valley	80.5	78.5	1.7 below.
Tennessee	70.1	69.7	0.4 below.
Ohio valley	67.7	65.8	1.9 below.
Lower lakes	62.7	58.2	4.5 below.
Upper lakes	59.0	55.3	3.7 below.
Extreme northwest	54.7	53.7	1.0 below.
Upper Mississippi valley	64.8	61.6	3.2 below.
Missouri valley	63.6	60.4	3.2 below.
Northern slope	56.7	56.4	0.3 below.
Middle slope	63.9	63.9	normal.
Northern plateau	59.8	59.8	normal.
Southern plateau	72.2	72.4	0.2 above.
North Pacific	58.9	59.4	0.5 above.
Middle Pacific	68.0	69.7	1.7 above.
South Pacific	72.8	75.8	3.0 above.
Mount Washington, N. H.	40.9	38.9	2.0 below.
Pike's Peak, Colo.	31.3	30.2	1.1 below.
Salt Lake City, Utah	64.4	69.3	4.9 above.

The mean temperature of September, 1883, has been above the normal in California, Nevada, Utah, and Arizona, and in the eastern Gulf states, the departures being greatest in southern California and at Salt Lake City, Utah, where they are 3° and 4°9 respectively. In the eastern Gulf states the

mean temperature exceeds the normal by only 0°4, and in the northern plateau, north Pacific coast region, and middle slope it has not differed from the September normal. Over the country east of the Rocky mountains, with the exception of the east Gulf states and middle slope, the mean temperature has been below the normal. The departures are less than 1° in the northern slope, Tennessee, Florida, and in the west Gulf states, while in the upper Mississippi and Missouri valleys, and in the lake region, the departures below the normal temperature have varied from 3°2 in the two first named districts to 4°5 in the lower lake region. On the Atlantic coast the mean temperature has averaged from 1°5 below the normal in the south Atlantic states, to 2°4 below in the New England and the Middle Atlantic states.

The general distribution of mean temperature, with the districts of maximum departures from the normal, for the month of September in each year from 1873 to 1882, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Remarks.
Western Gulf	+ 0.6	1873...	Normal in New England, the south Atlantic states, Tennessee, and the Ohio valley; slightly above the normal in the lower lake region, middle Atlantic, and Gulf states; below the normal in the upper lake region, Minnesota, and in the upper Mississippi and Missouri valleys.
Middle Atlantic states	+ 0.5		
Minnesota	- 2.5		
Upper Mississippi valley	- 2.0		
Missouri valley	- 1.5		
Upper lakes	+ 5.7	1874...	Normal in the south Atlantic states; below the normal in the lower Missouri valley and on the Pacific coast; above the normal in the Southern states and in the northern districts east of the Missouri valley.
Lower lakes	+ 4.7		
Ohio valley and Tennessee	+ 3.1		
Lower Missouri valley	- 2.5		
Pacific coast	- 1.2		
Saint Lawrence valley	- 4.0	1875...	Below the normal over the entire country, the departures being least marked in the Missouri valley and on the Pacific coast.
Gulf states	- 2.7		
New England	- 2.5		
South Atlantic states	- 1.8		
South Atlantic states	+ 0.2	1876...	Slightly above the normal in the south Atlantic states; normal in the middle Atlantic states; below the normal in all other parts of the country.
Saint Lawrence valley	- 2.0		
Lower Missouri valley	- 1.8		
Lower lakes	- 1.6		
New England	- 1.5		
Upper Missouri valley	+ 5.9	1877...	Normal at the Rocky mountain stations; above the normal in all other parts of the country, the departures being least marked on the Pacific coast and in the Ohio valley and Gulf states.
Upper Mississippi valley	+ 4.6		
Upper lakes	+ 4.2		
New England	+ 3.7		
Upper lakes	+ 3.6	1878...	Normal in the upper Missouri valley; slightly below the normal on the Pacific coast and in Minnesota; above the normal in all other districts.
Lower lakes	+ 3.2		
Middle Atlantic States	+ 3.2		
Pacific coast	- 0.6		
Minnesota	- 0.2		
Boise City, Idaho	+ 0.8	1879...	Above the normal at the Rocky mountain stations and in the west Gulf states; below the normal in the Rio Grande and Missouri valleys, Minnesota, and in all districts east of the Mississippi river, except normal at the Canadian maritime stations.
Pike's Peak, Colo.	+ 5.0		
Northern slope	+ 4.8		
Lower lakes	- 2.9		
Rio Grande valley	- 2.7		
Saint Lawrence valley	- 2.6		
Canadian maritime stations	+ 1.9	1880...	Above the normal in the northern plateau, northern slope, middle Atlantic states, and from the lake region to the Canadian Maritime Provinces; below the normal in all other parts of the country.
New England	+ 1.5		
Middle Atlantic states	+ 1.4		
Southern slope	- 2.3		
Western Gulf	- 1.8		
Eastern Gulf	- 1.6		
Lower lakes	+ 8.9	1881...	Normal in the Rio Grande valley; below the normal in Minnesota, the Missouri valley, northern slope, and west of the Rocky mountains, except slightly above in southern California; above the normal in all other districts, the departures being exceptionally large in the lower lake region, middle Atlantic states, and Ohio valley.
Middle Atlantic states	+ 8.2		
Ohio valley	+ 7.5		
Northern plateau	- 5.1		
Salt Lake City	- 4.4		
Southern plateau	- 3.5		
Extreme northwest	+ 3.3	1882...	Normal in the Ohio valley and south Atlantic states; below the normal on the Pacific coast and over the southern portions of the country; above the normal in the lower Missouri valley and over the northern districts from the Rocky mountains to the Atlantic coast.
Northern plateau	+ 2.2		
Middle Atlantic states	+ 1.6		
Southern slope	- 6.3		
Rio Grande valley	- 3.3		
Southern plateau	- 2.8		

The following are some of the highest and lowest monthly mean temperatures reported from the Signal Service stations during the month:

Stations reporting highest.	Stations reporting lowest.
Yuma, Arizona..... 85.7	Pike's Peak, Colorado..... 30.2
Key West, Florida..... 82.9	Mount Washington, New Hampshire..... 38.9
Rio Grande City, Texas..... 79.8	Saint Vincent, Minnesota..... 50.7
Cedar Keys, Florida..... 79.7	Alpena, Michigan..... 52.8
New Orleans, Louisiana..... 79.4	Fort Maginnis, Montana..... 53.1
Galveston, Texas..... 79.3	Escanaba, Michigan..... 53.3
Indianola, Texas..... 78.2	Fort Buford, Dakota..... 53.5
Brownsville, Texas..... 77.7	Fort Shaw, Montana..... 53.9
Mobile, Alabama..... 77.7	Marquette, Michigan..... 53.9
Sanford, Florida..... 77.5	Fort Assiniboine, Montana..... 54.2
Pensacola, Florida..... 77.2	Mackinaw City, Michigan..... 54.2

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for September, 1883. Voluntary observers report the following notes in connection with this subject:

*Arkansas.*—Lead Hill, Boone county: mean temperature, 67° .5, is 5° below the September average of the two preceding years.

*California.*—Poway, San Diego county: mean temperature, 70° .6, is 3° .3 above the September average of five years, and is the highest September mean of that period.

*Illinois.*—Riley, McHenry county: mean temperature, 56° .8, is 3° .2 below the September average of twenty-two years.

Anna, Union county: mean temperature, 68° .6, is about the September normal for the last eight years.

*Indiana.*—Wabash, Wabash county: mean temperature, 58° .3, is 4° .6 below the September average of eight years.

Logansport, Cass county: mean temperature, 61° .5, is 4° below the September average of the last twenty-four years.

Vevay, Switzerland county: mean temperature, 68° , is 0° .6 below the September average of fifteen years.

*Kansas.*—Yates Centre, Woodson county: mean temperature, 64° , is 3° .8 below the September average of the three preceding years.

Lawrence, Douglas county: mean temperature, 63° .5, is 2° .8 below the September average of the last sixteen years.

Wellington, Sumner county: mean temperature, 63° .8, is 5° .1 below the September average of five years.

*Maine.*—Gardiner, Kennebec county: mean temperature, 56° .1, is 2° .6 below the September average of a period of forty-seven years.

*Maryland.*—Fallston, Harford county: mean temperature, 62° .8, is 2° .1 below the September average of twelve years. The highest September mean of that period, 67° .9, occurred in 1874; the lowest, 61° .3, occurred in 1871.

Sandy Springs, Montgomery county: mean temperature, 62° .6, is 3° below the September normal.

*New York.*—North Volney, Oswego county: mean temperature, 56° .7, is 4° below the average of sixteen years.

Palermo, Oswego county: mean temperature, 54° .5, is 6° .3 below the September average of thirty years.

*Ohio.*—Cleveland: mean temperature, 59° .0, is 4° .5 below the September average of a period of thirty years.

Wauseon, Fulton county: mean temperature, 57° .2, is 5° .8 below the September average of thirteen years. During that period the highest September mean, 71° .2, occurred in 1881; the lowest is that for September, 1883.

*Pennsylvania.*—Dyberry, Wayne county: mean temperature, 55° .3, is 4° above the September average of seventeen years. The highest September mean of that period, 66° .9, occurred in 1881; the lowest, 52° .5, occurred in 1871.

Wellsborough, Tioga county: mean temperature, 52° .3, is several degrees below the September average of the last fifteen years.

*Texas.*—New Ulm, Austin county: mean temperature, 76° .4, is 1° .3 below the September average of the last twelve years. The highest September mean of that period, 81° .1, occurred in 1872; the lowest, 75° .6, occurred in 1876.

*Vermont.*—Woodstock, Windsor county: mean temperature, 55° .3, is 1° .2 below the September average of the last sixteen

years. The extreme monthly means for the same period are: highest, 62° .6 in 1881; lowest, 49° .0 in 1871.

*Virginia.*—Variety Mills, Nelson county: mean temperature, 63° .8, is 3° .7 below the September average of the last six years.

*West Virginia.*—Helvetia, Randolph county: mean temperature, 61° .8, is 0° .4 above the September average of seven years.

Table of Maximum and Minimum Temperatures for September, 1883.

State or Territory.	Signal Service.		U. S. Army Post Surgeons, or Voluntary Observers.	
	Station.	Max. Min.	Station.	Max. Min.
Alabama.....	Montgomery.....	96 53	Mt. Vernon Barracks.....	96 53
Do.....	Do.....	93 40	State Line.....	93 64
Arizona.....	Yuma.....	111 63	Texas Hill.....	118 60
Do.....	Prescott.....	95 30	Fort Bowie.....	94 47
Arkansas.....	Fort Smith.....	98 40	Lead Hill.....	95 30
Do.....	Do.....	98 40	Mount Ida.....	94 32
California.....	Los Angeles.....	104 53	Manmoth Tank.....	122 72
Do.....	Gate Mandocino.....	96 40	Summit.....	122 72
Colorado.....	West Las Animas.....	98 35	Fort Collins.....	72 34
Do.....	Pike's Peak.....	49 7	Fort Garland.....	95 33
Connecticut.....	New Haven.....	79 38	Fort Garland.....	81 23
Dakota.....	Fort Sully.....	99 28	Southland.....	84 32
Do.....	Blamarek.....	92 16	Fort Sully.....	99 29
Do.....	Del. Breakwater.....	79 53	Fort Pembina.....	86 11
Delaware.....	Washington.....	87 44	Receiving Reservoir.....	87 48
District of Columbia.....	Pensacola.....	60 40	Mayport.....	92 59
Florida.....	Key West.....	83 60	Lima.....	96 68
Do.....	Do.....	94 56	Forsyth.....	96 60
Georgia.....	Augusta.....	90 52	Madison.....	88 52
Do.....	Fort Lapwai.....	102 31	Fort Lapwai.....	98 32
Idaho.....	Casur d'Alone.....	82 30	Banker Hill.....	96 39
Do.....	Cairo.....	80 47	Polo.....	85 31
Illinois.....	Springfield.....	88 39	Laconia.....	92 42
Do.....	Indianapolis.....	87 40	Griffin Station.....	85 29
Do.....	Fort Reno.....	98 49	Logan.....	93 42
Indian Territory.....	Des Moines.....	90 37	Humboldt.....	92 30
Iowa.....	Dubuque.....	84 34	Manhattan.....	100 42
Do.....	Leavenworth.....	92 42	Emporia.....	92 32
Kansas.....	Do.....	92 44	Bowling Green.....	92 30
Kentucky.....	Louisville.....	92 44	Frankfort.....	89 39
Do.....	Do.....	92 44	Point Pleasant.....	101 54
Louisiana.....	New Orleans.....	90 40	Corinth.....	81 38
Maine.....	Portland.....	78 43	Orono.....	80 33
Do.....	Eastport.....	75 46	Sandy Springs.....	85 40
Maryland.....	Baltimore.....	81 46	Somersct.....	87 38
Massachusetts.....	Boston.....	79 41	Hentli.....	88 28
Do.....	Provincetown.....	78 42	Grand Rapids.....	90 31
Michigan.....	Port Huron.....	83 36	Fort Brady.....	72 25
Do.....	Escanaba.....	75 26	Minneapolis.....	84 29
Minnesota.....	Saint Vincent.....	89 17	Fort Snelling.....	85 22
Do.....	Saint Paul.....	74 30	Bolivar.....	98 42
Mississippi.....	Vicksburg.....	95 54	Pierce City.....	93 38
Missouri.....	Saint Louis.....	92 43	Fort Keogh.....	94 23
Do.....	Fort Benton.....	84 30	Lincoln.....	95 24
Montana.....	Fort Shaw.....	83 27	Fort Niobrara.....	92 30
Do.....	North Platte.....	91 30	Halleck.....	100 26
Nevada.....	Do.....	91 30	Grafton.....	80 30
Nevada.....	Mount Washington.....	60 15	Moorstown.....	87 38
New Hampshire.....	Little Egg Harbor.....	86 47	Freehold.....	83 37
New Jersey.....	Cape May.....	80 44	Fort Union.....	86 27
Do.....	Do.....	80 44	West Point.....	87 33
New Mexico.....	Oswego.....	81 46	Johnstown.....	79 29
New York.....	Buffalo.....	80 36	Chapel Hill.....	94 49
Do.....	Do.....	80 36	Highlands.....	83 37
North Carolina.....	Charlotte.....	92 51	Cincinnati.....	93 44
Do.....	New River Julet.....	93 58	Wauson.....	89 29
Do.....	Columbus.....	88 39	Fort Klammath.....	92 20
Ohio.....	Toledo.....	82 37	Albany.....	90 46
Do.....	Portland.....	87 45	Chambersburg.....	85 39
Oregon.....	Roseburg.....	86 39	Wellaboro'.....	81 28
Do.....	Philadelphla.....	82 45	Stategurg.....	92 56
Pennsylvania.....	Eric.....	84 42	Howell.....	95 50
Do.....	Narragansett Pier.....	77 39	Grand View.....	90 32
Rhode Island.....	Charleston.....	90 50	Barnesville.....	110 42
South Carolina.....	Knoxville.....	92 47	Cheburne.....	100 42
Tennessee.....	Do.....	92 47	Corinne.....	100 55
Do.....	Rio Grande City.....	104 53	Nephi.....	85 30
Texas.....	Stockton.....	93 40	Woodstock.....	82 29
Do.....	Salt Lake City.....	89 46	Acotink.....	87 45
Do.....	Do.....	89 46	Snowville.....	100 30
Utah.....	Do.....	89 46	Fort Spokane.....	88 39
Do.....	Do.....	89 46	Helvetia.....	83 34
Vermont.....	Lynchburg.....	87 46	Beloit.....	85 34
Virginia.....	Fort Myer.....	84 43	Nellville.....	82 24
Do.....	Dayton.....	91 30	Fort Bridger.....	80 19
Washington.....	Do.....	91 30	Do.....	80 19
West Virginia.....	Milwaukee.....	83 39	Do.....	80 19
Wisconsin.....	La Crosse.....	79 35	Do.....	80 19
Do.....	Cheyenne.....	83 30	Do.....	80 19
Wyoming.....	Do.....	83 30	Do.....	80 19

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature have been greatest in southern California, Arizona, and over an extent of country reaching from central Texas to the northern boundary of the United States. They have been smallest on the Atlantic coast south of New Jersey, and at the stations on the coast of the Gulf of Mexico.

The following are the largest monthly ranges that have been reported: Bismarek, Dakota, 76°; Fort Buford, Dakota, 73°; Saint Vincent, Minnesota, 72°; Fort Lapwai, Idaho, 71°; Fort Sully, Dakota, 71°; Fort Bennett, Dakota, 68°; Fort Meade, Dakota, 63°; West Las Animas, Colorado, 62°; Dayton, Washington Territory, 61°; Huron, Dakota, 60°; Lewiston, Idaho, 60°; Fort Apache, Arizona, 59°; Phoenix, Arizona, 59°; San Carlos, Arizona, 59°; Fort Reno, Indian Territory, 58°; Fort Smith, Arkansas, 58°; Prescott, Arizona, 58; Fort Shaw, Montana, 56°; North Platte, Nebraska, 55°.

The smallest monthly ranges are: Key West, Florida, 20°; Hatteras, North Carolina, 22°; Fort Macon, North Carolina, 23°; Portsmouth, North Carolina, 24°; Sanford, Florida, 24°; Cedar Keys, Florida, 25°; Cape Henry, Virginia, 26°; Delaware Breakwater, Delaware, 26°; Galveston, Texas, 26°; El Paso, Texas, 28°; Kittyhawk, North Carolina, 28°; New Orleans, Louisiana, 28°; Smithville, North Carolina, 28°; Indianola, Texas, 29°; Savannah, Georgia, 29; Wash-Woods, North Carolina, 29°; Chincoteague, Virginia, 30°; Norfolk, Virginia, 30°; Ocean City, Maryland, 30°; Wilmington, North Carolina, 31°; Charleston, South Carolina, 32°; Provincetown, Massachusetts, 32°; Pensacola, Florida, 33°.

GREATEST DAILY RANGES OF TEMPERATURE.

The greatest daily ranges of temperature have varied in the different districts as follows:

*New England.*—From 18° at Block Island, Rhode Island, on the 10th, to 30° at New Haven, Connecticut, on the 22d.

*Middle Atlantic states.*—From 17° at Delaware Breakwater, Delaware, on the 2d, 7th, and 27th, to 32° at Lynchburg, Virginia, on the 8th.

*South Atlantic states.*—From 16° at Fort Macon, North Carolina, on the 2d, and at Hatteras, North Carolina, on the 8th and 27th, to 27° at Augusta, Georgia, on the 1st.

*Florida peninsula.*—From 16° at Key West, on the 13th, to 24° at Sanford, on the 12th.

*Eastern Gulf.*—From 18° at New Orleans, Louisiana, on the 25th, to 29° at Montgomery, Alabama, on the 27th and 28th.

*Western Gulf.*—From 16° at Galveston, Texas, on the 25th, to 40° at Fort Smith, Arkansas, on the 11th.

*Tennessee.*—From 27° at Memphis, on the 1st, to 32° at Knoxville, on the 19th.

*Ohio valley.*—From 29° at Cincinnati, Ohio, on the 27th, to 31° at Columbus, Ohio, on the 11th, and at Indianapolis, Indiana, and Louisville, Kentucky, on the 12th.

Table of Comparative Maximum Temperatures for the Month of September.

State or Territory.	Maximum for September, 1883, Signal Service.		Maximum since Signal-Service stations were opened—3 to 12 years.			Highest from any other source.			
	Station.	Temp.	Station.	Temp.	Year.	Place.	Temp.	Year.	Length of Record.
Alabama	Montgomery	96	Montgomery	97	'75, '77	Mount Vernon Arsenal	98		33 years.
Arizona	Yuma	111	Burke's and Yuma	113	1879	Fort McDowell	114	1879	14 "
Arkansas	Fort Smith	98	Little Rock	97	1881	Fort Smith	101		21 "
California	Los Angeles	104	Red Bluff	106	1877	Fort Miller	114		13 "
Colorado	West Las Animas	98	Denver	93	1878	Fort Lyon	99	1875	19 "
Do	Denver	88	West Las Animas	94	1882				
Connecticut	New Haven	79	New Haven	100	1881	Columbin	94		10 "
Do	New London	78	New London	92	1881	New Haven	92		87 "
Dakota	Fort Sully	99	Fort Sully	107	1874	Fort Randall	106		20 "
Do	Fort Bennett	95	Yankton	100	1881	Fort Sully	106	1874	14 "
Delaware	Delaware Breakwater	79	Delaware Breakwater	93	1881	Fort Delaware	90		44 "
District of Columbia	Washington	87	Washington	104	1881	Washington	95		58 "
Florida	Pensacola	93	Jacksonville	98	1875	Fort Jefferson	100	1871	12 "
Georgia	Augusta	94	Augusta	97	'75, '81	Oglethorpe Barracks	99		36 "
Idaho	Fort Lapwai	102	Boise City	96	1878	Fort Boise	103	1874	16 "
Illinois	Chgo	85	Chgo	97	1881	Manchester	102	1864	11 "
Do	Springfield	88	Chicago	94	1881	Anna	102	1881	7 "
Indiana	Indianapolis	87	Indianapolis	94.5	1881	Laconia	101	1881	7 "
Indian Territory	Fort Reno	98	Fort Gibson	104.5	1881	Fort Gibson	103		52 "
Iowa	Des Moines	90	Keokuk	97	1881	Muscotine	103	1881	7 "
Kansas	Leavenworth	92	Dodge City	99	'76, '81, '82	Fort Riley	108		24 "
Do			Leavenworth	101	1882	Clay Centre	109	1881	1 "
Kentucky	Louisville	92	Louisville	99	1881	Newport Barracks	96		28 "
Louisiana	New Orleans	90	Shreveport	101	1881	Fort Jesup	100		22 "
Do			New Orleans	59	'75, '77, '81	Point Pleasant	104	1881	7 "
Maine	Portland	78	Portland	94.5	1881	Brunswick	96		52 "
Maryland	Baltimore	81	Baltimore	101	1881	Fort Washington	99		37 "
Massachusetts	Boston	79	Boston	101.5	1881	Fort Warren	100	1872	18 "
Michigan	Port Huron	83	Detroit and Marquette	97	1874	Thornville	100	1881	3 "
Do	Marquette	82	Port Huron	97	1881	Fort Brady	98	1854	5 "
Minnesota	Saint Vincent	89	Saint Paul	94	1875	Fort Snelling	92		60 "
Mississippi	Vicksburg	95	Vicksburg	98	1881	Fayette	98	1881	6 "
Missouri	Saint Louis	92	Saint Louis	101.5	1881	Saint Louis	101	1881	41 "
Montana	Fort Benton	81	Glendive	101	1882	Tongue River	103	1877	3 "
Do	Fort Shaw	83	Fort Keogh	99	1882	Fort Benton	101	1878	11 "
Nebraska	North Platte	91	North Platte	101	1881	Clear Creek	103	1881	7 "
Do			Omaha	99	1881	Genon	103	1881	6 "
Nevada			Winnemucca	94	'78, '80	Fort McDermitt	96	'75, '79	15 "
New Hampshire	Mount Washington	60	Mount Washington	65	1880	Dartmouth College	92		17 "
Do						Auburn	95	1881	7 "
New Jersey	Little Egg Harbor	86	Sandy Hook	101	1881	Atco	104	1881	7 "
New Mexico			La Mesilla	105	1879	Fort Craig	103		26 "
New York	Oswego	81	New York City	100	1881	Poughkeepsie	100		20 "
Do	Buffalo	80	Rochester	98	1881	Pen Yan	102	1881	16 "
North Carolina	New River Inlet	93	Wilmington	95	'75, '76	Fort Johnson	98		54 "
Do	Columbus	88	Cleveland	98	1881	College Hill	102	1881	6 "
Do	Cincinnati	87	Columbus	98	1881	Cincinnati	99		35 "
Oregon	Portland	88	Umatilla	95	'77, '79,	Fort Huskins	98		9 "
Pennsylvania	Philadelphia	82	Philadelphia	101.5	1881	Milton	105	1881	3 "
Do			Pittsburg	101.6	1881	Fallsington	103	1881	3 "
Rhode Island	Narragansett Pier	77	Erie	88	1881	Fort Adams	96	1881	40 "
South Carolina	Charleston	90	Newport	88	1881	Fort Moultrie	95		27 "
Do			Charleston	94	1876	Aiken	95	1881	3 "
Tennessee	Knoxville and Memphis	92	Memphis and Nashville	98	1881	Ashwood	100	1881	3 "
Texas	Rio Grande City	104	Rio Grande City	107	1877	Fort Stockton	109		21 "
Utah	Salt Lake City	89	Salt Lake City	93	1875	Fort Douglas	97	1876	19 "
Vermont			Burlington	90	'80, '81	Charlotte	94	1880	7 "
Virginia	Lynchburg	87	Fort Myer	102	1881	Accotink	104	1881	7 "
Washington	Dayton	91	Almota	94	1882	Fort Walla Walla	98		10 "
West Virginia			Morgantown	91	1881	Flenington	99	1881	5 "
Wisconsin	Milwaukee	83	Milwaukee	94	1874	Fort Howard	98		30 "
Do	La Crosse	79	La Crosse	92	1873	Edgerton	98	1881	1 "
Wyoming	Cheyenne	83	Fort Washakie	90	1882	Fort Laramie	99		26 "

*Lower lakes.*—From 24° at Toledo, Ohio, on the 4th and 11th, to 35° at Detroit, Michigan, on the 26th.

*Upper lakes.*—From 22° at Chicago, Illinois, on the 6th, to 30° at Alpena, Michigan, on the same date.

*Extreme northwest.*—From 40° at Saint Vincent, Minnesota, on the 17th, to 44° at Fort Buford, Dakota, on the 16th.

*Upper Mississippi valley.*—From 23° at LaCrosse, Wisconsin, on the 18th and 22d, to 34° at Keokuk, Iowa, on the 29th.

*Missouri valley.*—From 26° at Omaha, Nebraska, on the 26th, to 41° at Fort Bennett, Dakota, on the 25th.

*Northern slope.*—From 30° at Helena, Montana, on the 18th, to 47° at Fort Shaw, Montana, on the 16th.

*Middle slope.*—From 20° on the summit of Pike's Peak, Colorado, on the 21st, to 44° at West Las Animas, Colorado, on the 24th and 25th.

*Southern slope.*—34° at Fort Stockton, Texas, on the 3d and 12th.

*Southern plateau.*—From 28° at Fort Grant, Arizona, on the 19th, to 49° at Fort Verde, Arizona, on the 18th.

*Northern plateau.*—From 35° at Lewiston, Idaho, on the 17th, to 48° at Dayton, Washington Territory, on the 20th.

*North Pacific coast.*—From 25° at Fort Canby, Washington Territory, on the 21st, to 42° at Roseburg, Oregon, on the 20th.

*Middle Pacific coast.*—From 24° at San Francisco, California, on the 20th, to 37° at Red Bluff, California, on the same date.

*South Pacific coast.*—From 35° at San Diego, California, on the 22d, to 40° at Los Angeles, California, on the 21st.

#### FROSTS.

On chart v. are shown the limits within which frosts occurred during September. The following reports have been received from the various states:

*Arkansas.*—Fort Smith: the first frost of the season occurred on the morning of the 23d, causing slight injury to vegetation.

Frosts occurred at Lead Hill, Boone county, on the 10th and 23d.

*Arizona.*—Fort Apache, 25th.

*Colorado.*—Frosts occurred on the summit of Pike's Peak on the 5th, 7th, 8th, 13th, 14th, 15th, 22d, 23d; and at other points in the State on the 15th, 21st, 24th, 25th, 28th, and 29th.

*Connecticut.*—Southington, Hartford county: heavy frost occurred on the 4th, damaging the crops in some localities. Reports from the Housatonic valley state that the tobacco crop was damaged to the extent of \$100,000.

Frosts also occurred at various places in this state on the 3d, 4th, 6th, 7th, 10th, 26th, and 27th.

*Dakota.*—Frosts occurred at various places throughout the territory on the following dates: 2d, 6th, 8th, 9th, 10th, 14th, 16th, 17th, 18th, 20th, 30th.

*Delaware.*—Saint George's, New Castle county, 10th.

*Idaho.*—Fort Lapwai, 19th, 20th; Lewiston, 20th, 26th.

*Illinois.*—Urbana, Champaign county: a heavy frost occurred in this region on the 9th.

Rockford, Winnebago county: frost occurred here on the morning of the 9th, causing damage to corn in low lands in this state. On the 25th a heavy frost occurred throughout the state, and ice formed in some localities. The extreme dryness of the ground and plants prevented serious damage. In Douglas, Warren, and Will counties much damage was done. In Clark and Christian counties heavy frosts occurred, but the crops were too far advanced to be injured.

Frosts occurred in northern part of Illinois on the 5th, and were of general occurrence on the 9th, 10th, 17th, 18th, 22d, 23d, and from 25th to 29th.

*Indiana.*—Fort Wayne: the frost of the 10th caused damage to corn and tender vegetables in the lowlands.

Frost occurred at Logansport on the 4th and 18th; at Griffin Station and Lafayette on the 6th; they were generally reported from the 8th to 12th, and on the 26th.

*Iowa.*—Sioux City, Woodbury county: there was a heavy frost here on the morning of the 8th. In some localities corn was injured, but the general damage was slight.

Cedar Rapids, Linn county: severe frost occurred in this locality on the mornings of the 8th, 9th, and 10th, but the crops were not injured to any extent.

Cresco, Howard county: the frost of the 7th killed all of the tender vegetation and damaged the corn crop in this locality.

Davenport: a light frost was of general occurrence over the northern half of the state on the morning of the 9th. In low lands the corn was injured, but generally the crop was not seriously damaged.

Frosts were reported by numerous stations in Iowa from the 5th to 11th, on the 16th, 17th, 18th, 21st, 22d, 25th, 26th.

*Kansas.*—Yates Centre, Woodson county: The first frost of the season occurred here on the 21st. Frosts also occurred in this state at Topeka, on the 17th, and Holton on the 26th.

*Kentucky.*—Louisville: light frost is reported to have occurred in several parts of this state on the morning of the 11th, causing serious injury to the tobacco crop on the lowlands.

*Maine.*—Eastport: the first frost of the season occurred at this place on the morning of the 11th, causing slight injury to vegetation in the surrounding country.

Frosts occurred at Cornish on the 4th and 10th; at Orono, on the 4th and 6th; at Bangor, on the 4th, 11th, and 29th; at Portland, on the 27th.

*Maryland.*—Baltimore, 10th: light frost reported from surrounding localities; no damage caused.

*Massachusetts.*—Springfield, 6th: a heavy frost occurred in Hampden, Hampshire, and Franklin counties on the mornings of the 4th and 6th. The tobacco crop was badly injured; in these counties the damage is estimated at more than \$125,000.

Frosts were reported from other points in this state on the 6th, 9th, 10th, 11th, 26th, 27th.

*Michigan.*—Port Huron, 8th: the heavy frosts of the last two days killed all of the corn and buckwheat in Saint Clair county.

Detroit: the frost of the morning of the 10th was general throughout Michigan. In the vicinity of East Saginaw, the frost was unusually heavy: corn and potatoes were seriously damaged, and in many instances were entirely killed. In the counties north and west of East Saginaw serious injury was done to crops.

Frosts were reported from various places in Michigan on 2d, 3d, 5th, 6th, 8th to 12th, 17th, 18th, 19th, and from 25th to 30th.

*Minnesota.*—Saint Paul: heavy frosts occurred on the mornings of the 8th and 9th throughout Minnesota, Dakota, and northern Wisconsin. Reports state that the corn crop was damaged in all parts of Minnesota, especially near the Manitoba railroad.

Frosts also occurred in Minnesota on the 3d, 5th, 8th, 9th, 17th, 25th, and from the 27th to 30th.

*Missouri.*—Curryville, Pike county, on 9th, 26th; Pierce City, Lawrence county, 21st, 23d.

*Montana.*—Fort Maginnis: first killing frost of season occurred on the 20th, causing much damage to the late crops.

Frosts also occurred on the following dates: 15th, 20th, 21st, 22d, 24th, 25th, and from the 27th to 30th.

*Nebraska.*—Utica, York county: the frost of the morning of the 5th destroyed vines and other vegetation in this county.

Frosts occurred on other dates in Nebraska as follows: 17th, 21st, 24th, 25th, 26th.

*Nevada.*—Carson City, 14th, 23d, 24th, 26th, 27th.

*New Hampshire.*—On the summit of Mount Washington, from 1st to 6th, 9th to 12th, 17th, 18th, 25th to 30th; at other points in the state, on the 3d, 4th, 6th to 11th, 21st, 25th to 30th.

*New Jersey.*—At various places in the state on the 4th, 6th, 10th, 19th, 27th.

*New York.*—Fort Jervis, Orange county: the frost of the 4th seriously injured the corn and buckwheat crops in this county.

Factoryville, Tioga county: corn, buckwheat, and other vegetation were damaged by the frost of the 10th.

Elmira: the tobacco crop in the Chemung valley was damaged to the extent of about \$100,000 by the frost of the night of the 9-10th. Buckwheat and corn were also damaged.

Lockport, Niagara county: a heavy frost occurred in this county on the morning of the 10th. The loss to farmers is estimated at from \$100,000 to \$200,000. The corn and tomato crop was almost entirely ruined. This frost is considered to have been the most destructive that has occurred here for ten years.

Humphrey, Cattaraugus county: a heavy frost occurred on the 10th, seriously injuring all vegetation.

Friendship, Allegheny county: the frost of the 10th killed the corn and buckwheat in this locality.

Rochester: a very heavy frost occurred throughout western New York on the night of the 10-11th. The tobacco crop, fruit, and vegetables were badly damaged.

Oswego: frost of the 11th did much damage in this part of the state.

Frosts also occurred in various parts of this state on the following dates: 2d, 3d, 4th, 6th to 12th, 18th, 20th, 22d, 23d, and from 25th to 29th.

North Carolina.—Highlands, Macon county, 27th.

Ohio.—Reports from various counties throughout Ohio, state that the frosts of the mornings of the 7th, 9th, and 10th, were very heavy, and the corn crop throughout the state was more or less injured.

Frosts occurred at various places in Ohio from the 6th to 12th, on the 18th, and on the 26th and 27th.

Pennsylvania.—Wilkesbarre, Luzerne county: the frost of the 4th killed the late buckwheat and injured the corn.

Philadelphia, 10th: frost occurred in the surrounding localities on this date, killing tender vegetation.

Frosts were reported from numerous points throughout the state on the 4th, 6th, 7th, 9th, 10th, 11th, 19th, 26th, 27th and 29th.

Ontario.—Owen Sound: a remarkably heavy frost occurred throughout this section on the night of the 9-10th. At Priceville ice formed to a thickness of one inch, wheat, oats, and vegetables were badly damaged.

Province of Quebec.—Montreal, 10th: a severe frost last night did great damage to grapes and vegetables.

Rhode Island.—The first frost of the season occurred at Point Judith and Narragansett Pier on the 27th; no damage resulted.

Tennessee.—Milan, Gibson county, 10th, 22d.

Utah.—Salt Lake City, 15th; Nephi, 27th, 28th.

Vermont.—Randolph, Orange county: the frost of the 11th destroyed vegetables and injured the corn crop in this county. Frosts occurred in this state on the following dates: 4th, 6th, 7th, 10th, 11th, 17th, 26th, 27th, 29th.

Virginia.—Matton, Smyth county, 27th.

Washington Territory.—Dayton, 19th, 20th.

West Virginia.—Helvetia, Randolph county: frost of 10th damaged the corn crop in this county.

Wellsburg, Brooke county: the corn crop and vegetation generally were injured by the frost of the 10th.

Wisconsin.—The following telegram was sent from the office of the Chief Signal Office on Friday, September 7th:

*"To the Manager, Western Union Telegraph Company, Madison, Wisconsin:*

Light frosts are indicated for the tobacco regions of Wisconsin on Saturday.

(Signed)

DUNWOODY,  
Assistant."

Reports of frosts which followed the above warning are as follows:

Milwaukee, 9th: the late frosts were general in this state. At Sturgeon bay the crops were entirely ruined. Reports from Appleton and Marshfield state that the corn crop was destroyed.

Fond du Lac, Fond du Lac county: a heavy frost occurred here on the morning of the 9th, doing much damage to crops, especially to corn.

Menomonee, Dunn county: the frost of the morning of the 8th did great damage to corn.

Eau Claire, Eau Claire county: the corn crop in this county was totally destroyed by the frost of the morning of the 8th.

Menasha, Winnebago county, 8th: the frost of this date caused heavy damage to crops in this county.

Milwaukee: a heavy frost occurred in Milwaukee county on the morning of the 10th, which caused a large amount of damage.

Frosts occurred on other dates as follows: 5th to 10th, 17th, 18th, 22d, 26th to 30th.

Wyoming.—Cheyenne: first frost of the season occurred at this place on the 21st.

ICE.

Ice formed during September in the following states and territories:

Colorado.—Fort Garland, 21st.

Dakota.—Wentworth, on the 9th and from the 26th to 30th; Webster, on the 8th and 30th; Alexandria, 30th. At Fort Buford ice formed to a thickness of three-fourths of an inch on the 30th.

Iowa.—Cresco, 8th; Fort Madison, 9th and 26th.

Michigan.—Lansing, 9th and 10th; Swartz creek, 9th, 10th and 26th; Ionia, 9th, 10th and 26th.

Minnesota.—Saint Vincent, 27th; Duluth, 28th.

Montana.—Fort Maginnis, 21st.

New York.—Factoryville, 1st; Palermo, 11th; Friendship, 10th.

Ohio.—Toledo, 9th.

Pennsylvania.—Pittsburg, 10th; Grampian Hills, 10th.

Vermont.—Woodstock, 4th; Strafford, 26th.

Wisconsin.—Franklin, 8th; Embarrass, 8th, 9th.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada for the month of September, 1883, as determined from reports from more than six hundred stations, is exhibited on chart iv.

In the first column of the following table is given the average rainfall for September in the various districts for several years, as determined from observations made at the Signal Service stations; in the second column is given the average for September, 1883, and the third column shows the excess or deficiency of September, 1883, as compared with the average of that month for several years:

Average precipitation for September, 1883.

Districts.	Average for September, Signal-Service observations.		Comparison of Sept., 1883, with the average for several years.
	For several years.	For 1883.	
	Inches.	Inches.	Inches.
New England.....	3.74	2.50	1.24 deficiency.
Middle Atlantic states.....	4.14	4.47	0.33 excess.
South Atlantic states.....	5.94	6.63	0.69 excess.
Florida peninsula.....	6.70	5.07	1.69 deficiency.
Eastern Gulf.....	4.98	1.05	3.93 deficiency.
Western Gulf.....	4.33	3.17	1.16 deficiency.
Rio Grande valley.....	4.54	6.31	1.77 excess.
Tennessee.....	3.48	2.29	1.19 deficiency.
Ohio valley.....	2.49	1.53	0.96 deficiency.
Lower lakes.....	3.03	2.82	0.21 deficiency.
Upper lakes.....	3.98	2.78	1.20 deficiency.
Extreme northwest.....	2.24	1.01	1.23 deficiency.
Upper Mississippi valley.....	3.45	1.67	1.78 deficiency.
Missouri valley.....	2.60	2.60	Normal.
Northern slope.....	1.26	0.89	0.37 deficiency.
Middle slope.....	1.59	3.02	1.43 excess.
Northern plateau.....	0.78	0.06	0.72 deficiency.
Southern plateau.....	1.22	0.57	0.65 deficiency.
North Pacific coast.....	2.13	1.18	0.95 deficiency.
Middle Pacific coast.....	0.21	0.48	0.27 excess.
South Pacific coast.....	0.03	0.04	0.01 excess.
Mount Washington, N. H.....	9.09	6.90	2.19 deficiency.
Pike's Peak, Col.....	2.11	1.76	0.35 deficiency.
Salt Lake City, Utah.....	0.81	0.13	0.68 deficiency.

The monthly rainfall for September, 1883, has been slightly in excess of the average in the middle and south Atlantic states, and on the middle Pacific coast. In the middle and southern slopes and Rio Grande valley large excesses have occurred. At Fort Stockton, Texas, the monthly rainfall was 14.68, or an excess of 13.15 over the September average of the last eight years at that station. The heavy rains of the 4th