

29.88, S., threatening; Yeddo, 29.80, calm, gloomy weather. 5th, Shanghai, 29.76, S., heavy gale; Yeddo, 29.75, calm, rain; in  $35^{\circ}$ , N.  $160^{\circ}$ , E., 29.72, SE., heavy gale, rough sea. No. X, appeared to develop in southeastern China on or about the 6th and passed northeastward over the ocean to the south and east of the Japan Isles, from thence northeastward over Behring's Sea to Alaska and eastward into British North America. On the 6th and 7th, very heavy rains, with northeast to northwest winds, prevailed along the south and east coasts of Japan; lowest pressure on the 7th at Yeddo, 29.50, wind NW., rain-fall 3.43 inches. On the 8th and 9th, as the storm passed to the eastward, clearing weather, with westerly winds, prevailed. On the 12th and 13th, as the centre of lowest pressure was approaching Alaska from Behring's Sea, snow and rain, with a SSE. wind, occurred at Ft. St. Michaels. 14th, Ft. St. Michaels, southeasterly gale all day, with snow, barometer 29.73; Unalaska, wind SE., heavy gale, rain-fall 1.07 inches, rising temperature. 15th, Ft. St. Michaels, high easterly gale, barometer 29.68; Unalaska, very heavy gales from SE., SW. and W., falling temperature, with light rain. 16th, Ft. St. Michaels, high easterly gale, barometer 29.24; Unalaska, strong west winds all day, rising temperature. 17th, Ft. St. Michaels, east to south gales, barometer 29.71; Unalaska, strong southeast wind all day, light rain, stationary temperature. 18th, Ft. St. Michaels, 30.08, strong SSE. wind; Unalaska, wind south all day, fresh, light rain and rising temperature. On the 19th wind changed to west, with clearing weather. No. XVII, probably made its first appearance in southern China on the 12th, and, on the 16th, moved northeastward over the China Sea; on the 17th and 18th over Japan Sea and Japan, and thereafter pursued an irregular easterly course to near the western coast of North America, between  $40^{\circ}$  and  $50^{\circ}$  north latitude, which locality it reached on the 30th, where it probably again gathered renewed energy and appeared on the Pacific coast of the United States as area No. III, in the June, 1879, REVIEW. The track of this storm is founded upon reports from stations in China and Japan, logs of vessels traversing the North Pacific ocean, and reports from Unalaska. No. III appeared as a slight depression over the Aleutian Islands on the 1st, and passed thence eastward across the Alaska Peninsula, reaching British North America on the 5th, where it disappeared in the high pressure then occupying the region north of Hudson's Bay. No. XI, developed off the South Carolina coast, on the 7th and 8th, in about latitude  $30^{\circ}$ , N., longitude  $75^{\circ}$ , W., and passed thence northeastward, disappearing on the 10th and 11th in a high-pressure area then prevailing to the southeast of Newfoundland. On the 8th schooner *McNeil*, in  $31^{\circ}$ ,  $21'$  N.,  $79^{\circ}$ ,  $22'$  W., experienced violent E. to NE. gales and heavy cross-seas, lasting 48 hours. 9th, schooner *Nellie*, in about  $32^{\circ}$ , N.,  $75^{\circ}$ , W., was struck by lightning and experienced very heavy seas. No. I appeared as a slight depression near latitude  $35^{\circ}$ , N., longitude  $38^{\circ}$ , W., where threatening and rainy weather, with rough seas, prevailed from the 1st to the 3rd. During the 4th and 5th the centre of depression moved southeastward, from latitude  $35^{\circ}$  to the African coast, followed over the Azores and Madeira Islands by rapidly rising pressure and westerly winds.

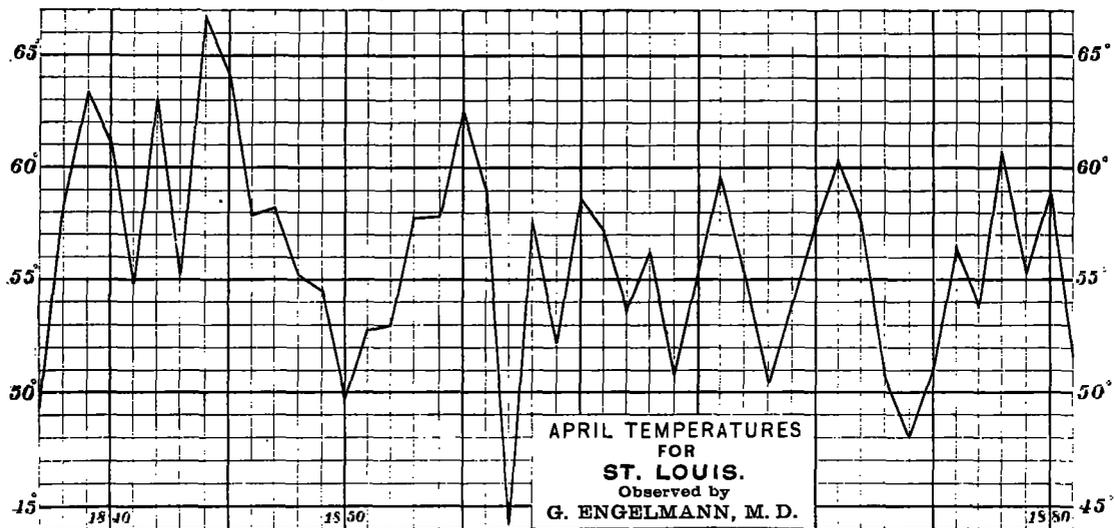
It is of interest to note in connection with the small number of storms crossing the Atlantic Ocean and their extreme northern latitude, the presence of an unusually high-pressure area over the North Atlantic Ocean between latitude  $30^{\circ}$  and  $50^{\circ}$  N. and longitude  $25^{\circ}$  and  $45^{\circ}$  W. The mean for the month in this region ranged from 30.23 to 30.38 and the temperature from  $55^{\circ}$  to  $70^{\circ}$ , while the prevailing winds were northeast to southeast south of latitude  $40^{\circ}$ , and southeast to southwest and northwest, to the northward of that parallel. From a record running back to October, 1877, no single month furnishes mean readings for this region of the North Atlantic to exceed 30.25, while the average of the highest mean readings for the 19 months, including April, 1879, was only 30.09. The average number of storms crossing the Atlantic north of parallel  $40^{\circ}$  for a period covering 17 months, between December, 1877, and April, 1879, was about 5, while May, 1879, presents barely 3. This places the month below the mean, but not lower than seems to be usual for this period of the year, as in May, 1878, only 2 storms were reported to have passed over the ocean from the main land of America. It is perhaps rather premature to make comparisons of this nature while the records of international storm charting are so meagre. Individual cases of very high barometric readings, as taken from the logs of vessels reported in the "Monatliche Uebersicht der Witterung" of the "Deutsche Seewarte," for May, 1879, are given as follows: 23rd, in  $39^{\circ}.5'$ , N.,  $37^{\circ}.6'$ , W., 30.69; in  $39^{\circ}.4'$ , N.,  $35^{\circ}.0'$ , W., 30.67; in  $42^{\circ}.5'$ , N.,  $41^{\circ}.9'$ , W., 30.62. 24th, in  $40^{\circ}.9'$ , N.,  $37^{\circ}.5'$ , W., 30.76; in  $40^{\circ}.2'$ , N.,  $34^{\circ}.6'$ , W., 30.71; in  $43^{\circ}.2'$ , N.,  $40^{\circ}.1'$ , W., 30.77; in  $45^{\circ}.5'$ , N.,  $45^{\circ}.4'$ , W., 30.63; in  $44^{\circ}.1'$ , N.,  $38^{\circ}.7'$ , W., 30.61; in  $45^{\circ}.1'$ , N.,  $36^{\circ}.9'$ , W., 30.74. 25th,  $42^{\circ}.7'$ , N.,  $37^{\circ}.2'$ , W., 30.81; in  $42^{\circ}.1'$ , N.,  $34^{\circ}.5'$ , W., 30.77; in  $44^{\circ}.1'$ , N.,  $38^{\circ}.8'$ , W., 30.77;  $49^{\circ}.6'$ , N.,  $33^{\circ}.1'$ , W., 30.62; in  $44^{\circ}.4'$ , N.,  $37^{\circ}.8'$ , W., 30.61; in  $46^{\circ}.5'$ , N.,  $31^{\circ}.5'$ , W., 30.71. 26th, in  $44^{\circ}.1'$ , N.,  $35^{\circ}.8'$ , W., 30.73; in  $43^{\circ}.2'$ , N.,  $34^{\circ}.3'$ , W., 30.69; in  $44^{\circ}.8'$ , N.,  $36^{\circ}.7'$ , W., 30.69; in  $47^{\circ}.3'$ , N.,  $33^{\circ}.5'$ , W., 30.68. 27th, in  $44^{\circ}.7'$ , N.,  $34^{\circ}.2'$ , W., 30.67; in  $43^{\circ}.7'$ , N.,  $33^{\circ}.4'$ , W., 30.65; in  $45^{\circ}.5'$ , N.,  $33^{\circ}.9'$ , W., 30.70; in  $46^{\circ}.8'$ , N.,  $34^{\circ}.0'$ , W., 30.66.

## TEMPERATURE OF THE AIR.

The mean temperature of the air for April, 1881, is shown by the isothermal lines (in red) on chart No. II. The table of mean and comparative temperatures in the right-hand corner of the chart, shows in the first column the average for the month throughout the various districts as deduced principally from observations taken at Signal Service stations. In the two remaining col-

umns are shown the means for the present month, and the departures of such means from the average for many years. West of the 100th meridian the temperature is everywhere above the normal, while in every district to the eastward it is below, except in the West Gulf States, where it is normal. The departures of excess range from +0.7 in the Southeastern Rocky Mountain Slope to +4.0 in the Northern Pacific Coast region, +5.9 at Salt Lake City and +6.5 on summit of Pike's Peak. Departures of deficiency range from -0.5 in New England and the Rio Grande valley to -3.4 in Minnesota and the South Atlantic States, and -5.2 on the summit of Mt. Washington.

*Deviations from Mean Temperatures.*—Under this heading departures exhibited by the reports from the regular Signal Service stations are shown in the table of comparative temperatures on the right-hand side of chart No. II. The following items of importance in connection with this subject are reported by voluntary observers: *Florida*: Houston, month remarkably cold. *Georgia*: Forsyth, severest weather in April since 1849. *Illinois*: Riley, mean temperature 5° below mean of past 20 years; coldest April occurred in 1874. *Iowa*: Ft. Madison, month unusually cold and backward. Clinton, mean temperature slightly below the normal; first half of the month unusually cold. *Kansas*: Lawrence, mean temperature 1°.45 below mean of past 13 years; fruit trees began to bloom later than ever before recorded. Topeka, mean temperature considerably below the normal; on first ten days of the month temperature reached freezing point each day. Holton, mean temperature considerably below the normal; vegetation very backward. *Maine*: Gardiner, mean temperature 2° below that of past 45 years; month very cold. *Maryland*: Sandy Springs, mean temperature slightly below the normal; mean of first 20 days, 20° colder than the mean of the last 10 of the month. Fallston, mean temperature 1° below that of past 14 years. *Michigan*: Thornville, month very cold, temperature considerably below the normal; vegetation very backward. Litchfield, month very cold; vegetation backward. *Minnesota*: New Ulm, temperature considerably below the normal; month cold and very backward. *Missouri*: St. Louis,



"Missouri Weather Service" reports mean temperature 4°.4 below mean of past 45 years; eight times since 1837 mean temperature lower than that of present month: coldest April occurred in 1857, mean temperature 44°.1; warmest April occurred in 1844, mean temperature 66°.8; highest maximum 93° in 1837; lowest minimum 18° in 1857. The above diagram shows the curve of mean temperatures for April, as furnished by Prof. T. E. Nipher, of the "Missouri Weather Service." As compared with the observations taken at the Signal Service station in St. Louis during the past 10 years, the curves appear to be reliable. *Nebraska*: Howard, mean temperature, 6°.3 below that of past four years. *New Jersey*: Freehold, temperature considerably below the normal; vegetation very backward. *New York*: North Volney, mean temperature 2° below that of past 13 years; coldest April occurred in 1874, mean temperature 33°.6; warmest April occurred in 1878, mean temperature 50°.9; highest maximum 80° in 1881. Palermo, coldest April in past 28 years, except 1868, 1874 and 1875. Ardenia, temperature considerably below the normal; month unusually cold, especially the last half. Waterburg, mean temperature 0°.7 below that of past 10 years. *Ohio*: Cleveland, mean temperature 4°.6 below that of past 26 years; coldest April occurred in 1837, mean temperature 37°.8; warmest April occurred in 1878, mean temperature 53°.8. Little Mountain, temperature below the normal, month unusually cold and backward. Westerville, temperature below the normal, month unusually cold and blustering, especially the first half. North Lewisburg, mean temperature 6° below that of past 50 years; spring, three to four weeks later than usual. *Pennsylvania*: Wellsboro, month unprecedentedly cold, temperature considerably below

the normal; vegetation very backward and agricultural operations much delayed. *Texas*: Clarksville, month unusually cool; vegetation backward. *Washington Territory*: Bainbridge Island, mean temperature 3° above that for April, 1880. *Wisconsin*: Embarrass, temperature below the normal. *West Virginia*: Flemington, first half of month very cold; vegetation backward.

Table of Maximum and Minimum Temperatures for April, 1881.

State or Territory.	Signal Service.		U. S. Army Post Surgeons or Voluntary Observers.		State or Territory.	Signal Service.		U. S. Army Post Surgeons or Voluntary Observers.		
	Station.	Max.	Min.	Station.		Max.	Min.	Station.	Max.	Min.
Alabama.....	Mobile.....	90°		Auburn.....	27°		Mississippi.....	Vicksburg.....	90°	31°
Do.....	Montgomery.....	30°					Missouri.....	St. Louis.....	87°	23°
Arizona.....	Yuma.....	102°		Maricopa.....	108°		Do.....	Do.....		
Do.....	Prescott.....	20°					Montana.....	Fort Keogh.....	90°	
Arkansas.....	Little Rock.....	89°	20°	Fayetteville.....	17°		Do.....	Fort Shaw.....	39°	
California.....	Los Angeles.....	94°		Summit.....	23°		Nebraska.....	North Platte.....	82°	
Do.....	Campana.....	28°		Ft. Lyon.....	59°	16°	Do.....	Omaha.....	6°	
Colorado.....	Denver.....	86°		Southington.....	70°	19°	Nevada.....	Winnemucca.....	70°	20°
Do.....	Pike's Peak.....	1°		Pembina.....	-12°		Do.....	and Pioche.....	4°	-17°
Connecticut.....	New Haven.....	78°	42°				N. Hampshire.....	M. Washington.....	4°	-17°
Dakota.....	Ft. Buford.....	92°					Do.....	Do.....		
Do.....	Yankton.....	38°					New Jersey.....	Sandy Hook.....	75°	
Delaware.....	Breakwater.....	73°	25°				Do.....	Atlantic City.....	4°	
Dist. Columbia.....	Washington.....	87°	24°				New Mexico.....	La Mesilla.....	98°	
Florida.....	Key West.....	91°		Ft. Barrancas.....	94°	27°	Do.....	Santa Fe.....	22°	
Do.....	Pensacola.....	34°					New York.....	Albany.....	86°	
Georgia.....	Augusta.....	89°		Forsyth and.....			Do.....	Buffalo.....	11°	
Do.....	Atlanta.....	25°		Quitman.....	96°		North Carolina.....	Wilmington.....	86°	
Iowa.....	Des Moines.....	81°	20°	Logan and.....			Do.....	Charlotte.....	28°	
Do.....	Do.....	56°		Cresco.....	54°		Ohio.....	Columbus.....	63°	
Do.....	Do.....			Vail.....	0°		Do.....	Sandusky.....	14°	
Idaho.....	Boise City.....	78°					Oregon.....	Umatilla.....	82°	
Do.....	Eagle Rock.....	18°					Do.....	Roseburg.....	54°	
Illinois.....	Chicago.....	83°		Anna.....	87°		Pennsylvania.....	Pittsburg.....	80°	17°
Do.....	Do.....	17°		Elmira.....	10°		Do.....	Do.....		
Indiana.....	Indianapolis.....	78°	24°	Logansport.....	86°		Rhode Island.....	Newport.....	63°	23°
Do.....	Do.....			Wabash.....	17°		South Carolina.....	Charleston.....	81°	32°
Indian Ty.....	Fort Sill.....	94°					Tennessee.....	Memphis.....	87°	
Do.....	Fort Gibson.....	26°		Yates' Centre.....			Do.....	Knoxville.....	24°	
Kansas.....	Dodge City.....	91°	18°	and Topeka.....	7°		Texas.....	Rio Grande.....	102°	
Do.....	Leavenworth.....	13°		Bowling Green.....	87°	21°	Do.....	Denison.....	27°	
Kentucky.....	Louisville.....	82°	25°				Utah.....	Salt Lake City.....	75°	36°
Louisiana.....	Shreveport.....	91°	32°				Do.....	Do.....		
Maine.....	Portland.....	78°		Emmitsburg.....	86°	19°	Vermont.....	Burlington.....	75°	11°
Do.....	Eastport.....	11°		South Lee.....			Virginia.....	Norfolk.....	80°	
Maryland.....	Baltimore.....	84°	25°	and Heath.....	10°		Do.....	Lynchburg.....	25°	
Massachusetts.....	Boston.....	80°		Lansing.....	84°		Washington Ty.....	Dayton.....	53°	
Do.....	Thatcher's Id.....	18°					Do.....	Colfax.....	25°	
Michigan.....	Port Huron.....	79°		New Um.....	54°		West Virginia.....	Morgantown.....	75°	26°
Do.....	Alpena.....	2°					Wisconsin.....	La Crosse.....	82°	10°
Minnesota.....	St. Paul.....	78°					Wyoming.....	Cheyenne.....	75°	13°
Do.....	St. Vincent.....	-14°								

*Ranges of Temperature at Signal Service Stations.*—Monthly ranges in general varied from 50° to 75° over the country east of the Rocky Mountains, and from 35° to 55° to the westward of that region. Ranges less than 50° occurred in the following districts: Northern Plateau, Northern Pacific coast, Middle Pacific coast, Southern Pacific coast, Middle Plateau and along the Gulf and portions of the South Atlantic, Middle Atlantic and New England coasts. The *smallest* ranges were: San Francisco, 28°; Key West, 30°; San Diego, 31°; Wood's Holl and New Shoreham, 33°; Shakespeare, N. M., and Galveston, 35°; Portland, Or., Sacramento, Punta Rassa and Newport, 40°. The *largest* were: St. Vincent, 87°; Moorhead, 86°; Ft. Buford, 84°; Yankton, 82°; Bismarek, 79°; Dodge City, 78°; Ft. Gibson, 73°; Omaha, La Crosse, Duluth and Ft. Keogh, 72°; Deadwood, Ft. Bennett and Marquette, 71°; Ft. Elliott and Des Moines, 70°. The *daily* ranges varied in the different districts as follows: New England, from 21° at New Shoreham to 36° at Boston, Springfield and Portland; Middle States, 18° at Cape May to 32° at Albany, 35° at Washington and 37° at Norfolk; South Atlantic States, 24° at Hatteras to 31° at Charlotte and 34° at Smithville; Eastern Gulf States, 17° at Key West to 29° at Vicksburg and 32° at Montgomery; Western Gulf States, 19° at Galveston to 42° at Ft. Gibson, 43° at Denison and Corsicana and 46° at Mason; Ohio valley and Tennessee, 26° at Cincinnati to 37° at Chattanooga, 39° at Nashville and 40° at Pittsburgh; Lower Lake region, 20° at Erie to 27° at Rochester and Oswego and 30° at Detroit; Upper Lake region, 27° at Chicago to 34° at Port Huron, 36° at Duluth and 39° at Alpena; Upper Mississippi valley, 23° at La Crosse to 34° at Des Moines, 35° at St. Louis and St. Paul and 38° at Dubuque; Missouri valley, 30° at Omaha to 32° at Yankton, 38° at Leavenworth and 39° at Ft. Bennett; Extreme Northwest, 35° at Moorhead to 36° at Bismarek, 37° at St. Vincent and 48° at Ft. Buford; Northern Slope, 41° at Deadwood to 44° at Ft. Custer and 46° at Ft. Keogh; Middle Slope, 26° on summit of Pike's Peak to 38° at Denver, 41° at Ft. Elliott and 48° at Dodge City; Southern Slope, 40° at Henrietta to 52° at Concho and 54° at Ft. Davis; Northern Plateau, 33° at Boise City to 36° at Umatilla, 41° at Eagle Rock and 44° at Dayton; Middle Plateau, 30° at Salt Lake City to 37° at Pioche and 47° at Winnemucca; Southern Plateau, 27° at Shakespeare to 48° at Tucson, 50° at Prescott and 55° at La Mesilla; North Pacific, 27° at

Portland to 32° at Roseburg and 34° at Olympia; Middle Pacific, 22° at San Francisco, to 26° at Sacramento and 31° at Red Bluff; South Pacific, 27° at San Diego to 36° at Visalia, 40° at Los Angeles and 50° at Campo.

*Frosts* were reported very frequently north of the 38th parallel and east of the 102nd meridian. South and westward of these boundaries they occurred in the various States on the following dates: *North Carolina*, 1st to 7th, 10th, 14th, 15th, 17th; *South Carolina*, 2nd, 5th, 6th; *Stateburg*, 2nd, 5th, killing blossoms and buds on low grounds; *Georgia*, 1st, 2nd, 5th; *Quitman*, 2nd, killing tender vegetation; *Florida*, 2nd, 3rd, 5th; *Alabama*, 2nd, 6th, 10th, 15th; *Green Springs*, 2nd, killing vegetation; *Mississippi*, 2nd, 5th, 14th; *Tennessee*, 1st, 2nd, 4th, 5th, 10th, 14th, 16th, 17th; *Arkansas*, 1st, 2nd, 4th, 14th; *Louisiana*, 1st, 2nd, 5th, 14th; *Texas*, 1st, 4th, 12th, 13th, 14th; *Cleburne and San Antonio*, 14th, killing vegetation; *Indianola*, 14th, killing cotton plants and garden truck; *Clarksville*, 14th, very destructive to peaches, apples, pears and plums, early corn had to be replanted in many localities, oats badly damaged, and the young foliage of forest trees extensively destroyed; *New Mexico and Arizona*, 13th, 14th; *Colorado*, 4th, 9th, 15th, 17th; *Utah*, 8th, 13th, 23rd, 25th; *Nevada*, 11th, 12th, 24th; *Carson City*, 24th, killing fruit and vegetables; *California*, 7th, 8th, 11th; *Oregon*, 12th, 30th; *Umatilla*, 30th, slightly damaging fruit trees and grape vines; *Idaho*, 1st to 4th, 7th, 8th, 12th, 28th, 30th; *Montana*, 1st to 4th, 6th to 13th; 24th, 25th, 27th to 30th. *Washington Territory*, 8th, 12th, 23rd, 26th, 30th; *Dayton*, 30th, slight damage to vegetation, which is about a month in advance of the usual growth for this period.

## PRECIPITATION.

The general distribution of rain-fall (including melted snow) for April, 1881, is shown on chart No. III from the reports of over 500 stations. From the table in the left-hand corner of the chart is obtained a monthly average for each of the various districts, determined from the records (covering a period of many years) of Signal Service stations, and also a comparison of the present month with such averages. In general the rain-fall is considerably below the normal, only two remote and comparatively unimportant districts, viz: the Florida Peninsula and the Northern Pacific coast region, show the slightest excess. The most marked feature of this important subject for the month, is not so much the deficiency in any particular district, as that this deficiency is remarkably general, affecting in a striking manner those districts which are usually subject to heavy precipitation at this period of the year. As compared with the previous records of Signal Service observations for the month of April since 1874, no such wide-spread deficiency has ever been reported. The departures from normal are most marked, save two exceptions, over the northern sections of the country, the largest, —2.34, being reported from New England. There has been little if any variation from the accustomed diversity of rain-fall over the Rocky Mountain and Plateau districts, the largest amount, 4.64 inches, fell on the summit of Pike's Peak, while an entire absence of rain was reported from scattering stations in Arizona, California, Nevada and Utah.

In connection herewith the following notes from voluntary observers are of interest: *Riley, Ill.*, monthly rain-fall 1.74 inches below mean of past 20 years; dryest month ever observed. *Lawrence, Kans.*, rain-fall 1.91 below mean of past 13 years. *Gardiner, Me.*, monthly rain-fall 1.82 below mean of past 45 years; dryest April occurred in 1844. *Sandy Springs, Md.*, rain-fall remarkably small for April. *St. Louis*, the "Missouri Weather Service" reports monthly rain-fall considerably below the average. The "Nebraska Weather Service" reports 2.86 inches as an average for the whole State, which is more than three times as much as fell in April, 1880; rain-fall in western part of State exactly the average of 20 years, in the eastern part a little below the usual amount. *Contoocookville, N. H.*, monthly rain-fall 2.00 inches below the normal; dryest April on record. *Grafton, N. H.*, monthly rain-fall considerably below the normal; dryest April on record. *Palermo, N. Y.*, dryest April in past 28 years, excepting 1879. *Waterburg, N. Y.*, monthly rain-fall 1.19 below mean of past 19 years. *Argyle, N. Y.*, monthly rain-fall considerably below the mean; crops suffering from drought. *Cleveland*, monthly rain-fall 0.82 below mean of past 26 years. *Mission House, Wis.*, monthly rain-fall considerably below the average; month remarkable for the absence of the customary April rains.

*Special Heavy Rains.*—1st, *Wellsboro, Pa.*, 3.16 inches. 4th, *Laredo*, 2.53. 7th, *St. Louis*, 2.62; *Auburn, Ala.*, 2.75. 12th, *Wellsboro, Pa.*, 3.26; *Green Springs, Ala.*, 3.00. 14th, *Hatteras*, 4.83; *Fort Macon*, 3.04; *Kittyhawk*, 2.77; *Lincoln, Neb.*, 3.00. 17th and 18th, *Battle Creek, Mich.*, 3.00. 20th, *Brackettville*, 2.50. 20th and 21st, *Mason*, 2.60; *Henrietta*, 4.70. 21st, *Corsicana*, 3.30; *Melissa, Tex.*, 3.00. 21st and 22nd, *Graham, Tex.*, 3.36. 22nd, *Port Eads*, 6.29. 24th, *Mobile*, 5.34; *Pensacola*, 2.73; *Fort Barrancas, Fla.*, 3.08. 25th, *Highlands, N. C.*, 4.85. 25th and 26th, *Galveston*, 3.20.

*Largest Monthly Rain-falls.*—*Mobile*, 9.21 inches; *Elsworth, N. C.*, 7.38; *Highlands, N. C.*, 7.20; *Neah Bay, Wash. Ty.*, 7.02; *Hatteras*, 6.88; *Franklin, N. C.*, 6.70; *Bowling Green, Ky.*, 6.09; *Cape Henry*, 6.03; *Quitman, Ga.*, 5.90; *Memphis*, 5.74; *Ft. Barrancas, Fla.*, 5.55; *Ft. Canby, Wash. Ty.*, 5.51.