

storm signals ordered, thirty-two; justified, wholly, twenty-four, partly, six. Number of signals ordered for easterly winds, twenty-nine; justified, twenty-six. Number of signals ordered for westerly winds, sixty-three; justified, sixty-one. Number of signals ordered late, eight. Number of winds without signals, seventeen. Percentage of justifications, 72.4.

Cold-wave signals.—(Ordered by Assistant Prof. T. Russell.) Total number of signals ordered, two hundred and seventy-three; justified, wholly, one hundred and thirty-five, of which fifteen were ordered late, partly justified, ten. Number of severe cold waves without signals, fifteen. Percentage of justifications, 49.5.

Percentages of local verifications of weather and temperature signals as reported by directors of the various State Weather Services for December, 1888.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Illinois	88.0	83.0	New Jersey	86.6	87.3
Indiana	91.1	84.1	New York	85.0	86.0
Kansas	87.9	81.7	North Carolina	84.5	80.2
Kentucky	80.4	83.6	Ohio	86.0	82.0
Louisiana (northern)	91.0	100.0	South Carolina	87.5	91.5
Louisiana (southern)	92.0	90.0	Tennessee	90.8	88.5
Michigan	79.6	79.1	Texas	80.3	78.3
Nebraska	90.6	91.1			

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts are republished from reports for December, 1888, of the directors of the various state weather services:

ALABAMA.

The season has been mild and pleasant, although the average temperature was 4.5 below the normal. This is to be accounted for upon the ground that the reduction of temperature was distributed over the entire period with but three or four really cold days, and the fair, sunshiny days were largely in the majority. The weather was generally cool enough, however, to produce light frosts and thin ice frequently during the month. The lowest temperature recorded was 13, in the northeastern portion of the state. In middle and southern Alabama the depression was not so low. Every December since the organization of the state service has recorded a minimum temperature below that of December just closed. In 1884, 6 was registered at one or more stations; in 1885, 12; in 1886, zero, and in 1887, 10. The rains were not heavy, and the total average precipitation was 1.98 below the normal. The winter wheat has suffered slightly on account of the deficiency of rain.

Summary.

Temperature.—Monthly mean, 46; highest monthly mean, 51.2, at Troy; lowest monthly mean, 40.3, at Valley Head; maximum, 71, at Bermuda, 25th; minimum, 13, at Valley Head, 20th; range for state, 58; greatest local monthly range, 53, at Troy; least local monthly range, 31, at Selma.

Precipitation.—Average for the state, 2.71; greatest, 4.32, at Tuscaloosa; least, 1.86, at Florence.

Wind.—Prevailing direction, northwest.—P. H. Mell, Signal Corps, Auburn, director.

ARKANSAS.

Summary.

Temperature.—Monthly mean, 43.8; highest monthly mean, 50.7, at Forrest City; lowest monthly mean, 39.6, at Lead Hill; maximum, 73, at Texarkana, 6th; minimum, 15, at Hebir, 20th; greatest local monthly range, 53, at Conway; least local monthly range, 38, at Camden.

Precipitation.—Average for the state, 3.57; greatest, 7.16, at Ozone; least, 0.23, at Prescott.—Prof. John C. Branner, Little Rock, director; W. U. Simons, Corporal, Signal Corps, assistant.

ILLINOIS.

The past month has been a most remarkable one, and will long be remembered as one of the mildest of which there is any record. Never before has the average temperature of December been so high, the snowfall so light, nor the minimum temperature so high. The precipitation has been below the average, and while frosts have been as numerous as usual, they have been unusually light, and the ground but very slightly frozen at any time. In the northern counties the ground was considerably frozen, but in the central and southern counties it was scarcely frozen at all. Snow fell on several occasions, but was always light, and remained on the ground but a short time—excepting the northern counties not more than a day at one time; and at the end of the month no snow remained on the ground in the state, except in a few of the extreme northern counties, and even there very little of it.

Summary.

Temperature.—The average for the month, 33.5, was 5.7 above the average of the past ten years, an excess that raises the yearly average considerably, so that it is only 0.9 below the mean of the past thirteen years.

Precipitation.—The rainfall was only 0.40 below the average of the ten previous Decembers and was very equally distributed over the state, the average being the same for the three divisions.

Wind.—Prevailing direction, southwest.—Col. Charles F. Mills, Springfield, director; James Cassidy, Sergeant, Signal Corps, assistant.

INDIANA.

December, 1888, will be remembered as one of the mildest, and at many stations the mean temperature was the highest on record in Indiana for that month; steady high temperature prevailed and the absence of sudden changes to low temperature, below zero, was a marked feature this year. Warmer

periods occurred on the 7th and 8th, 15th and 16th, and from the 24th to 26th; while colder periods were very uninteresting and of no note whatever. The departure of the mean temperature from the normal was nearly +4.0.

The precipitation for the month was exceedingly small, and the small amount of snow which was precipitated did not cover the ground for any great length of time, as it melted or evaporated soon after it had fallen. The greatest amount of rain, and that less than 1.00 in twenty-four hours, was measured nearly everywhere on the 15th and 16th, on the approach and passage of the lowest barometric area. The average amount of precipitation was about 1.64 below the normal for December.

Summary.

Temperature.—Monthly mean, 34.6; highest monthly mean, 39.5, at Marengo; lowest monthly mean, 30.4, at Mauzy; maximum, 62.5, at Cannelton, 25th; minimum, 7.0, at Mauzy, 14th; range for state, 55.5; greatest local monthly range, 48.0, at Mauzy and Butlerville; least local monthly range, 37.0, at Columbus and De Gonia Springs.

Precipitation.—Average for the state, 1.78; greatest, 3.65, at Huntingburgh; least, 1.19, at Vevay.

Wind.—Prevailing directions, south and southwest.—Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.

IOWA.

The month was fair, dry, and extraordinarily warm, very moderate westerly winds prevailing. The mean temperature was 7.5 above the normal. During the preceding twenty years December has but three times been as warm, viz., in 1875, 1877, and 1881; the warmest December being that in 1877, which was 17 above the normal. The highest temperature at the central station was 58, on the 23d, a temperature which had not been reached in December since 1877; the lowest, 10, on the 28th. During the preceding fifty years there have been only four Decembers without temperatures falling to or below zero, viz., in 1846, 1858, 1877, and 1881.

The total amount of precipitation in December exceeded 2.00 in a broad belt running west of the Mississippi, and extending in southern Iowa as far as to Clarke and up to Story counties; west of this belt, and half way up the Missouri, the rainfall exceeded 1.00; the northwest and west, down to Adams county, received less than 1.00.—Dr. Gustavus Hinrichs, Iowa City, director.

KANSAS.

The temperature ranged from 8 to 10 above the December average, being nearest normal in the eastern counties, rising towards the west. The highest temperature occurred during the early part of the month and the lowest after Christmas. The precipitation during the month was mostly in the form of snow or sleet. In the eastern division there were three wet spells, the first on the 7th and 8th, the second from the 14th to 17th, and the last from the 24th to 30th; in the middle division it mostly occurred from the 24th to 30th, while in the western division it occurred on the 14th and 16th and from the 25th to 30th.

Summary.

Temperature.—Monthly mean, 35.9; highest monthly mean, 40.0, at Wellington; lowest monthly mean, 30.3, at Marydale Farm; maximum, 74, at Gorman, 4th; minimum, —3, at Topeka, 28th; range for state, 77; greatest local monthly range, 66, at Concordia and Topeka; least local monthly range, 43, at Victoria; greatest daily range, 57, at Santa Fé, 4th; least daily range, 2, 25th, at Halstead.

Precipitation.—Average for the state, 0.52; greatest, 3.89, at Independence; least, 0.00, at Grainfield and Grinnell.

Wind.—Prevailing direction, south.—Prof. J. T. Lovell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.

KENTUCKY.

Summary.

Temperature.—The December mean for the state was 38.7, which is a slight

excess above the normal; maximum, 65, at Franklin, 25th; minimum, 8, at Ashland, 22d; highest monthly mean, 40.8, at Millersburgh; lowest monthly mean, 33.4, at Falmouth; the warmest days of the month were 24th, 25th, and 26th; the coldest, 14th, 18th, 20th, and 22d.

Precipitation.—The average for the state was 1.49, being about 1.50 less than the normal; the greatest, 2.02, at South Fork, and the least, 1.10, at Millersburgh. The average number of days upon which rain or snow fell was 5.9.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

The month was comparatively mild and pleasant, sunshiny days prevailing to a marked degree. The average temperature was but 0.5 below the normal of past twenty years. The warm periods were about the 5th, 12th, and 25th, and the coolest period occurred from 19th to 21st throughout the state. The maximum temperature reported was several degrees above an average maximum December temperature for Louisiana; the general average being about 78. In 1884 and 1886 the temperatures were, respectively, 85 and 84, the former being the highest December maximum on record for the state. The minimum temperature was slightly below the average for December, the general average being about 20. The coast minimum temperatures ranged from 31 to 40, occurring during the cool spell of 19th to 21st.

There was a general deficiency of 0.70 in the rainfall for the northern and southern sections. As a rule the rainfall is nearly half an inch greater in the northern section of the state during December, and the averages for the past month show the normal difference to have existed within a few hundredths of an inch.

The prevailing dates of rainfall were the 3d, 9th, 15th, 16th, 25th, and 26th, with light local rains from 29th to 31st. The remainder of the month was dry and pleasant. A thunder-storm was general in the western and northern parishes on the 15th, and was accompanied with heavy rain, averaging 1.18.

Summary.

Temperature.—Monthly mean, 51.0; highest monthly mean, 57.8, at New Iberia; lowest monthly mean, 47.8, at Delta; maximum, 80, at Farmerville, 12th; minimum, 19, at Liberty Hill, 20th, and Clinton, 19th and 20th; range for state, 61; greatest local monthly range, 58, at Farmerville and Liberty Hill; least local monthly range, 28, at Shell Beach; mean daily range, 21.5.

Precipitation.—Average for the state, 4.60; for the northern section, 4.85; for the southern section, 4.41; greatest local monthly rainfall, 6.85, at Liberty Hill; least, 2.28, at Marksville; daily rainfall, exceeding 2.50 in any twenty-four consecutive hours, Vidalia, 3.10, on 8-9th; Lake Charles, 2.80, on 15th, and Abbeville, 2.70, on 8th; average number of days on which rain fell, 6.

Wind.—Prevailing direction, northeast.—*R. E. Kerkam, Sergeant, Signal Corps, New Orleans, in charge.*

MICHIGAN.

The month has been remarkable for the warm, pleasant weather and deficiency in rainfall.

Summary.

Temperature.—The mean for the month, 30.0, is 3.4 above the normal of fourteen years. The temperature was reported above the normal in all sections. The mean daily temperature was above the normal on twenty days, below on seven, and normal on four days. The highest mean daily temperature in the past fourteen years, 53, occurred on the 19th, 1877, and the lowest, —8, on the 29th, 1880. The highest mean daily temperature for this month, 41, occurred on the 24th, and the lowest, 17, on the 21st. The highest mean monthly temperature, 37.2, occurred in 1877, and the lowest, 17.2, in 1876. The maximum temperature for the month, 58, occurred on the 26th, at Petersburg, and the minimum, —5, on the 21st, at Omer.

Precipitation.—The average for the month, 1.79, is 0.86 below the normal of fourteen years. The precipitation was below the normal in all sections of the lower peninsula and 0.48 above the normal in the upper peninsula. The precipitation was general on the 5th, 15th, 16th, 17th, 24th to 27th. The heaviest occurred on the 16th and 26th. The greatest, 4.25, was reported at Marquette, and the least, 0.81, at Arbel. Comparing the precipitation for this month with the records of the past thirteen years, it is found that the largest amount, 4.85, was recorded in 1884 and the least, 1.70, in 1880. The average amount of snowfall, unmelted, on the level, for the state, was 3.5; there was but very little remaining on the ground at the end of the month; only two counties, Emmet and Otsego, in the lower peninsula, reporting more than 2 inches, and in the upper peninsula it ranged from 2.8 to 12.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

The characteristics of December were fair, pleasant weather, temperature much higher than usual, and precipitation deficient, especially in the centre of the state. From one to eight inches of snow were reported on the ground in the lower part of the state at the end of the month, while in the northern part the ground was bare, or only a trace of snow appeared.

Summary.

Temperature.—The mean for the month, 22.8, is 8 above the December normal. The excess in the northern part of the state was about 9, and in the south from 5 to 6. The highest temperatures were recorded on the 4th, 9th, and 28d, and the coldest days were the 12th, 18th, 19th, 21st, and 31st. The extremes of temperature were 68.1 at Saint Paul, 23d, and —19 at Pokegama

Falls, 18th; range for the state 77.1. At the end of the month ice was nine inches thick at points in central Minnesota and the ground was frozen to the depth of three feet.

Precipitation.—Except in the southern tier of counties the precipitation was deficient, and very much so in the centre of the state, including the stations of Moorhead, Pine River, and Duluth. The dates of precipitation in the northern part of the state were the 5th, 12th, 15th, 18th, 25th, and 27th; in the southern, 12th, 15th, 16th, and 24th to 27th. The heaviest daily rains were 0.77 at La Crosse, Wis., on the 16th, and 0.75 at Rolling Green on the 24th.

Wind.—Prevailing directions, northwest and south.—*Prof. W. W. Payne, Northfield, director; John Healy, Private, Signal Corps, Saint Paul, assistant.*

MISSISSIPPI.

While the mean temperature of the air was not above the average for this month, the large amount of sunshine, the rather uniform distribution of temperature through most of the month, and the rapid warming up by south and southeast winds succeeding the cold waves combined to keep the ground warm. Winter-growing vegetation was unusually vigorous during the month.

Summary.

Temperature.—The mean of the state was 47, which is just the normal determined from all available records. In December, 1887, the mean was 46; the highest local monthly mean, 53, at Logtown, and the lowest, 42, at Louisville; the highest temperature recorded was 76, at Artonish, 14th, and the lowest, 16, at Louisville, 20th; the greatest daily range, 37, at Batesville, 7th, and the least, 1, at Starkville, 17th.

Precipitation.—The average, 3.18, for the state was quite evenly distributed as to time and locality. The normal rainfall of the entire state for December is 5.13; in December, 1887, it was 8.06. Rainfall exceeding 1.00 in twenty-four hours occurred at Canton and Vicksburg on the 9th, at Starkville and Artonish on the 15th, at Batesville, University, Water Valley, Canton, and Yazoo City on the 15th, and at Batesville on the 29th and 30th.

Wind.—Prevailing wind, north or northwest.—*Prof. R. B. Fulton, University, director; M. J. Wright, jr., Sergeant, Signal Corps, assistant.*

MISSOURI.

Summary.

Temperature.—The mean temperature for December was 35.4. The highest temperature reported was 70 at New Haven, and the lowest, 0.5, at Oregon. The average of maximum temperatures was 61.1, and the average of minimum temperatures 14.3, making an average range of 46.8. The highest temperatures occurred on the 5th, 10th, 23d, and 24th, and the lowest on the 19th, 20th, 27th, and 28th.

Precipitation.—The average precipitation was 2.14, which is about the December normal. The greatest amount reported was 3.70, at Carthage, and the least, 0.70, at Maryville. In the state, as a whole, precipitation occurred on 21 days. The greatest number of days of precipitation at any place was 9 at Frankford. The amount of snowfall was reported as follows: Mound City, 9.75; Oregon, 9.5; Maryville, 7; Conception, 6; Langdon, 5; Kansas City, 3.75; Princeton, 2.5; Lamonte and Harrisonville, 2; Fayette, Wither's Mill, and Oak Ridge, 0.75; and Glasgow, Mexico, Sedalia, and Warrensburg, 0.6. Most other stations report snowfall too small to measure.—*Prof. Francis E. Nipher, Saint Louis, director; G. A. Weber, Sergeant, Signal Corps, assistant.*

NEBRASKA.

The month of December has been exceedingly warm and one of the driest for many years. Only December, 1881, was warmer, and December, 1878, had less precipitation.

Summary.

Temperature.—The most striking fact in the weather of the month is its exceedingly high mean temperature for southeastern Nebraska, which is 31.6, or 9 above the normal for December; this has only been exceeded since 1877 by December of 1881, when it was 33; the maximum for the month was 70, and this too was exceeded only in 1881; there have, however, been about the normal number of freezing days, but the temperature has fallen but little below zero during the month, although in preceding Decembers the mercury has fallen to —20, and once in 1887 to —28.

Precipitation.—Another dry month for Nebraska has been added to the list of dry months which began with September. Only a small area of the state, from the central to the northeastern portion, received over 1.00 of rain. The mean for southeastern Nebraska was 0.60, and is the least since 1878. Four Decembers, however, have had a smaller number of rainy days. The average of cloudiness has also been less than 1878.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Corporal, Signal Corps, assistant.*

NEVADA.

The weather this month has been beautiful indeed, free from blizzards, high winds, fogs, &c., with a large percentage of bright sunshiny days. There were only ten cloudy days, eleven clear, and remainder fair.

Summary.

Temperature.—The temperature for the month was generally stationary and high, the mean being only about 3 less than for November. The extreme temperatures of the month were both reported from Elko; the highest, 78, on the 26th, and the lowest, —10, on the 31st. Lowest mean temperature was 26.3, at Mill City, and the highest, 53.6, at El Dorado Canyon.

Precipitation.—The precipitation generally throughout the state would

average fairly well. It was small at Carson City, Genoa, Dayton, Elko, Wellington, Hot Springs, Humboldt, Mill City, and Beowawe. Beowawe, the lowest, .17, and Mill City, the highest, .85. There was between 1.00 and 2.00 at El Dorado Canyon, Rioville, Palisade, Golconda, and Crane's Ranch, while at Tuscarora there was 3.27, Battle Mountain, 4.92, and Burner's Ranch, 6.00.—*Prof. Charles W. Friend, Carson City, director; E. H. Thompson, Private, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

The average temperature of the month at twenty-six stations, with back records for comparison, shows an excess of 3.5, the excess being greatest in the Northern States. The excess of precipitation at thirty-four stations averages 1.08, and gives 10.82 as the excess for the five months, August to December.

Summary.

Temperature.—Monthly mean, 30.3 (100 stations); highest monthly mean, 37.5, at Nantucket; lowest monthly mean, 22.6, at Berlin Falls; maximum, 69, at North Conway, 26th; minimum, —15, at Berlin Falls, 22d; range for New England, 84; greatest local monthly range, 76, at West Milan; least local monthly range, 40, at Nantucket; greatest daily range, 52, at Berlin Mills, 24th; least daily range, 0, at Calais, 18th, Woonsocket, 16th.

Precipitation.—Average for New England, 4.46 (124 stations); greatest, 7.26, at Saint John; least, 1.23, at Block Island.

Wind.—Prevailing direction, northwest (18 stations).—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; Park Morrill, Sergeant, Signal Corps, assistant.*

NEW JERSEY.

The mean temperature for December, 1888, is 2.4 above the average determined from past records of forty-eight stations. The warmest days during the month were the 5th, 17th, 25th, 26th, and 27th, and the coldest, the 21st, 22d, and 23d. The lowest temperature recorded in the northern portion of the state was 5; in the central, 7; and in the southern, 15. The average precipitation for the state is 0.07 above the average determined from past records of forty-eight stations.

Summary.

Temperature.—Monthly mean, 34.9; highest monthly mean, 40.4, at Cape May C. H.; lowest monthly mean, 31.6, at Hanover; maximum, 66, at Trenton, 17th; minimum, 5, at Hanover, on the 22d; range for state, 61; greatest local monthly range, 56, at Trenton and Tenafly; least local monthly range, 38, at Ocean City; greatest daily range, 40, at Tenafly, 5th; least daily range, 0.2, at Egg Harbor City, 18th.

Precipitation.—Average for the state, 3.69; greatest, 4.95, at South Orange; least, 2.05, at Clayton.

Wind.—Prevailing direction, northwest.—*Prof. George H. Cook, New Brunswick, director; E. W. McGann, Sergeant, Signal Corps, assistant.*

NEW YORK.

Summary.

Temperature.—The highest temperature for the month was 66, at Middleburgh, 27th, and the lowest was —17.5, at Canton, 22d. The mean temperature for the entire state was 29.6, the 26th being the hottest day, and the 22d the coldest. The temperature was above the normal at all stations, excepting at Oswego, where it was equal to the average monthly record of December during the past eighteen years.

Precipitation.—The average for the state was 3.09; the rainfall ranged from 3.09 above the average for December, at Boyd's Corners, to 1.60 below the average, at North Hammond. The greatest daily rainfall, 4.42, occurred at Boyd's Corners, 18th. The average number of days on which the precipitation was .01 or more inches of rain or melted snow was eleven. A thunderstorm was reported on the 16th at Queensbury and Wedgewood.

Wind.—Prevailing direction, northwest.—*Prof. E. A. Furtess, Ithaca, director; I. W. Brewer, Private, Signal Corps, assistant.*

NORTH CAROLINA.

Summary.

Temperature.—Monthly mean, 41.8; highest monthly mean, 46.5, at Kitty Hawk; lowest monthly mean, 37.2, at Knoxville, Tenn.; maximum, 72, at Kitty Hawk, 9th; minimum, 15, at Mount Pleasant and Lenoir, 21st; range for state, 57; mean monthly range, 48.3; mean daily range, 18.2; greatest mean daily range, 24, at New Berne; least mean daily range, 10.6, at Hatteras; highest monthly range, 52.5, at Mount Pleasant; lowest monthly range, 29.4, at Hatteras.

Precipitation.—Average for the state, 3.74; greatest monthly rainfall, 7.40, at Chapel Hill; least monthly, 1.90, at Knoxville, Tenn.

Wind.—Prevailing direction, northwest.—*Dr. Herbert B. Battle, Raleigh, director; H. McP. Baldwin, Sergeant, Signal Corps, assistant.*

OHIO.

Summary.

Temperature.—The mean temperature of the northern section was 32.3; of the middle section, 33.1; of the southern section, 34.5; and of the state, 33.8. These means are 3.0, 3.3, 1.7, and 2.7 above the seven years averages of the sections and state. The maximum temperature recorded was 62.5 at Portsmouth, 26th, and the minimum, 1.0, at Jefferson, 22d. The greatest daily range was 38.0 at Quaker City, 25th, and the lowest, 2.6, at Cincinnati, 1st. This was the warmest December since the opening of the bureau.

Precipitation.—The mean rainfall in the northern section was 1.57; in the middle section, 1.65; in the southern section, 1.20; and in the state, 1.47. These means are 0.74, 0.97, 1.50, and 1.07 below the averages for the sections and state. Less rain fell than in any previous December, the principal deficiency being in the southern section, where the rainfall was less than one-half the usual amount. The greatest monthly rainfall was 2.69 at Jefferson, and the least, 0.75, at Springborough.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Private, Signal Corps, assistant.*

PENNSYLVANIA.

Summary.

Temperature.—The mean temperature for December, determined from the tri-daily observations, was 32.6, which is slightly above the normal. The mean daily maximum and minimum, 40 and 25, respectively, give a monthly mean of 32.5. The highest temperatures reported were Pittsburgh, 62.1; Tionesta, 62; Meadville, 61, and Philadelphia, 61. The lowest were Columbus, —10; Clarion, —9, and Greenville, —4. The warmest period of the month was on the 26th, and the coldest on the 22d.

Precipitation.—The average rainfall, 3.14, is slightly above the normal. Some deficiencies occurred in the western part of the state. Most of the eastern counties received an excess. More than half of the monthly total for the middle and eastern parts of the state fell on the 17th, causing freshets. Flurries of snow were frequent. Many stations report only a "trace." The greatest totals for the month are: Meadville, 21; Eagle's Mere, 20; Wellsborough, 13; Tionesta, 13; Girardville, 11; Somerset 7; Uniontown, 7, and Columbus 6. All of the snow melted rapidly and none remained on the ground at the end of the month.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant, in charge.*

SOUTH CAROLINA.

Summary.

Temperature.—Mean for the state, 42.7; highest monthly mean, 50.5, at Timmonsville; lowest monthly mean, 38.5, at Cedar Springs; maximum, 71, at Aiken, 26th; minimum, 13, at Cedar Springs, 21st; range for the state, 58.

Precipitation.—Mean depth of rainfall for the state, 3.56; greatest, 5.12, at Brewer's Mines; least, 2.12, at Charleston; greatest daily rainfall, at Brewer's Mines, 2.68; average number of rainy days, 6.7, against 9.7 for December, 1887.—*Hon. A. P. Butler, Columbia, director; H. C. Seymour, Private, Signal Corps, assistant.*

TENNESSEE.

The meteorological conditions of December were marked by no special features except, perhaps, the small amount of rainfall and the total absence of any electrical disturbance—not a single thunder-storm being reported.

Summary.

Temperature.—The mean temperature was 39.6, about the December mean for the past six years. The highest local mean was 43, at Savannah, and the lowest, 36.8, at Greenville. The highest temperature was 70, on the 8th at Savannah, and on the 25th at Franklin, and was the lowest maximum observed in December during the past six years except that of 1887, which was 65, the highest being 78, in 1883. The lowest temperature observed was 9, on the 20th at Fostoria, and was several degrees above the average December minimum. The highest temperature was recorded at most of the stations on the 25th, and the lowest on the 20th and 21st in the eastern division, and on the 20th at all the stations in the other divisions. The ranges of temperature were about the average for the month. There were four cold wave warnings received during the month, viz., 16th to 17th, 24th to 25th, 26th to 27th, and 31st; all of which were verified except that of the 24th to 25th, with the usual benefits to farmers, gardeners, stockmen, and merchants.

Precipitation.—The mean precipitation for the month was only 1.78, more than 2.00 less than the December mean of the past six years. A small portion of this was in snow and sleet. Of the amount recorded the eastern and middle divisions received an average of 1.75, and the western division about 2.00. Most of the amount fell on the 9th, 16th, 26th, and 31st, the last being the day of the greatest rainfall during the month. It is a coincidence worthy of note that the corresponding day of the month in the year previous showed the greatest rainfall, but on that day an average of 1.60 fell throughout the state, nearly as much as the average for the entire month of December of 1888. The greatest monthly rainfall at any station was 3.50, at Covington, which station showed also the greatest rainfall in twenty-four hours, 1.50, on the 15th. The least local monthly rainfall was 0.60, at McKenzie. Except on the four days above mentioned the rains were very light. There were ten days reported without measurable rainfall. Snows were variously reported on nine days; at many of the stations the fall was not sufficient to measure, and it remained on the ground but a few hours. The greatest depth reported was 3.60, at Greenville.

Wind.—Prevailing direction, northwest.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.*

TEXAS.

The features of the month were the mild character of the weather and the slight excess in precipitation reported in the northern and central counties. In the southern and southwestern counties there was less than the usual

amount of precipitation. The rainy periods were the 7th and 8th, 14th and 15th, 25th and 26th, and 28th to 31st. Snow did not occur except in some of the northwestern counties, and the amount did not exceed one-half inch.

Summary.

Temperature.—The average temperature, 51.7, was considerably above the seasonal average, and 2.5 lower than the average of last month. The mean of maximum temperatures was 60.4, and of minimum temperatures, 42.9; maximum, 84.2, at Rio Grande City, 15th; minimum, 19.4, at Fort Elliott, 30th; absolute range of temperature, 64.8; greatest monthly range, 52.6, at Fort Elliott; least monthly range, 26.8, at Brownwood; average range, 41.5

Precipitation.—Average for the state, 3.43; greatest amount of precipitation in any consecutive twenty-four hours, 3.49, at Brazoria, 30th; greatest monthly precipitation, 7.57, Palestine; least monthly precipitation, 0.50, at El Paso.—S. O. Young, M. D., Galveston, director; Allen Buell, Sergeant, Signal Corps, assistant.

Meteorological record of voluntary observers and Army post surgeons, November, 1888.

The maximum and minimum temperatures at stations marked thus (*) are from readings of other than standard instruments.

Table with columns for Stations, Temperature (Fahrenheit) (Max, Min, Mean), and Precip'n. Includes entries for Alabama, California, Arizona, Arkansas, British Columbia, and California.

Meteorological record of voluntary observers, &c.—Continued.

Table with columns for Stations, Temperature (Fahrenheit) (Max, Min, Mean), and Precip'n. Includes entries for California, Dakota, and various other locations.