

Cranes flying northward.—Pretty Prairie, Kansas, 6th; Indianola, Iowa, 2d, 8th; Guttenburg, Iowa, 8th; Palermo, New York, first appearance, 7th. *Flying southward.*—Wicklow, Dakota, 18th, 20th.

NOTES AND EXTRACTS.

The following extract is taken from the report of the Illinois Meteorological Service:

SEASON.

April was a cold and, in many portions of the state, a dry month. Vegetation made but little growth during the past month, and is three weeks behind average seasons.

The cool weather has been favorable for work-animals, and the labor of seeding is well advanced.

TEMPERATURE.

The mean temperature of April for six years in the several divisions of the state is as follows:

Division.	1878.	1879.	1880.	1881.	1882.	1883.
Northern	53.00	46.00	49.00	40.80	48.55	48.13
Central	58.00	51.00	52.00	45.20	53.44	53.18
Southern	60.00	55.00	57.00	53.30	58.55	57.40
Average	57.00	51.00	53.00	46.43	53.51	52.90

It will be seen from the foregoing table that the mean temperature of the past month is lower than that for April, 1882.

With the exception of April, 1879, and 1881, the past month was the coldest April since 1877 in the northern division of the state.

The mean temperature from January 1st to April 30th, 1883, was lower than for corresponding months in the preceding five years in this division.

The mean temperature in 1878, 1880, and 1882, to April 30th, was about 10° warmer than for the corresponding period of the present year in the northern portion of the state.

In April, 1883, the mean temperature in the central counties was lower than in April 1878 and 1882, and higher than for the same month in 1879, 1880, and 1881.

The mean temperature for the first four months in 1883, with the exception of the same period in 1881, is lower in the central portion of the state than for the corresponding period in any year since 1877.

The mean temperature for April, 1883, in the southern division of the state was lower than in April, 1878 and 1882, and higher than for the same month in 1879, 1880, and 1881.

From January 1st to April 30th, 1883, the mean temperature in the southern counties was lower than for any like period since 1877, with the exception of 1881.

RAINFALL.

The average monthly rainfall, including melted snow, for the past six Aprils, is as follows:

Division.	1878.	1879.	1880.	1881.	1882.	1883.
Northern	3.72	2.13	4.29	1.81	4.55	3.26
Central	3.63	1.99	4.29	1.89	4.14	4.66
Southern	5.20	2.41	3.22	4.11	2.84	4.59
Average	4.18	2.18	3.93	2.60	3.84	4.17

The mean precipitation for the state in April, 1883, of 4.17 inches, exceeds that of the same month in any year since 1878.

The precipitation in the northern counties for April, 1883, of 3.26 inches, is less than the rainfall of corresponding month in 1878, 1880, and 1882.

The average monthly precipitation in these (the northern) counties for the first four months of 1883, of 2.57 inches, is less than that of the corresponding period since 1879.

The rainfall in April, 1883, of 4.66 inches in the central counties largely exceeds that of the same month since 1877.

The average monthly rainfall in the central division from January 1st to April 30th, 1883, was 3.45 inches—the lowest average for a like period for the past six years, with the exception of the corresponding months of 1881 and 1882.

The rainfall in the southern portion of the state in April, 1883, of 4.59 inches, largely exceeds that of any corresponding month since 1878.

The average monthly rainfall of 4.43 inches for the first four months of 1883, is more than for a like period since 1877, with the exception of 1882.

Dr. Gustavus Hinrichs, Director of the Iowa Weather Service, has forwarded an advance proof of his interesting report for the month of April, 1881, which is as follows:

IOWA WEATHER BULLETIN, FOR APRIL, 1883.

April, 1883, was rather warm, but otherwise nearly normal. The mean temperature of the air was not quite two degrees above normal; the middle decade being seven degrees above, and the last decade being two and a half degrees below normal.

The amount of precipitation was nearly normal, diminishing from over three inches in the southeast and the lower Des Moines valley, to but little over one inch in the northeast and the northwest. The principal days with precipitation were the 4th and 5th, the 13th and 14th, and the 22d. But very little snow fell. The month was more windy than usual, the total run of the wind exceeding the normal value nearly twenty per cent. Our state was almost free from whirlwinds during April; only a very limited tornado ran up the Maple river valley on the evening of the 22d, the date of the exceedingly destructive whirlwind of Beauregard and Wesson in Mississippi.

During the severe thunder-storms of the 4th, 13th, and 22d hail has fallen and lightning has done damage to buildings, stacks, and stock.

Halos were seen, especially from the 17th to the 19th, preceding the cold weather of the last decade. The zodiacal light was observed but a few times. The northern light was very generally observed on the 24th throughout the eastern half of Iowa, and was also seen on the 19th.

On the whole, the weather during April has been remarkably favorable for all farm and garden work, and our spring is making promise of a fruitful year. May is probably going to be normal or somewhat below, and the summer promises to be a warm one; if these indications shall be realized, the harvest will be abundant.

GUSTAVUS HINRICH.

CENTRAL STATION, I. W. S., May 7, 1883.

The damage to orchards is largely limited to the more treeless region of central Iowa; in many parts of the state the fruit-buds are quite healthy.

To prevent damage from late frosts, the twigs cut off in pruning should be heaped mainly at the corners of the orchard, and be set to burn so as to envelope the orchard in smoke on the approach of a cold night; so far as the smoke covers the bloom, no damage from frost will be sustained.

Severe night frosts may occur as as the 25th of May. They are especially to be looked for between the 10th and 15th, that is about the 12th. They are again to be feared about the 22d. If the 25th has been safely passed, the fruit bloom has escaped the most sweeping destruction to which it is liable.

Mr. W. Earle Cass, Director of the New Jersey Weather Service, has forwarded the following meteorological summary for the month of April 1883:

Stations.	Temperature.			Rainfall.
	Max.	Min.	Mean.	
Rockland Lake, New York.....	o	o	o	3.01
Cape May Point, New Jersey.....	62.5	29.0	48.1	4.69
Somerville, New Jersey.....	69.9	30.0	49.8	3.07
Atlantic City, New Jersey.....	63.0	27.0	45.5	4.31
Sandy Hook, New Jersey.....	68.0	27.0	46.6	5.79
Newton, New Jersey.....	70.2	19.8	47.6	3.93
New York City, New York.....	70.0	26.5	46.6	3.82
Port Jervis, New York.....	65.0	23.0	44.2	3.87
New Brunswick, New Jersey.....	68.0	24.5	45.5	4.53
Lambertville, New Jersey.....	.....	.....	.....	2.81
Newark, New Jersey.....	71.0	23.5	47.6	4.64
Barnegat City, New Jersey.....	61.3	32.0	46.0	3.93
Fallsburg, Pennsylvania.....	72.0	32.0	48.3	3.88
Belvidere, New Jersey.....	.....	.....	.....	2.79
Princeton, New Jersey.....	67.8	22.3	46.2	2.46
Philadelphia, Pennsylvania.....	72.0	27.0	50.0	2.44
Vinland, New Jersey.....	80.0	26.0	49.2	3.96
Caldwell, New Jersey.....	.....	.....	.....	5.38
Freshhold, New Jersey.....	70.0	24.0	44.9	3.98
Atlantic City, New Jersey.....	61.0	11.0	35.0	3.09

The Missouri Weather Service, under direction of Professor Francis E. Nipher, has issued the following report for April, 1883:

MISSOURI WEATHER SERVICE; APRIL, 1883.

The average temperature of April has been 56° 7 at Saint Louis, which is about half a degree above the normal of Englemann's series. Since 1837 the mean April temperature has once reached 66° 8—in 1844—and in 1857 it fell to 44° 1, a range of 22° 7. The extremes during the last month have been 32° 2, on the 24th, and 85° 6, on the 14th, which are very ordinary temperatures. In April, 1857, the lowest daily minimum was 18° 0; while in the years 1838, 1843, and 1855 the highest maximum reached was 93° 0.

In the state, the maximum temperature has been the highest in the central part, Glasgow reporting 93° 0. Miami 92° 0; while at Cairo, Illinois, the highest temperature reached was 84° 5, that at Keokuk being 85° 0. The lowest minimum reported was 22° 0 at Centreville, and twelve stations out of twenty-one reported the minimum as 32° 0, or below.

The rainfall at the central station has been 2.62 inches, the normal rainfall being 3.70 inches. At the Saint Louis water-works, however, the rainfall has been 3.87 inches.

The rainfall has been heaviest, or more than 5.00 inches, in the extreme southeastern part of the state. In the central western part, and in a narrow belt extending therefrom to Macon and Shelby, the fall has been less than 1.00 inch, while in the north the fall has been over 2.00 inches.

At 4.00 p. m., on the 14th, a severe local storm, which was apparently an incipient tornado, did considerable damage at Hannibal. Its track was about three hundred feet wide. Similar storms with hail were observed seven miles west and ten miles north of Mexico. A small tornado having

a width of fifty to seventy feet passed through the western part of Pleasant Hill between 7.30 and 8 a. m. A portion of a rail-fence was carried eight feet and set down without materially changing the relative positions of the rails.

In the dry area of the past month, where ice-crust did damage to the wheat during the winter, additional damage has been done by the drought and high winds of the past month. At Savannah not over one-tenth of a crop is left, and farmers are planting the ground in corn. Meadow is also light. In the southeastern part, however, the plentiful rains have repaired to some extent the damage done to wheat, and it is turning out better than was expected.

Thus far the fruit crop has not been materially injured by frost, the cool and uniform temperature having been very favorable.

FRANCIS E. NIPHER, Director

WASHINGTON UNIVERSITY, May 5, 1883.

The Ohio Meteorological Bureau, Professor T. C. Mendenhall, Director, has, through the co-operation of the Cleveland, Akron and Columbus Railroad Company, introduced a system of railway weather signals, by which the weather conditions, as predicted by the United States Signal Service, are shown from the sides of the baggage cars of the mail trains. This

system of weather forecasts was successfully operated during April, over eighty-five per cent. of the predictions being verified.

The following is an explanation of the signals used:

The signal will consist of two figures which differ in color, being red or blue, and in form, being shaped like the sun, the moon, or a star.

The red color has to do with the temperature, and the blue with the state of the weather, as rainfall or snow; they are used as below:

Red.—Sun, higher temperature; moon, lower temperature; star, stationary temperature.

Blue.—Sun, general rain or snow; moon, clear or fair weather; star, local rain or snow.

By "higher" or "lower" temperature is meant that the temperature at any hour of the day may be expected to be higher or lower than it was at the same hour the previous day; and by "stationary" temperature, that it will vary more than three or four degrees from the record of the day before.

"Local" rains are such that are likely to occur at one or more points along the line, but will not probably be "general." Local rains are not generally of long duration.

Professor Mendenhall furnishes the following meteorological summary for April, 1883:

Report of the Ohio meteorological bureau. Summary for the month of April, 1883.

Numbers.	Stations	Counties.	Mean barometer.	Highest barometer.	Day of month.	Lowest barometer.	Day of month.	Range of barometer.	Mean relative humidity.	Mean temperature.	Highest temperature.	Day of month.	Lowest temperature.	Day of month.	Range of temperature.	Mean daily range of temperature.	Greatest daily range of temperature.	Day of month.	Least daily range of temperature.	Day of month.	Number of clear days.	Number of fair days.	Number of cloudy days.	Days on which rain or snow fell.	Total rainfall for month.	Average daily rainfall.	Direction of wind.
1	Cincinnati	Hamilton	29.996	30.368	3	29.516	23	.852	66.6	55.1	83.0	14	32.0	1	51.0	17.2	0	4	6.0	2	8	12	10	15	3.72	.124	ne.
3	Dayton	Montgomery	30.017	30.382	3	29.670	23	.712	72.4	50.4	85.2	14	25.2	2	58.0	20.1	30.8	17	7.5	1	9	11	10	11	2.28	.076	ne.
4A	Lima	Allen	30.058	30.348	3	29.763	10	.565	82.7	48.4	84.0	14	19.0	2	65.0	27.3	42.0	29	12.5	23	13	11	6	7	2.81	.094	sw.
4B	Sidney	Shelby	30.058	30.348	3	29.763	10	.565	82.7	49.8	87.0	14	20.0	2	67.0	25.2	42.5	17	8.0	22	8	12	10	12	3.30	.110	sw.
5	Up'r Sandusky	Wyandot	30.033	30.380	3	29.770	23	.610	69.0	48.8	84.0	14	22.0	2	62.0	19.9	39.0	14	6.0	6	11	9	10	8	3.29	.110	sw.
6	Wauseon	Fulton	29.970	30.280	3	29.600	11	.680	72.8	45.2	84.5	14	17.8	2	66.7	24.1	40.7	14	10.6	1	9	12	9	13	1.63	.054	sw.
7	Lebanon	Warren	29.970	30.280	3	29.600	11	.680	72.8	45.2	84.5	14	17.8	2	66.7	24.1	40.7	14	10.6	1	9	12	9	13	1.63	.054	sw.
8	N. Lewisburg	Champaign	29.970	30.280	3	29.600	11	.680	72.8	45.2	84.5	14	17.8	2	66.7	24.1	40.7	14	10.6	1	9	12	9	13	1.63	.054	sw.
9	Levering	Knox	29.970	30.280	3	29.600	11	.680	72.8	45.2	84.5	14	17.8	2	66.7	24.1	40.7	14	10.6	1	9	12	9	13	1.63	.054	sw.
10	Toledo	Lucas	29.972	30.262	4	29.578	11	.684	58.3	47.4	80.0	14	20.5	2	59.5	17.4	36.0	14	8.0	1	6	16	8	11	1.57	.052	s.
11	Ironton	Lawrence	29.991	30.363	3	29.564	23	.799	68.5	49.0	86.6	14	24.0	2	62.6	24.9	41.4	17	10.0	5	10	6	14	12	4.03	.134	nw.
12A	Washington	Fayette	29.991	30.363	3	29.564	23	.799	68.5	49.0	86.6	14	24.0	2	62.6	24.9	41.4	17	10.0	5	10	6	14	12	4.03	.134	nw.
12B	Buchanan	Pike	29.984	30.306	3	29.599	23	.707	62.6	50.4	86.0	14	26.0	2	60.0	19.3	32.0	17	10.0	1	10	8	12	12	2.85	.095	ne.
13A	Columbus	Franklin	29.984	30.306	3	29.599	23	.707	62.6	50.4	86.0	14	26.0	2	60.0	19.3	32.0	17	10.0	1	10	8	12	12	2.85	.095	ne.
13B	O. S. University	Franklin	29.984	30.306	3	29.599	23	.707	62.6	50.4	86.0	14	26.0	2	60.0	19.3	32.0	17	10.0	1	10	8	12	12	2.85	.095	ne.
13C	Westerville	Franklin	29.998	30.338	3	29.630	23	.708	78.9	48.0	85.0	14	33.0	2	62.0	20.4	33.5	18	10.0	1	9	10	11	9	2.65	.088	s.
14	Oberlin	Lorain	30.045	30.346	3	29.662	23	.684	79.0	45.6	90.0	14	15.0	3	75.0	24.1	51.0	18	9.0	7	5	15	10	9	1.86	.062	n.
15	Marietta	Washington	30.023	30.379	3	29.614	23	.765	76.0	50.9	88.2	14	29.6	24	58.6	23.6	39.4	13	10.3	2	5	13	12	9	4.77	.159	nw.
16	Granville	Licking	30.023	30.379	3	29.614	23	.765	76.0	50.9	88.2	14	29.6	24	58.6	23.6	39.4	13	10.3	2	5	13	12	9	4.77	.159	nw.
17	Quaker City	Guernsey	30.014	30.341	3	29.618	11	.723	71.8	46.2	85.0	14	24.0	1	60.0	22.3	40.0	17	10.0	2	11	9	10	11	4.56	.152	w.
18	Canon	Stark	30.014	30.341	3	29.618	11	.723	71.8	46.2	85.0	14	24.0	1	60.0	22.3	40.0	17	10.0	2	11	9	10	11	4.56	.152	w.
19	Warren	Trumbull	30.031	30.361	3	29.654	11	.707	76.0	44.0	85.0	14	20.1	2	64.9	20.0	33.8	17	5.5	25	7	12	11	10	2.04	.068	sw.
20	Wooster	Wayne	29.992	30.271	3	29.601	11	.670	64.7	44.8	85.0	14	20.0	2	65.0	18.6	33.5	23	7.0	7	4	11	15	12	2.01	.070	ne.
21A	Cleveland	Cuyahoga	29.992	30.271	3	29.601	11	.670	64.7	44.8	85.0	14	20.0	2	65.0	18.6	33.5	23	7.0	7	4	11	15	12	2.01	.070	ne.
21B	Cleveland	Cuyahoga	29.992	30.271	3	29.601	11	.670	64.7	44.8	85.0	14	20.0	2	65.0	18.6	33.5	23	7.0	7	4	11	15	12	2.01	.070	ne.
	State		30.009	30.382	3	29.516	23	.866	71.5	48.1	90.0	14	15.0	3	75.0	21.5	42.8	17	5.0	7	8.4	11.6	10.0	11.0	3.06	.102	sw.

NOTE.—The means are computed only from station reports covering the entire month, and whose instruments have been compared with standards.

Mr. A. J. McWhirter, Commissioner of Agriculture, Statistics, and Mines for the state of Tennessee, in his report for April, 1883, publishes the following meteorological summary:

SUMMARY OF WEATHER REPORT FOR APRIL, 1883.

- Mean temperature, 59°.
- Highest temperature, 92°, on the 14th, at Murfreesborough.
- Lowest temperature, 20°, on the 16th, at Cedar Ridge.
- Range of temperature, 72°.
- Mean daily range of temperature, 24°.
- Greatest daily range of temperature, 41°, on the 17th, at Savannah.
- Least daily range of temperature, 2°, on the 9th, at Benton and Grassy Cove.
- Mean depth of rain or melted snow, 6.89 inches.
- Greatest depth of rain or melted snow, 10.7 inches, at Waverly.
- Least depth of rain or melted snow, 4.91 inches, at Alexandria.
- Average number of clear days, 10.
- Average number of fair days, 9.
- Average number of cloudy days, 11.
- Average number of days on which rain or snow fell, 9.
- Prevailing direction of the wind, south.

In submitting his report, Mr. McWhirter says:

The accompanying report compiled from observations made at thirty-seven different stations throughout the state, embracing all the different altitudes and climates, from the mountains in the east to the lowlands along the Mississippi. It is necessarily incomplete, as many of the observers have not yet

been fully equipped with the necessary instruments and apparatus for accurate observations, but it is perhaps as nearly correct as practicable under the circumstances.

The following summary has been forwarded by S. R. Thompson, Director of the "Nebraska Weather Service":

NEBRASKA WEATHER-SERVICE BULLETIN FOR APRIL, 1883.

The weather for the month was a trifle warmer than usual, while the rainfall was normal.

Rainfall.—The rainfall by sections was as follows: southeast, 1.57 inches; northeast, 1.86 inches; southwest, 3.97 inches; northwest, 2.39 inches. Average for the entire state, 2.44 inches.

Temperature.—The mean temperature of the air was 52.8. The average of all noon observations was 59.7. The following were some of the maximum and minimum temperatures:

Omaha, max., 88.2; min., 32.0. North Platte, max., 79.3; min., 21.0. De Soto, max., 95.0; min., 30.0. Agricultural college, max., 91.0; min., 26.0.

Relative humidity.—Omaha, max., 77.0; min., 35; mean, 57.0. North Platte, mean, 64.9. De Soto, mean 63.4. Agricultural College, 61.3.

Wind.—Miles traveled: Omaha, 8,015; North Platte, 9,256. Prevailing direction: Omaha, southeast; North Platte, Northeast; Agricultural College, east.

Greatest velocity: Omaha, 35 miles, northwest; North Platte, 52 miles, southeast; Agricultural College, 50 miles.

Miscellaneous.—Snow covered the ground at Minden on the 24th. Killdees seen on 2d at Red Willow. Martins and Killdees on 3d at Genoa. Lunar halos on 11th and 19th at Agricultural College, and solar halos on 15th and 19th.

Miss Kate McKenzie, of Peru, reports that hailstones one inch in diameter fell on the 13th. "The voice of the turtle was heard in the land" first, on the 3d, at Crete.

Most observers report a very backward season. Nearly all observers report early apples, cherries, and plums in bloom, toward the latter part of the month.

Correction.—In the March bulletin, noon temperature 42°, at Central City, was reported as daily mean temperature, which was 31.5°.

The State Weather Service of Michigan, is under the direction of Dr. H. B. Baker, Secretary of the Michigan State Board of Health. The observers of this service, twenty in number, forward their reports direct to the Office of the Chief Signal Officer, for use in the preparation of the MONTHLY WEATHER REVIEW. They also furnish reports to Dr. Baker, who is carefully studying the influence of climatic conditions in their relation to the health statistics of Michigan. An extract from

Dr. Baker's annual report, published under "Notes and Extracts" in the REVIEW, for December, 1882, will clearly show the importance of this work.

Professor J. T. Lovewell, of Washburn College, Topeka, Kansas, is now engaged in organizing a weather service for that state.

ERRATA.

On page 56 of the March REVIEW, under the heading "North Atlantic Storms, &c," the following corrections should be made:

Low-area ii., tenth line, ranging from 2.69, should read 29.6.

Low-area iv., fifth line, vessels to the westward of the sixteenth meridian, &c., should read, vessels to the westward of the sixtieth meridian.