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BULLETIN NO. 18.

NEW SERIES.

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# Agricultural Experiment Station,

OF THE


## Agricultural and Mechanical College,

AUBURN, ALA. - - - - - AUGUST, 1890.

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### CLIMATOLOGY OF ALABAMA.

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 The Bulletins of this Station will be sent Free to any citizen of the State, on application to the Director.

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# CLIMATOLOGY OF ALABAMA.

[Compiled from Meteorological Observations taken from 1811 to 1890, including General Phenomena from 1711 to 1890.]

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P. H. MELL.

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## METEOROLOGICAL RECORDS AVAILABLE.

The earliest systematic work of collecting meteorological data in Alabama was under the auspices of the Smithsonian Institute, about forty years ago. Prior to that time a few observers reported at irregular intervals to some of the agricultural journals the reading of thermometers and rain gauges, and in many issues of the papers of that early time frequent references were made concerning the general conditions of the weather and the effects produced on the crops. In the preparation of this bulletin careful examination has been made of the following publications, from which much valuable data have been collected :

Southern Cultivator, Soil of the South, Country Gentleman, Farm and Home, Southern Field and Fireside, Smithsonian Institute publications, Patent Office Reports, Signal Service Reports and Bulletins of the Alabama Weather Service.

## HISTORY OF THE WEATHER WORK IN ALABAMA.

Great credit is due Prof. Joseph Henry, late Secretary of the Smithsonian Institute, for the encouragement he extended to meteorological observers before the signal service assumed charge of the system. His earnest pen and liberal use of the means at his disposal for many years, kept up a more or less regular series of observations, compilations of which were published from year to year in the Patent Office Reports and Transactions of the Smithsonian Institute. In 1870 when the entire system was transferred to the chief signal officer he established two stations in the

State, one at Mobile and the other at Montgomery, that were placed in charge of signal service men. Until 1880 these two stations were the only regularly organized services that existed in the State. In 1880, however, the chief signal officer placed a set of maximum and minimum thermometers and rain gauges at a number of railroad depots in charge of the agents, who were compensated to keep up regular observations during the crop seasons, and telegraph the same to the central stations at Mobile and Montgomery for the benefit of farming and commercial interests. A number of voluntary observers kept up their work and sent year after year monthly reports to the chief signal officer. In February, 1881, a meteorological station was established at Auburn by the authorities of the Alabama Polytechnic Institute. In 1884, by the solicitation of the chief signal officer, Auburn was made the central station of the Alabama Weather Service; and in March of that year a bulletin was issued containing data from twenty-two voluntary observers. In a few months the number of observers was increased to forty-five. From that date until the present time the State service has been in successful operation, and much valuable material has been collected through the patient and constant service of these earnest observers.

During the first two years there were many difficulties to contend with in placing the service on a firm basis; and doubts were frequently entertained by outside parties whether the service would last very long. There was no money with which to pay the expenses of publication of bulletins and to purchase the necessary instruments for the use of observers. Immediately upon the organization of the service the State Commissioner of Agriculture was urged by the Director to receive the manuscript of the bulletins each month and publish them as part of the transactions of the Department. This he finally consented to do. This trouble having been surmounted the effort was now made to secure first-class and uniform instruments for the stations. This was not successfully accomplished until the chief signal officer in 1888 kindly consented to lend to the State a sufficient number of maximum and minimum ther-

ometers, exposed thermometers and rain gauges to equip one station in each county. Up to this time observers furnished their own instruments.

In February, 1885, the Commissioner of Agriculture withdrew his support, and the publication of the bulletins was transferred to the printing office of the College by the special enactment of the Board of Trustees. At the present time the system is on most excellent footing and is doing most efficient service to the people of the State.





A bulletin is issued at the end of each month and special weekly bulletins, during the crop seasons, on Saturday mornings indicating the effects of the weather on the crops. At irregular periods special bulletins have been issued upon some meteorological subject, written by experts. In the reports that have been sent to the central station during the past five years we find not simply dry figures, but they also include much that is interesting concerning the planting and reaping of crops; the occurrence of frosts and damages resulting from floods; much concerning the health of the people of the State affected by sudden changes of the atmosphere; the passage of cold waves; flight of birds; ravages of insects and great storms.

Alabama has the honor of inventing the present system of signals for indicating the changes of the weather twenty-four to forty-eight hours in advance. This system was first introduced in the State in September, 1884, a year or more before it was finally adopted by the chief signal officer for the entire United States. The cold wave flag did not belong to the Alabama system; it was taken from the system in use by the chief signal officer at the time.

The flags adopted for this purpose are four in number, and are of the form and dimensions indicated on following page, (8):

CIRCULAR.  
Alabama Weather Service,  
AUBURN, ALABAMA.

EXPLANATION OF SIGNALS.

No. 1 . White Flag.	No. 2. Blue Flag.	No. 3. Black Triangu- lar Flag.	No. 4. White Flag with black square in centre.
			
Clear or fair weather.	Rain or snow.	Temperature signal.	Cold wave.

Number 1, white flag, six feet square, indicates clear or fair weather. Number 2, blue flag, six feet square, indicates rain or snow. Number 3, black, triangular flag, four feet at the base and six feet in length, always refers to temperature; when placed above numbers 1 or 2 it indicates warmer weather; when placed below numbers 1 or 2 it indicates colder weather; when not displayed, the indications are that the temperature will remain stationary, or that the change in temperature will not vary four degrees from the temperature of the same hour of the preceding day. Number 4, white flag, six feet square, with black square in centre, indicates the approach of a *sudden* and *decided* fall in temperature. This signal is not to be displayed unless it is expected that the temperature will fall to forty-five degrees, or lower, and is usually ordered at least twenty-four hours in advance of the cold wave. When Number 4 is displayed, Number 3 is always omitted,

When displayed on poles the signals should be arranged to read downward; when displayed from horizontal supports a small streamer should be attached to indicate the point from which the signals are to be read.

INTERPRETATION OF DISPLAYS.

- No. 1, alone, indicates fair weather, stationary temperature.
- No. 2, alone, indicates rain or snow, stationary temperature.
- No. 1, with No. 3 below it, indicates fair weather, colder.
- No. 2, with No. 3 above it, indicates warmer weather, rain or snow.
- No. 1, with No. 4 below it, indicates fair weather, cold wave.
- No. 3, with Nos. 1 and 2 below it, indicates warmer, fair weather, followed by rain or snow.

☞ Communications in reference to the display of signals and symbols should be addressed to

P. H. MELL, Director,  
AUBURN, ALA.



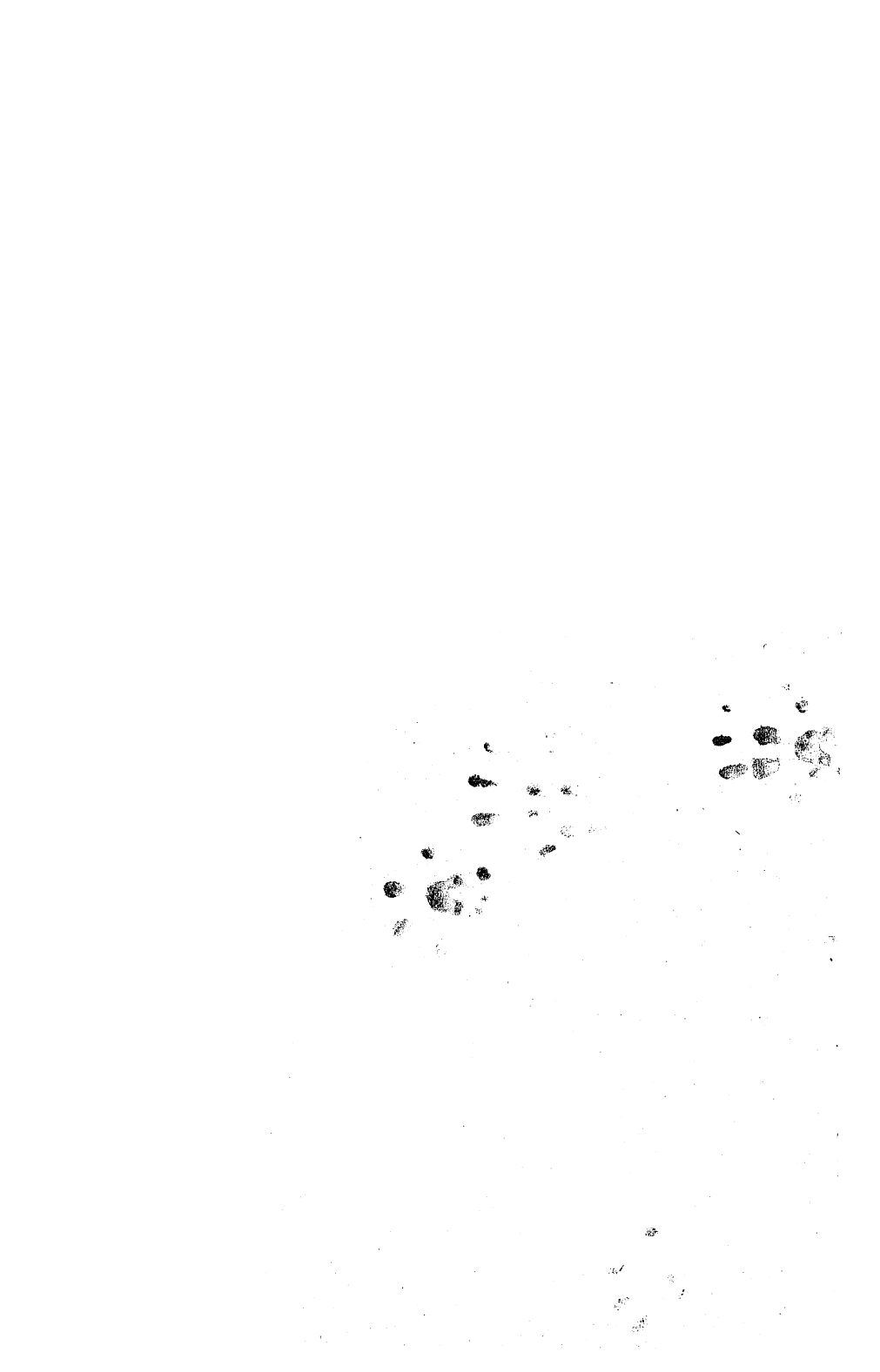


Table Exhibiting the History of Meteorological Work in Alabama.

COUNTY.	STATION.	Latitude.	Longitude	Elevation.	Date of Opening Station.	Date of Closing Station.	Character of Observations.	Names of Observers, and Authorities Reporting to.
Adams	Prattville	32°28'	86°29'	190	June, 1884	Jan. 1886	rainfall and temperature	Prof T J Lamar, J E Wilkinson, W F Mims, *S W S
Chilton	Fish River	30 23	87 51	17	Jan. 1867	Sept. 1868	temperature only, and broken	W. J. VanKirk, Smithsonian Institute.
"	Bon Secour	"	"	"	1866	1867	temperature	W. J. VanKirk, Smithsonian Institute.
"	Ft. Morgan	"	"	"	Jan. 1835	July, 1843	rainfall and temperature; broken	Smithsonian Institute.
Cherokee	Eufaula	31 55	85 3	"	Mar. 1884	Aug 1887.	rainfall, maximum & minim. temperature	Capt. R. F. Kolb, Jas. Milton, S. W. S.
Clay	Union Springs	32 8	86 36	450	Jan. 1886	Still open.	rainfall and temperature	J. L. Moultrie, C. H. Franklin, James Grady, S W S
Colbert	Greenville	31 50	86 36	450	April, 1882	Oct. 1887	rainfall, max. and min. temperature	Cotton Belt Station, Judge J. K. Henry, S. W. S.
Cook	Jacksonville	33 50	85 42	653	June, 1884	May, 1886	rainfall and temperature	Prof. J. G. Ryals, jr., Prof. J. H. Chapell, S. W. S.
Coosa	La Fayette	32 56	85 24	865	July, 1884	April, 1886	rainfall and temperature	Dr. W. B. Trent, Prof. G. O. Willet, S. W. S.
Crawford	Butler	32 5	88 12	"	Jan. 1889	Still open	rainfall, max and minimum temperature.	B. F. Gilder, S. W. S.
Crenshaw	Clanton	32 52	86 36	596	Mar. 1884	Sept. 1885	rainfall and temp; (dry-bulb)	W. E. Stewart, S. W. S.
Cullman	Centre	34 10	85 37	729	Jan. 1885	Still open	rainfall, max. and min. temp; (dry bulb).	Thos. Bradford, S. W. S.
Dale	Lineville	33 20	85 42	"	Jan. 1886	Aug. 1886	rainfall and temp, (dry bulb)	Prof. G. W. Stevens, Alexander Beck, S. W. S.
De Kalb	Edwardsville	33 44	85 29	"	Jan. 1884	Oct. 1885	rainfall and temp, (dry bulb)	Capt. J. M. K. Guinn, B. B. Bridges, S W S.
Etowah	Tuscumbia	34 40	87 42	468	April, 1882	Still open.	rainfall and dry bulb	Col. L. B. Thornton, S. W. S.
Franklin	Evergreen	31 25	87 45	"	May, 1884	Still open.	rainfall max and min. temperature	Cotton Belt Station.
Fayette	Wiggins	31 15	87 45	"	Mar. 1889	Still open	rainfall, max. and min. temperature.	M. D. Jones, S. W. S.
Genevieve	Luverne	31 45	86 20	"	June, 1889	Still open.	rainfall, max. and min. temperature.	J. O. Sentell, W. I. Fundaburk, S. W. S.
Greene	Clintonville	31 26	85 54	"	June, 1884	April, 1886	rainfall, temperature, (dry bulb)	R. A. Clements, S. W. S.
Jefferson	Newton	31 21	85 35	"	Mar. 1884	May, 1888	rainfall, max and min temperature	T F Mangum, jr., C L McCartha, C P Atkinson, O D
Lamar	Carlowville	32 10	87 15	400	June, 1856	Dec. 1874	rainfall and temperature, (dry bulb)	H. L. Allison, M. D., S. Inst. (Killebrew, S W S.
Lawrence	Selma	32 25	87 0"	236	Jan. 1858	Still open.	rainfall and temperature, broken.	S. K Jennings, C F Fahs, B H Riggs, Miss S V A Hunt,
Madison	Cahaba	32 22	87 10	"	3 months	in 1859	temperature and direction of wind.	Dr. Mathew Troy, S. Inst. [W D Dunlap, S W S.
Marion	Orrville	32 24	87 6	200	5 months	in 1859-60	rainfall and temperature.	Dr. S K Jennings, T A Huston, J A Coleman, S I.
Mobile	Valley Head	34 30	85 30	1058	June, 1885	Still open.	rainfall, max and min, dry bulb temp.	Dr. E. P. Nicholson, S. W. S.
Montgomery	Gadsden	34 2	86 2	"	May, 1884	Still open.	rainfall, max and min temperature	D. P. Goodhue, S. W. S.
Opelika	Wetumpka	32 33	86 2	"	June, 1884	Nov. 1885	rainfall, max and min temperature	M. E. Reese, S. W. S.
Polk	Fayette C. H	32 42	87 48	"	July, 1884	Still open.	rainfall max and min temp.	T. P. McConnell, Daniel Collier, S. W. S.
Shelby	Boligee	32 46	88 10	"	1860	"	rainfall and temperature, (dry bulb)	Col. Horace Harding, S. I.
St. Clair	Eutaw	32 46	87 54	"	1851	1852	rainfall and temperature, (dry bulb)	Prof. A. Winchell, S. I.
Tallapoosa	Knoxville	33 2	87 52	"	"	"	observations made on direction of wind.	Smithsonian Institute.

Erie	32 48	87 31	...	May, 1824	June, 1825	rainfall and temperature from dry bulb.	Dr. S. K. Jennings, Dr. T. C. Osborne, S. I.
Greensboro	32 42	87 35	220	Jan. 1855	Still open.	rainfall and dry bulb thermometer.	R B Waller, N T Lupton, J W A Wright, M H Yerby
Green Springs	32 47	87 46	250	Jan. 1854	July, 1885	rainfall, max & min tem, bar. humidity.	Dr. Henry Tutwiler, J. W. A. Wright, S. I. & S. W. S.
Havana	32 52	87 36	300	1853	Dec. 1869	rainfall and dry bulb temperature.	Dr. Henry Tutwiler, Dr. S. K. Jennings, S. I.
Newbern.	32 41	87 35	...	...	...	direction of the wind and cast of the sky.	Smithsonian Institute.
Scottsboro	34 45	85 58	...	April, 1882	Aug. 1889	rainfall max and min temperature	Cotton Belt Station.
Birmingham	33 32	86 37	600	Sept. 1884	Still open.	rainfall and dry bulb temperature	J. E. Waller, W. B. Summerville, C. B. S. and S. W. S.
Florence.	34 48	87 45	563	Jan. 1849	Still open.	rainfall dry bulb temperature	Prof. J. K. Powers, J. W. Milner, C. W. Ashcroft, S. W. S.
Moulton	34 27	87 25	643	1859	1868	rainfall, dry bulb, barom. relative humidity	Prof. J. Shackelford, A. J. Harris, T. J. Peters, A. D. Hunt
Auburn.	32 40	85 30	826	Jan. 1854	Still open.	rf. soil tem. m & m tem, bar. ter. & solar rad	Prof. Darby, P. H. Mell, H. Lamar, W. D. Dunlap, A. C.
Opelika.	32 38	85 25	...	Jan. 1867	Still open.	rainfall, max and min, dry bulb tem	J. H. Shields, Miss Shields, G. Lyons. [Dunstan.
Elkmont.	34 52	86 56	...	Feb. 1889	Still open.	rainfall, max and min temperature.	D. J. Moore, S. W. S.
Benton.	...	...	...	1849	1851	rainfall and temperature (dry bulb)	Smithsonian Institute, Dr. C. F. Percival.
Ft. Deposit.	31 59	86 36	...	May, 1884	Still open.	rainfall, max and min temperatures	Cotton Belt Station.
Mt. Willing.	32 7	86 44	...	Sept. 1884	Still open.	rainfall, max and min temperature	W. M. Garrett, S. W. S.
Huntsville	32 45	86 40	690	Jan. 1831	Aug. 1877	rainfall and temperature	U. S. Post Hospital Reports.
New Market	34 54	86 27	809	Jan. 1888	Aug. 1889	rainfall, max and min temperature.	Dr. Geo. D. Morris, S. W. S.
Demopolis	32 31	87 52	...	April, 1882	Oct. 1883	rainfall, max and min temperatures	Cotton Belt Station.
Guntersville.	34 24	86 15	...	July, 1889	Still open	rainfall, max and min temperatures	A. J. Baker, S. W. S.
Citronelle.	31 7	88 12	150	July, 1888	Still open	rainfall, max and min temperatures	Dr. J. G. Michael, S. W. S.
Mobile.	30 41	88 2	35	Jan. 1840	Still open	rainfall, dry bulb, max and min, bar.	Dr. S. B. North, J. J. Nicholson, L. B. Taylor, Sgt. S. S.
Mt. V. Barracks.	31 12	88 2	...	Aug. 1840	Still open	rainfall, max and min temperatures.	U. S. Post Hospital reports.
Spr. Hill College.	30 42	81 1	...	1866	...	rainfall, dry bulb temperature.	Rev. A. Carnette, S. Inst.
Monroeville	31 32	87 28	150	Mar. 1849	Nov. 1855	rainfall, temperature, (dry bulb)	S. J. Cumming, S. Inst.
Bermuda.	31 43	87 12	...	Feb. 1886	Still open	rainfall, max and min dry bulb temp.	Wm. Fowler, S. W. S.
Montgomery	32 23	86 18	219	Mar. 1849	Still open	rainfall, max and min dry bulb, baro.	Rev. J. A. Shepherd, Foster and Sgts. of S. S.
Trinity	34 38	87 3	875	Mar. 1884	April 1887	rainfall, temp from dry bulb.	Prof. Joseph Shackelford, S. W. S.
Marion.	32 38	87 26	430	Oct. 1873	Still open	rainfall, max and min, dry bulb temp	Prof. A. D. Smith, D. Thos. Dill, S. W. S., C. B. S.
Uniontown.	32 28	87 30	...	April, 1882	Still open	rainfall, max and min, bar, soil temp	W. H. Newman, S. W. S.
Carrollton	33 14	88 3	...	July, 1884	Still open	rainfall, max and min dry bulb temp.	Judge M. L. Stansel, S. W. S. [Douer, S. W. S.
Troy	31 50	85 54	450	April, 1872	Dec. 1889	rainfall, dry bulb, max and min temp.	H. C. Bailey, J. W. Morgan, J. M. Dill, Jos. Wal-
Roanoke.	32 12	85 23	...	Aug. 1884	Mar. 1886	rainfall and dry bulb temp	G. W. Stevens, J. P. Shaffer, S. W. S.
Ft. Mitchell.	32 30	85	...	July, 1836	Sept. 1837	rainfall	Smithsonian Institute.
Oswichee	32 15	85	...	Jan. 1886	Dec. 1887	rainfall and (dry bulb) temp,	Dr. W. C. Whitaker, S. W. S.
Ashville	33 52	86 20	...	Jan. 1857	Dec. 1857	temperature	Thos. M. Baker, S. Inst.
Calera	33 6	86 31	502	April, 1882	July 1887	rainfall, max and min temp.	C. L. Candler, Cotton Belt station.
Columbiana.	33 15	86 36	...	April, 1873	Still open	rainfall, max and min temp	Smithsonian Institute, W. D. Lovette, S. W. S.
Coatopa	...	...	...	...	...	rainfall and temperature	Smithsonian Institute, Dr. S. K. Jennings.

NOTE.—S. W. S. stands for State Weather Service; S. I. stands for Smithsonian Institute; C. B. S. stands for Cotton Belt Station.

Before entering into a discussion of the climatic features of Alabama it is thought best to cull and mention in this place some of the most interesting data from the large mass of material collected by the observers mentioned in the preceding list. The following classification has been made as a matter of convenience :

1. Temperature data from some stations furnishing several years continuous observations.
2. Rainfall data from stations giving several years observations.
3. Years of drought and wet years.
4. Destructive storms.
5. Remarkably cold winters and warm summers.
6. Years of good crops and years producing poor crops.
7. The winds of Alabama.

1. Temperature data from some stations furnishing several years continuous observations.

AUBURN.  
TEMPERATURE.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.
1855..	42.98	49.5	53.0	64.4	71.4	77.7	80.1	79.1	76.5	62.9	56.7	48.96	63.6	....	....
1856.															
1857.															
1881.....	49.2	50.6	61.7	72.8	79.1	80.7	78	76.3	69.3	53.4	50	62.4	100	19	
1882.....	51.9	53	58	65.2	67	77.5	74.7	75.9	71.7	61.6	50.5	41.4	62.4	93	14
1883.....	48.1	56.6	50.9	64.2	69.5	75.8				67.9	54.8	50.2	....	....	19
1884.....	38.4	54	56.3	59.7	72	72.4	76	77	75.9	69.3	54	48.8	62.8	94	3
1885.....	43.4	42	49.4	63.3	68	75	78	77.5	74	60	53	45.5	60.8	92	12
1886.....	39.8	47.1	53.7	62.4	70.2	76	77.8	78.9	76	64.3	52.3	42.9	61.8	97	4
1887.....	42.9	57	55.2	64.6	74	*	83	77.7	71.7	61.7	55	46.3	....	96	9
1888.....	47.2	52.8	54.2	67.1	71	76	80	78.4	72.1	62.2	54.7	46.1	63.6	93	17
1889.....	46.9	46.3	54.7	62.5	70.1	76.1	80.7	77.6	74.8	62.3	53.1	57.8	62.7	98	16.5
Means	44.6	50.7	53.6	61.2	70.5	76	79	78.9	74.3	64.2	53.8	47.8	62.8	....	....

\* The records were destroyed by fire June 27th, 1887.

CARLOWVILLE.  
TEMPERATURE.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.
1856	38.86	59.31	53.20	58.11	69.74	78.93	83.38	82.06	74.60	66.76	56.28	45.46	....	98	10
1857	38.86	59.31	53.20	58.11	69.74	78.93	83.38	82.06	74.60	66.76	56.28	45.46	....	98	10
1858	57.72	47.62	59.28	66.04	70.39	76.30	81.70	79.14	72.62	70.57	45.63	48.31	64.36	96	25
1859	42.96	56.25	64.74	61.48	74.14	78.96	87.08	81.51	74.33	63.69	62.63	49.65	66.03	96	15
1860	....	....	....	....	....	....	87.00	....	....	....	....	....	....	103	....
1867	45.65	56.63	57.10	65.50	70.93	80.63	81.03	80.50	77.38	67.32	57.80	55.75	65.35	95	24
1868	45.03	50.48	62.30	66.45	72.43	80.98	80.93	79.00	75.55	65.00	52.28	44.83	64.61	100	14
1869	51.28	50.28	57.50	65.28	72.00	78.60	82.53	81.90	73.65	60.35	53.38	47.40	64.51	98	27
1870	50.98	50.25	52.95	62.65	75.18	77.65	82.23	82.00	75.13	66.63	54.98	44.28	64.58	98	12
1871	49.15	55.68	59.78	66.55	70.63	79.95	83.23	82.63	72.88	67.90	55.42	49.92	66.14	98	19
1872	42.07	49.10	53.92	68.00	75.55	79.25	80.90	81.05	76.78	64.58	51.75	45.97	64.08	96	18
1873	43.15	52.61	54.32	64.59	74.11	78.89	81.57	80.28	74.70	62.48	53.75	50.17	64.22	96	15
1874	50.4	54.7	61.90	63.20	74.50	81.80	83.40	82.20	78.20	68.50	59.40	51.30	67.47	....	....
1875	47.2	52.4	56.30	62.20	75.20	81.20	84.30	77.40	73.20	59.10	60.60	57.10	65.50	....	....
1876	56.8	52.5	54.40	68.90	71.70	79.40	81.70	80.70	75.80	65.50	53.60	40.30	65.10	....	....
1877	48.5	49.2	54.60	61.40	71.20	83.50	83.90	81.40	75.90	....	....	....	....	....	....
Me's	47.8	52.7	57.3	64.3	72.7	74.3	88.2	80.7	75.1	65.7	55.0	48.9	65.2	....	....

GREENSBORO.

TEMPERATURE.

Year.	January.	Febry.	March.	April.	May.	June.	July.	August.	Sept.	Oct-ber.	Nov.	Dec.	Annual.	Max.	Minim.
1855	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1856	.....	.....	.....	.....	.....	79.9	82.6	81.6	.....	66.3	54.3	43.7	.....	94	..
1857	37.3	57.5	52.7	56.0	67.6	75.6	74.6	76.6	72.4	59.7	52.3	50.5	61.1	91	8
1858	50.6	45.5	57.3	64.0	70.9	75.6	80.0	77.7	70.7	64.9	44.8	55.0	63.1	93	22
1859	44.8	54.2	56.3	62.4	72.4	76.8	78.5	77.6	73.2	60.8	57.1	42.5	63.0	93	14
1860	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1861	45.5	50.3	56.2	62.8	68.7	78.6	79.2	77.2	74.5	63.9	63.8	54.0	64.6	.....	.....
1862	53.3	50.5	.....	.....	78.2	77.9	83.2	80.0	.....	.....	.....	47.0	.....	98	23
1863	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1864	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1865	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1867	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1868	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1869	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	52.8	46.4	.....	.....	.....
1870	50.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1876	45.39	50.47	56.16	61.90	70.31	76.92	79.31	78.28	72.22	61.97	52.60	47.21	62.7	.....	.....
1884	.....	.....	.....	64.0	76.0	76.0	80.6	78.8	76.7	68.5	.....	49.7	.....	.....	.....
1885	44	44.9	51.0	65.7	69.0	79.0	78.9	80.2	75.0	61.5	55.0	47.0	62.8	.....	.....
1886	39.4	48.0	57.2	63.6	71.0	76.1	77.3	77.7	70.0	54.4	45.9	63.2	.....	.....	.....
1887	45	59.4	58.0	66.3	72.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	46	53.1	54.6	66.3	71.6	78.0	82.0	79.4	71.6	61.9	57	57.9	65.0	.....	.....
1889	47.1	45.2	55.5	66.3	70.7	76.9	81.7	77.9	74.8	64.7	53	60.3	64.5	.....	.....
Me's	45.7	50.8	55.5	63.3	71.6	77.3	79.8	78.6	73.9	64.0	54.3	48.9	63.6	.....	.....

GREENE SPRINGS.

TEMPERATURE.

Year.	January	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Novem.	Decem.	Annual.	Maxim.	Minim.
1854	43.94	.....	63.20	60.11	.....	.....	.....	.....	.....	.....	.....	43.83	.....	.....	.....
1855	47.63	43.43	56.30	72.57	80.23	80.16	79.19	82.17	75.00	61.80	61.60	47.72	65.65	103	16
1856	35.30	47.00	56.48	67.79	73.37	79.70	81.19	78.87	73.67	64.83	53.39	42.88	62.87	102	8
1857	35.83	61.27	50.57	55.28	63.54	76.17	76.24	78.28	72.42	59.43	57.32	50.18	61.21	92	4
1858	50.11	43.74	56.37	63.19	70.50	76.50	79.32	78.08	73.90	66.23	44.14	51.69	62.81	95	22
1859	47.91	53.46	57.97	61.71	73.30	77.17	78.70	77.80	77.41	60.21	57.09	42.92	63.47	.....	.....
1860	.....	.....	.....	.....	.....	.....	83.70	78.15	73.78	61.53	49.70	42.75	.....	100	..
1861	43.35	49.23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	76.17	.....	78.03	63.03	61.95	51.93	44.02	.....	.....	97.20
1867	42.66	54.16	53.98	62.59	66.88	76.30	79.10	78.68	76.84	63.69	55.30	53.65	63.65	94	19
1868	42.77	48.13	60.68	64.78	68.43	77.55	79.45	77.31	73.20	61.37	46.83	42.86	61.93	97	10
1869	47.92	47.84	52.65	60.50	68.15	75.78	80.45	80.63	71.23	56.06	49.38	44.08	61.14	98	20
1870	47.60	47.53	57.10	59.36	68.85	75.44	79.48	80.21	73.86	63.65	52.12	42.38	61.76	95	9
1871	46.43	51.68	58.00	64.00	68.66	78.61	83.00	83.55	74.05	66.15	53.50	48.20	64.44	94	16
1872	39.39	49.12	50.38	68.25	71.16	79.20	82.43	83.21	77.00	62.30	49.28	10.73	62.70	.....	.....
1873	41.00	51.00	54.00	62.30	71.32	72.12	79.00	76.80	71.63	57.48	48.32	44.12	60.81	.....	.....
1874	44.33	50.20	57.56	58.07	70.91	72.93	80.58	83.05	76.61	62.18	55.02	18.79	63.35	.....	.....
1875	43.18	44.72	55.80	59.30	71.92	76.25	84.33	76.17	74.28	56.43	45.82	53.10	62.69	.....	.....
1876	50.05	50.81	51.25	63.03	69.86	76.22	80.84	78.35	74.55	60.61	49.08	37.18	61.82	.....	.....
1877	43.66	48.67	51.80	61.69	68.52	77.64	80.35	78.04	73.10	62.11	48.93	48.18	61.89	.....	.....
1878	41.36	45.53	60.00	64.71	78.23	77.00	83.91	81.26	74.90	61.00	54.72	41.50	63.92	.....	.....
1879	42.89	43.78	56.66	59.96	69.35	73.94	79.33	74.00	70.70	64.70	54.28	49.94	61.62	.....	.....
1880	53.80	49.03	55.90	63.56	71.50	74.20	79.78	78.65	74.00	62.70	48.36	42.75	62.85	.....	.....
1881	42.16	48.80	51.90	62.39	73.26	79.50	81.17	81.06	76.36	69.50	54.30	52.48	64.40	.....	.....
1882	53.16	56.63	60.81	65.38	68.58	79.03	77.03	71.86	72.50	68.50	52.44	42.50	64.03	.....	.....
1883	46.13	54.22	53.51	64.23	68.28	78.22	82.85	79.77	75.10	70.00	55.37	50.10	64.81	.....	.....
1884	37.61	52.18	57.00	61.00	71.30	73.52	80.00	77.32	76.50	68.35	49.83	48.69	62.78	.....	.....
Mns	44.4	49.67	55.82	62.73	70.87	76.63	80.47	78.85	73.82	65.41	52.77	46.04	63.12	.....	.....

HUNTSVILLE.  
TEMPERATURE.

Year.	January	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual.
1829.....													
1830.....													
1831.....													
1832.....													
1833.....													
1834.....													
1835.....	42.1	42	65.1	61.3	67.2	74.2	76.4	76.2	70.1	59.5	49.7	41.8	59.7
1836.....													
1837.....													
1838.....													
1839.....													
1840.....													
1841.....													
1842.....													

MOBILE.

TEMPERATURE.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.
1840.....	56.1	57.4	65.6	70.7	78	82.7	83.8	85.3	79.3	73.	59.2	54.5	70.5	93	34
1841.....	54.3	56.9	61.8	69.9	74.8	81.3	83.2	81.8	74.6	67.8	63.6	56	68.8	94	31
1842.....	57.9	57.8	69.5	69.4	76.4	82.5	80.3	81.2	78	69.1	61.7	56	70.0	93	33
1871.....	50.5	58.3	61.1	67.9	72.7	80.6	82.3	83	74.9	68.7	57.9	51.6	67.5	.....	.....
1872.....	44.6	51.7	55.1	68.9	76	80.8	80.7	81.3	77.7	75.5	54	47.9	65.4	.....	.....
1873.....	46.3	56.1	57.1	65.7	74.3	79.3	82.1	79.6	76.2	64.8	56.9	53.6	66.0	98	19
1874.....	52.8	56.6	63.1	64.3	73.4	79.8	80.6	83.7	77.9	68.6	60.1	53.9	67.9	100	31
1875.....	49.9	50.9	60	63.1	75.8	80.7	84.1	78.3	74.9	62.7	62.2	57.5	66.7	99	25
1876.....	56.7	55.3	55.9	66.4	74.6	80.9	83.2	79.2	76.5	63.7	55.1	43.8	66.0	.....	.....
1877.....	49.7	52.9	57.2	65.8	72.9	82.4	85	81.5	77.4	67.8	55.8	53.8	66.8	100	.....
1878.....	47.8	51.9	64.3	69.8	75.7	81.3	84.4	82.5	77.2	68	57.6	47.2	67.3	98	26
1879.....	48.7	51.8	61.8	66.1	74.8	80.2	81.4	78.2	75.8	69.1	60.6	55.8	67.0	100	15
1880.....	59.4	56.3	64.4	69.3	75.2	80.1	80.5	80.4	75.1	66.7	*	49.1	.....	98	14
1881.....	47.6	53	256.7	65.4	76.6	82.9	83.3	81.4	79.3	73.7	59.1	56.6	68.0	100	8
1882.....	58.3	51.1	65.1	70.5	72.5	81.3	78.6	79.4	75.7	71.4	58.5	48.5	68.2	100	24
1883.....	52.7	59.6	57.7	68.8	72.9	81.3	83.6	82	77.9	73.3	60.5	56.4	68.9	101	28.5
1884.....	43.5	51.3	62.2	66.2	74.6	77.8	80.1	78.7	78.6	72.2	55.5	53.9	66.2	96	13.9
1885.....	41.2	48.3	53.5	66.2	71.7	78.8	79.4	79	76.6	72.9	56.2	47.5	64.3	94	20
1886.....	44.1	49.7	56.7	63.9	72.2	77.9	78.6	79.9	77.6	67.4	56.1	48.9	64.4	97	11
1887.....	47.6	62.5	58.9	66.3	73.9	77.7	80.4	79.9	77	66.4	58.6	50.8	66.7	98	16
1888.....	52.4	56.3	57.5	68	72.1	77.5	80.5	78.2	72.8	65.2	56.9	49	65.5	97	23
1889.....	49.8	49.4	56.2	66	70.2	76.7	81.2	79.3	76.7	66	56.3	61	65.8	95	29
Means.....	50.7	50.2	60.7	66.7	74.2	80.2	81.7	80.7	77.6	68	65.5	64.7	66.2	.....	.....

\* Records of office were destroyed in December, 1880.

MONTGOMERY.

TEMPERATURE.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.
1849 } 1861 }	52.73	60.88	63.80	75.49	77.62	...	...	...	73.40	61.40	50.19	50.18	....	.....	.....
1873..	43.4	53.4	54.2	63.9	73.8	77.7	83.2	80	174.9	62.6	53.7	49.2	63.8	97	14
1874..	50.8	54.3	60.9	62.2	73.1	79.6	79.9	82	376	64.9	57.8	51.2	66.3	103	27
1875..	47.7	49.3	56.9	62.1	74.5	80.7	85.3	78.3	74.3	60.4	58.9	54.4	65.5	102	18
1876..	54.4	53.9	54	65	73.1	79.8	82.8	80.4	74.8	62.4	52.6	41.4	64.9	.....	.....
1877..	49.2	57.8	54.7	64.2	71.9	80.7	83.7	81.4	75.3	65.3	53.5	52.1	65.6	102.5	....
1878..	46.2	49.8	62.6	67.3	74.9	79.3	84.3	83	67.6	64.7	55.8	44.4	65.9	100	22
1879..	48.9	48.9	60.4	63.3	73.8	79	82.5	77.1	73.5	67.9	58.4	53.8	66.0	101	14
1880..	57.6	53.8	61.5	66.9	73.8	79.3	81	79.8	73.2	65	51.1	46.2	66.6	100	8
1881..	44.5	50.5	53.4	63.5	75.2	81.9	84.1	81.1	77.8	71.2	56.4	54	66.2	106.9	24
1882..	55.2	57.4	62.2	68	70.4	79.6	78.1	78.6	74	69.6	54	44.9	66	97.6	19.2
1883..	49.8	58.2	54.8	65.9	70.6	79.2	82.4	80	376	71.2	58	53.6	66.7	98.6	25
1884..	40.5	55.4	59.9	63.4	74.6	75.6	81	78.4	79	71.5	54	51.2	65.4	97.1	8
1885..	46.2	45.4	51.7	65.8	70.1	79.8	80.2	79	77.5	60.9	54.3	46.6	62.9	98	15
1886..	41.8	47.2	55.6	63.8	72.7	77.5	79	680	77.3	66	54	44.8	63.4	98	5
1887..	45.2	59.3	57.6	66	75.7	79.9	79.7	79	375.7	63.5	56	47.8	65.5	102	13
1888..	51.1	54.5	56.6	68.7	72.4	78.6	82.7	78.6	71.6	62.3	54.8	46.6	64.9	98	18
1889..	47.4	46.9	54.8	64.4	70.6	76.2	79.5	78.5	75.4	63.9	54.6	59.2	64.3	99	21
M'ans	48.2	52.8	57.1	64.9	73	79	81.8	79	975.3	65.5	55.4	49.5	65.3	.....	.....

MOULTON.

TEMPERATURE.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.
1859...	.....	.....	55.82	60.67	73.52	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1861..	45.00	48.00	51.00	61.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866..	.....	.....	.....	64.67	.....	72.23	80.5	.....	.....	.....	.....	.....	.....	.....	.....
1867..	38.9	57.94	48.93	60.95	67.33	75.45	76.73	75.55	73.35	59.62	51.0	48.20	60.66	87	17
1868..	38.1	45.46	57.68	60.55	66.99	75.60	78.53	74.94	69.28	59.02	46.81	38.91	59.32	92	12
1869..	44.63	44.48	49.62	60.98	66.22	73.40	76.35	78.95	67.94	52.22	47.15	41.67	58.63	91	20
1871..	44.82	51.15	57.17	64.53	68.03	76.75	78.33	78.50	69.92	62.30	50.25	44.30	62.17	90	16
1872..	34.45	46.10	48.80	64.78	69.65	75.72	78.47	79.45	72.30	59.28	45.20	37.3	59.30	90	12
1873..	37.00	45.85	50.10	61.18	69.75	75.69	78.72	77.15	71.32	56.75	49.67	46.75	59.99	90	11
1874..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1875..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1876..	41.66	47.47	52.63	61.46	68.49	74.17	77.20	76.48	70.19	56.95	48.35	42.93	.....	.....	.....
Means	40.6	48.3	52.4	61.6	68.4	74.9	78.1	77.3	70.6	58.0	48.4	42.9	60.1	.....	.....



## MOUNT VERNON BARRACKS.

## TEMPERATURE.

Year.	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	An'ual	Max.	Min.
1840..	....	....	....	....	....	....	....	78.83	74.12	67.65	55.92	50.53	...	...	...
1841..	50.50	53.00	58.00	67.00	72.25	77.00	....	....	....	....	....	....	....	....	....
1842..	50.38	54.70	66.50	67.12	73.00	78.50	76.70	75.50	74.60	65.82	55.03	49.05	65.57	....	....
1843..	52.50	50.70	47.70	69.50	75.30	76.66	82.35	78.21	78.86	63.61	59.56	49.61	65.38	94.24	....
1844..	....	....	....	....	77.51	78.42	81.17	78.16	73.97	62.65	57.07	47.40	....	98.24	....
1845..	51.30	53.14	55.73	70.49	73.59	80.08	81.36	81.04	74.30	62.62	53.03	42.53	64.93	99.16	....
1846..	48.93	50.63	61.57	64.18	72.72	76.52	77.43	78.19	77.60	65.17	58.87	57.23	65.75	94.26	....
1847..	47.40	55.02	57.09	69.99	70.53	77.90	77.0	77.33	71.45	66.30	57.84	47.11	54.58	94.21	....
1848..	52.98	56.61	60.44	64.50	73.95	74.89	78.22	77.82	72.76	65.59	51.19	57.98	65.58	92.26	....
1849..	53.00	49.86	65.14	64.75	72.50	76.90	76.27	79.05	74.50	64.21	58.90	54.22	65.77	95.18	....
1850..	56.30	51.66	61.55	66.61	73.18	76.90	79.89	81.61	78.33	66.96	55.57	52.04	66.72	95.26	....
1851..	51.26	57.04	59.12	67.52	74.89	79.83	81.82	79.22	75.53	66.83	54.79	49.82	66.47	98.18	....
1852..	42.15	59.55	64.17	64.42	76.43	79.60	82.29	82.14	79.01	70.58	56.87	59.51	68.06	98.9	....
1853..	47.48	53.84	61.22	70.96	74.31	79.86	78.55	80.41	75.70	65.88	61.10	47.31	66.39	95.28	....
1854..	51.52	53.18	65.24	62.30	74.64	79.17	78.90	81.17	79.58	69.17	54.76	49.22	66.57	98.24	....
1855..	53.19	48.39	57.85	72.34	78.48	78.98	78.84	79.78	78.35	63.93	62.99	51.12	67.02	102.21	....
1856..	39.50	56.46	57.19	68.63	74.18	78.60	81.71	81.33	74.64	66.97	58.68	49.29	65.59	95.13	....
1857..	43.73	61.48	56.48	59.07	71.08	79.36	79.86	78.65	76.58	60.86	56.99	55.73	64.99	95.10	....
1858..	56.24	50.69	60.35	66.34	73.73	78.36	81.36	80.17	76.04	70.90	49.97	56.65	66.73	96.27	....
1859..	48.95	57.67	62.42	65.01	75.33	78.65	80.98	79.63	76.34	65.23	60.98	48.39	66.63	96.14	....
1860..	50.53	53.36	60.27	71.14	78.01	86.21	89.79	87.71	81.76	69.96	55.69	51.49	69.66	104.17	....
1873..	....	....	....	....	....	....	....	....	....	63.0	57.1	56.9	....	....	....
1874..	53.9	56.3	65.2	64.6	75.3	80.9	81.6	84.3	78.4	69.0	60.7	55.9	68.8	....	....
1875..	50.2	52.3	61.4	64.7	76.1	80.1	84.8	78.2	76.5	65.7	65.2	59.3	67.9	102..	....
1876..	58.5	57.5	58.2	68.2	74.9	80.7	83.0	80.0	78.6	66.3	56.5	51.3	67.8	102..	....
1882..	....	....	66.1	70.5	72.4	79.7	77.6	78.6	75.2	71.9	57.7	49.5	....	102.20	....
1883..	52.9	61.5	59.3	67.9	71.9	80.1	82.4	82.3	78.8	74.6	60.8	56.8	69.1	....	23
1884..	43.7	59.4	63.9	67.1	74.5	76.6	81.6	80.6	80.3	74.1	57.2	54.7	67.8	101.10	....
1885..	49.9	49.7	55.5	69.2	73.5	81.2	81.6	80.9	77.6	64.7	57.4	50.5	66.0	99.15	....
1886..	44.4	50.5	58.5	65.4	74.1	78.8	80.4	82.2	78.8	69.2	57.3	49.3	65.7	....	....
1887..	48.1	63.6	60.2	68.3	75.4	79.6	81.6	82.3	78.5	66.5	58.8	50.3	67.8	....	....
1888..	52.7	57.1	60.1	70.2	71.5	79.3	83.1	79.9	75.0	66.5	58.5	49.8	67.0	....	....
1889..	50.5	50.0	58.5	66.8	71.0	77.7	81.0	79.0	75.2	65.6	55.2	60.0	65.8	....	....
M'ans	52.2	56.8	62.0	67.1	74.1	78.9	80.8	82.9	76.7	66.8	55.6	52.8	67.2	....	....

MEAN TEMPERATURE AT STATIONS IN ALABAMA.

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Annual.	Max.	Min.	No. of years.
Auburn.....	44.6	50.7	53.6	61.2	70.5	76	79	78.9	74.3	64.2	53.8	47.8	62.8	100	4	11 years, 3 months.
Bermuda.....	48.3	53.4	55.2	66	71.3	76.6	78.6	78.5	74.8	63.5	57.7	47	64.2	96	15	4 years.
Birmingham.....	39.1	41.7	50.1	61.7	69	75.8	79.4	79.2	78.1	68	49	49	61.7	103	0	3 years.
Bolling.....	41	44	49.7	64	70	.....	80	80	78	64.5	47	48	.....	100	17	2 years.
Carlowville.....	47.8	52.9	57.3	64.4	72.7	74.3	88.2	80.7	75.1	65.7	55	48.9	65.2	103	8	15 years, 5 months.
Carrollton.....	39.7	48.3	52.2	63.9	71.3	77.3	79.8	76.8	73.8	63.8	52.4	42.9	61.9	96	0	5 years.
Centre.....	39	40	48.6	60.3	62.4	74.5	78.5	76.1	73.3	60.1	50.8	46.9	59.2	96	14	3 years.
Clanton.....	44	.....	52.9	63.8	72.6	71.5	78.4	79.9	.....	68	49	47	.....	96	20	2 years.
Clintonville.....	49	51	55	68.2	72.4	74.2	77.7	.....	77	73	56	.....	.....	90	22	1 year.
Coatopa.....	47.3	52.3	56.4	62.8	70.2	77.2	80.6	82	73.4	66.2	52.4	43.8	61.7	98	11	2 years.
Decatur.....	35.5	41.3	50	61	73	78	81.9	83	.....	.....	.....	41.4	.....	102	14	1 year.
Edwardsville.....	38	37	43.5	60.7	66	76	80.7	79.3	78	62.7	52.3	42	59.7	97	8	3 years.
Erie.....	18.9	54.5	62.4	65.3	75	78.5	82.8	82.1	76.1	65.9	64.2	50.7	66.4	.....	.....	5 years.
Eufaula.....	41.2	51	65.6	84.4	73.7	77.2	79.4	79	75.6	69.4	54.4	48.2	64.2	98	8	4 years.
Eutaw.....	41.3	52.2	58	65.7	73.6	79.9	82.4	80.7	73.7	61.8	50.5	45.2	63.5	.....	.....	2 years, 2 months.
Evergreen.....	46	43.1	56	66.6	74	76	82.2	85	77.8	66	54.9	49.5	64.8	99	15	2 years.
Fayette.....	35.4	41.9	53	61.3	72	79.5	83.2	75	75.9	64.9	50.6	41	61.1	104	0	4 years.
Florence.....	37.7	40.2	49	61.9	68.6	74.5	79.4	78.6	89	60.3	49.9	41.5	60.9	96	16	5 years.
Fort Morgan.....	55.3	50.3	56.2	65.1	75	80	82.2	81.4	77	70.9	60.9	56.8	67.6	.....	.....	2 years, 10 months
Gadsden.....	38.3	43.2	47	58.7	67.3	73.6	79.4	76.2	71.5	58.4	49	37.9	58.4	102	.....	6 years.
Greensboro.....	45.7	50.8	55.5	63.3	71.6	77.3	79.8	78.6	73.9	64	54	34.8	63.6	93	2	11 years, 2 months,
Green Springs.....	44.4	49.7	55.8	62.7	70.9	76.6	80.5	78.9	73.8	65.4	52.8	46.1	63.1	103	4	24 years, 6 months.
Greenville.....	47	58	52.9	66.2	73.6	77.7	80.9	79.8	77.2	71	53.8	47.8	65.5	94	11	3 years.
Huntsville.....	42.1	42.6	51.3	61.3	67.2	74.2	76.4	76.2	70.1	59.5	49.7	41.8	59.7	94	.....	14 years.
Jacksonville.....	40.9	45	49	59.2	68.3	75.8	83.3	76.5	74	63.8	50.3	44.8	60.9	100	13	2 years.
LaFayette.....	38.1	.....	43.2	57.9	69	78	83.5	79	76.5	64	53.3	.....	.....	92	0	2 years.
Livingston.....	45.8	52.6	54.4	65.3	70.1	76.9	81.5	79.7	74.8	62	52.8	45.5	63.4	100	10	3 years.
Marion.....	40.9	47.9	54.2	63.6	72	78.3	80.1	74.5	75.8	66	51.5	44.2	61.6	98	11	4 years.
Mobile.....	50.7	50.2	60.7	66.7	74.2	80.2	81.7	80.7	76.9	68.6	56.6	47.6	66.2	101	11	22 years.
Monroeville.....	47.9	56.4	62.8	65.6	73.5	78.3	80	80.2	76.1	69.5	56.4	52.7	66.6	.....	.....	4 years.

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Montgomery	48.2	52.8	57.1	64.9	73	79	81.8	79.9	75.3	65.5	55.4	49.5	65.3	106.9	5	18 years, 5 months.
Moulton	40.4	48.4	52.4	62.2	68.8	75	77.9	77.4	70.7	59.2	48.4	42.9	60	92	11	7 years, 10 months.
Mount Vernon	52.2	56.8	62	67.1	74.1	78.9	80.8	82.9	76.7	66.8	55.6	52.8	67.2	104	9	30 years, 8 months.
Mount Willing	45.3	52.4	54.1	63.3	71.8	78	77	79.5	74.9	66.8	54.9	48.2	63.8	102	10	4 years.
Newton	50	51.9	57.4	65.5	54.7	79.9	-0.5	79.6	78	70.8	55.9	52.1	64.7	99	12	3 years.
New Market	41.1	40.8	51.8	63.5	65.5	81	78.9	76	...	59.4	47.7	45.9	...	90	10	2 years.
Opelika	45.8	50.7	56.9	62.8	68.9	77.7	80.2	78.4	74.8	62.3	52.1	46.9	63.2	105	11	2 years, 7 months.
Oswichee	41.7	52.6	55.2	61.2	74.4	77.3	79.2	77.4	77.3	66	56.9	46.3	63.8	97	8	3 years.
Prattville	40.9	43.3	49	62.3	69.7	73.6	80.7	77	77	64	50.2	46.1	61.2	96	6	2 years.
Selma	49.3	52	55.8	64	73.5	79	82	81	74.4	66.6	55.7	49.3	65.7	98	14	5 years.
Talladega	46	48.7	55.3	65.2	72.3	77.7	82.2	79.9	72	63.5	55	46.5	63.7	100	15	2 years.
Trinity	37.3	44.5	50.9	59.9	70.5	74.9	79.2	78	75	63.4	51.7	41.5	60.6	96	16	4 years.
Troy	46.9	51.3	58.3	65.2	74.4	-0.5	82.2	80.4	76.6	65.5	57.1	52.3	65.9	104	14	5 years.
Tuscaloosa	45.1	48.6	56.6	63.8	72.7	78.6	82.4	78	76.3	64.3	53.5	50.4	64.2	97	4	6 years.
Tuscumbia	38.3	43.9	48.6	61.8	67.7	73.6	78.3	74.9	70.9	57.5	49.2	40.7	58.7	99	14	6 years.
Union Springs	48.6	53.6	58	66.6	75.4	80.6	82.5	80.6	76.8	67.4	56.7	50.9	66.5	98	8	19 years.
Valley Head	36.1	43.3	48.5	59.9	66	75.3	76	75.2	68.8	55.6	47.3	38.6	57.7	98	16	5 years.
Wetumpka	46	45	52	70	...	78.5	80.9	79.5	76.5	70.5	52	49	...	94	20	2 years.
Mean	42.9	49.2	54.1	63.5	73.3	77.8	83.9	78.9	79.9	64.8	52.9	46.6	63.1			

## 2. Rainfall data from Stations giving several years observations.

### AUBURN.

#### PRECIPITATION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1855....	0.25	0.99	1.85	2.28	1.72	1.69	3.85	5.86	1.64	2.47	5.38	9.34	37.52
1856....	5.53	1.90	6.83	0.88	0.83	6.47	2.38	4.86	0.58	0.46	10.92	4.00	45.64
1857....	5.39	1.10	3.68	.....	6.79	.....	4.34	3.73	1.07	.....	.....	5.76	.....
1881....	3.72	4.11	7.57	4.87	0.73	4.25	2.50	6.03	4.11	4.91	5.12	6.30	54.22
1882....	4.47	11.31	9.28	4.34	2.45	2.93	9.18	3.42	7.9	2.14	2.48	5.09	65.01
1883....	8.79	2.46	2.58	12.82	2.05	6.22	.....	.....	.....	3.01	1.85	5.47	.....
1884....	5.38	4.20	10.07	2.97	0.61	11.52	5.38	2.31	0.21	0.57	2.52	4.78	50.52
1885....	9.25	3.59	3.41	2.03	7.44	3.30	6.92	3.45	4.77	5.08	4.70	2.98	56.92
1886....	7.92	4.31	8.03	4.02	3.69	8.15	4.40	5.24	0.40	0.00	5.04	3.92	55.12
1887....	4.05	6.79	2.27	1.59	3.73	*	21.09	4.32	7.16	2.74	0.08	13.84	.....
1888....	3.13	7.34	11.24	2.47	6.50	5.31	3.25	4.52	4.90	4.39	4.96	2.94	60.95
1889....	9.48	5.72	2.81	3.73	1.52	2.71	3.75	3.73	3.42	1.52	6.26	0.68	45.13
Means...	5.61	4.4 <sup>c</sup>	5.80	3.82	3.17	5.28	4.37	4.20	3.29	2.48	4.49	5.43	52.42

\*The records were destroyed by fire June 27th, 1887.

### CARLOWVILLE.

#### PRECIPITATION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Annual.
1856....	.....	.....	.....	.....	.....	9.14	1.39	4.85	1.10	0.30	15.60	6.28	.....
1857....	4.97	2.10	4.87	4.88	6.75	2.05	4.96	6.92	1.32	0.85	3.90	3.87	47.44
1858....	6.80	3.99	9.09	7.68	1.25	5.01	3.10	4.02	1.90	7.75	2.12	6.50	59.21
1859....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59.17
1867....	1.88	3.39	7.80	6.37	4.41	4.52	2.26	3.72	4.50	2.87	3.87	8.80	49.39
1868....	8.63	6.79	3.90	10.46	0.80	2.70	5.60	3.13	6.51	6.40	3.44	6.90	64.86
1869....	8.80	10.82	5.70	10.05	1.54	3.54	5.67	6.63	1.95	2.40	5.93	6.71	69.24
1870....	5.05	6.75	7.87	2.84	0.75	8.01	3.50	8.21	2.97	0.57	8.66	7.70	62.88
1871....	5.24	6.73	13.00	9.21	6.04	9.39	1.48	4.69	2.24	1.65	9.37	3.61	72.65
1872....	4.95	12.14	11.42	4.92	8.04	2.17	18.55	2.84	0.48	1.23	6.90	5.08	78.72
1873....	6.05	11.39	6.10	2.51	10.28	4.71	3.90	3.72	5.84	1.85	2.52	2.63	67.50
1874....	4.90	7.46	12.81	11.17	1.15	9.46	5.70	1.49	0.10	1.24	2.75	7.14	65.37
1875....	8.07	9.63	20.50	4.08	1.02	1.88	3.31	1.97	12.65	1.88	8.72	5.63	79.34
1876....	6.19	7.61	10.95	12.52	4.57	1.76	5.41	2.80	2.05	1.38	3.30	7.33	65.77
1877....	5.84	2.36	7.35	15.10	2.15	5.76	2.56	1.56	12.43	.....	.....	.....	.....
Means...	5.91	7.01	7.77	7.83	3.77	5.01	4.81	4.04	4.00	2.33	5.93	5.63	65.19

DECATUR.  
PRECIPITATION.

YEAR.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1879.....	.....	3.30	8.10	.....	.....	.....	1.40	1.60	1.90	2.70	3.80	2.80	.....
1880.....	.....	2.45	13.85	8.85	3.75	0.85	.....	.....	.....	.....	.....	4.60	.....
1881.....	1.70	4.35	5.75	5.30	3.95	1.30	1.00	1.90	3.20	3.55	5.55	5.65	44.20
1882.....	13.70	6.90	5.21	4.85	2.95	2.00	6.19	4.81	1.00	2.30	5.15	1.95	57.01
1883.....	7.10	4.60	4.30	5.67	3.42	4.04	.....	.....	.....	.....	.....	.....	.....
1884.....	7.28	8.90	6.55	5.35	0.85	4.25	6.95	2.25	0.80	1.70	2.10	3.70	50.68
1885.....	7.65	4.10	2.40	3.45	5.90	5.10	2.90	2.85	2.75	2.90	5.55	1.25	46.80
1886.....	6.70	3.55	8.40	3.40	3.95	5.74	1.43	1.54	3.25	0.05	8.75	2.50	49.26
1887.....	6.80	6.85	2.80	3.15	2.49	4.31	5.20	1.99	2.03	3.95	0.80	4.00	44.37
Means....	7.27	5.00	6.37	5.00	3.40	3.45	3.58	2.42	2.13	2.45	4.53	3.31	48.91

\*25 days.

GREENSBORO.  
PRECIPITATION.

YEAR.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1855.....	1.33	1.44	1.64	0.59	1.79	3.99	1.68	6.41	6.29	1.45	5.24	5.75	37.60
1856.....	3.52	2.60	6.16	3.95	5.23	6.37	1.91	2.75	0.58	0.44	12.99	5.73	52.23
1857.....	5.17	2.21	3.34	3.43	8.55	1.71	4.73	2.46	0.84	1.49	6.04	7.99	47.96
1858.....	9.29	3.58	3.15	4.55	3.26	1.11	0.91	3.88	0.14	2.67	3.19	7.87	43.60
1859.....	4.29	6.33	7.00	6.27	1.96	2.65	7.20	3.93	5.52	1.56	1.95	4.79	53.45
1860.....	2.16	6.13	0.91	2.63	1.41	3.35	4.06	11.61	3.90	4.52	7.77	6.36	54.81
1861.....	4.85	6.21	3.02	2.88	2.32	2.51	4.41	13.18	1.79	2.31	3.87	2.58	49.93
1862.....	8.39	9.76	5.12	7.16	1.29	1.74	0.36	1.00	4.14	0.58	0.53	3.09	43.16
1863.....	7.50	9.51	6.13	3.70	1.93	4.61	1.83	5.84	0.48	2.85	2.85	7.39	54.62
1864.....	2.45	1.75	9.15	2.74	1.32	7.73	2.04	3.84	6.79	4.30	6.31	5.20	53.62
1865.....	4.85	13.09	6.11	5.90	1.02	1.37	2.14	5.22	2.74	2.08	2.94	8.44	55.90
1866.....	3.05	7.05	2.73	7.38	7.36	6.31	3.06	5.22	2.74	2.13	4.41	3.78	55.22
1867.....	1.86	1.67	9.55	5.67	3.85	4.52	3.06	5.22	2.74	1.92	2.77	5.11	47.94
1868.....	9.80	3.74	3.05	6.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
1869.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.50	5.90	.....
1870.....	6.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1884.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.09	.....
1885.....	8.94	3.33	2.92	3.17	5.88	4.00	2.51	2.23	1.84	1.37	7.32	5.33	48.84
1886.....	10.15	5.34	11.72	6.97	2.86	6.73	5.95	7.31	0.54	1.50	4.53	2.11	65.61
1887.....	3.36	4.90	1.04	2.58	3.37	4.29	3.09	3.45	.....	.....	.....	.....	.....
1888.....	4.38	4.38	11.20	2.16	2.35	4.14	3.37	9.29	7.93	4.40	3.13	2.15	49.00
1889.....	5.40	2.00	1.52	6.62	0.61	3.37	4.52	2.98	1.91	0.37	4.13	2.19	39.68
Means..	5.36	5.00	5.02	4.48	3.13	3.92	3.16	5.27	2.99	2.18	4.81	5.52	50.84

## GREENE SPRINGS.

## PRECIPITATION.

YEAR.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual.
1854	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.87	.....
1855	1.09	1.20	1.19	0.40	1.30	4.61	3.13	6.62	2.79	1.64	7.11	4.93	36.01
1856	2.91	2.65	5.87	4.41	6.12	6.94	1.20	4.57	2.20	4.50	9.52	1.68	55.57
1857	4.12	3.64	2.74	3.45	5.64	2.29	4.98	5.56	1.08	1.35	6.39	8.95	50.19
1858	8.69	6.48	3.59	3.22	2.77	3.60	4.41	3.88	0.00	4.29	2.16	7.50	50.59
1859	4.17	7.87	8.00	3.18	2.28	3.13	6.16	6.30	5.45	1.25	2.66	4.93	55.40
1860	.....	.....	.....	.....	.....	.....	1.80	8.85	2.67	2.82	8.70	5.19	.....
1861	2.12	4.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	5.97	3.02	.....	4.79	1.75	4.37	4.99	.....
1867	1.70	1.38	8.77	4.01	5.29	2.84	5.00	2.10	1.77	1.38	3.83	2.41	40.48
1868	11.04	3.03	3.51	7.27	4.40	5.88	5.33	3.72	3.66	7.17	4.17	4.19	58.37
1869	5.96	9.16	3.25	8.22	0.97	1.73	1.38	2.32	1.67	2.50	4.30	5.90	47.36
1870	4.77	4.74	5.65	2.76	0.50	3.75	7.3	2.55	0.40	0.30	7.35	5.13	45.28
1871	5.95	7.90	8.35	13.30	5.80	4.43	2.95	4.70	1.10	5.05	5.05	2.35	66.93
1872	3.45	4.80	7.06	4.28	4.10	7.70	10.00	0.10	3.50	0.05	2.30	6.70	54.34
1873	4.87	7.78	4.85	2.57	5.58	5.65	2.90	1.86	4.11	1.00	1.19	1.25	43.70
1874	4.55	6.02	8.79	14.59	2.31	5.18	2.65	1.48	2.67	0.79	1.06	3.42	53.51
1875	4.92	5.50	8.85	4.19	2.19	4.72	3.13	3.15	4.36	1.00	3.59	7.13	52.73
1876	3.89	5.09	5.25	10.25	7.18	4.28	7.60	4.22	2.15	2.15	0.52	3.18	55.76
1877	6.21	5.66	5.50	9.63	2.31	3.13	4.89	2.31	14.11	4.85	5.05	4.75	68.40
1878	2.82	2.52	5.20	5.70	4.09	8.36	2.50	8.32	2.55	2.32	2.81	7.11	54.30
1879	5.56	4.68	1.22	5.90	5.86	6.84	4.50	5.08	0.98	9.85	4.09	5.55	60.11
1880	0.95	4.03	10.76	10.15	4.59	4.21	2.00	5.45	5.00	5.12	10.54	8.28	71.03
1881	6.45	5.10	10.00	5.03	1.96	3.87	1.73	11.00	2.98	3.90	5.43	4.75	62.20
1882	7.36	5.35	7.15	8.18	2.01	2.45	7.02	7.0	2.26	3.80	3.55	4.30	60.51
1883	10.47	5.00	3.56	5.13	1.62	4.10	2.57	6.95	0.68	2.20	4.53	5.99	52.80
1884	7.76	6.48	9.17	5.18	1.18	7.57	12.02	1.04	1.25	2.41	2.02	5.39	61.47
Means.	5.07	5.04	6.01	6.13	3.48	4.75	4.41	4.55	2.97	2.94	4.49	4.99	54.83

NOTE.—Capt. J. W. A. Wright, of Livingston, makes the following comments in regard to the tables of rainfall and temperature for Greene Springs.

GENERAL RESULTS.—The temperature table shows the average temperature of our three winter months is 47 deg.; spring, 63 deg.; summer, 79 deg., and autumn, 63 deg. The rather curious and interesting fact follows, that our average temperature for April and October, as well as for spring and autumn, is the same as the annual average of our climate, as obtained in these observations in twenty years (21,900 observations)—that is 63 deg., and this 63 deg. would be the number on a map with Isothermal lines for our part of Alabama. The range between our average for winter and summer (79 deg.—47 deg.) is only 32 deg., and this is the very important element by which climates are compared.

The range of temperature between the coldest monthly average, 45 deg. (January), and the warmest monthly average, 81 deg. (July), is 36 deg. The greatest range between the coldest month here recorded, 37 deg. (December, '76), and the warmest month, 84 deg. (July, '75, '78, and '88), is 47 deg. The extreme range of temperature in this part of Alabama, from the warmest to the coldest hour ever properly observed and recorded since 1854, with standard thermometers properly protected from direct and reflected rays of the sun, is a little more than 100 deg. That is, positively the highest ever so observed—and that was before the war—was 104 deg. in the shade, observed by Prof. Tutwiler and myself very carefully at Greene Springs. Only twice, since 1854, has the mercury, in properly placed thermometers, ever been observed lower than 4 deg. (that is, 4 deg. above zero). In January, '84 and '85, the mercury stood on our coldest days, in different localities, from zero to 2 deg. below zero. This shows the extreme range of our climate in Central Alabama, during the last thirty-five (35) years, to be 106 deg. Never, at any time for thirty years past, have I seen the thermometer, when properly shaded, as high as 100 deg. in our part of Alabama, nor do I believe it has been seen so high by any one else, with a standard thermometer properly placed. I wish to place my testimony on record here, that the mercury very rarely, even on our hottest days in July and August, stands above 96 deg. in the shade, and that any record up to or above 100 deg. for our part of Alabama, as a normal temperature for the last twenty-five years, is merely an error. Heat accumulated by roofs and walls and streets in cities may

show a higher temperature, but can this be properly called normal? For the last three winters, our coldest temperature has been 20 deg. in December and January, and the mercury with us very rarely falls below 20 deg.

The rain table proves that March and April are our most rainy months, while May, September and October are our driest—the least average rainfall occurring in October, while the averages for May and September are nearly the same. It shows that our heaviest rainfall, any one year, has been a little more than 71 inches (in '80); and the least, 43.7 inches (in '73). It gives the most rain in one month, more than 14 inches (April, '74 and September, '77); while the least rainfall, during any one month, was one-twentieth of an inch (0.05), in October, '72. It is worthy of remark, that the average rainfall of each of the three summer months, is between four and five inches, and of each winter month between five and six inches. There was no month entirely without rain.

The unusually small rainfall recently for six months, from December, '88 to May, '89, inclusive, furnishes a very interesting confirmation of the theory of Herschel and other eminent astronomers, that our years of maximum and minimum rainfall correspond with years of maximum and minimum sun-spots—periods of ten or eleven years from maximum to maximum and minimum to minimum.

During the six months named, we had only about half the rainfall of our wettest years—the latter amounting to thirty-five or thirty-six inches, as in '83-'84 and '73-'74, as can be seen from the rain table. From Prof. Charles A. Young, of Princeton, who has made the sun and its spots a life study, I learn there were scarcely any sun spots in the six months from last December to May inclusive. Another period of minimum rain and sun spots was the winter of '77-'78.

It seems very reasonable, that the fewer the sun spots, the more light and heat we receive from the sun; the dryer the earth's surface and atmosphere becomes and consequently the less rain falls, and vice versa.

N. B.—All annual and monthly averages in these tables of temperature and rain correspond so nearly with those at the important Signal Station, Montgomery, that they may be safely used for Central Alabama, in general.

## HUNTSVILLE.

### PRECIPITATION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October	Nov.	Dec.	Annual.
1831.....	6 71	2 34	4 26	4 16	4 30	4 66	4 16	4 57	0 83	1 65	3 60	2 22	43 46
1832.....	2 77	3 46	1 93	5 54	3 60	2 15	5 46	6 65	2 22	4 71	2 27	5 57	46 33
1833.....	6 87	11 45	10 80	4 90	5 91	3 00	3 8-	2 49	2 04	3 82	2 90	4 61	67 67
1834.....	10 41	8 24	2 91	3 32	4 15	1 66	4 84	7 06	4 03	5 85	3 05	7 62	63 14
1835.....	4 86	3 19	6 10	12 30	3 18	6 37	3 74	10 26	2 14	1 67	4 96	1 52	60 29
1836.....	4 85	3 05	5 82	5 16	6 53	3 60	8 40	6 13	1 25	2 22	1 38	6 36	54 75
1837.....	1 52	4 02	5 32	3 32	2 49	7 03	1 66	5 55	4 01	5 23	3 05	3 88	47 08
1838.....	5 53	2 87	3 18	2 77	4 02	6 08	3 95	0 69	3 19	1 80	9 12	5 12	48 32
1839.....	2 63	2 08	4 00	3 74	1 94	5 54	2 64	1 80	2 22	0 00	0 28	2 21	29 03
1871.....	.....	.....	.....	.....	.....	5 40	2 00	6 00	0 38	4 40	1 10	.....	.....
1872.....	.....	.....	5 50	1 90	.....	.....	10 50	2 45	2 40	0 85	.....	7 50	.....
1873.....	6 60	8 50	3 50	1 40	4 10	8 30	3 80	3 40	4 30	5 05	1 60	4 71	54 76
1874.....	5 47	4 55	9 03	17 39	2 00	6 03	6 71	10 15	7 85	3 47	5 18	3 19	81 02
1875.....	5 94	6 05	10 46	2 83	1 61	3 20	4 84	5 93	1 83	1 22	6 22	8 12	58 25
1876.....	5 93	2 61	6 40	9 90	9 60	3 71	5 90	6 76	1 00	1 95	1 20	3 30	58 26
1877.....	6 50	1 31	5 40	8 15	2 35	5 66	5 50	2 08	.....	.....	.....	.....	.....
Means.....	5 42	4 55	5 64	5 79	3 98	5 16	4 88	5 12	2 64	2 93	3 28	4 71	54 10

MOBILE.  
PRECIPITATION.

Year.	January	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Novem.	Decem.	Annual.
1840 . . .													
1841 . . .													
1842 . . .	5.59	3.87	6.54	5.43	4.65	6.40	8.21	6.60	4.41	2.46	4.55	3.94	62.65
1852 . . .													
1869 . . .													
1871 . . .	6.50	5.13	9.76	2.93	6.18	6.17	4.24	3.70	3.95	5.33	6.68	1.01	61.58
1872 . . .	3.69	8.00	12.76	4.35	3.78	6.33	13.37	1.67	2.11	2.77	5.65	3.70	68.18
1873 . . .	4.16	3.15	3.86	0.88	11.47	9.87	8.75	10.35	8.07	1.85	3.23	2.97	68.61
1874 . . .	2.48	2.72	10.57	10.92	1.23	5.69	10.21	3.79	2.54	0.00	2.04	4.17	56.36
1875 . . .	5.79	7.15	8.32	7.51	1.46	2.45	4.00	7.07	8.52	2.32	3.06	3.01	62.66
1876 . . .	3.14	4.32	8.01	3.88	4.32	3.35	5.38	11.53	1.76	0.37	5.36	7.18	58.60
1877 . . .	6.30	1.40	5.94	8.40	1.68	7.07	3.74	4.69	12.68	6.15	4.70	5.99	68.74
1878 . . .	4.57	3.40	4.33	4.09	4.90	6.60	2.98	9.95	3.86	4.84	6.31	7.64	63.47
1879 . . .	0.78	1.99	5.94	6.42	3.56	2.35	11.17	10.54	1.33	5.15	4.72	3.38	57.33
1880 . . .	1.18	5.73	9.41	2.99	5.62	5.08	4.92	4.75	7.04	7.32	*	3.71	.....
1881 . . .	7.62	8.00	10.41	9.21	1.44	4.85	2.77	15.22	11.71	3.23	7.36	9.15	90.97
1882 . . .	6.77	4.54	5.13	9.92	6.78	2.40	9.52	8.96	4.05	8.29	2.67	5.84	74.67
1883 . . .	8.80	3.63	4.21	7.25	8.51	9.42	3.31	5.88	0.96	0.84	2.57	3.11	58.50
1884 . . .	7.40	5.01	11.53	5.54	8.48	7.01	4.98	1.26	1.78	5.36	4.12	5.00	67.57
1885 . . .	11.95	2.85	6.36	5.24	3.27	4.18	3.81	6.07	3.23	1.19	4.83	5.00	54.98
1886 . . .	6.12	4.10	14.62	5.86	1.27	5.94	6.59	3.55	2.69	0.13	3.36	1.97	56.18
1887 . . .	2.90	6.62	3.65	1.93	2.84	8.91	4.31	4.31	6.21	2.45	0.44	7.02	51.59
1888 . . .	3.20	10.33	7.24	3.39	7.30	13.56	5.36	14.35	3.04	2.48	2.46	.....	.....
1889 . . .	5.07	4.64	3.48	1.65	2.78	5.35	9.55	2.80	6.97	0.08	6.78	0.52	49.67
Means . . .	5.39	4.38	7.10	5.40	4.61	6.24	7.24	6.73	4.64	2.82	4.21	4.15	32.99

\*Office, instruments and records destroyed by fire November 17, 1880.

MONTGOMERY.  
PRECIPITATION.

Year.	January.	Febr'y.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual.
Oct. 1858 to Dec. 1874 . . . . .	6.04	7.48	7.29	5.75	4.79	7.28	3.23	1.91	1.12	2.10	4.65	5.26	56.90
1872 . . . . .										3.38	0.53	5.73	4.08
1873 . . . . .	4.97	9.97	4.51	5.57	10.25	11.08	5.17	2.56	3.06	0.68	4.58	2.61	64.00
1874 . . . . .	3.69	6.57	10.66	9.45	2.03	4.31	3.87	1.25	0.39	1.97	2.60	5.14	51.93
1875 . . . . .	6.71	7.86	11.56	3.54	1.67	1.94	0.99	2.14	8.13	1.68	5.90	6.04	58.16
1876 . . . . .	3.70	5.07	7.33	10.99	6.55	4.85	6.24	3.05	1.61	0.96	3.42	5.97	59.74
1877 . . . . .	6.67	2.68	7.17	10.36	0.82	2.94	3.43	1.07	4.07	2.51	3.75	4.79	50.26
1878 . . . . .	5.39	2.59	2.64	5.91	4.06	5.85	1.59	7.67	2.55	3.49	3.92	6.74	55.40
1879 . . . . .	2.06	2.14	2.68	4.50	3.90	3.22	5.21	4.54	1.12	10.20	1.47	7.42	48.46
1880 . . . . .	1.65	6.11	9.26	6.42	7.07	0.90	3.17	4.41	2.83	2.66	4.06	5.68	54.22
1881 . . . . .	3.58	7.05	5.45	4.52	1.41	3.04	2.18	5.06	4.49	2.72	4.56	9.75	53.81
1882 . . . . .	4.54	9.27	6.92	5.03	2.94	3.98	6.29	3.41	4.18	2.40	1.91	3.88	54.75
1883 . . . . .	7.20	2.00	3.61	8.16	2.62	5.02	0.87	2.08	0.22	2.00	1.70	4.23	39.71
1884 . . . . .	4.82	4.80	9.50	3.08	1.18	10.26	2.80	3.05	0.58	1.87	2.67	4.00	48.61
1885 . . . . .	9.72	3.68	2.93	3.92	8.92	4.32	1.54	3.93	4.83	2.38	3.59	3.13	58.89
1886 . . . . .	6.69	4.10	6.86	7.38	2.95	8.61	3.37	5.37	1.12	0.03	6.72	3.05	56.25
1887 . . . . .	5.08	7.47	0.72	1.18	2.84	3.31	8.56	2.04	2.03	2.47	0.79	8.25	44.74
1888 . . . . .	4.12	7.67	11.51	1.08	5.19	4.82	3.86	6.51	5.73	5.39	3.38	2.13	61.39
1889 . . . . .	6.70	3.49	2.95	3.13	1.28	4.02	5.70	6.33	4.35	0.01	6.17	0.49	44.62
Means . . . . .	5.59	6.46	6.77	5.64	4.33	6.06	3.58	2.58	2.08	2.27	4.19	5.06	54.61



## MOULTON.

## PRECIPITATION.

YEAR.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1867.....													44.01
1868.....													44.23
1869.....													46.30
1870.....													
1871.....													44.78
1872.....													44.24
1873.....													42.65
1874.....													36.57
Means....	3.66	4.10	5.57	6.41	3.45	3.84	3.25	2.10	3.29	2.55	2.69	2.93	43.87

## MOUNT VERNON BARRACKS.

## PRECIPITATION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1840.....										5.73	1.70	2.26	
1841.....	12.84	4.86	9.28	4.65	7.23	4.60							
1842.....													
1843.....	3.81	5.90	9.22	5.17	0.72	16.67	6.11	2.18	3.49	5.04	6.27	11.80	76.38
1844.....					5.92	9.38	5.03	8.29	0.98	2.90	10.57	2.54	
1845.....	11.30	8.37	4.52	1.79	2.54	2.19	2.73	6.48	5.40	11.87	4.99	6.34	68.52
1846.....	6.82	5.31	5.63	11.51	5.49	5.57	9.42	4.74	2.12	0.40	3.75	4.60	65.36
1847.....	6.83	7.70	6.45	3.77	3.94	4.05	11.92	7.39	5.85	0.42	4.10	9.01	71.43
1848.....	3.90	5.17	3.50	2.78	2.15	6.35	3.10	4.39	2.99	1.54	7.94	5.74	49.55
1849.....	2.89	2.44	1.36	3.06	6.11	9.25	14.56	11.15	0.65	13.00	10.54	4.22	79.23
1850.....	9.59	4.81	2.09	4.22	6.72	2.01	6.44	5.13	0.15	0.85	2.32	5.22	49.55
1851.....	3.89	7.26	0.77	1.14	3.44	5.35	1.84	8.69	4.42	2.07	6.99	2.91	48.77
1852.....	1.92	1.95	1.52	6.24	6.75	1.56	1.92	9.64	0.70	2.40	9.74	7.15	51.49
1853.....	11.18	8.10	16.45	6.59	5.34	2.00	12.64	8.95	11.09	8.44	2.70	13.09	106.57
1854.....	11.01	12.83	6.22	1.96	4.45	6.72	6.13	2.29	6.82	0.81	2.34	0.73	62.31
1855.....	0.45	1.16	1.17	1.52	0.20	2.22	9.85	12.59	10.03	2.17	10.78	7.62	59.76
1856.....	5.46	3.16	5.33	3.53	3.41	9.26	3.19	5.74	1.25	0.70	11.25	5.87	58.15
1857.....	2.65	2.00	4.50	4.78	0.17	2.60	3.85	9.33	0.17	3.33	10.05	6.39	49.82
1858.....	10.62	3.12	5.21	2.02	1.42	4.80	7.31	5.89	4.38	7.73	3.98	7.87	64.35
1859.....	6.07	8.49	10.82	6.42	2.97	6.47	5.57	4.53	6.48	2.41	1.80	2.91	64.94
1860.....	2.38	10.80	1.68	1.58	2.56	3.45	1.25	6.98	5.10	6.93	4.40	3.50	50.61
1873.....										3.25	4.40	3.50	
1874.....	7.85	12.75	12.95	12.95	1.80	13.05	8.80	4.05	3.25	0.15	2.04	5.95	85.59
1875.....	6.00	10.81	12.45	3.89	2.00	3.37	2.46	3.85	7.81	4.90	3.70	3.28	64.52
1876.....	4.75	5.13	8.32	5.79	3.25	7.48	8.94	2.51	1.94	0.50	5.80	5.33	59.74
1882.....	6.51	5.88	8.41	4.98	8.57	3.79	14.54	11.26	1.79	2.26	0.68	5.88	74.55
1883.....	10.30	3.22	4.19	11.18	8.23	14.24	3.27	1.67	0.07	0.57	2.64	3.51	62.89
1884.....	5.45	4.76	14.68	5.61	5.79	7.75	5.61	4.98	1.15	5.76	4.73	3.10	69.37
1885.....	9.53	3.52	7.89	8.15	4.19	6.79	4.07	4.20	5.05	1.35	4.32	2.77	61.88
1886.....	7.12	2.37	7.59	7.11	2.53	7.41	6.50	6.90	0.76	0.00	7.03	1.43	56.75
1887.....	4.49	6.93	0.93	0.67	1.12	6.17	6.01	3.37	4.84	4.06	1.18	9.92	49.69
1888.....	2.39	10.37	11.67	1.50	5.78	7.86	2.67	8.66	2.64	5.10	2.92	3.77	65.33
1889.....	7.09	2.62	3.14	2.47	2.62	1.98	7.91	1.13	6.36	0.23	6.89	1.63	44.07
Means ..	6.00	5.92	6.48	4.73	3.91	6.14	6.33	6.10	3.72	3.45	5.24	5.12	63.14

## THREE MILES NORTH OF UNION SPRINGS.

## PRECIPITATION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1867.	...	...	...	...	...	...	...	...	...	7.30	3.60	2.30	...
1868.	5.80	4.90	3.00	5.40	3.35	0.25	6.50	2.22	1.16	8.38	1.55	4.00	46.51
1869.	5.70	4.93	2.59	7.78	1.25	3.79	2.77	2.88	0.53	0.45	4.47	4.65	41.79
1870.	3.18	2.61	6.35	2.20	0.38	2.42	1.34	1.50	2.27	0.00	5.64	6.38	34.27
1871.	3.87	6.35	6.82	6.47	5.51	9.76	0.34	5.91	1.94	1.58	4.61	1.55	54.71
1872.	1.57	5.95	6.20	2.97	3.43	1.26	5.96	1.63	0.97	0.86	3.20	2.38	36.38
1873.	1.37	5.13	2.85	3.46	6.38	5.83	2.39	4.01	1.30	1.63	2.09	1.10	37.56
1874.	1.97	5.03	10.91	10.48	1.12	6.76	5.15	1.25	2.37	0.92	3.08	4.67	53.71
1875.	5.69	4.34	12.32	3.06	1.75	2.47	2.92	2.90	4.96	1.24	4.31	3.47	49.43
1876.	1.90	2.37	4.71	5.11	5.83	1.10	3.79	2.43	0.43	1.74	2.27	5.84	37.52
1877.	4.75	2.42	6.76	7.83	1.07	3.55	1.83	1.44	3.80	2.22	4.87	2.66	43.20
1878.	3.46	1.87	2.99	3.88	4.41	3.77	3.28	5.32	1.67	1.92	7.32	4.23	44.32
1879.	1.54	1.21	2.94	5.74	1.83	0.74	3.17	3.01	0.75	7.62	0.55	5.30	34.40
1880.	1.02	3.87	5.91	3.54	2.64	1.63	1.45	5.25	2.35	3.60	2.92	3.95	38.13
1881.	2.17	3.32	7.05	5.02	0.47	4.63	0.80	3.64	2.03	4.00	3.63	6.00	47.76
1882.	3.67	6.09	4.66	5.13	2.86	4.26	6.43	6.61	4.37	1.85	1.75	4.33	53.01
1883.	7.22	3.03	4.00	8.75	4.43	3.44	1.23	1.07	1.65	1.03	1.37	3.05	43.27
1884.	0.67	2.82	10.52	3.67	2.83	8.43	3.71	3.74	0.00	0.00	2.53	3.08	41.40
1885.	7.18	3.15	3.19	2.78	7.58	3.27	4.64	2.70	5.67	4.22	3.13	3.10	50.66
1886.	6.72	3.97	6.59	4.95	1.02	8.73	3.95	3.66	0.95	0.00	5.19	2.77	48.50
1887.	3.63	4.85	0.58	1.99	2.66	5.09	15.77	3.07	5.03	3.12	1.87	7.83	55.49
1888.	3.45	6.57	13.48	2.08	3.37	5.87	1.33	4.15	6.98	8.53	4.08	2.31	62.60
Means	3.64	4.27	5.92	4.87	3.06	4.15	3.75	3.40	2.44	2.83	3.37	3.86	45.56



PRECIPITATION, IN INCHES, AT STATIONS IN ALABAMA.

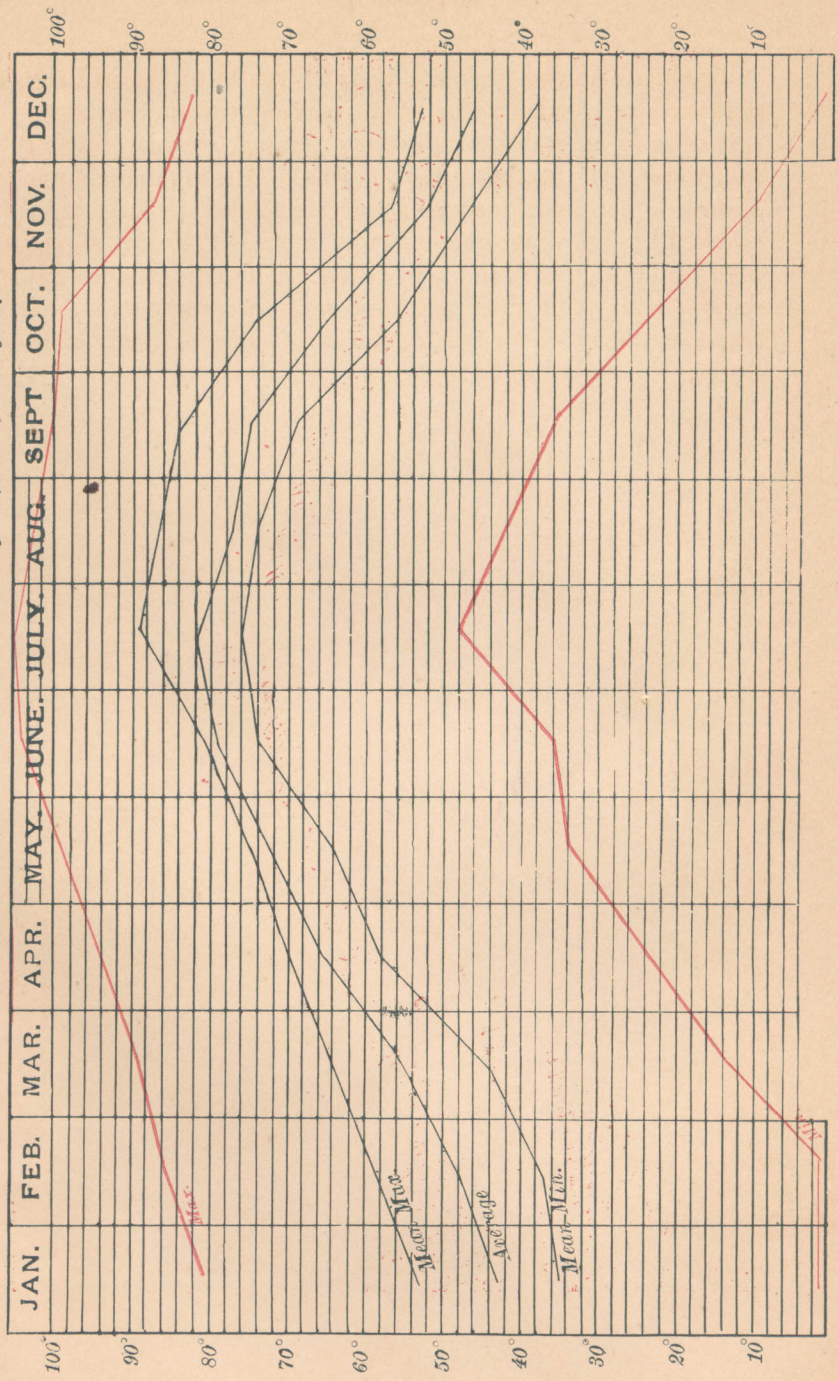
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Annual.	Period of Observation.
Auburn.....	5.61	4.48	5.80	3.82	3.17	5.28	4.37	4.20	3.29	2.48	4.49	5.43	52.42	12 years.
Bermuda.....	3.80	3.31	5.40	3.82	1.77	4.79	2.45	5.15	4.39	3.41	3.58	3.03	44.90	4 years.
Birmingham.....	7.07	2.59	11.51	7.76	3.06	4.28	3.07	3.84	3.40	1.72	...	3.40	...	5 years.
*Calera.....	...	...	...	4.45	2.91	6.09	2.76	2.58	1.87	0.49	...	...	...	6 years.
Carlowville.....	5.91	7.01	7.77	7.83	3.77	5.01	4.81	4.04	4.00	2.33	5.93	5.63	65.19	13 years, 4 months.
Coatopa.....	5.40	4.90	6.60	3.00	4.05	5.80	3.70	1.35	2.25	2.80	7.00	5.80	52.65	2 years.
Carrollton.....	5.55	3.98	2.25	5.35	4.99	3.21	3.44	3.55	2.65	2.30	2.76	5.42	45.45	4 years.
Decatur.....	7.27	5.00	6.37	5.00	3.40	3.45	3.58	2.42	2.13	2.45	4.53	3.32	48.91	7 years, 8 months.
Demopolis.....	...	...	...	6.20	1.81	7.60	4.44	5.36	1.76	2.66	...	...	...	2 years.
Edwardsville.....	7.33	5.48	4.76	1.90	6.74	5.19	4.34	3.74	2.68	1.70	2.25	4.52	49.67	2 years.
Elyton.....	3.94	4.40	8.28	1.12	1.87	4.00	3.87	4.44	3.43	3.75	3.25	4.00	46.32	2 years.
Eufaula.....	5.94	4.64	3.15	2.46	2.13	3.27	6.97	4.34	3.25	1.88	5.08	2.12	44.23	4 years.
*Evergreen.....	2.22	3.83	8.58	3.55	1.88	5.72	7.37	3.38	4.94	1.77	7.72	2.43	50.43	4 years.
*Fish River.....	3.49	2.00	4.28	...	1.00	3.05	5.69	7.52	5.23	0.89	2.33	3.32	...	5 years.
Florence.....	6.06	4.34	3.95	2.39	4.57	4.20	5.83	2.78	2.88	5.96	2.58	4.66	46.20	5 years.
*Fort Deposit.....	...	...	...	9.96	4.68	3.87	3.31	2.32	2.18	1.50	...	...	...	4 years.
Fort Mitchell.....	2.29	5.52	4.61	6.70	6.30	7.08	1.75	4.28	1.22	0.11	3.86	1.48	45.20	1 year, 3 months.
Gadsden.....	5.77	3.77	3.47	1.80	5.84	5.22	3.76	3.52	2.48	2.40	3.51	6.44	47.9	4 years.
Greensboro.....	5.36	5.00	5.02	4.48	3.13	3.92	3.16	5.27	2.99	2.18	4.81	5.52	50.84	18 years, 8 months.
*Greenville.....	7.55	4.22	3.63	7.83	4.64	8.89	4.66	3.30	2.33	1.51	7.39	2.35	58.10	6 years.
Green Springs.....	5.17	5.04	6.01	6.13	3.48	4.75	4.41	4.55	2.97	2.94	4.49	4.99	54.83	28 years.
Havana.....	8.66	6.54	3.76	8.53	2.90	0.66	3.16	3.24	4.59	6.35	3.45	5.08	56.92	2 years.
Huntsville.....	5.42	4.55	5.64	5.79	3.98	5.16	4.88	5.12	2.64	2.93	3.28	4.71	54.10	16 years.
Jacksonville.....	5.69	3.00	7.19	3.18	6.03	5.83	4.19	2.16	...	1.69	2.68	3.03	...	3 years.
†Livingston.....	3.22	4.25	1.54	5.06	7.87	3.71	3.62	3.15	1.81	5.73	2.06	6.06	48.08	4 years.
Marion.....	2.50	5.00	5.50	8.92	3.48	2.56	4.81	4.24	2.74	3.37	2.00	2.60	47.72	6 years.
Mobile.....	5.39	4.38	7.10	5.40	4.61	6.24	7.24	6.73	4.24	2.82	4.29	4.15	62.99	24 years.

Monroeville.....	3.68	6.69	4.65	5.52	7.04	4.95	6.89	7.30	2.74	1.56	5.72	4.15	60.89	5 years, 5 months.
Montgomery.....	5.59	6.46	6.77	5.64	4.33	6.06	3.58	2.58	2.08	2.27	4.19	5.06	54.61	22 years.
Mount Vernon Barracks.....	6.00	5.92	6.48	4.73	3.91	6.14	6.33	6.10	3.72	3.45	5.24	5.12	63.14	32 years.
Mount Willing.....	8.59	6.28	1.47	4.87	5.26	2.50	...	2.92	2.28	1.42	3.30	6.86	...	4 years.
Moulton.....	3.66	4.10	5.57	6.41	3.48	3.84	3.25	2.10	3.29	2.55	2.69	2.93	43.87	10 years.
Newton.....	7.03	4.98	3.57	4.45	4.39	2.45	3.82	8.08	2.61	1.60	3.49	5.26	51.53	4 years.
Oswichee.....	5.76	4.21	7.43	2.16	2.35	8.36	5.08	6.55	1.21	3.80	2.90	5.45	54.26	2 years.
*Opelika.....	.....	.....	.....	6.48	9.08	5.20	6.97	3.93	2.52	3.30	3.14	4.44	.....	8 years.
*Pine Apple.....	.....	.....	.....	6.13	2.67	3.46	3.86	2.44	1.24	1.33	.....	.....	.....	6 years.
Prattville.....	9.17	3.69	1.87	2.44	7.25	6.50	3.99	3.06	0.00	2.44	3.15	6.73	50.29	2 years.
Selma.....	4.31	6.43	8.74	6.55	2.16	4.18	4.16	3.78	2.20	2.50	4.97	5.93	55.91	13 years.
*Scottsboro.....	.....	.....	.....	5.73	3.63	4.60	5.59	3.57	2.41	2.91	.....	.....	.....	6 years.
Talladega.....	5.70	5.13	7.52	2.17	1.92	4.09	2.31	3.82	5.57	2.33	2.08	7.20	49.84	2 years.
Trinity.....	7.28	5.98	3.99	5.38	4.60	7.02	4.37	1.99	0.95	1.68	2.06	5.78	51.08	4 years.
Troy.....	4.77	5.68	11.14	6.36	3.5	4.95	6.35	4.80	3.55	1.81	4.19	4.68	61.85	5 years.
Tuscaloosa.....	3.27	1.73	6.99	9.71	2.70	3.33	2.71	2.06	2.05	2.61	2.34	1.36	41.75	6 years.
Tuscumbia.....	6.02	4.84	2.74	2.31	5.45	5.78	5.07	2.52	3.77	2.46	3.25	5.16	49.37	4 years, 1887 incom- plete
*Uniontown.....	.....	.....	.....	7.73	1.97	3.93	4.80	4.50	1.16	1.38	.....	.....	.....	2 years.
Union Springs.....	3.64	4.27	5.92	4.87	3.06	4.15	3.75	3.40	2.44	2.83	3.37	3.86	45.56	21 years, 3 months.
Valley Head.....	5.33	6.44	12.78	3.72	4.04	10.55	2.57	6.42	2.22	2.42	3.52	5.39	64.40	5 years.
Wilsonville.....	4.08	3.36	6.38	4.87	2.79	4.56	3.85	3.91	2.64	3.20	3.48	3.50	48.62	6 years.
Means.....	5.36	4.67	5.76	5.12	3.95	4.80	4.40	4.01	2.74	2.47	3.84	4.49	51.89	

† Two years' observations at this Station were made by Captain J. W. A. Wright, and two years by Observer of Cotton Belt Station.  
 \* Stations of the Cotton Belt Series.—The Observers at these Stations report only during the crop season, viz: From April 1st until November 1st.

The chart on the opposite page shows in an interesting manner how regularly the mean maximum and the mean minimum temperatures follow the average temperature of the State. The extremes are not great. The high maximum shown on the chart occurred only once during the period covered by the diagram, and was recorded at the signal office in Montgomery in July of 1881. The reader must understand that this does not represent an average for the State, but is an abnormal temperature observed only once during the period of twenty-one years.

Diagram showing for the entire State of Alabama, the Maximum, Minimum, Mean Maximum, Mean Minimum and Average Temperatures of the Air. Compiled from reports of the State Weather Service, extending over periods of 2 to 27 years.







## 3. YEARS OF DROUGHT AND WET YEARS.

From special Bulletin No. 1, issued by the Alabama Weather service and compiled by Capt. W. H. Gardner of Mobile, the following extracts are taken concerning the condition of the weather prior to 1830. From 1830 to the year 1890 the data mentioned in this bulletin, came from the Reports of the Smithsonian Institute; Reports of the Department of Agriculture; Reports of the Signal Service; Patent Office Reports, and reliable agricultural and scientific journals:

1711. There was a severe storm and high flood in March on Mobile Bay which overflowed the newly organized town and caused its removal to its present site.

1746. A destructive cyclone visited the Gulf coast, which laid waste the plantations and totally destroyed the rice crop. This article was used in most families as a substitute for bread.

1807. The spring was wet and the water courses were high.

1817. A year of constant rains in Alabama, Georgia and South Carolina.

1825. A dry summer.

1829. A year of continuous rains in Alabama and Mississippi, and poor crops.

1832. A winter of heavy rains and extraordinary floods.

1833. A winter of heavy rains and great floods in the rivers of Alabama. The Tombigbee, above Gainesville, was higher than ever known prior to this time.

1840. The spring was dry and cool. The fields early in June presented a bleak and barren aspect. Famine seemed imminent. The summer was also dry and the farms were thoroughly cultivated. The Warrior at Tuscaloosa was very nearly dried up, resulting in the death of a great many fish. At Montgomery there was a slight rain early in August, and no more until late in October. The Alabama river was too low for navigation. An immense cotton crop was made, perhaps the largest yield per acre ever known in the State up to this time. There was no bad weather to prevent picking from August to the following spring. The total rainfall for the year at Huntsville was only 29.08 inches, and at Savannah, Georgia, 25.98 inches.

1843. The spring was late, with continued rains in July and August, throughout the cotton region. This wet weather acted so injuriously on the cotton that a most favorable fall failed to produce as large a crop as that obtained in 1842.

1844. The summer was dry and the season generally excellent for the growth of cotton. The crop opened very early and was large. Cotton picking was general August 1st.

1845. The spring and summer were exceedingly dry.

1846. A memorable year in Alabama. The cotton caterpillar made its appearance for the first time in the clay lands north of the Black Belt or the Cretaceous formation. The damage in central and south Alabama was fearful. Boll worms were also abundant. The rapid multiplication of

these insects was caused by the unusually wet summer. The cotton crop was 25 per cent. less than that produced in 1844.

1847. A wet summer, and insects were very numerous. Scarcely any cotton opened on August 27th. All the southern rivers were very high from the heavy rains in December. Rainfall for the year at Mobile was 71.43 inches. The season was unpropitious and backward. The spring opened late and the frequent occurrence of destructive hail storms and the prevalence of northeast winds, accompanied with chilling rains, until late in May, exercised an unhappy influence on the growing crop, placing it back three or four weeks.

1850. The winter and spring were so wet and the land was in such bad order it could not be well prepared for the crop. Much of the soil was ploughed up in wet clods that had not pulverized when the season for planting had arrived. Cotton insects were numerous.

1851. Excessive rains and very high water in April. The summer was dry and hot and there was but little rain from May 4th until August 10th; resulting in the poorest corn and cotton crops on the sandy and clay lands ever made. The drouth of seven weeks parched up the gardens in east Alabama. It also cut off the oats, except the autumn crop. About the middle of August, after an exceedingly dry year throughout the cotton regions it rained generally over the country. The fall continued warm and dry until unusually late and afforded to planters double the crops they expected in August.

1852. There was a frequency of rain in July and August that produced a too rapid development of weed in the cotton plant, and multiplied the injurious insects, that resulted in considerable damage to the crop.

1853. The March rains were heavy, while in April there was no rain of consequence. In May it continued excessively dry in the same districts affected in April and the drought was very severe. In July the rains became abundant and even excessive where the drought had been severe. These rains began early in the month and continued and were profuse, giving at the end of July 7.00 to 11.00 inches of rainfall, or nearly twice the mean depth. During September the rains were heavy, as much as 15.00 inches falling at Pensacola. Some damage was done by these rains in retarding the development of cotton-bolls, and by flooding bottoms. The annual rainfall at Mount Vernon Arsenal, near Mobile, was 106 57 inches; the largest ever recorded in Alabama. The rains of September and the generally wet character of the latter parts of the season, together with the early drought, that lasted about three months, seriously reduced the yield of cotton.

1854. The weather of spring cold and dry and the wheat and oat crops were cut off. The severity of the drought was unprecedented, affecting more or less the entire country. Even the low lands, that heretofore gave large yields during dry years, materially failed in 1854. In the month of September the rains were abundant and damaged to a great extent the opening cotton. The grain crop was also seriously injured.

1855. A mild winter with considerable dry weather. Rivers were not navigable. Cotton that was planted in April and May did not germinate for want of moisture. Late in May there was sufficient rain to bring up cotton and late planted cereals. The summer was dry but cultivation was perfect and the cotton crop was very large. The yield per acre was the

largest ever realized except possibly in 1839. Total rainfall for the year at Green Springs was 39.27 inches; at Greensboro it was 37.60 inches, and at Auburn, 37.85 inches, or a deficiency of nearly 20 inches. The summer rainfall was well distributed and the deficiency was not so severe on the growing crops.

1857. No rain fell in East Alabama during the months of June and July. The year was distinguished by abnormal conditions of both temperature and rainfall. The deficiency in precipitation was fully 16 inches.

1858. During this year occurred great spring floods. August was hot and dry, except in East Alabama where the rains were continuous. The fruit crop was abundant and cotton and grain crops excellent. During the months of August, September and October little rain fell, and the cotton opened rapidly and early and the season was most excellent for gathering it. A large crop was saved. Oats were destroyed by rust. The corn crop was fair and there was an abundance of fruit.

1859. Another spring of heavy rains and destructive floods. The summer was seasonable, and the fall was like that of 1875 and 1876, and like those years an immense cotton crop was gathered in very bad condition. Picking was continued until March, 1860.

1860. The planters of Alabama made enough corn to do them. In a few localities of the State such was the length of the drought, and the intensity of the heat the crop was cut a little short, but in other sections more favorable there was enough corn made to spare. No rain fell in East Alabama from June 5th to July 27th. In this part of the State the effects of the drought were exhibited by the dried up creeks, stunted cotton bare of fruit and the forest shrubbery dying for want of moisture in the earth. There were two equinoctial storms—one August 11th and the other September 15th.

1865. The rivers were all high in April and May, but the summer was dry and fair crops were made.

1867. Continuous spring rains and the rivers over the State very high. The crops were replanted early in June, and by September promised a fine yield, but the cotton caterpillars appearing in large numbers, and no fruit having developed by that time, the crop was seriously damaged.

1868. The summer was moderately favorable, and the cotton plant was well fruited by July 10th. Continuous rains from August 20th until September 10th developed both boll worms and caterpillars which inflicted great damage, reducing the cotton crop on the black lands fully one half.

1870. A dry spring, particularly during May. The weather during June and July was favorable for cultivation. There was a late frost and the cotton crop was very large.

1871. March and April were very wet. May cool, with frequent rains, and June was showery, July was dry and favorable for farming operations, but August produced heavy rains. September, October and November were favorable for gathering the crop but the yield was light. Caterpillars did great damage in central Alabama.

1872. A year of moderate temperature and favorable distribution of moisture. The cotton crop was very forward. July and August were very warm with light rainfall. Cotton opened very rapidly, the fields being white by August 24th. The yield was large,

1874. January and February were pleasant months. April was wet and May was dry. Heavy rains in June. Caterpillars did considerable damage in central Alabama.

1875. April and May dry. Poor stand of cotton. There were general rains about the middle of June which gave healthy, vigorous growth to the plants, the lands having been placed in fine condition during the dry weather of April and May. July and August were very dry in middle and southern Alabama. The fall and winter months were continuously wet and the very large crop of cotton was gathered in very bad condition. There was no frost of consequence until December 8th.

1876. March 19th a very heavy snow storm swept over west Alabama, resulting in a heavy rainfall at Mobile. Caterpillars were more generally prevalent than ever known, but coming late did no material damage.

1877. An equinoctial storm swept over the State on September 18 and 19, in which the wind was not high, but the rain fell on the north west limits of the storm in torrents. At Tuscaloosa 14.00 inches fell in two days. The Warrior river was 63.6 feet above low water and destroyed all the corn and cotton crops on the rich bottom lands between Tuscaloosa and Eutaw. The rain fell without intermission.

1879. The season up to May 20th was very favorable for planting and farm operations. From this date until June 5th there were continuous rains and but little plantation work was done and crops became grassy. July and August were showery. The autumn was mild and comparatively dry. Picking season was generally excellent and the crop was large.

1881. During March rains were very heavy and the rivers were higher than in 1865. The months of April, May, June and July were quite dry. The corn crop was cut down to save fodder, as the protracted drought prevented the formation of corn.

1883. Prolonged and unprecedented drought continued during August and October. The weather during October was hot, dry and unhealthy. Crops suffered for rain, and in some localities, wells dried up.

1884. The remarkable features for the year were the unusually heavy rains of June and July, followed immediately by a prolonged drought, that lasted nearly four months. The rainfall was about four inches below the average.

1885. The summer opened moderately cool and slight damage was done to the cotton, but by the beginning of July the weather turned off very favorably and the outlook for a fine crop was encouraging. The abundant rains that occurred during July and August developed the cotton insects and rust, and the cotton plant was retarded in its growth. During the autumn the weather was so wet the cotton sprouted in the fields, and this trouble, together with the numerous insects and rapid increase of the rust cut off the crop considerably.

1886. The spring opened with extensive and damaging floods. The rise in the rivers was greater than was ever known to occur before. During May the rains were so frequent the crops became badly choked with grass and weeds. The rains continued throughout June, damaging cotton very much. During July the days were fair and the farmers cultivated the lands so well the crops recuperated wonderfully. The fair weather of August and the dry, sunshiny days of September opened the cotton so rapidly a very

fair crop was gathered. The weather continued dry until the close of October.

1887. The spring was dry until May, when rains occurred so often as to place the young crop in good condition. On the 24th of June the Central Office of the State Weather Service, with all its records, was destroyed by the fire that burned the main building of the Alabama Polytechnic Institute, and no bulletins were issued until September. The fall was remarkable for a continued drought and high temperature. In some portions of north Alabama the thermometer ranged as high as 100° in September, and before the close of the month there was a fall of 50°. Crops of all kinds suffered on account of drought and hot weather.

1888. The spring opened wet and cool. The rains were continued throughout August. The autumn was unusually mild and roses were in bloom at Auburn on December 10th.

1889. The spring was quite dry and farmers complained very much about the dry condition of the atmosphere producing withering effects on the crops. The rains were frequent in north and west Alabama during June, but in eastern and southern portions of the State the farms still suffered for want of rain until the close of the month when copious showers fell. The weather generally during the summer months was favorable for the crops. A good cotton crop was gathered and the staple was in excellent condition because of the fine dry weather during the autumn months.

#### HEAVY RAINFALLS PER DAY.

1880. Green Springs, April 19 and 20, 3.82 in 9 hours.  
 1881. Mobile, August 3rd, 6.20; 4th, 3.10; 5th, 3.56.  
 Mobile, November 6th, 4.50 in 10 hours.  
 Montgomery, December 14th, 2.93; 21st, 3.45.  
 1882. Montgomery, February 8th, 3.01.  
 Auburn, February 8th, 3.56 in 14 hours.  
 Auburn, February 28th, 2.33 in 9 hours.  
 Mount Vernon, March 26th, 4.81, from 7.15 a. m. to 9.30 p. m.  
 Auburn, March 26th, 1.58 in 1 hour and 30 minutes.  
 1883. Auburn, October 22nd, 2.15.  
 1884. Birmingham, April 15th, 3.50.  
 Auburn June 28th, 4.00.  
 Carrollton, July 28th, 3.10.  
 Wetumpka, July 28th, 3.50.  
 Prattville, December 14th, 3.50.  
 1885. Clintonville, January 23rd, 4.07.  
 Tuscaloosa, April 30th, 5.25 in 3 hours.  
 Pine Apple, May 30th, 5.30.  
 Trinity, June 12th, 4.90.  
 Tuscumbia, September 29th, 6.33.  
 Marion, November 6th, 6.00.  
 1886. Greensboro, January 3rd, 4.57.  
 Russellville, March 29th, 9.75.

- Tuscumbia, September 14th, 5.16.  
 1887. Fayette, January 23rd, 5.00.  
 Auburn, July 27th, 7.37.

## WET MONTHS.

1867. August, 13.55 at Fish River.  
 1881. March, 11.74 at Tuscaloosa.  
 March, 7.57 at Auburn.  
 August, 15.22 at Mobile.  
 1882. January, 13.70 at Decatur.  
 February, 11.31 at Auburn.  
 June, 14.41 at Birmingham.  
 July, 16.37 at State Line.  
 July, 14.54 at Mount Vernon Arsenal.  
 August, 11.26 at Mount Vernon Arsenal.  
 September, 10.25 at Troy.  
 1883. January, 10.47 at Greene Springs.  
 January, 10.30 at Mount Vernon Arsenal.  
 April, 12.83 at Auburn.  
 April, 11.22 at Birmingham.  
 April, 11.18 at Mount Vernon Arsenal.  
 April, 10.65 at Opelika.  
 June, 14.24 at Mount Vernon Arsenal.  
 June, 10.28 at Greenville.  
 1884. January, 12.94 at Clanton.  
 January, 11.52 at Auburn in 15 days.  
 July, 12.02 at Greene Springs. Thunder storms occurred almost daily.  
 June, only 3 days without rain in some parts of the the State.  
 1885. May, 12.96 at Bolling.  
 1886. January, 11.00 at Newton.  
 March, 18.25 at Newton.  
 June, 12.41 at Lineville, 18 days rain.  
 November, 11.55 at Mount Willing.  
 1887. July, 21.09 at Auburn.  
 December, 15.95 at Mount Willing.  
 1888. January, 11.50 at Selma.  
 March, 13.48 at Union Springs.  
 June, 13.56 at Mobile.  
 August, 14.35 at Mobile.

## DRY MONTHS.

1882. June, 0.10; September, 0.31, Talladega.  
 June, 0.13; September, 0.32, Calera.  
 October, 0.29; Talladega, 0.37, Calera.  
 1883. September, 0.07, Mount Willing; 0.16, State Line;  
 0.22, Montgomery; 0.25, Uniontown; 0.48, Pine Apple.

1884. September, 0.00, Prattville; 0.00, Wetumpka; 0.00 Troy; 0.00, Tuscaloosa; 0.00, Evergreen; 0.00, Selma; 0.00, Fort Deposit; 0.00, Calera. This was the driest month on record. From 33 reports only 5 gave 1.00 inch and over. The average for the State was 0.40 of an inch.

October. The following stations reported a fall of rain less than 1.00 inch: Eufaula, Union Springs, Jacksonville, Edwardsville, Summerville, Auburn, Opelika, Fort Deposit, Calera. The mean depth of rainfall for the State was 1.48 inches.

1886. September. The following stations reported a fall of rainfall of less than 1.00 inch: Centre, Selma, Greensboro, Birmingham, Auburn, Marion, Carrollton, Tuscaloosa, Livingston, Fort Deposit, Mount Willing, Oswiehee.

October. Tuscumbia, Fayette, Florence, Trinity, Selma, Auburn, Montgomery, Marion, Livingston, Eufaula, Union Springs, Newton, Fort Deposit, Mount Willing, Mobile, Bermuda, Oswiehee. The average for the State was 0.58 inch.

1887. March. Less than 1.00 inch. Bermuda, Marion, Montgomery, Union Springs, Mount Willing, Tuscaloosa, Troy.

1889. May. Less than 1.00 inch: Bermuda, Livingston, Greensboro, Columbiana, Uniontown, Centre.

October. Tuscumbia, Union Springs, Mobile, Livingston, Greensboro, Pine Apple, Uniontown, Selma. Average for the State 0.98 of an inch.

#### 4. DESTRUCTIVE STORMS.

1740. September 11th a most destructive hurricane swept the Gulf coast from the Mississippi to Pensacola. It began about 1 A. M. and lasted until 12 M. It blew down several houses in Mobile. Half of Dauphin Island was carried away and more than three hundred head of cattle were drowned on the island. On the 18th another violent storm visited the coast of Alabama. It came from the N. N. E., and was accompanied by heavy rains that caused an overflow of all the rivers by which were laid waste all the plantations of the Indians from Carolina to Mobile. Much suffering resulted from these storms in and around Mobile.

1772. From August 31st to September 3rd a storm visited the country around Mobile much more destructive than any before experienced. Vessels were driven into the heart of the town and the violence of the wind forced the salt water over the ground, destroying all vegetation. All the houses were filled with water several feet deep. The sea was driven over the islands along the coast of the Gulf in mountainous waves. The wind ranged from S. S. E., but further west the storm was more violent and the wind come from N. N. W. It is stated that during this storm the mulberry rees in Mobile lost all their leaves by the force of the winds, and after-

wards put forth a second crop of leaves, blossomed and produced fruit within the brief space of four weeks,

1794. A destructive tornado in August. The locality visited was not mentioned in the record. Such a small area of the territory between latitudes  $21^{\circ}$  and  $41^{\circ}$ , in Alabama, was occupied prior to 1815, we have no record of the tornadoes and violent storms which generally produce such terrible havoc in the months of March, April and May,

1819. August 25th to 28th a destructive cyclone prevailed on the Gulf coast. A large brig was stranded on Dauphin street in Mobile,

1852. August 25th produced an equinoctial storm of great violence, causing the highest flood ever known in Mobile, except that of 1772.

1878. March 27th a tornado passed through Hale county, prostrating trees and small houses.

1880. March 18th a tornado passed across the southern portion of Pike county, during the evening, causing great damage to timber and fencing. The storm passed about three miles west of Smilie's bridge on Conecuh river in an easterly direction, and in a distance of ten miles greatly damaged fourteen plantations.

1881. On February 18th a tornado passed through Tuscaloosa county. Its direction was northeast and extended a distance of fifteen miles. Another storm passed a little north of Sumterville in Sumter county, at 5 p. m. on the 23rd of March, that was very violent in its effects. This storm was also northeast, and its track was about forty yards wide.

1882. September 9th a destructive gale visited Marvin on Saturday night. Another began in Alabama on the 10th, and passed across Georgia and South Carolina. This storm swept over the section around and in Auburn, prostrating trees and small houses. The gale continued with unabated force for five or six hours.

1883. On April 22nd a violent tornado occurred in Alabama and passed through Talladega county, killing one person and destroying considerable property. Another storm passed to the north and west of Headland, Henry county, on the evening of May 20th, that destroyed some farm buildings. On October 16th a heavy storm passed near Williams' Station, but no material damage was done in the immediate section.

1884. February 19th tornadoes of great violence passed through Montgomery county on the afternoon. At Montgomery the wind blew at the rate of 32 miles per hour. The wind veered from S. to Nw. during the storm and the temperature fell from  $80^{\circ}.9$  to  $47^{\circ}$ . Storms also passed through the following counties doing considerable damage: Calhoun (8 persons killed); Cherokee; Coosa; Elmore; Jefferson (destroyed most of the town of Leeds and killed 11 persons, wounding 31. The storm was accompanied by hail with stones of unusual size); Perry.

1884. March 11th tornadoes passed through the counties of Greene and Pickens. And on the 24th at 2 a. m., another swept through Barbour county that was accompanied by unusual electric displays and torrents of rain. Its track was about one-quarter of a mile wide. Several persons were badly injured, and one man was killed. On the 25th a tornado passed through northeast Alabama continuing on into Georgia, doing great damage in its track to property. Another on the same day swept through



beat one in Chambers county, five miles north of Fredonia. It destroyed everything in its path.

April 2nd a tornado passed through Springville during the night. This storm swept in a northeast direction into Tennessee, and about 60 miles southwest of Chattanooga seven persons were killed. The track of the storm was one hundred yards wide. Eleven miles east of Huntsville a strong wind demolished a farm and killed three persons, wounding four others. At 4 p. m. on the 14th considerable damage was done by a storm at Frankfort in Franklin county. Another tornado passed through Cullman county on the 15th, and also one swept through Elmore county on the 16th in a northeast direction. Another on the 15th through Henry county, and also through Morgan county. Three miles south of Auburn a tornado committed considerable havoc over a distance of eight miles or more. This storm originated four miles southwest of Auburn and passed over into Georgia. In that State a number of persons were killed and thousands of dollars worth of property destroyed.

December 12th a violent storm of wind and rain passed through Mr. J. W. Harris' plantation ten miles north of Auburn, sweeping everything in its track; eight houses were demolished. The width of the track was about 100 feet, and the course of the storm was northeast. The initial point was supposed to be near Mount Meigs.

1885, January 11th tornadoes passed through the following counties: Lamar, Fayette, Cullman, Blount, Marshall, DeKalb, Greene, Hale, Bibb, Chilton, Coosa, Clay, Randolph, Macon. These storms carried death and destruction in their paths. The general direction was northeast. Immense trunks of forests were seriously damaged, and the largest and best timbers in the course of the storms were prostrated and piled together in tangled masses. The storms were most violent between 5 and 7 p. m.

April 30th a storm of considerable violence passed over Summerfield, Dallas county. The tornado came from northwest and was accompanied with rain and small hail stones.

May 6th a severe storm passed over the section of the State in the neighborhood of the towns of Plantersville, Dixie and Randolph at 4:30 p. m. Newspaper accounts fix the loss at \$10,000.

November 6th—The storms of this date swept across the State about 11 a. m. The following places were more or less damaged: Fort Payne, Decatur, Florence, Greensboro, Livingston, Marion, Mobile, Montgomery, Opelika, Selma, Orrville Station, Coatopa Station, Plantersville, Tuscombria. The damage resulting to crops and property over the State was very great, and in some localities persons were killed by the violent winds. The rivers rose very rapidly and soon overflowed their banks.

1886, March 27th a tornado did considerable damage near Grove Hill. The track was a quarter of a mile wide and came from the west. On the 29th a storm passed through Smith's Station from the southwest, doing considerable damage to timber and other property. On the 30th, between 11 a. m. and 12 m., the northeast portion of Bullock county was visited by a tornado. The track was about one hundred yards wide, and its direction was N. N. E.

1888, March—Heavy precipitations occurred on the 26th and 27th that damaged property over the State to a considerable degree. All railroads

were more or less injured and trains were stopped for several days. The local wind storms accompanying this rain were quite severe in some localities—unroofing houses and prostrating fences and trees. This cyclone lasted for two days, and the temperature was high during the entire period.

From the above notes, it will be seen that the heavy floods and strong winds occur most frequently in Alabama during the months of March, April and May,

#### TORNADOES IN ALABAMA.

The following interesting account of tornadoes in Alabama was taken from the *American Meteorological Journal*, and was prepared for that journal by Lieut. John P. Finley of the United States Signal Service. The map shows only approximately the directions and locations of these storms. For a more detailed and accurate account, refer to the tables accompanying Lieut. Finley's article :

Period of observation, 67 years, 1822–1888.

Total number of storms, 112.

Year of greatest frequency, 1884—19 storms.

Average yearly frequency—1.6 storms.

Year in past (10) ten years no report of storms—none.

Month of greatest frequency, March—28 storms.

Day of greatest frequency, January 11th—7 storms.

Hours of greatest frequency, 6 to 7 P. M. and 7 to 8 P. M.

Months without storms, July, August, September and October.

Prevailing direction of storm movement—Ne.

Region of maximum storm frequency, north central portion.

TABLE II. —A Chronological Table, showing the location, date and time of occurrence, and general character of formation and movement of Tornadoes in the State of Alabama for a period of sixty-seven years, from 1822 to 1888.

County.	Month and Day.	Year.	Time.	Direc- tion.	Form of Cloud.	Width of Path in Feet.
Morgan	April 16	1822	5 p m.	NE	Funnel	2640
Chilton		1823		E 10° N		2640
Morgan	April 6	1823	9 p m.	NE	Funnel	3960
Tuscaloosa	April 25	1829				
Calhoun	May 1	1830				
Morgan	June 16	1834	4:30 p m.	NE	Funnel	1237
Blount		1840		E 20° N		
Etowah		1840		E 20° N		
Blount	March 10	1840	6 p m.	E	Funnel	2640
Jefferson	March 16	1840	About 6 p m.	NE		1320
Mobile	March 24	1840	7 p m.	S 80° E		165 to 660
Tuscaloosa	March 4	1842	6 a m.	NE		
Tuscaloosa		1843		E 45° N	Inverted Cone	600
Lee	March 7	1854	1 p m.	NE		900
Pickens	March 12	1855		SE		
Cherokee	May 24	1857		NE		
Lee		1858		NE		1320
Cleburne	November 30	1861	10 p m.	NE		600 to 900
Cleburne	March 4	1863	11 p m.	NE		600 to 900
Lee	December 25	1864	Midnight	NE		
Cherokee		1866		E 40° N		
Cleburne	April 16	1866	11 p m.	NE		600 to 900
Talladega	May 6	1866	8 p m.	E 10° N		1320
Calhoun	February 15	1867		E 10° N		
Tuscaloosa	April 29	1867	10 a m.	E 20° N	Funnel	
Cleburne	May 4	1867	Midnight	NE		600 to 900
Cleburne	May 26	1867	8 p m.	ENE	Funnel	600 to 900
Cleburne	February 12	1868	3 p m.	NE		600 to 900

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TABLE II.—A Chronological Table, showing the location, date and time of occurrence, and general character of formation and movement of Tornadoes in the State of Alabama for a period of sixty-seven years, from 1822 to 1888.—Continued.

COUNTY.	Month and Day.	Year	Time.	Direction.	Form of Cloud.	Width of Path in Feet.
Tuscaloosa	May 8	1868				
Clay	January 29	1869	8:30 a m	E	Funnel	1320
Talladega	April —	1869		NE		
Pickens	May 6	1869	6 p m	E		450
Calhoun	January —	1870	8 a m			
Marshall	April 23	1870		NE		
Calhoun	December 24	1870			Funnel	
Cleburne	November 16	1873	12 p m	NE		600 to 900
Jackson and Calhoun		1874				
Hale	November 22	1874	Afternoon	SE		
Colbert	November 22	1874	6 p m	NE	Funnel	900
Shelby	November 22	1874	Midnight	E 10 S		300 to 1320
Dallas	November 27	1874			Funnel	
Cherokee		1875		E 30 N		1320
Lamar	February 24	1875	6:30 p m	NE		450
Lee	March 20	1875	2 p m	NE	Funnel	300 to 900
Pike	March 20	1875				
Coosa and Tallapoosa	May 1	1871	about 10 a m	E		1320
DeKalb	April 23	1876		NNE		
Etowah	December 25	1876		E 20 N		
Hale	April 23	1878	5 p m	NE		2640
Chilton	February —	1879				360 to 600
Chilton	February 13	1880		ENE		1320
Barbour	March 15	1880	Evening			
Pike	March 18	1880	Evening	NE		
Jackson	April 25	1880	Afternoon	NE	Funnel	1000 to 3500
Blount	December —	1880		SE		
Cherokee		1881		ENE		

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Tuscaloosa	February 18	1881	Afternoon	NE	Funnel	Narrow.
Perry	February 26	1881	Midnight	NE		300
Randolph	March 22	1881	1 a m	NE	Funnel	
Sumter	March 23	1881	5 p m	NE	Funnel	80 to 120
Madison	February 28	1882	11:45 a m	NE	Funnel	900
Barbour	March 27	1882	night			5280
Dallas	March 27	1882	night			
Henry	March 27	1882	9:30 p m	E		
Lee	March 27	1882	night			
Washington	March 27	1882	2:30 p m	E		1320
Etowah	April 2	1882		NE		
Choctaw	April 22	1882	4 p m	NE		1200
Jefferson	January 16	1883		NE	Funnel	
Blount	April 2	1883		SE		
Jefferson	April 22	1883		NE		600
Cherokee	April 22	1883	10:30 p m			900
Cherokee	April 23	1883	4:30 p m	NE		1320
Fayette	January 11	1884	6 p m	E	Funnel	1200
Pickens	February 19	1884	12 m	NE		
Pickens	February 19	1884	11 a m	NE		
Talladega and Calhoun	February 19	1884	2 p m	NE	Balloon	1320 to 3960-
Marshall	February 19	1884	9 p m			1320
Jefferson and St. Clair	February 19	1884	1:20 p m	NE	Funnel	600 to 2640
Cherokee	March 6	1884	4 p m			450
Tuscaloosa	March 11	1884	10:30 p m	NE		1320
Pickens	March 11	1884	7 p m	NE	Funnel	300 to 900
Marshall	March 11	1884	7:30 p m			900 to 1200
Greene	March 11	1884	8 p m	NE	Funnel	300
Jefferson	March 25	1884	2 p m	NE	Funnel	300
Cherokee	March 25	1884	8 p m	NE	Funnel	
Lawrence and Jackson	April 1	1884	6 p m	NE	Funnel	900 to 1320
St. Clair	April 1	1884	Midnight	NE	Funnel	
Blount and DeKalb	April 1	1884		NE		
Lawrence	April 12	1884	2:30 p m			
Lee	December 12	1884	night	NE		100

TABLE II—A Chronological Table, showing the location, date and time of occurrence, and general character of formation and movement of Tornadoes in the State of Alabama for a period of sixty-seven years, from 1822 to 1888.—Continued.

COUNTY.	Month and Day.	Year.	Time.	Direction.	Form of Cloud.	Width of Path in feet.
Randolph.....	January 11...	1885				
Macon.....	January 11...	1885	11 p m.....	E 20° N		2640
Coosa and Clay.....	January 11...	1885	9 p m.....	E 10° N	Funnel.....	1320 to 2640
Lamar, Fayette and Walker.....	January 11...	1885	5 p m.....	E 15° N		1320 to 2640
Greene, Hale, Bibb and Chilton.....	January 11...	1885	6:20 p m.....	E 30° N	Funnel.....	900 to 1320
Cullman, Blount, Marshall and DeKalb.....	January 11...	1885	7 p m.....	E 20° N		600 to 3960
Coosa.....	February 20.	1885	5:30 p m.....	NE.....	Funnel.....	250
Marshall.....	March 28.....	1885	Afternoon.....			300
Madison.....	May 6.....	1885	6:30 p m.....	N 45° E	Funnel.....	Narrow
Sumter.....	November 6..	1885	8 p m.....	NE.....		1320
Lamar.....	November 6..	1885	10 p m.....	NE.....		300 to 2700
Dallas.....	November 6..	1885	3:30 p m.....	NE.....	Funnel.....	300 to 2640
Hale.....	April 25.....	1886	Afternoon.....	NE.....		
Elmore.....	March 29.....	1886	Morning.....	NE.....	Funnel.....	450
Washington.....	January 13...	1887	Morning.....	NE.....	Funnel.....	1320
Jefferson.....	April 18.....	1887	3 a m.....	NE.....	Funnel.....	Narrow
Lamar.....	April 22.....	1887	6 p m.....	NE.....	Funnel.....	900
Pike.....	June 26.....	1888	Afternoon.....	Easterly	Funnel.....	Narrow
Talladega.....	June 26.....	1888	Afternoon.....	Easterly	Funnel.....	Narrow

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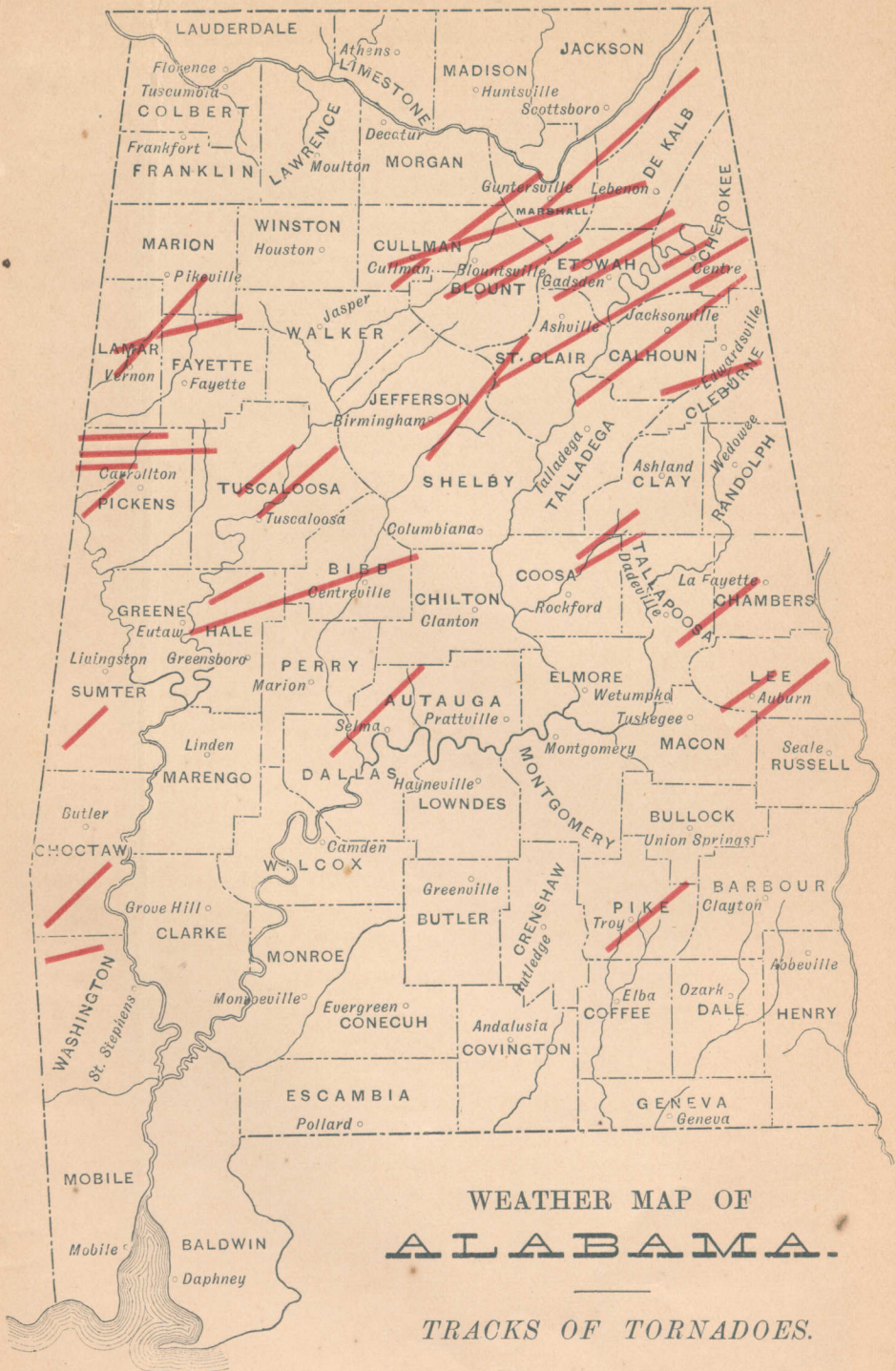
TABLE 3.—Relative frequency of Tornadoes by Months and Days, for Alabama.

The *italic* figures to the right of the dates show how many times Tornadoes occurred on that day of the month. The blank (—) signifies date missing.

MONTH.	DAY OF MONTH.	No. of days.	Total No. of tornadoes per month.
January.....	(11)7, 13, 16, 29 and (—).....	5	11
February.....	12, 13, 15, 18, (19)5, 20, 24, 26, 28 and (—).....	10	14
March.....	(4)2, 6, 7, 10, (11)4, 12, 15, 16, 18, (20)2, 22, 23, 24, (25)2, (27)5, 28, 29 and (—).....	18	28
April.....	(1)3, (2)2, 6, (12)2,* (16)2, 18, (22)4, (23)4, (25)3, 29 and (—).....	11	24
May.....	(1)2, 4, (6)3, 8, 24 and 26.....	6	9
June.....	16, (26)2.....	2	3
1 November.....	(6)3, 16, (22)3, 27 and 30.....	5	9
23 December.....	12, 24, (25)2, and (—).....	4	5
Blank.....	(1)9.....	1	9
Total.....	.....	62	112







WEATHER MAP OF  
**ALABAMA.**

TRACKS OF TORNADOES.



## 5. REMARKABLE COLD WINTERS AND WARM SUMMERS.

1748. The winter was so severe that the Mississippi river at New Orleans was frozen thirty to forty feet from the banks.

1768. Another cold winter that froze the Mississippi River at New Orleans some distance from the banks and killed all the orange trees.

1772. A winter like those of 1746 and 1768, followed by a summer of tropical intensity.

1779-80. The winter was exceedingly cold over the South. The extreme cold began about November 15th, with the forest foliage still green in many places because the autumn was very mild and gentle, and some trees and shrubs were putting forth new growth. Through the winter until the middle of February there was not sufficient warmth to cause even a temporary thaw, but there was a constant succession of snow storms, which so obstructed the usual methods of travel that the ice on rivers and large creeks was used in the place of the ordinary roads. The winds were so piercing that wild turkeys were frozen in the woods and domestic fowls fell from their roosts. The deer sought shelter from the blasts around the cabins of the settlers, and all kinds of animals perished in the forests for want of food, which was buried beneath the snow.

1783. July and August were so cold the colonists had to resort to winter clothing. White frosts made their appearance in the beginning of September. On the 15th of November the cold became intense. There was a constant succession of squalls and the wind blew with great violence from the north and northeast, and from the south. The variations of the weather were such that several times in six hours Reaumur's thermometer fell from 20° above freezing to 3° below in a closed room where fire was kept.

1793, 1794, 1796 and 1799 were very severe winters.

1807. February 7th was very cold and was called the "Cold Friday." On the evening of the 15th the weather was mild with light rain about night. In a few hours the rain was turned into snow that covered the ground about six inches. The snow was immediately followed by a northwest wind storm of great violence. The cold became more intense as the night advanced, and on the morning of the 16th the frozen sap expanding caused the bark of trees to explode.

1816. This is known in history as the year without a summer. January, February and March were mild; April and May were quite cold. It is stated by a traveller on a boat from Mobile to New Orleans, he saw on April 16th the spray that was blown from the waves freeze on the rigging. June 8th there was a killing frost in latitude 33°. August and September were quite cool; October and November stormy and disagreeable; but December was mild and comparatively genial. There was frost every month as far south as latitude 34°.

1823. This year marks the lowest temperature recorded in Mobile. At midnight on the 16th of February the thermometer was down to 5° above zero.

1825. This year should be known as the year without a winter. About September the cotton crop was supposed to have been irreparably damaged, and large speculative purchases were made in Charleston for shipment to Liverpool. During September there were showers which revived and invigorated the plant, causing new growth and fruitage, which, in the absence

of cold and frost matured a large crop, resulting in a ruinous decline for the speculators.

1827. A killing frost on the 27th of May throughout the cotton States, greatly damaging the cotton crop. Early in December the weather became intensely cold. The ground was hard frozen in Alabama until March, 1828.

1832. A winter of great severity. At Huntsville the thermometer registered in January—9°. There were destructive hail storms throughout the State; but fair crops were made.

1833. A cold winter. This year is remarkable for the magnificent meteoric display that occurred on the night of November 13th—and that is now so well known in history. Many rustic hamlets and log cabins became extemporized confessionals; and “old citizens” yet hold to the opinion that more vows of reformation, more promises of amendment were made that night than ever before in the same space of time.

1834 and 1835 were cold winters; and February 6th and 7th, 1835, were exceedingly cold, the temperature at Mobile was 6° at sunrise. The cotton crop for 1835 was very large.

1846-47. The winter was unequaled in severity by any since 1835. In middle Alabama the thermometer registered 10° to 22° above zero.

1849. February and March were mild and spring-like. Vegetation was more advanced than ever noticed before. Wheat was ripening, and cotton had four to six leaves; corn was waist high and the leaves of the forest trees about grown by April 15th. On the 16th ice formed on all still water and the ground was frozen half-inch deep and everything green was killed. It became necessary to replant both corn and cotton.

1852. Thermometer registered 8° at Mobile on January 20th. Marking ink froze as rapidly as the brush was withdrawn from the marking pots, causing the suspension of work in the cotton yards. The spring was cool, inclement and late; but the summer was seasonable and crops of corn and cotton were large.

1855-56. The winter was the coldest since 1852. Standing water near Mobile was frozen hard enough to permit of skating, a most unusual sight for that latitude.

1857. The spring was unprecedentedly cold and backward. Nearly all the fruit and advanced vegetables were cut off. There was no cotton up on the 20th of April; and the wheat that was jointing in central Alabama was killed by a frost on the 5th of April. On April 13th it began snowing and was the largest for 15 years, but the ground not being frozen the snow did not accumulate more than three or four inches in depth. May 6th a severe hail storm swept through central Alabama. The summer was cool. The corn and cotton crops were poor. While the winter was not unusually cold, the low spring and summer temperatures reduced the mean for the year about 2° below the average, while some stations showed a mean lower than those for 1823 and 1835. The peaches, although few in number, were very large and unusually fine.

1874-5. The winter was mild and there was no frost of consequence until December 8th, 1875.

1876. March 19th, a very heavy snow storm over West Alabama. April 20th and 21st, a frost occurred in latitude 33° which killed all young leaves;

and on June 8th the temperature was near the frost point in Central Alabama. December 30th, a snow storm began that proved to be the fiercest ever known in Alabama. The cotton crop was very poor.

1877. The Bigbee River was frozen over at Columbus, Mississippi, the first week in January. The ice was thick enough to support a boy's weight. This is the only time in this generation where such a freeze occurred. The temperature at Columbus was 0°.

1884-5. Five cold waves passed over the State during the month of January, 1885. Comparatively few days were mild and the temperature was 5° below the normal. The month of February was decidedly colder than the same period of time for a number of years. The average temperature was about 6° below the normal. But little farm work was accomplished because of the frozen condition of the ground. The fall oats were all killed, and the farmers were compelled to replough the fields and sow them in spring grains. The average temperature for the winter was 5° below the normal.

1886. The severe weather of the month has rendered January the most remarkable season recorded in many years. The oats that were growing finely at the opening of the month were totally destroyed by the cold wave that began on the 8th. Considerable stock were killed where proper protection was not given. The temperature in north Alabama was as low as 7° below zero. On December 3rd to 5th, throughout north Alabama a snow storm occurred that covered the ground with snow to the depth of 20 inches; in middle Alabama it reached a depth of 16 inches; and as much as 12 inches in some portions of south Alabama. This fall of snow was unusually heavy for this climate, and in some sections was the cause of marked comment, because such a sight had never been witnessed before, especially in the extreme southern part of the State.

1887. The month of January was very cold. The average temperature for the State was 6° below the normal.

1889-90. Mild spring-like weather continued throughout the winter, and vegetation came forth with well developed leaves before the 1st of March.

## 6. YEARS OF GOOD CROPS AND YEARS OF POOR CROPS.

The following years produced good crops and in abundance: 1823, 1825, 1835, 1837, 1839, 1840, 1842, 1844, 1855, 1858, 1859, 1870, 1872, 1875, 1878, 1879, 1885, 1886, 1889.

The following years produced inferior crops: 1817, 1827, 1838, 1843, 1846, 1847, 1849, 1850, 1851, 1852, 1853, 1854, 1857, 1867, 1868, 1871, 1876, 1884.

## 7. THE WINDS OF ALABAMA.

It is a fact well known in meteorology that the circulation of the air, or what is commonly called wind, controls the conditions of the climate of the country over which it moves. It is an old saying that the winds are variable, but

a number of years of observations, carefully taken, will furnish data from which average conclusions may be drawn. Dry air in passing over a surface of water or moist object will absorb a large amount of vapor, that it will hold so long as the temperature of the air remains the same it was when the water was absorbed. But in sweeping across the country it must come in contact with currents varying in temperature to its own. Air from more northern climes and cooler coming in contact with the warm, moist atmosphere, the vapor will be condensed and rain will result. The question may be naturally asked, can the conditions of the weather be foretold by observing the directions of the wind? This is possible with considerable degree of accuracy. Whenever there is a low pressure in Alabama, the air from the surrounding territory will rush in to fill in the partial vacuum. The particles coming from the south and south west and east and south east are generally accompanied with vapor caught up while passing over the Gulf and Atlantic; the air from the west and north west is generally cool and largely emptied of moisture in sweeping across such a wide stretch of land. These currents striving to reach the centre of the depression will cause a whirl around the trough and rain will result on the outer rim of this whirl pool. It is also generally true that in impinging on each other the northern and southern currents will cause minor eddies that will frequently result in violent local storms—electrical and sometime tornadic also. By a careful observation of barometers, well located in different portions of the country, the unequal expansions of the air may be accurately noted. If a low pressure passes across the State rain or cloudy weather may be expected, and fair weather will almost certainly accompany a high pressure.

After many years of observations made under the auspices of the Smithsonian Institute and the Signal Service the following table has been prepared by the chief signal officer concerning the circulation of air and its influence on rain and clear weather :

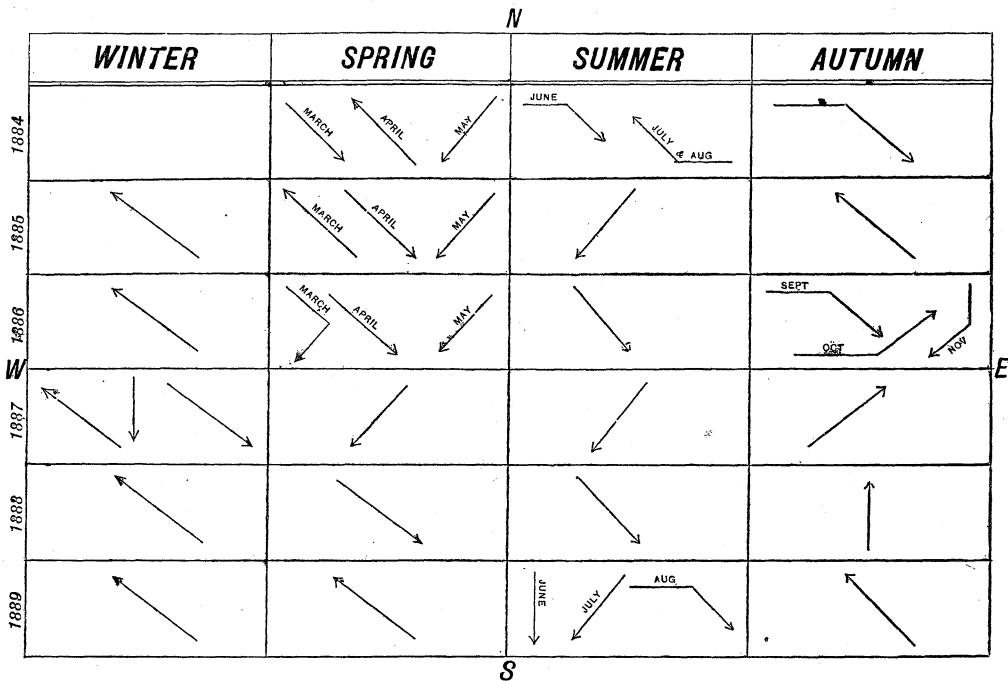
MONTHS.	WINDS MOST LIKELY FOLLOWED BY RAINS.	WINDS LEAST LIKELY FOLLOWED BY RAINS.
January.....	South or East.	Northwest or Southwest.
February.....	“ “ “	“ “ “
March.....	Southwest or Southeast.	North or West.
April.....	Southwest or Southeast.	North, Northwest or West, Southwest.
May.....	Southwest or Southeast.	North or West.
June.....	Southwest or Southeast.	Northeast or Northwest.
July.....	Southwest or Southeast.	Northeast or Northwest.
August.....	South or East.	Northeast or Northwest.
September.....	South or East.	Northwest or Southwest.
October.....	South or East.	Northwest or Southwest.
November.....	South or East.	Northwest or Southwest.
December.....	South or East.	Northwest or Southwest.

The following chart has been prepared from data supplied by the observers of the State weather service and indicates by a diagram the average directions of the wind for each season of the year. The service began operations March 1st, 1884, and hence the winter of 1883-4 is left blank. The arrows fly with the wind. The diagram shows that the average direction of wind in winter is from the south east; in the spring it blows from the south east and south west; in summer from the south east and south west, and in autumn from the west and south west:





Diagram Showing the Annual Average Direction of wind in Alabama from 1884 to 1889



NOTE.—The arrows fly with the wind.



## SOME GENERAL CONCLUSIONS.

In studying the mass of material given in the preceding pages, much that is valuable can be obtained concerning the climate of the State. At some stations the observations were conducted so long, satisfactory conclusions may be drawn concerning local climatic conditions.

Alabama is so situated in relation to the parallels of latitude and the difference in elevation between the southern and northern portions that many of the plants necessary for man's sustenance and pleasure may be successfully grown within her borders. Her climate is so varied, without great extremes, that most of the plants peculiar to tropical regions, are grown in the belt bordering the Gulf; and the cereals and forage plants common in the north and west are successfully cultivated in her mountains and upper valleys. The health of the people of Alabama can compare favorably with any other country on the globe. Violent epidemics are very rarely found within her borders, and whenever, after long years, yellow fever or cholera find lodgment on her soil it is due entirely to immigration and the disease soon spends itself in the locality where it first finds foothold. The thermometer seldom goes above  $100^{\circ}$ , and only now and then in years does it range a degree or so below zero. It is considered to be extremely cold when the temperature reaches  $10^{\circ}$ , and intensely hot when the thermometer records  $100^{\circ}$  in the shade. Not more than two or three days in the year give such high temperature, and only a few localities in the State. The atmosphere is moist enough to produce a cooling sensation on the skin when the breeze passes across the heated person as it sweeps in from the west and north west. The average rainfall for the entire State is only 52.12 inches, and at no place does the normal precipitation run above 65.00 inches. By a glance at the table of normal precipitations found on another page of this Bulletin, it will be noticed that the least annual rainfall is 41.75 inches, and the greatest is 64.96 inches. It is thus seen that the atmosphere is neither too dry nor too moist for the most luxuriant production of vegetation and for the best condition for the health of the inhabitants of the State.

The highest normal average temperature is  $82.02$  in July

and the lowest is 43.°1 in January, giving a range of 39.°1. The winters are seldom very cold and the summers are not excessively warm. The last frost in spring occurs on April 15th, and the first frost in autumn comes on November 15th, so that the farmer is blessed with seven months in which no cold occurs sufficiently severe to even nip the most tender bud, except at rare intervals already indicated in the previous page of this bulletin. It is a fact well known that because of this long season for growing and maturing plants sometimes several crops are gathered on the same body of land in the same year.

The cold weather does not begin until December, and only one month in the winter is really disagreeably cold, viz: January. The winter is usually mild and snow seldom falls heavy enough to cover the ground more than two or three inches.

As a matter of interest in this connection the following tables are given of maxima and minima temperatures to show that the climate of Alabama is not extreme either in heat or cold. The stations selected are those that have furnished records for a series of years:

MONTGOMERY—Maximum; Series extends from 1872 to 1890—

J	F	M	A	M	J	J	A	S	O	N	D
{ 78.5	81.2	86.3	90.	99.	105.5	106.9	103.	98.	96.1	83.	79
{ 73.3	76.9	80.8	86.8	93.5	97.1	98.9	96.3	93.2	86.3	79.	72.7

The year of extreme heat was 1881.

Minimum—

J	F	M	A	M	J	J	A	S	O	N	D
{ 5.	14	25	30	44	48	60.8	59	40	31	21.	8
{ 19.3	24.5	33.2	40.5	50.7	61.1	69	65.5	52.7	40.8	29.1	22.8

The year of extreme cold was 1886.

HUNTSVILLE—Minimum; Series extends from January, 1831, to December, 1839—

J	F	M	A	M	J	J	A	S	O	N	D
{ 9	7	8	13	31	36	51	54	39	29	13	—7
{ 11.4	12.2	19.5	34.8	45.8	51.9	59	58	45.2	34.6	21	15.4

The years of extreme cold were January, 1832, and 1836.

Maximum—Series extend from January, 1831, to December, 1839.

J	F	M	A	M	J	J	A	S	O	N	D
{ 75	75	84	86	90	92	95	96	91	86	78	68
{ 68	70	80	82	86	90	92	90	86	81	72	67

The year of extreme heat was 1838.

MOBILE—Minimum temperature; Series extend from April, 1840, to December, 1889—

J	F	M	A	M	J	J	A	S	O	N	D
{ 19	33	31	44	55	51	68	70	60	42	36	27
{ 24.3	30.8	37.1	43.6	52.9	63.4	63.1	68.4	53.6	44	31.5	26.2

The year of extreme cold was in 1873.

Maximum—Series extend from April, 1840, to December, 1889—

J	F	M	A	M	J	J	A	S	O	N	D
78	79	80	85	92	96	98	96	96	94	85	76
71.8	74.8	79.8	81.9	87.7	89.8	97.4	95.3	92.8	91	78.1	72.8

The year of greatest heat was in 1873.

MOUNT VERNON ARSENAL—Series extend from August, 1840, to December, 1889; Minimum—

J	F	M	A	M	J	J	A	S	O	N	D
9	13	23	33	48	58	61	57	46	32	24	14

The year of greatest cold was 1852.

Maximum—Series extend from August, 1840, to December, 1889—

J	F	M	A	M	J	J	A	S	O	N	D
80	84	90	95	102	100	100	104	98	96	88	84

The year of greatest heat was 1860.

AUBURN—Minimum; Series extend from February, 1881, to December, 1889—

J	F	M	A	M	J	J	A	S	O	N	D
4	11	24	27	45	46	60	61	46.5	32	18	14
13.6	19.7	28.9	37.4	50.6	58	64.2	62.3	52.2	38.2	24.7	20

The year of greatest cold was 1886.

Maximum—

J	F	M	A	M	J	J	A	S	O	N	D
76	76	81	86	93	97	100	97.5	95	94	81	74
69.6	73.2	75.9	83.5	88.6	92	95.7	93.2	91.3	81.8	77.2	69.3

The year of greatest heat was 1881.

CARLOWVILLE—Minimum; Series June, 1856, to September, 1877—

J	F	M	A	M	J	J	A	S	O	N	D
8	24	29	40	48	70	74	70	52	32	30	28

Maximum—

J	F	M	A	M	J	J	A	S	O	N	D
75	80	84	85	95	94	103	98	90	88	76	78

The first figures in the above series represents the maxima and minima temperatures at the stations named. The second series of figures represents the average of all the maxima and average of all the minima. These latter figures are more important in studying the question of effects of heat on plant economy. These averages will be reached each year while the first series of figures may not be reached by the thermometer during several years. For instance, at Huntsville the minimum temperature during nine years was  $-9^{\circ}$ , and the thermometer registered this degree only twice within that period. At Auburn the maximum temperature was  $100^{\circ}$  in nine years, and this record was made only once during those nine years. It is not an unusual occurrence for the thermometer to register at Huntsville  $11.04$  in winter and a maximum of  $92^{\circ}$  in summer. And at Auburn  $13.06$  may be often reached in ten or twenty years, or  $95.07$  in summer. These average maxima and minima may therefore be properly termed plant temperatures

**METEOROLOGICAL SUMMARY FOR THE STATE OF ALABAMA.**  
 Compiled from material furnished by Observers of the State Weather Service.

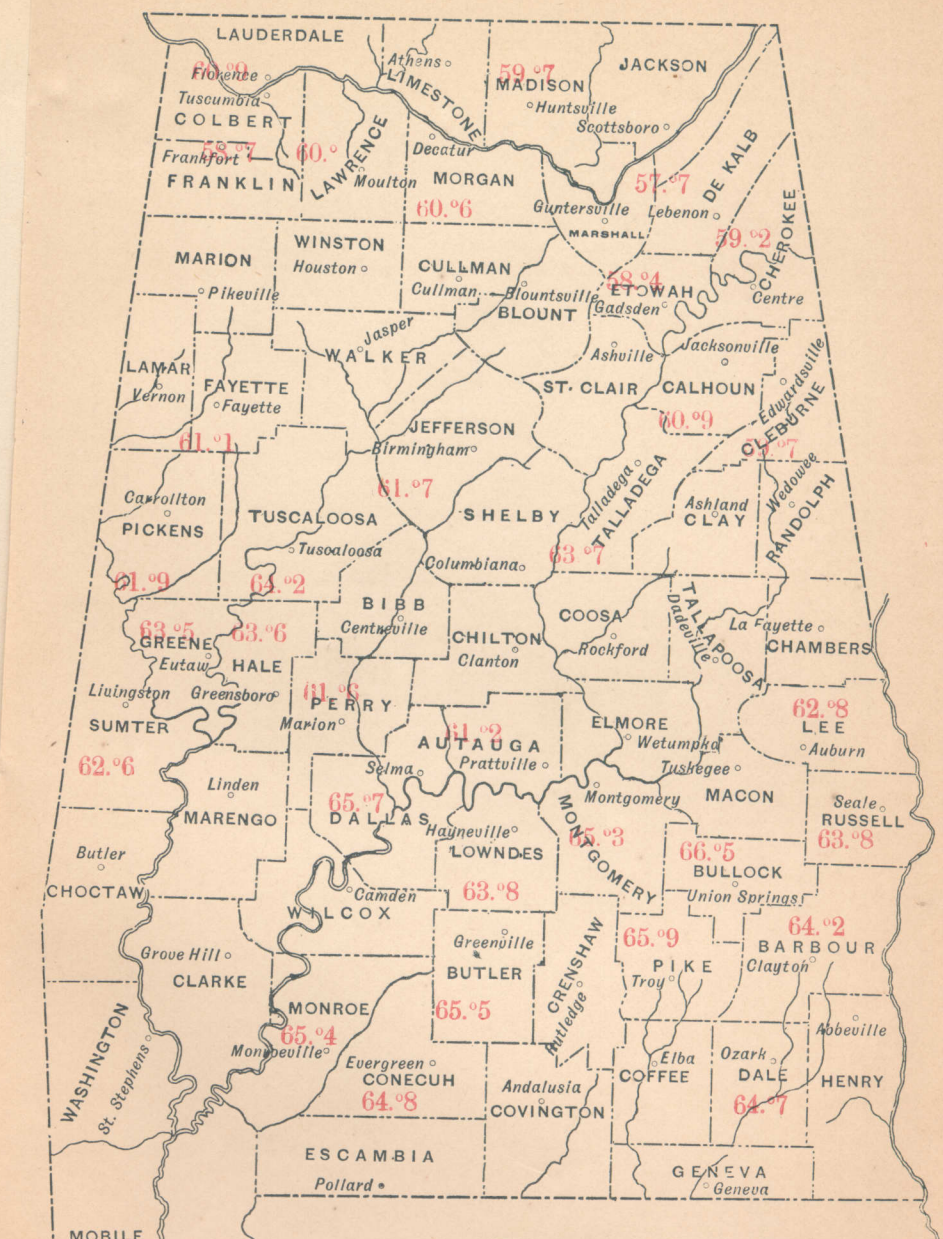
	1884.		1885.		1886.	
		DATE.		DATE.		DATE.
Mean barometer .....	29 979		30 089		30.087	
Highest barometer and date.....	30.504	December 19....	30 64	January 3 .....	30.702	February 5.....
Lowest barometer and date.....	29 53	March 1.....	29.386	February 17....	28.955	January 3.....
Mean temperature.....	67 3		61 3		61 4	
Maximum temperature and date.....	104	July.....	105	June .....	103	August.....
Minimum temperature and date.....	6	December .....	1	February .....	0	December .....
Greatest monthly range.....	66	October.....	66	Jan. and Feb....	72	February.....
Least monthly range.....	14	July.....	13	July.....	19	June and July..
Mean temperature, spring .....	65 2		61 2		62 1	
“ “ summer .....	76 9		79 3		77 9	
“ “ autumn .....	66 3		61 9		64 4	
“ “ winter.....			44 5		41 9	
Coldest day spring, mean minimum.....	29 3	March 1.....	24 9	March 23.....	27	March 11.....
Warmest day spring, average for State.....	92 7	May 22-23.....	86 7	May 25.....	90 5	May 28-29.....
Coldest day summer.....	57 1	June 1-11.....	63	July 1.....	62 4	June 19.....
Warmest day summer.....	95 4	August 29.....	96 3	August 1.....	97 7	August 16.....
Coldest day autumn .....	30	November 25.....	28 7	November 26.....	28	November 19.....
Warmest day autumn.....	94 4	October 7.....	89 7	September 15.....	91 9	September 17.....
Coldest day winter.....	13 6	December 19.....	3 7	January 9, 1886.....	10 5	Jan. 3, 1887.....
Warmest day winter .....	74 7	December 22....	65 9	Feb. 23, 1886.....	78	Feb. 18, 1887.....
Rainfall in inches.....	40 35		51 49		54 63	
No. cloudy days .....	100		130 3		126	
No. clear days .....	87		117 8		122	
No. fair days .....	118		116 9		117	
No. days of rain .....	81		109		94 7	
Average direction of wind.....	S. E.		N. W.		S. E.	
No. months wind from north and northeast.....	0		0		1	
“ “ “ “ south and southeast.....	8		3		5	
“ “ “ “ south and southwest.....	1		3		3	
“ “ “ “ west and northwest.....	3		6		3	

**METEOROLOGICAL SUMMARY FOR THE STATE OF ALABAMA.**  
 Compiled from material furnished by Observers of the State Weather Service.

	1887.		1888.		1889.	
		DATE.		DATE.		DATE.
Mean barometer .....	30 135		30 126		30 102	
Highest barometer and date.....	30 800	January 3.....	30 72	April 26 .....	30 68	December 1.....
Lowest barometer and date.....	29 26	October 19.....	29 00	August 11.....	29 43	Jan. 27, Mar. 18.
Mean temperature .....	63 6		63 1		62 8	
Maximum temperature and date.....	102	June, July, Aug.	100	July.....	101	June.....
Minimum temperature and date.....	1	January.....	9	February.....	7	February.....
Greatest monthly range.....	69	November.....	62	January.....	63	October.....
Least monthly range .....	6	July.....	19	June and July.....	16	August.....
Mean temperature, spring .....	64 1		63 6		62 2	
“ “ summer.....	79 3		78 6		77 2	
“ “ autumn.....	62 9		62 5		62 3	
“ “ winter.....	47 4		47 9		45 5	
Coldest day spring, mean minimum.....	31	March 29.....	28 8	March 23.....	29 7	March 10.....
Warmest day spring, average for State .....	90 6	May 17.....	91 2	May 27.....	89 8	May 17.....
Coldest day summer .....	59 3	June 14.....	55 6	June 4.....	43 8	June 1.....
Warmest day summer .....	97	July 19.....	95	August 2.....	94 8	July 24.....
Coldest day autumn .....	20	November 21.....	28 8	November 28.....	23	November 30.....
Warmest day autumn.....	95 9	September 15.....	88 5	September 11-12.....	93	September 15.....
Coldest day winter .....	17 9	January 19, 1889.....	17 9	Feb. 7, 1889.....	26 6	December 1.....
Warmest day winter .....	74 5	January 6, 1888.....	75 6	Feb. 17, 1889.....	77 4	December 15.....
Rainfall in inches.....	47 83		58 83		45 58	
No. cloudy days .....	110		122		108	
No. clear days .....	139		115		137 4	
No. fair days.....	116		128		119 6	
No. days of rain .....	74 6		96 5		79 9	
Average direction of wind.....	S. W.		S. E.		N. W.	
No. months wind from north and northeast .....	3		3		1	
“ “ “ “ south and southeast.....	3		4		1	
“ “ “ “ south and southwest.....	5		2		3	
“ “ “ “ west and northwest.....	1		3		7	



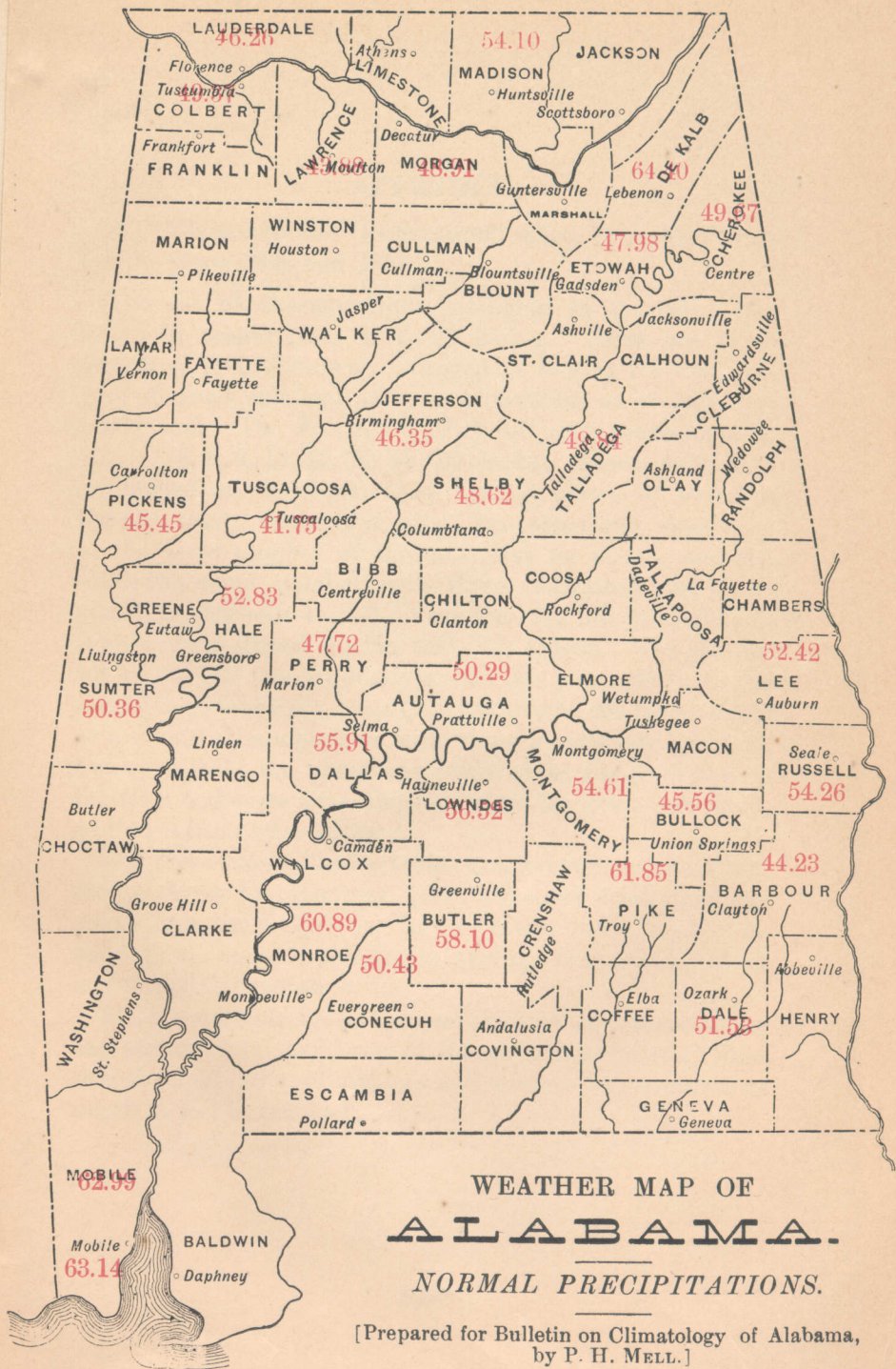




WEATHER MAP OF  
**ALABAMA.**  
 NORMAL TEMPERATURES.

[Prepared for Bulletin on Climatology of Alabama,  
 by P. H. MELL.]





**WEATHER MAP OF ALABAMA.**  
**NORMAL PRECIPITATIONS.**

[Prepared for Bulletin on Climatology of Alabama, by P. H. MELL.]



## APPENDIX.

*Soil Temperatures.*—Observations taken at Auburn during the years 1888 and 1889:

The set of thermometers belonging to the soil series range in length from 1 to 96 inches. There are three groups of instruments so arranged as to give the temperature of moist soil and as near as possible an average dry, sandy soil. The first set consists of nine thermometers, viz: 1, 3, 6, 9, 12, 24, 36, 48, 60 inches respectively, that are buried on the banks of a running stream of water in bottom, sandy land. The other two sets—one, consisting of the same number of thermometers as above, and the other the same number with three additional, viz., 72, 84 and 96 inches—are buried on the top of a hill in sandy soil that is often stirred during the crop season. The smaller set on the hill was originally placed in a grass plat with the intention to leave the grass growing around the instruments as a means of comparison with those in cultivated ground, but by mistake the grass was removed by the workmen on the farm and some time elapsed before the grass recovered, so that results were vitiated.

The first of the following tables give average results of soil temperatures for the year 1889, obtained from readings made three times each day at the hours of 7 a. m., 2 p. m. and 7 p. m., and compared with average temperature of air and terrestrial radiation.

The second table shows by comparison with the maximum and minimum temperatures of the air and terrestrial radiation the fluctuation of maxima and minima temperatures as depth in soil is reached.

Table showing by comparison the maxima and minima temperature of terrestrial radiators, air and soil thermometers.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Max. Terrestrial Thermometer .....	51°	66°5	54°	62°	63°	74°	73.°5	72°5	78	60	60	59.5
Max. Air .....	67°	75°	76	82	89	91.5	98.	92.5	93	82	76	74
<i>On hill.</i>												
Maxima 3 inches ...	63.5	69	73.5	82.5	92.5	96	101.5	95	96.5	84.5	69.5	69
Maxima 6 inches ...	61	76.5	68.5	79.5	89	92	98	92.5	92.5	82.5	68.5	65
Maxima 24 inches ...	52.5	57	58.5	67	76.5	80	86	82	89.5	74	65.5	60
Maxima 48 inches ...	53.5	53	56.5	63	71.5	75	79.5	79	84.5	74.5	69	60.5
Maxima 96 inches ...	59.5	56.5	56	60.5	62.5	69	73	73.5	76.5	74.5	70	65
<i>In bottom.</i>												
Maxima 3 inches ...	60.5	67	69	80	92.5	95	101	96	96	84.5	71.5	69.5
Maxima 6 inches ...	58.5	65	66.5	79.5	88	91	97.5	93	92	82	69	65
Maxima 24 inches ...	54	57.5	58	67.5	76	80	85.5	82	82.5	74.5	66	60
Maxima 48 inches ...	54.5	54	57	64	71	75	79.5	79	79	75	68	61
Min. Terrestrial Ther.	21	24	32	37	43	43	60	62	48	36	22	30.5
Minimum Air .....	23	16.5	30	38	45	46	67.5	63	48	38	24	29
<i>On hill.</i>												
Minima 3 inches ...	33.5	32	37	48.5	52	52	71.5	69.5	54.5	45	35	35
Minima 6 inches ...	35.5	34.5	39	50	55	55	73.5	70.5	57.5	48	37	37.5
Minima 24 inches ...	46.5	44	49	58	64.5	68.5	77	78	72	62.5	52	50
Minima 48 inches ...	51	54.8	50.5	56.5	63	69.5	74.5	77	75	67.5	58	56.5
Minima 96 inches ...	56.5	54.5	54.5	54	60	65.5	69	73	73.5	70.5	64	62
<i>In bottom.</i>												
Minima 3 inches ...	35.5	35	41.5	47.5	55	55	74	70.5	56.5	45	34	34
Minima 6 inches ...	39	38	44	52	59	58	76	73	60	49	37	36
Minima 24 inches ...	48.5	46	51	58.5	65	69.5	77	78.5	72.5	63	52.5	50
Minima 48 inches ...	52.5	50.5	51.5	57	63.5	69.5	74.5	77	75	67.5	59	57

Average soil temperatures, at Auburn, Alabama, during the year 1889.

	Terrestrial.	Air.	1	3	6	9	12	24	36	48	60	72	84	96	
		°	°	°	°	°	°	°	°	°	°	°	°	°	
January	39.7	46 9	47.4	47.3	47.3	46.8	46.7	49.2	50.8	52.5	53.6	54.7	55.9	57.5	Thermometers on hill.
			47.5	47	48.2	47.9	48.2	50.8	52	53.4	54.6				Thermometers in bottom.
February	36.8	46 3	46.2	46.1	46.7	46.3	46.7	49.4	50.2	51.6	52.6	52.4	53.4	55	“ on hill.
			56.7	56.4	55.8	54.7	53.5	53.4	53.1	53.2	53.3	53.3	54	54.8	“ in bottom.
March	43.2	54 7	55.2	54.1	54.6	53.8	53.8	54.4	53.9	54.3	54.2				“ on hill.
			67.2	67.1	66.5	65.5	63.9	62.6	61.1	60.9	59	58	58.2	58	“ in bottom.
April	55.6	62.5	67.9	66.8	66.6	64.5	63.8	62.6	60.9	60.6	59.3				“ on hill.
			76.1	76.7	76.1	75.3	73.9	71.6	69.3	66.7	65.4	64.2	63.3	62.4	“ in bottom.
May	57.2	70.1	77.4	77	75.5	74.6	73.7	71.1	67.4	66.3	65.3				“ on hill.
			82.1	81.9	81.3	80.1	78.3	76.1	74	72.5	70.6	69.3	68.5	67.2	“ in bottom.
June	65.8	76 1	82.3	82	81.5	79.5	78.7	76.2	73.8	72.4	70.2				“ on hill.
			86.2	86.6	86.3	85	83.3	80.9	78.7	77.2	74.7	73.3	72.5	70.8	“ in bottom.
July	70.0	80 7	86.4	86.7	86.6	84.5	80.4	80.9	78.1	76.6	74.2				“ on hill.
			81	81.6	81.4	80.7	79.3	79.1	78.3	77.5	76.4	75.6	75	73.3	“ in bottom.
August	67.5	77.6	82	82	82.5	81.1	80.5	79.7	79.2	77.7	76.1				“ on hill.
			78.3	78.4	78.4	80.8	77	77.8	77.2	77.1	77.8	75.6	75.1	73.8	“ in bottom.
September	65.2	74 8	79.1	78.7	79.2	78.2	77.6	78.1	75.4	76.2	75				“ on hill.
			68.9	68.5	68.1	67.2	67.1	69	68.3	71.2	72.3	72.3	72.2	72.2	“ in bottom.
October	49.5	62 3	69.1	68.7	68.8	67.6	67.8	69.5	70.7	71.9	72.2				“ on hill.
			56.6	56.2	56.3	56	56.2	59.6	61.6	63.5	64.7	65.7	66.6	67	“ in bottom.
November	42.9	53.1	56.7	55.9	56.4	56.2	56.3	60.2	63.1	64.4	65.9				“ on hill.
			59	57.9	57.3	56	55.2	56.7	57.5	58.7	60	60.5	61.5	62.9	“ in bottom.
December	45.5	57.8	58.9	57.7	57.1	55.8	55	56.9	57.7	58.9	60.1				“ on hill.
															“ in bottom.

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The observations of soil temperatures have not been taken long enough to produce normal results, but it is interesting to note some features in the accompanying tables.

1. The average temperature of the soil in the bottom within two feet of the surface is about one degree higher in January than it is on the hill. The two places in February produce practically the same results within a depth of two feet. In March the bottom is slightly cooler. In April, May, June and July the results are practically the same. In August and September the bottom is again nearly one degree warmer, while in November and December the hill soil is slightly warmer than the bottom soil.

2. There is a gradual increase of temperature in the winter months from the surface to the depth of eight feet, averaging  $7.^{\circ}3$ , greater in January ( $10.^{\circ}1$ ) and least in December ( $3.^{\circ}9$ ). In the spring months there is a decrease in temperature to eight feet, averaging  $8.^{\circ}3$ , least in March ( $1.^{\circ}9$ ) and greatest in May ( $13.^{\circ}7$ ). In the summer months the stratum of earth at eight feet depth is  $12.^{\circ}7$  cooler than that of one inch below the surface. It is  $15.^{\circ}4$  cooler in July and only  $7.^{\circ}7$  cooler in August. In September the eight feet stratum is only  $4.^{\circ}5$  cooler, while in October it is  $3.^{\circ}3$ , and in November  $10.^{\circ}4$  warmer than the one inch stratum.

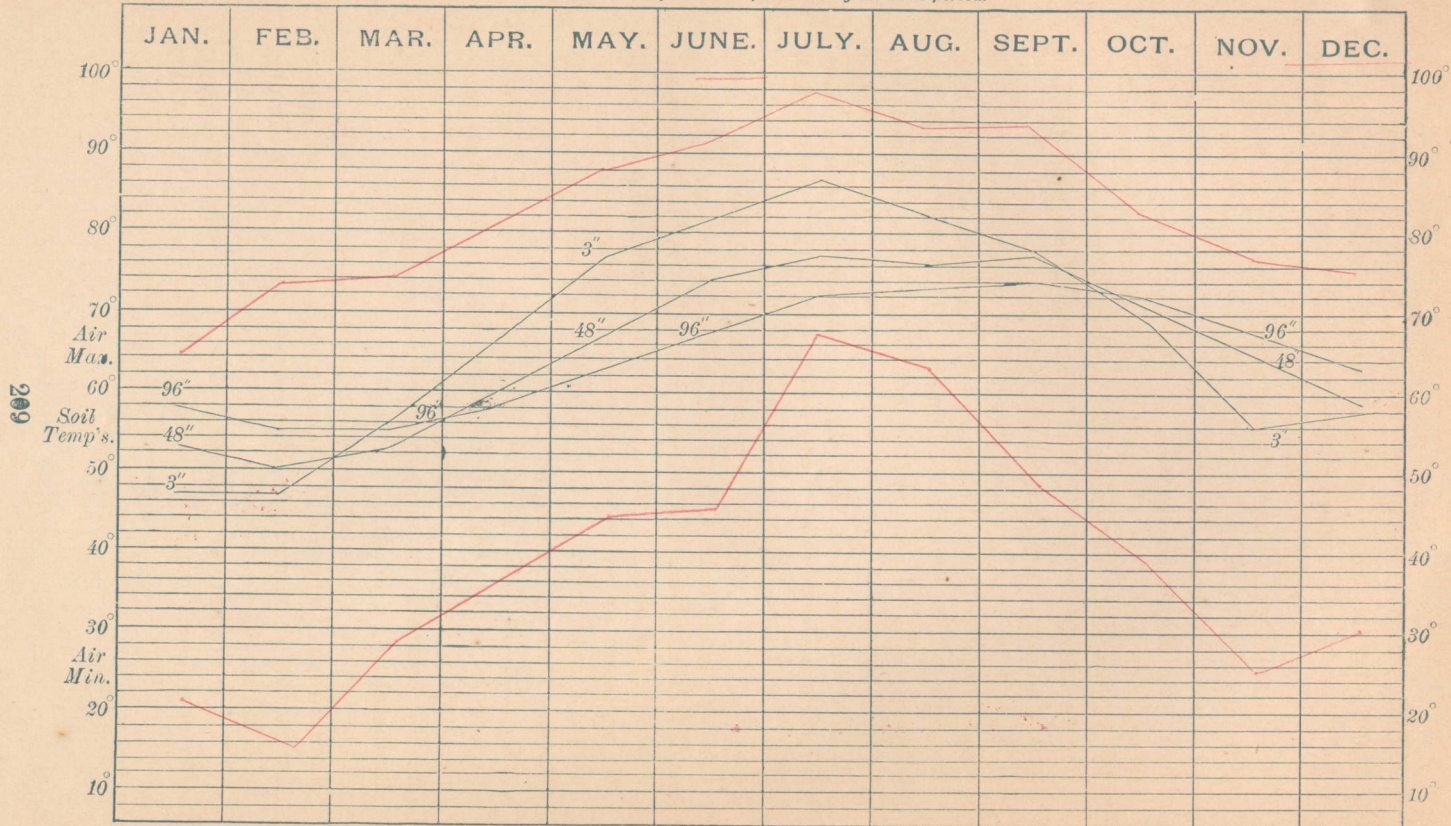
3. In the middle of summer the eight feet soil thermometer registers an average temperature  $9.^{\circ}9$  cooler than the average temperature of the air, while in January it is  $10.^{\circ}6$  warmer than the atmosphere.

4. The difference between the average January temperature of the eight feet soil thermometer and the July temperature of the same thermometer is  $13.^{\circ}3$ , while the difference between the January and July average atmospheric temperatures is  $33.^{\circ}8$ .

The chart on next page represents graphically the fluctuations of three soil thermometers 3, 48 and 96 inches during the year, and the comparison with the maximum and minimum temperatures of the air during 1889 at Auburn. It is interesting to note how closely the three soil thermometers register in March and October, and how wide asunder they are in January, July and December.



Diagram showing Average Temperatures of the Soil for each Month in 1889, at Depths of 3 - 48 and 96 inches. Also Maximum and Minimum Temperatures of the Atmosphere during the same period.



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