

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU,

CO-OPERATING WITH THE

MARYLAND STATE WEATHER SERVICE

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The Johns Hopkins University and the Maryland Agricultural College.
CENTRAL OFFICE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

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MONTHLY REPORT.

SEPTEMBER 9, 1895.

Contains Review for the Month of August.

Atmospheric Temperatures during the month of July.

By W. F. R. PHILLIPS, M. D., U. S. Weather Bureau.

Read before the American Climatological Association, Hot Springs, Va., June 13-15, 1895.

Atmospheric temperature as an important factor of climate in general and climates in particular is too well recognized to require an apology for its introduction to your notice.

The fact that two or more places may have the same mean temperature, either annual or monthly, does not of necessity imply identical thermal conditions. An example will illustrate this fact more forcibly than an elaborate theoretic explanation. Thus Des Moines, Iowa, and Tatoosh Island, Washington, have the same annual mean temperature, namely, 49° . But the mean temperature of the hottest month at Des Moines is 75° , and at Tatoosh Island 56° . The mean temperature of the coldest month is 18° at Des Moines and 41° at Tatoosh Island. The highest temperature recorded at Des Moines is 104° , at Tatoosh Island 78° ; and the lowest temperature thirty degrees below zero at Des Moines and seven degrees above at Tatoosh Island, being a total range of 134° for the former and 85° for the latter.

Thus it is seen that for a correct apprehension of the thermal conditions of different places, even though on the same isotherm, it is necessary to consider the various phases of atmospheric temperature.

These phases will be taken up in the order following:

1. The mean daily temperature or the average

degree of heat received in twenty-four hours; which meteorologically defined is the arithmetical mean of twenty-four hourly observations; but which in practice is found to be more easily, and sufficiently accurately obtained by using the mean of the highest and the lowest temperatures recorded by self-registering thermometers.

2. The daily mean maximum temperature or the average of the series of the daily highest temperatures recorded at any moment.

3. The daily mean minimum temperature or the average of a series of the daily lowest temperatures recorded.

4. The daily average range of temperature or the difference between the mean maximum and the mean minimum temperatures.

5. The daily mean variability of the temperature or the average difference between the temperatures of any two consecutive days.

6. The absolute maximum temperature or greatest degree of heat received at any moment.

7. The absolute minimum temperature or the lowest degree of heat received at any moment.

The first five phases show the temperature probabilities, and the last two the temperature possibilities of any climate. In addition to these statistics of temperature, it is desirable that we should possess information as to the frequency of spells of several consecutive days of either very hot or very cold weather; but to obtain this information it is first essential that we settle upon what shall be regarded as the minimum limit of an excessive departure from average conditions. This is not by any means an easy matter to determine, as an instance will show. At Galveston, Texas, only four times in fifteen years has the daily mean temperature in July been four degrees above normal for the

month, for that period, 84°. At St. Louis, Mo., in the same years there have occurred eighteen days having mean temperatures of 10 or more degrees above the normal, 79°, or more than twice the excess of Galveston. If only the numerical values of the departures from the normals be used as the standard of comparison, Galveston, when compared with St. Louis, would appear never to suffer from periods of abnormally excessive heat; but we find that whilst in fifteen years on sixteen occasions a mean daily temperature of 87° has been maintained for three or more consecutive days in St. Louis, yet, during the same period on twenty-three occasions, a mean of 86.3° has been maintained for three or more days in Galveston. The average duration of these periods has been six and eight-tenths days at Galveston and five and six-tenths days at St. Louis.

The question as to the possible physiologic effects of such temperatures, as well as the determination of the limits that shall constitute excessive departures, I submit as features worthy of future study and consideration.

The subject to which I particularly invite your attention is the distribution of temperature over the United States during the month of July.

This month has been chosen, because, first, it is the hottest period of the year, secondly, the high temperatures prevailing during this month are closely associated with the prevalence of a very fatal disorder of infantile life—cholera infantum, for which we recognize in change of climate an effective measure of both prevention and cure, and thirdly the probability that the great heat of this month is not altogether unconnected with the sudden increase in the prevalence of enteric fever that usually takes place in the succeeding months of August and September.

The temperature records and data to which I shall refer are those of the Signal Service, War Department, from 1871 to 1891, in which latter year they were transferred to, and continued to the present time by the Weather Bureau, Department of Agriculture.

With but few exceptions the records are of fifteen or more years of continuity, while some are continuous from 1871-72.

Throughout the month of July the average daily temperatures exceed 70° in the states bordering on the South Atlantic and Gulf coasts, in the states of the Ohio, lower and middle Mississippi valleys, in the greater part of the Middle Atlantic States and of Kansas and Iowa. In the extreme northern part of the United States the mean daily temperature seldom reaches 70° for more than three or four days. The lowest mean temperature recorded is 56° at Tatoosh Island in the extreme northwest corner of the country, and the highest mean temperature is 92° at Yuma, Arizona.

The average July temperatures recorded at the Weather Bureau stations along the northern border of the United States beginning at Eastport, Maine, and going westward are as follows: Eastport 60°, Oswego and Rochester 70°, Buffalo 69°, Erie and Cleveland 71°, Sandusky and Toledo 73°, Detroit 72°, Port Huron 68°, Alpena 66°, Marquette 65°, Duluth and Saint Vincent 66°, Williston 69°, Havre 68°, Spokane Falls 69°, Port Angeles 57°, Tatoosh Island 56°, along the southern limits, beginning at Key West with 84° and going westward are Tampa 82°, Pensacola 81°, Mobile 83°, New Orleans 82°, Galveston, Corpus Christi 84°, El Paso 83°, Yuma 92°, San Diego 68°. On the Atlantic coast are temperatures ranging from 60° at Eastport to 84° at Key West, or a difference of a little more than one degree of temperature for each degree of latitude. On the Pacific coast the difference between Tatoosh Island, 56°, and San Diego, 68°, is 12° of temperature for 16° of latitude or $\frac{3}{4}$ of degree of temperature for each degree of latitude; but the difference is not uniformly distributed; for from Tatoosh Island to San Francisco there is but 3° difference, while from San Francisco to San Diego there is 9° difference.

The isotherm of 70° passes through southern New Hampshire, westward through northern New York, across Lake Erie, through lower Michigan into extreme southern Wisconsin, then northwesterly through Wisconsin, traversing central Minnesota, the contiguous portions of the Dakotas, into Montana, where bending southward it passes through Idaho and parts of Nevada and Oregon into northern California to near the coast, where it turns sharply to run southeasterly till near Los Angeles it leaves the land and emerges on the Pacific.

The isotherm of 80° traverses the southeastern portions of North Carolina, the northern parts of South Carolina and Georgia, northeastern Alabama, central and western Tennessee, northern Arkansas, Indian Territory, extreme northwestern Texas, southern New Mexico, central Arizona and southern California.

The isotherm of 90° is seen in the southwestern portion of Arizona and in southwestern California. Small portions of the isotherm of 60° are seen in northern Maine and in northwestern Washington.

Between the isotherms of 70° and 80° are included all the states except Oregon, Washington and parts of New Hampshire, Vermont, Michigan, Minnesota, North Dakota, Montana and Idaho to the north of 70°; and Texas, Louisiana, Mississippi and Florida, and parts of Arkansas, Georgia and South Carolina to the south of 80°.

The mean maximum temperatures vary from 69° at Eastport to 90° at Key West on the Atlantic coast, from 61° at Tatoosh Island to 74° at San Diego on the Pacific coast, and from 77°

at Saint Vincent to 98° at El Paso, and 107° at Yuma in the Interior. In the Gulf states the average maximum temperatures range from 90° to about 95°, and in the northwestern and western parts of Texas from 93° to 99°. On the Atlantic coast south of North Carolina the average maximum is 90°. In the Middle Atlantic States, the Ohio, middle Mississippi and lower Missouri Valleys, in Kansas, Nebraska, Colorado, and the central Plateau regions, and in the greater part of California the mean maximum temperatures range between 85° and 88°. In the states along the northern boundary of the country and in Wyoming the average maximums vary from 75° to 80°.

The mean minimum temperatures vary from 52° at Eastport and Tatoosh Island to 79° at Key West and 62° at San Diego. In the South Atlantic and Gulf States, and in the lower part of the middle Mississippi Valley it ranges generally about 73°, while in the Middle Atlantic States, the Ohio Valley, Lower Lake Region, lower Missouri and Upper Mississippi Valleys, in Kansas and Nebraska the average minimum is about 65°. In nearly all the states of the Rocky mountain and Plateau regions, and of the Pacific slope the mean minimum is about 55°.

East of the Mississippi River we may expect a mean daily range, or a daily difference between the highest and the lowest temperatures of the day of about 18°, and west of the Mississippi a difference of from 5° to 10° greater, increasing with the elevation above sea-level. On the Pacific slope the difference ranges from 10° to 15°, but may vary greatly as affected by either altitude or proximity to the water, as at Sacramento it is 30° while at Tatoosh it is only 9°.

The variability of temperature or average difference from day to day, is less in July and August than in any other months of the year, and is so nearly alike in either that it is not practicable to discriminate between them in this respect. In other words July and August are the most equable months of the twelve as regards temperature. On the Pacific and Gulf coasts the variability is little more than one degree. As we go northward and inland the variability gradually increases. In the latitude of Savannah it is equal to 2°, and in that of Washington City 3°. The greatest variability is observed in Montana and in the Dakotas where it reaches 4° to 5°.

The absolute maximum temperatures recorded in July have been pretty nearly uniform in the different states. 108° has been observed at Havre, Montana, and 106° at San Antonio, Texas. Some of the most notably high temperatures are, 122° in Death Valley, Cal., 118° at Yuma, Arizona, 112° at El Paso, Texas and Red Bluff, Cal., 110° at Tucson, Arizona. The place having the lowest maximum is Tatoosh

Island, 78°. Temperatures of 102° to 105° have generally been observed in all the interior states.

The absolute minimum temperatures recorded have ranged from 70° at Corpus Christi, Texas, to 31° at Havre, Montana. The minimum temperatures appear to be more influenced by latitude in their distribution than the maximums.

The greatest absolute range of temperature is, as might be inferred, experienced in the northwest, and the least along the Gulf coast.

East of the Rocky Mountains the highest one day mean temperatures have been observed generally in the central valleys and in the South Atlantic States. The highest mean recorded for one day is 94° at Augusta, Georgia, and the next highest 93° at Kansas City and San Antonio. Temperatures of 91 degrees and 92° have been recorded generally throughout these regions. On the immediate Gulf coast and in the extreme lower Mississippi Valley the highest means for one day that have been noted have been from 87° to 89°. In New England, The Middle Atlantic States, the region of the Great Lakes, the Rocky Mountain and the Plateau regions the highest mean temperatures for one day have been about 85°.

The lowest mean temperatures for one day have ranged from 75° on the Gulf to 55° in the northern portions of the United States. In the greater part of the country the lowest mean temperatures range between 60° and 65°.

North of the 35 parallel of latitude the mean July temperature is generally from 4 to 6 degrees higher than that of June, and from 2 to 3 degrees higher than that of August. South of this parallel the July difference is from 2 to 3 degrees greater than June, and 1 to 2 degrees greater than August.

Convention of the American Association of State Weather Services.

The fourth annual convention of the American Association of State Weather Services, at Indianapolis, Indiana, October 16th and 17th, 1895, promises to be the largest and most successful meeting yet held by the Association. A circular letter dated September 4, 1895, received from Maj. H. H. C. Dunwoody, President of the Association, states that up to that time twenty-seven state weather service directors had expressed their intention of being present.

A cordial invitation to the convention is extended to all voluntary observers, displaymen and crop correspondents throughout the country. Doubtless, many residing in Indiana and adjacent states will attend, but it is hoped that a considerable number from more distant sections will be present, also.

The topics already suggested for discussion embrace a wide field, and a valuable and interesting report of the proceedings may be anticipated. Papers upon topics of interest to state weather services are solicited, and if the authors of such articles as may be prepared find it impracticable to attend the convention, they are requested to forward them to the Secretary of the Association, Mr. James Berry, Chief of the State Weather Service Division, Weather Bureau, Washington, D. C.

Miscellaneous Notes.

The MONTHLY REPORT will be issued on the 8th of each month, except when that day falls on Sunday or a holiday observed by printers. When this occurs the 9th will become the date of publication.

Review of the Month—August.

WEATHER.

Temperature (degrees).—Monthly mean (entire territory), 75.7, being 1.4 above the normal; highest monthly mean, 80.7, at Milford, Del.; lowest monthly mean, 66.0, at Deer Park. Highest temperature 102, at Westminster, on the 11th; lowest temperature 31, at Deer Park, on the 22nd. Greatest local monthly range, 59, at Deer Park; least local monthly range, 19, at Cherryfields. Monthly mean range (entire territory), 44.3; monthly mean maximum, 87.4; monthly mean minimum, 64.2.

Precipitation (in inches).—Average (entire territory), 2.03, being 1.84 above the normal. Greatest amount, 4.76, at Seaford, Del.; least amount, .49, at Pope's Creek.

Thunderstorms.—At Bachman's Valley, on the 4th, 11th, 27th, 29th, 31st; at Baltimore, on the 4th, 6th, 11th, 15th, 16th, 27th, 29th, 31st; at Bird's Nest, on the 13th, 27th; at Charlotte Hall, on the 29th, 31st; at Cherryfields, on the 27th, 29th, 31st; at Dover, on the 16th, 31st; at Frederick, on the 4th, 6th, 11th, 12th, 15th, 27th, 29th, 30th, 31st; at Garrison, on the 4th, 11th, 16th, 29th; at Grantsville, on the 4th, 6th, 11th, 17th, 24th, 28th, 29th; at Green Spring Furnace, on the 4th, 12th, 18th, 24th, 30th; at Hancock, on the 4th, 6th, 11th; at Jewell, on the 7th, 15th, 16th, 28th, 31st; at Laurel, on the 4th, 15th, 31st; at Mardela Springs, on the 4th, 6th, 15th, 20th, 29th, 30th, 31st; at Milford, on the 7th, 15th, 17th, 31st; at Millsboro, on the 12th, 15th, 16th; at Newark, on the 4th, 29th, 31st; at Oldtown, on the 4th, 17th, 24th, 27th, 29th; at Pocomoke City, on the 12th, 27th; at Norfolk, on the 9th, 11th, 12th, 13th, 27th, 29th, 30th; at Philadelphia, on the 4th, 7th, 11th, 12th; at Princess Anne, on the 12th, 16th, 27th, 31st; at

Seaford, on the 15th, 16th; at Sharpsburg, on the 11th, 12th, 30th; at Solomon's, on the 4th, 11th, 12th, 20th, 27th, 29th, 30th, 31st; at Sunnyside, on the 7th, 11th, 17th, 24th, 29th, 30th; at Wilmington, on the 4th, 29th, 31st.

Hail.—At Dover, on the 16th; at Garrison, on the 16th; at Laurel, on the 7th; at Oldtown, on the 4th.

Frost.—At Sunnyside, on the 20th.

Fogs.—At Jewell, on the 16th, 28th; at Mardela Springs, on the 14th, 21st, 26th, 27th; at Millsboro, on the 17th, 26th, 28th; at Oldtown, on the 5th, 6th, 7th, 8th, 9th, 13th, 28th; at Sunnyside, on the 13th; at Wilmington, heavy fogs on the 1st, 3rd, 5th, 11th, 12th, 15th, 16th, 17th, 20th, 21st, 23rd, 28th, 29th. Light fogs, on the 2nd, 4th, 7th, 8th, 9th, 10th, 24th, 25th, 26th, 30th, 31st. Lasting all day, 5th, 29th, 30th.

Halos, Solar.—At Philadelphia, on the 20th.

Halos, Lunar.—At Mardela Springs, on the 5th, 28th; at Millsboro on the 30th; at Norfolk, on the 27th; at Wilmington, on the 5th.

Corona, Lunar.—At Millsboro, on the 3rd, 4th; at Wilmington, Aug. 31st.

Corona, Solar.—At Mardela Springs, on the 21st, 26th.

Meteors.—At Jewell, on the 11th; at Mardela Springs, on the 11th; at Millsboro, on the 28th.

CROPS.

Week ending August 5th.

The outlook for the corn crop continued encouraging, notwithstanding the dry weather; wheat had turned out fairly well in northern and western sections. Pastures were getting short and, as a consequence, dairy products were shrinking. Oats were yielding largely. Buckwheat was promising in northern and western countries. Potatoes were yielding well, but the late crop needed rain. Sweet potatoes were in good condition in Southern Maryland. Reports of tomatoes were varying; the crop was much in need of rain. Watermelons from Southern Maryland were in market. Peaches were yielding better than anticipated, and there was a large crop of apples. Reports of grapes were generally favorable, and huckleberries were abundant in Western Maryland.

Week ending August 12th.

The dry weather continued, and all crops needed rain.

The outlook for corn was somewhat less promising than at the close of the preceding week, though quite encouraging reports were received from many localities. Wheat harvesting is about finished in Western Maryland, an average yield being reported, except in Wash-

ington county. There was a good stand of buckwheat in Western Maryland, but in other sections it was backward on account of the drought. Tobacco was growing slowly, but showed the effect of the dry, hot weather. Pastures were failing. Millet looked well in Southern Maryland. There was no improvement in tomatoes, and late potatoes were not promising. Vegetables, generally, were abundant, but much in need of rain. Peaches of good quality were ripening in Washington county, Western Maryland, and good reports of the crop were also received from Eastern Maryland. Apples were plentiful.

Week ending August 19th.

Owing to the continued dry weather, the outlook for crops was not improved. Corn was still doing fairly well in Western Maryland, but in other sections it had been injured by the drought; decided injury had also resulted to tobacco, tomatoes, late potatoes, and to garden vegetables generally. Tomato canning commenced in Eastern Maryland. Pastures were poor, much to the detriment of stock. Apples were plenty, and peaches, pears, plums and other fruits were abundant in many localities.

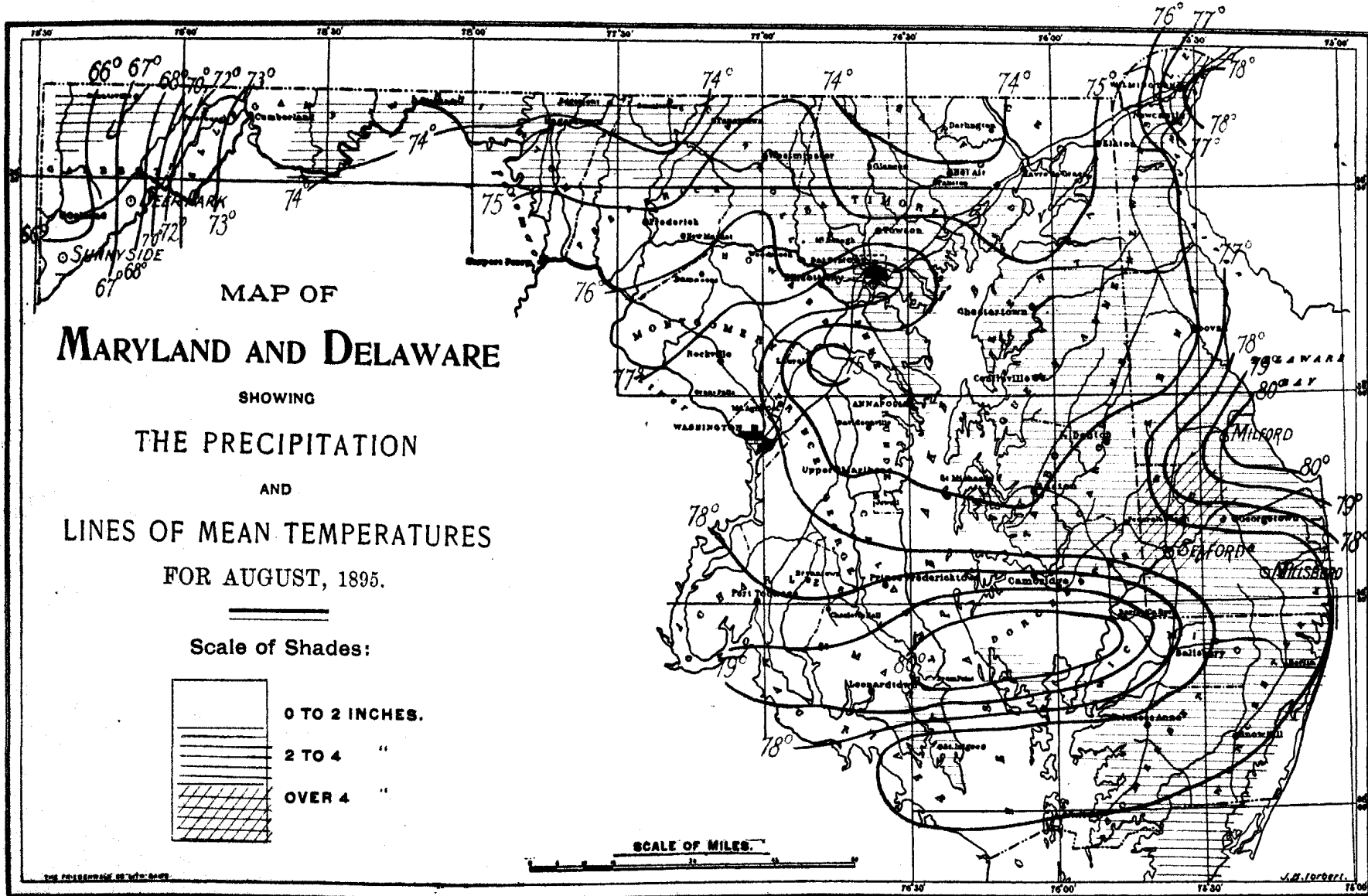
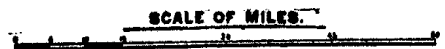
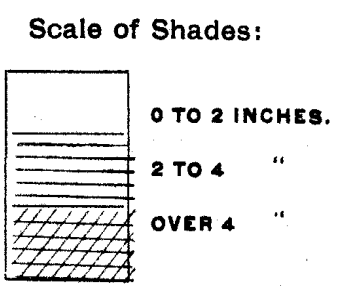
Week ending August 26th.

Springs were failing and the water in streams was low. Corn, tobacco and growing crops generally were being injured by the continuance of dry weather. A great crop of oats had been harvested in Western Maryland. Pasture was short and young clover was dying out. Tomatoes were reported a full crop in some western and southern localities, but below the average elsewhere. The yield of potatoes was variable. Apples were fine and abundant, and favorable reports of the peach crop were received from Eastern Maryland and Delaware.

Week ending September 2nd.

Showers benefited all growing crops, particularly late corn and tobacco. The cutting of the early crop of corn began, and some of the earlier tobacco was housed. Potatoes were turning out well—better than anticipated—in northern and western sections; elsewhere they were rather poor. Pastures improved. Tomatoes in northern central Maryland were reported to be a light crop and ripening late. Plowing for fall seeding was well advanced, considering the unfavorable conditions that had prevailed. Fruit was abundant.

MAP OF
MARYLAND AND DELAWARE
 SHOWING
 THE PRECIPITATION
 AND
 LINES OF MEAN TEMPERATURES
 FOR AUGUST, 1895.



J.H. Forcell.

Meteorological and Weather Signal Display Stations of the Maryland State Weather Service.

Stations.	County.	Meteorological Observer.	Displayman.
Annapolis	Anne Arundel	J. E. Abbott	W. M. Abbott.
Appleton	Cecil		W. C. Henderson.
Bachman's Valley	Carroll	J. M. Myers.	
Baltimore		J. B. Marbury. G. N. Wilson. A. T. Brewer. F. S. Coale.	Weather Bureau.
Baltimore, (The Anchorage)			Thos. Hansen. N. N. Nock.
Bel Air	Harford		
Bel Alton	Charles	Walter Cox.	
Boettcherville	Allegany	F. F. Brown.	
Bradshaw	Baltimore		B. F. Taylor.
Buckeystown	Frederick		A. W. Nicodemus.
Burkittsville	Frederick	J. P. Sifer.	
Cambridge	Dorchester		Samuel Lehman.
Charlotte Hall School	St. Mary's	J. Francis Coad.	
Cherryfields	St. Mary's	J. Edwin Coad.	
Chestertown	Kent	Hon. M. deK. Smith.	
Cumberland	Allegany	Shriver and Rizer. E. T. Shriver.	
Darlington Academy	Harford	Prof. A. F. Garbreath.	
Deer Park	Garrett	S. P. Specht.	
Delaware City, Del.	New Castle		W. E. Reybold.
Denton	Caroline	F. C. Ramsdell.	
Dickerson	Montgomery		W. H. Dickerson.
Distributing Reservoir, D. C.		Maj. J. G. D. Knight.	
Dover, Del.	Kent	Jno. S. Jester	Philip Burnet.
Easton	Talbot	Henry Shreve.	Henry Shreve.
Fallston School	Harford	G. G. Curtiss, A. M.	
Flintstone	Allegany		N. T. Downes.
Frederick	Frederick	McClintock Young.	"The News."
Frostburg	Allegany		J. N. Benson.
Frederica, Del.	Kent		Miss E. V. Newpom. Miss L. T. Frazier.
Garey P. O.	Howard		Walter Dorsey.
Garrison	Baltimore	A. W. Nyce.	
Glyndon	Baltimore	J. E. Henry	J. J. Dyer.
Grantsville	Garrett	J. S. Miller	T. H. Bittinger.
Great Falls	Montgomery	Maj. J. G. D. Knight.	
Green Spring Furnace	Washington	E. G. Kinsell.	
Hagerstown	Washington	Prof. C. E. Carl.	
Hampstead	Carroll		H. H. Meals.
Hancock	Washington	Dr. J. S. Diehl.	
Hartly, Del.	Kent		Miss C. A. Forde.
Havre de Grace	Harford		W. S. McCombs.
Jewell	Anne Arundel Co.	Jos. Plummer.	
Johns Hopkins Hospital, Baltimore		W. L. Woods.	
Kenton, Del.	Kent		W. S. Arthurs.
Kirkwood, Del.	New Castle	J. S. Carnagy.	
La Plata	Charles	J. S. Turner	J. S. Turner.
Laurel	Prince George's	Dr. T. M. Baldwin.	
Laurel, Del.	Sussex		E. D. C. Hegeman.
Louisa	Allegany		J. J. Robinson.
Mardela Springs	Wicomico	A. E. Acworth	L. A. Wilson.
Marshall Hall	Charles	F. H. Deal	
Maryland Agricultural College	Prince George's	Prof. J. H. Patterson.	
McDonogh School	Baltimore	H. Norwig.	
Middletown	Frederick		G. C. Rhoderick, Jr.
Milford, Del.	Kent	J. Y. Foulk	J. Y. Foulk.
Millsboro, Del.	Sussex	Rev. L. W. Wells.	
Mt. St. Mary's College	Frederick	J. A. Mitchell, Ph. D.	Jos. H. Martin.
Newark College, Del.	New Castle	Prof. Wm. H. Bishop.	
Oakland	Garrett	J. Lee McComas, M. D.	J. L. McComas, M. D.
Odenton	Anne Arundel		E. B. Watts.
Oldtown	Allegany	Dr. H. C. Shipley.	
Princess Anne	Somerset	Jas. R. Stewart	L. F. Wilson.
Pocomoke City	Worcester	R. M. Stevenson	R. M. Stevenson.
Pope's Creek	Charles	George Dent.	
Receiving Reservoir, D. C.		Maj. J. G. D. Knight.	
Rising Sun	Cecil		Dr. L. R. Kirk.
Salisbury	Wicomico		W. Benjamin. L. W. Gunby. H. L. Wallace.
Seaford, Del.	Sussex	H. L. Wallace	H. L. Wallace.
Sharpsburg	Washington	R. L. Hiberger.	
Snow Hill	Worcester		Purnell & Vincent.
Solomon's	Calvert	W. H. Marsh, M. D.	
†Sparrow's Point	Baltimore		Md. Steel Co.
St. Charles Coll., nr. Ellicott City	Howard	Rev. H. M. Chapuis, S. S.	
Sunnyside	Garrett	John G. Knauer.	
Sykesville	Carroll		J. S. Hyatt.
Upper Marlboro	Prince George's	J. B. Perrie.	
Washington, D. C.		S. W. Beall.	
Western Port	Allegany	Prof. O. H. Bruce.	
West Friendship	Howard		Postmaster.
Westminster	Carroll	Prof. Roland Watts.	
Westover	Somerset		E. D. Long.
Wilmington, Del.	New Castle	F. C. D. McKay	Wm. Lawton.
Woodsboro	Frederick		G. F. Smith.
Woodstock College	Baltimore	T. J. A. Freeman, S. J.	
Woman's College, Frederick	Frederick	Miss W. A. Lantz.	
*Birdsneat, Va.	Northampton	C. R. Moore.	
*Norfolk, Va.	Norfolk	Jas. J. Gray.	
*Warsaw, Va.	Richmond	C. H. Constable.	

*Stations of the Virginia State Weather Service. †Whistle signals only.

DAILY PRECIPITATION FOR AUGUST, 1895.

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Tot		
Sunnyside				T		.50	.20				T	.29					T			T				.42			.30	T	.28	.40	.16	1.29		
Oakland																															.43	1.31		
Deer Park											.77													.11							.43	1.31		
Grantsville				.66		.10					.35					.11								.35			.30			.40		2.27		
West'nport						.30					.20					.08								.17		.04	.02		.17	.10		1.08		
Boottchery a				.30		.20					.20					.20											.20		.10	.10		1.90		
Cumb. (a)				.15		.28					.20					.60								.10			.21		.10			1.64		
Cumb. (b)				.28	.03	.24					.15					.57												.10	.21			1.81		
Oldtown a				.57		1.25												.13						.18			.11		.55			2.79		
Hancock				.38	1.73						.15													.09			.25		.24		.18	3.02		
Gr'nSp. Fur.				.24	T		.69				T						T							.06			.21		.06	.96	T	2.22		
Hagersto'n				.21		.37					T																.25		1.05	1.20	.33	3.41		
Sharpsburg				T		.19					.06	.53				.03	T							.03			.06		.08	.18	T	1.15		
Burk'tsvle																																		
Mt. My's Col.																																		
Fred'k				.03	T	.45					.30	.06												.02			.15		.44	.43		1.88		
Woman's Col.																																		
Taneytown																																		
Bach. V'y				.45							.40				.02		.09								T			.74		.06		.74	2.52	
WestMd.Col				.32							.58					.16															.72	2.58		
Glyndon				.41							.06																							
Garrison				.45											.13	1.04	.68											.08		.38	T	.37	3.15	
Woodst. Col				T		T	T				T				T	.25	.36											.18		.23	1.11			
Baltimore				T		T	T			.68	T				T	.03	.36								T			T	.25	T	.78	2.43		
St. Chas. Col.															.47	.18	.10										.05		T		.82	1.72		
Great Falls																																		
Falls'n Sch.				.68		T	.02				T				T	T			1.12	.19				T			.33		.18	T	.05	2.38		
Dar'g'nAcad'y				.25		.08				.34	.02				T	T	.08											T			.58	1.49		
Annapolis						.22	.43																											
Jewell																	.10	.18										.54		T		.04	1.51	
Dist. R., D.C																																		
Rec. R., D.C																																		
Wash., D. C.				T	.11	T	.27	.15	.01								.32				T							.31		.04	.02	.03	1.26	
Md. Agr. Cl.				T		.58	.10	.02							.34		.22										T					.53	2.57	
Colg. Park																																		
Laurel				.15			.20								.50																.75	1.60		
Up. Marib.				T		T	.25								T	T	.11											.61		.12	T	1.09		
La Plata k.						.20																								.50	.50	1.20		
Bel Alton																																		
Pope's Cr'k																															.12	.49		
Solomon's				T							.01					.05					.04							.25	.12			1.05	2.05	
Charl. Hall Sch																.07	.49										.16	.42	.42	.42	.42	1.59		
Cherryfields							.13										.25				.07	.03					.73	.38	T		.73	2.29		
Chestert'n																																		
Denton						1.37									.11														.66		1.00	3.14		
Easton				.07		1.50									.04		.02											.23	.31	.63		3.35		
Mardela Sp.						.13					.26																	.19	.02	.70	1.31			
Pr'cess An.											.11					.09	.28											.43		.16	1.88	2.53		
Poc'm'k Cit	.08									.34					.01	.90	.02			.03												1.85		
Wilm't. Del.																																		
Del. Col. Del				.32	.02	T	.01	T	.02		T				T		T	.09	T					T				T	.73	T	.08	T	.04	2.31
Newark, Del				.17		.06																									.07	1.56		
Dover, Del.						.14	.08								1.13														.49		.38	1.73		
Milford, Del. a.				.15		.04	.13				.01				.60	2.10	.02												.02	.44	3.65			
Seaford, Del				T											.45	2.25	.49												.39		1.18	4.76		
Millsb'o, Del							.14								.01		.02													.60	2.37			
Phila. Pa.				.01	.23	T	.01				T				1.34	.11	.02											.08	T		.80	2.37		
Norfolk, Va				.01		T			T	T							.52	.01										.01	T	.29	T	.59		
Warsaw, Va				.01		T						.45	.11				.53											.78		.15	2.58			
Birds Nest, Va																	.53												.48		.25	1.27		
																	.25											.20				1.70		

NOTE.—"T" indicates a trace of rain or melted snow.

Reports for July, 1895, received too late for earlier publication.

STATIONS.	COUNTIES.	Altitude above sea in ft.	Latitude.	Longitude.	TEMPERATURE.						Total Precipitation.	Total Snow-fall.	Clear Days.	Partly Cloudy Days.	Cloudy Days.	Rainy Days. (0.1 in. or more)	Prevailing Winds.				
					Monthly Mean.	Mean of Max.	Mean of Min.	Max.		Min.											
								Degrees	Date.	Degrees								Date.			
NORTHERN-CENTRAL MD.																					
Great Falls **	Montgomery	39	0	77	14	73.4		92	20	58	31	34	2.63	0			8				
SOUTHERN MARYLAND.																					
Dist. Res., D. C. **		38	52	77	0	73.0		90	21	57	31	33	4.01	0			8				
Rec. Res., D. C. **		38	52	77	0	73.2		90	21	59	31	31	3.68	0			8				
EASTERN MARYLAND.																					
Pocomoke City		87	33	5	75	34	75.4	84.5	86.4	98	21	55	15	41	2.88	0	14	11	6	11	S. E.

See foot-notes on opposite page.

MONTHLY SUMMARY OF REPORTS FOR AUGUST, 1895.

STATIONS.	COUNTIES.	Altitude above sea in ft.	Latitude.	Longitude.	TEMPERATURE.								Total Precipitation.	Total Snow-fall.	Clear Days.	Partly Cloudy Days.	Cloudy Days.	Rainy Days. (0.1 in. or more)	Prevailing Winds.	
					Monthly Mean.	Mean of Max.	Mean of Min.	Max.		Min.		Monthly Range.								
								Degrees	Date.	Degrees	Date.									
WESTERN MARYLAND.																				
Sunnyside ¹ *	Garrett	2440	39°20'	79°21'	66.9			90	10	37	20	53	1.29		19		12	8	S. W.	
Oakland	Garrett	2380	39 24	79 18																
Deer Park	Garrett	2457	39 25	79 13	66.0	81.0	50.9	90	10, 11, 16	31	22	59	1.31							
Grantsville	Garrett		39 45	79 10	67.4	79.7	55.2	88	10	40	22	48	2.27		16	14	1	7	S. W.	
Westernport	Allegany		39 28	78 2	72.1	89.2	55.0	99	10	42	1	57	1.08						8	
Boettcherville ^{1a}	Allegany		39 39	78 48	71.6			96	10	46	22	50	1.90						7	
Cumberland, Shriver & Rizer.	Allegany	650	39 39	78 46	77.2	89.3	65.2	98	10, 16	54	1, 2, 22	44	1.64						7	
Cumberland, E. T. Shriver.	Allegany	700	39 39	78 45	74.0	84.6	63.5	94	10, 16	50	1, 21	44	1.81		23	5	3	8		
Oldtown a	Allegany		39 33	78 37	73.8	86.2	61.4	95	11	48	22	47								
Hancock	Washington		39 40	78 10	73.6	87.3	59.8	96	10	45	22	51	3.02		18	13			7	
Green Sp. Furnace	Washington	500	39 39	77 55	74.3	88.7	59.9	96	10, 11	44	22	52	2.22		17	14			6	
Hagerstown	Washington		39 39	77 43	74.4	90.3	58.6	100	10	48	20	52	3.41		17	6	8	6		
Sharpsburg	Washington		39 25	77 45	75.1	87.8	62.4	96	10, 11	49	22	47	1.15		25	5	1	8	S. E.	
Libson ² *	Washington				74.2			96	11	53	20, 22	43			13	13	5	6	N. W.	
NORTHERN-CENTRAL MD.																				
Burkittsville	Frederick		39 25	77 35																
Mt. St. Mary's Col.	Frederick	720	39 43	77 20																
Frederick	Frederick	280	39 24	77 18	75.2	88.0	62.3	97	11	50	1, 22	47	1.88		11	20			8	
Woman's College	Frederick	280	39 24	77 18																
Taneytown	Carroll		39 40	77 9																
Bachman's Val. ^{1a}	Carroll		39 37	76 55	76.2			98	12	56	19	42	2.52		23	6	2	8	S. W.	
Western Md. Col. } Westminster.	Carroll		39 25	77 0	79.0	92.5	65.4	102	11	54	22	48	2.58		21	8	2	5		
Glyndon	Baltimore	650	39 27	76 45																
Garrison	Baltimore		39 23	76 49	74.0	86.2	61.7	96	11	49	1, 20	47	3.15		24	6	1	8	S. W.	
McDonogh School, a	Baltimore	535	39 23	76 44	75.1	83.9	67.1	94	11	54	1	40								
Woodstock Col.	Baltimore	392	39 20	76 49	74.7	85.9	63.5	96	10	50	20	46	1.11		23	8			4	
Baltimore		179	39 17	76 36	77.1	86.8	67.4	96	10	57	1, 22	39	2.43						6	
Johns Hopkins Hos			39 17	76 36	77.2	87.9	66.4	98	11	50	1	48			21	5	5	6	S. W.	
St. Charles Coll. } nr Ellicott City. } §Great Falls**	Howard	300	39 16	76 44	77.6	84.3	70.9	93	11	60	1	33	1.72		20	11			5	
Fallston School, 1*	Montgomery		39 0	77 14	77.0			94	11, 29	57	12, 20, 22	37	1.21						7	
Darlington Acady.	Harford	450	39 31	76 24	74.6			94	11	58	1, 22	38	2.38		6	25			7	
	Harford	300	39 39	76 14	73.8	84.1	63.4	93	11	50	20	43	1.49		20	9	2	7	S. W.	
SOUTHERN MARYLAND.																				
Annapolis	Anne Arund'	20	39 58	76 30																
Jewell	Anne Arund'		39 44	76 36	76.3	85.5	67.1	94	10	50	1	44	1.51		24	7	0	6	S. W.	
Dist. Res., D. C.			38 52	77 0																
Rec. Res., D. C.			38 52	77 0																
Washington, D. C.		112	38 52	77 0	77.2	87.6	68.8	96	10	54	1	42	1.26		18	12	1	9	S.	
Md. Agric't. Col. } b College Park. }	Pr. George's		38 58	76 56	76.2	89.2	63.1	98	11, 29	47	1	51	2.57						7	
Laurel	Pr. George's		39 5	76 45	74.8	87.2	62.3	96	11	46	1	50	1.60		24	7	0			
Upper Marlboro	Pr. George's		38 47	76 45	76.0	88.9	63.2	97	10	50	1, 20	47	1.09		24	6	1	4	S. W.	
Marshall Hall	Charles		38 42	77 8																
La Plata	Charles		38 32	77 0	75.5	87.8	63.2	98	29	52	19	46	1.20							
Bel Alton	Charles		38 26	77 1																
Pope's Creek	Charles		38 22	77 1	79.1	90.7	67.5	98	11	51	19	47	1.49						3	
Solomon's	Calvert	20	38 19	76 27	80.2	90.0	70.5	98	10, 11	60	1	38	1.05		10	12	9	6	S. E.	
Charlotte Hall Sch ¹	St. Mary's		38 28	76 48	78.7	90.1	66.4	99	10, 11	52	1	47	1.59		20	10	1	6	S. E.	
Cherryfields ² *	St. Mary's		38 11	76 24	76.0			84	11, 24	65	1	19	2.29		12	18	1	6	S. W.	
EASTERN MD. AND DELAWARE.																				
Chestertown	Kent	80	39 13	76 4																
Denton	Caroline	42	38 47	75 41	76.8	89.2	64.5	97	11, 31	55	3	42	3.14						4	
Easton	Talbot	35	38 42	76 6	76.0	86.7	65.2	95	11	52	20	43	3.35		20	9	2	7	W.	
Mardela Spr.	Wicomico	25	38 30	75 39	79.9				11, 29	56	1, 2	39	1.31		15	13	3	6	S. E.	
Princess Anne	Somerset		38 10	75 35	76.7	86.7	66.7	95	11	51	20	44	2.53		9	19	3	8	S. W.	
Pocomoke City	Worcester	37	38 5	75 34	79.4	88.4	70.3	97	11	60	1, 2	37	1.85		20	10	1	7	S.	
Wilmington, Del.	Newcastle	115	39 44	75 33	78.8	90.5	67.0	100	11	53	23	47	2.31		9	22	0	8	S. W.	
Newark } Delaware College } Del.	Newcastle		39 40	75 37	75.2	86.4	63.9	97	11	49	22	48	1.56		23	6	2	5	S. W.	
Kirkwood, Del. ¹ * d	Newcastle		39 35	75 41	75.3			93	9	65	1	28			20	7	0		N. E.	
Dover, Del.	Kent	40	39 10	75 30	76.0	84.7	67.2	94	11	55	1, 20	39	1.73		24	7	0	4	W. S. W.	
Milford, Del.	Kent		38 45	75 25	80.7	91.8	69.6	98	11	53	1	45	3.65		27	2	2	9	W.	
Seaford, Del.	Sussex		38 40	75 35	76.7	86.8	66.6	97	11	54	1	43	4.76						5	
Millsboro, Del.	Sussex		38 44	75 15	76.9	87.2	66.6	97	11	53	1, 20	44	2.37		19	11	1	8	S.	
PENNSYLVANIA.																				
Philadelphia					77.4	86.8	68.1	98	11	56	1	42	.59						6	S. W.
VIRGINIA.																				
Norfolk					78.7	87.0	70.4	95	11	63	1	32	2.58		17	11	3	8	S. W.	
Warsaw	Richmond				78.0	88.6	67.3	98	11	52	1	46	1.27		9	22			3	
Bird's Nest					79.4			93	11	64	1	29	1.70		15	13	3	3	S. W.	
AVERAGES	Western Maryland.				72.4	86.4	59.2					49.8	1.92		18.5	10.0	5.9	7.1	S. W. W.	
	Northern-Cent'l Md.				75.9	86.6	65.3					42.8	2.14		18.3	10.9	2.4	6.4	S. W.	
	Southern Maryland.				77.0	88.7	65.6					43.1	1.46		18.9	10.3	2.6	5.9	S. W.	
	East. Md. and Del.				77.4	87.8	66.8					41.6	2.60		18.6	10.6	2.3	6.5	S. W.	
	Entire territory.				75.7	87.4	64.2					44.3	2.03		18.7	10.4	3.0	6.5	S. W.	

* Extremes of temperature from observed readings of dry thermometer. A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

¹ Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. + 4. ² Mean of 8 a. m. + 8 p. m. + 2. * Mean of 7 a. m. + 2 p. m. + 2.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers. Letters of the alphabet are used to denote the number of days that are missing from record; for instance, "a" denotes 1 day missing. An italic letter following the name of a station indicates that two or more observers, as the case may be, are reporting from the same station. † Omitted in computing averages. ‡ Received after report had gone to press and therefore omitted in computing averages and in preparing map. § Received too late to be included in averages.