

U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JULY, 1900.

MARYLAND AND DELAWARE SECTION

OF THE

CLIMATE AND CROP SERVICE

OF THE

WEATHER BUREAU.

IN COOPERATION WITH THE

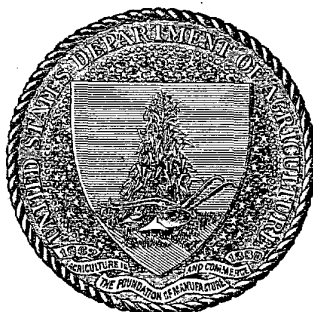
MARYLAND STATE WEATHER SERVICE.

(Prof. Wm. B. Clark, Director; Prof. Milton Whitney, Secretary and Treasurer.)

PREPARED UNDER DIRECTION OF
WILLIS L. MOORE,
CHIEF OF WEATHER BUREAU.

BY

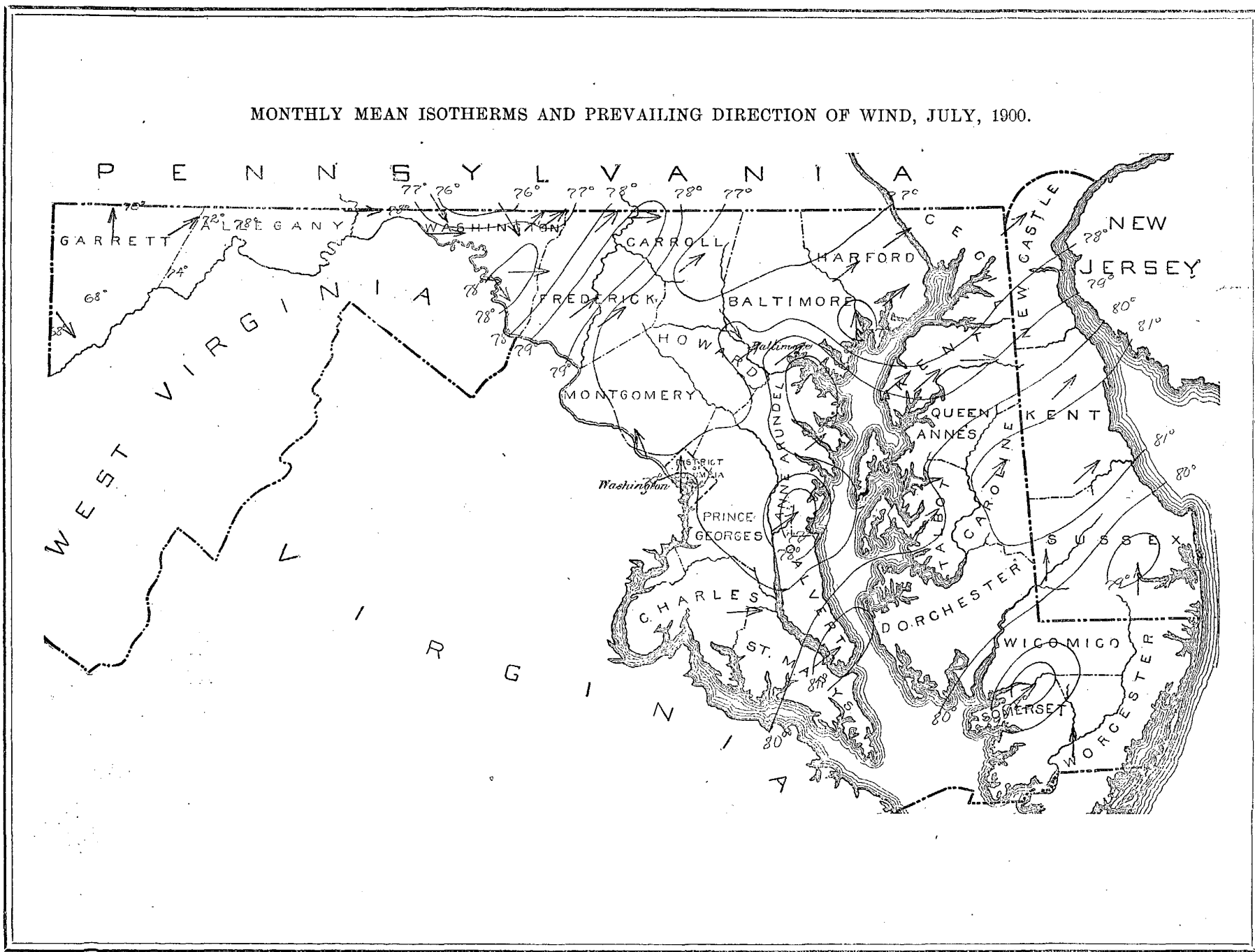
OLIVER L. FASSIG,
SECTION DIRECTOR.



BALTIMORE, MD.:
WEATHER BUREAU OFFICE.
JOHNS HOPKINS UNIVERSITY.

1900.

MONTHLY MEAN ISOTHERMS AND PREVAILING DIRECTION OF WIND, JULY, 1900.



U. S. DEPARTMENT OF AGRICULTURE,
CLIMATE AND CROP SERVICE
 OF THE
WEATHER BUREAU.
 CENTRAL OFFICE: WASHINGTON, D. C.
 MARYLAND AND DELAWARE SECTION,
 OLIVER L. FASSIG, Section Director.

Vol. V.

BALTIMORE, MD.

No. 7.

The July Hot Spell in Maryland. The summer of 1900 will be recorded as one of the hottest in the annals of Middle Atlantic States weather, owing to the long period of high temperatures in July, followed by a shorter period of unprecedented heat in August. During the first two days in July northerly winds prevailed in Maryland, accompanied by a cool morning temperature of about 60° in the central and eastern portions of the State. On the Allegany plateau the night temperature was as low as 40°. The maximum afternoon temperatures were about 85°. On the whole, these days were several degrees cooler than the normal for the season. On the 3d the temperature began to rise rapidly. At Baltimore the maximum was 92°, and with the exception of four or five days during which the maximum thermometer registered in the eighties, the afternoon temperatures remained well above 90° until the 21st of the month. From the 22d to the 31st the maximum readings ranged between 80° and 91°. The hot spell culminated in temperatures of 100° on the 16th and 17th. These temperatures, occurring at Baltimore, fairly represent the conditions that prevailed in the central, eastern, and southern portions of the State. In the valleys of Washington and Allegany Counties the figures are somewhat higher. Thus at Hagerstown a reading of 105° was recorded on the 16th; at Hancock 105° on the 15th, 16th, and 17th; at Green Spring Furnace 106° on the 17th, the highest in the State. Within very narrow limits, Maryland offers a great variety of climatic conditions. On the Allegany plateau, in Garrett County, the thermometer did not get above 92° during the entire month, and then only on one or two days.

* *

The temperatures here indicated are all shade temperatures, that is, they were registered by thermometers placed in standard shelters which protect the instruments from the direct rays of the sun, or reflected rays from neighboring objects, but are so made as to permit of free circulation of the air. Thermometers exposed to the direct rays of the sun at Chase, in Baltimore County, and at Chewsville, in Washington County, gave an average maximum of 104° on 13 days, with an absolute maximum of 110°. Such temperatures are however not unusual with thermometers so exposed. The average number of days with a maximum temperature of 90° or above in July at Baltimore, based on the 30 years of carefully kept records of the U. S. Weather Bureau, is 9 days.

Their frequency has varied from none, as in 1891, to 18, as in 1876. During July, 1900, there were 15 such days at Baltimore, 17 at Washington, 18 at Hagerstown, 19 at Laurel, 21 at Taneytown, and 27 at Hancock. Frostburg had but 5, Grantsville and Deer Park 2 each, while at Sunnyside, Garrett County, there was but one such day, with a maximum of 91°. The average daily maximum temperature at Baltimore during these 15 days was 95°; the normal average for the same period is 86°, showing a daily excess of 9°. These excessive temperatures caused the average daily temperatures for the entire month in Maryland and Delaware to be 2.5° to 3° above the normal values.

* *

The weather conditions which usually accompany hot spells were present in a marked degree during July, 1900. The skies were remarkably clear; the winds were prevailing southwest, and generally light in force; the rainfall was deficient in quantity and frequency. The records from over fifty stations in Maryland, Delaware, and the District of Columbia show an average of 17 clear, 11 partly cloudy, and 3 cloudy days. The average condition at Baltimore, derived from 30 years of observations, is 10 clear, 13 partly cloudy, and 8 cloudy days. The winds were almost constantly from the south or southwest while the high temperatures prevailed. At Baltimore they were from the southeast, south, or southwest during 20 days out of the 31. The average hourly velocity was but 4.6 miles, approximately the lowest in 25 years, during July, while the maximum velocity for the month was only 18 miles, the lowest recorded at Baltimore. Scattered showers fell from the 3d to the 9th; on the 12th and 30th the rainfall was general throughout the States of Maryland and Delaware. During the period from the 17th to 26th local showers were frequent. With but few exceptions the total rainfall for the month was decidedly below the average. Baltimore had but 1.51 inches and Washington but 1.25 inches, whereas the average rainfall for July in this vicinity is about 4.50 inches. The relative humidity during the period of intense heat was somewhat below the average for the month, a circumstance affording some cause for thankfulness.

* *

While suffering the discomforts of an intense spell of warm weather, we are apt to overestimate its severity as compared with those experienced in the past. Statistics, however, support the assertion that the recent July hot spell was one of the most trying on record in our vicinity. It is always difficult to make just comparisons in dealing with weather conditions. We feel hot and uncomfortable and look for the cause in high temperatures alone, but do not always find them so high as expected. The element of personal discomfort is due to certain combinations of temperature, humidity, and air movement, and we have no single set of values to express this element. We can and do measure accurately the temperature, the humidity, and the wind direction and velocity, each separately. Upon these figures we must base our judgment of the severity of any disagreeable period of weather. Since 1871, the date of the establishment of the Weather Bureau Station at Baltimore, the number of days

in July with a maximum temperature of 90° or above has exceeded 15 but twice. In 1878 there were 16 such days with an absolute maximum of 98°. The average of the maximum temperatures was 92.5° as compared with 95° in 1900. The average relative humidity was the same in both instances, namely 63 per cent. The average daily wind movement was greater in 1878 than in 1900, having been 128 miles in the former and 117 miles in the latter period. In 1876 there were 18 consecutive days with an average maximum of 93°, and an absolute maximum of 99°; the average relative humidity during this period was 63 per cent; while the average wind movement was 125 miles per day. As a result of this comparison with the two most conspicuous July rivals for notoriety, we find that the hot spell of July, 1900, was but little shorter in duration; that the humidity was as high; that the average temperature was fully two degrees higher; and that the wind velocity, a powerful element of relief on a muggy day, was less.

The intense heat of August, and the general atmospheric conditions which brought about such unusual temperatures, will be considered in the August report.

O. L. F.

Loss by Lightning in July. *4th.* A frame farm house was struck in Cecil County and damaged to the extent of \$25. During the same storm a cow valued at \$35 was struck and killed in an open field.

5th. In Sussex County, Delaware, a cow valued at \$27 was struck and killed in an open field, at some distance from fences or trees.

12th. Lightning struck a barn in Cecil County, destroying building and contents; total loss, \$1000. Storm in Kent County, during which a residence was struck; two persons were severely shocked, a dog was killed, and two horses were struck and killed in the neighborhood. Lightning struck a store in Somerset County, setting fire to the building; the flames were extinguished after a loss of \$100.

20th. A hay barrack was struck and consumed in Baltimore County; loss, \$1500.

22d. Two dwelling houses struck by lightning in Somerset County, one badly damaged.

23d. Large barn, together with contents, destroyed by lightning in Cecil County; loss, \$5000. Barn struck and destroyed in Queen Anne's County; loss, \$1500. Barn in Montgomery County destroyed by lightning; loss not known. During a storm at Cambridge, Dorchester County, two barns and several trees were struck.

24th. Two young men badly shocked by lightning in Wicomico County.

25th. During a storm at Hagerstown, Washington County, lightning struck the house of William H. White, colored. He was instantly killed, and a silver watch in his pocket was melted into a mass. Two other houses were struck, and about five miles from the city five cows were killed. In Harford County a large stone barn was struck; the building was almost entirely destroyed, and a horse within was killed.

CLIMATOLOGY OF THE MONTH.

ATMOSPHERIC PRESSURE.

Monthly mean at Washington, D. C., 29.99 inches; at Baltimore, 29.99 inches; average, 29.99 inches; highest, 30.21 inches, at Baltimore, on the 2d; lowest, 29.58 inches, at Baltimore, on the 8th.

TEMPERATURE.

The monthly mean (entire territory), 77.5°, is 2.3° above the normal.

The highest monthly mean was 81.4°, at Solomons, Md., and Milford Del.

The lowest monthly mean was 67.6°, at Deer Park.

The highest temperature recorded during the month was 106°, at Green Spring Furnace, on the 17th.

The lowest temperature recorded during the month was 35°, at Deer Park, on the 1st.

The greatest local monthly range was 63°, at Boettcherville.

The least local monthly range was 37°, at Milford, Del.

The greatest daily range was 55°, at Hancock, on the 15th.

The least daily range was 3°, at Woodstock College, on the 26th.

PRECIPITATION. in inches and hundredths.

The monthly average (entire territory), 3.17, was 1.25 below the normal.

The greatest amount was 6.13, at New Market.

The least amount was 1.25, at Washington, D. C.

The greatest amount in twenty-four hours was 2.72, at Charlotte Hall, on the 12th.

The average number of rainy days, 8.

WIND.

The prevailing direction was from the southwest.

The total movement was 3,397 miles, at Baltimore, and 4,214 miles, at Washington, D. C.

The maximum wind velocity was 30 miles per hour from the southwest, at Washington, D. C., on the 25th.

MISCELLANEOUS PHENOMENA.

Thunderstorms.—Baltimore, 5, 6, 8, 12, 18, 22, 25, 30; Boettcherville, 4, 6, 18, 22, 25, 29; Charlotte Hall, 4, 6, 8, 12, 18, 21, 23; Chase, 5, 8, 11, 12, 19, 22, 23, 25; Chestertown, 4, 5, 8, 12, 19, 23, 25; Chewsville, 19, 22, 23, 25; Clear Spring, 4, 6, 12, 17, 19, 22, 23, 24, 25; College Park, 19; Fallston, 4, 5, 12, 19, 20, 22, 23, 30; Frederick, 4, 5, 12, 17, 19, 22, 23, 25; Frostburg, 18; Grantsville, 3, 4, 5, 6, 7, 13, 17, 18, 19, 20, 21, 22, 23, 25, 29; Green Spring Furnace, 4, 5, 12, 20, 23, 25, 30; Hagerstown, 4, 5, 12, 17, 19, 20, 24, 25, 26; Harney, 19, 24; Jewell, 4, 5, 6, 7, 8, 12, 19, 22, 23, 25, 30, 31; Laurel, 6, 12, 19, 22, 23, 25; McDonogh, 23; Millsboro, 5, 12, 18, 20, 23; Mount St. Marys, 5, 18, 19, 25; Newark, 3, 4, 12, 20, 21, 23, 24, 25; New Market, 4, 5, 12, 20; Pocomoke City, 5, 22, 26; Princess Anne, 20, 23, 24, 25; Rock Hall b, 8, 19, 22, 23, 25; Seaford, 5, 12, 18, 20, 23, 25, 26; Smithsburg (2), 19, 23, 25; Solomons, 4, 5, 6, 7, 8, 11, 12, 18, 19, 21, 22, 23, 24, 25, 26, 31; Sunnyside, 4, 6, 7, 12, 17, 18, 20, 23, 24, 25; Taneytown, 5, 12, 18, 19, 21, 23, 24, 25; Washington, D. C., 4, 5, 8, 12, 19, 22, 23, 24, 25; Woodstock, 5, 12, 19, 20, 23, 25, 26; Wyoming, 4, 12.

Frost (Light).—Deer Park, 1.

Hail.—Laurel, 22; Van Bibber, 12.

Fog.—Clear Spring, 24, 31; Green Spring Furnace, 24; Harney, 30, 31; Sunnyside, 10, 13, 19, 22, 27, 28, 31; Woodstock, 31.

Solar Halo.—Jewell, 15.

Lunar Halo.—Mount St. Marys, 5, 6, 7, 12; Princess Anne, 7, 11.

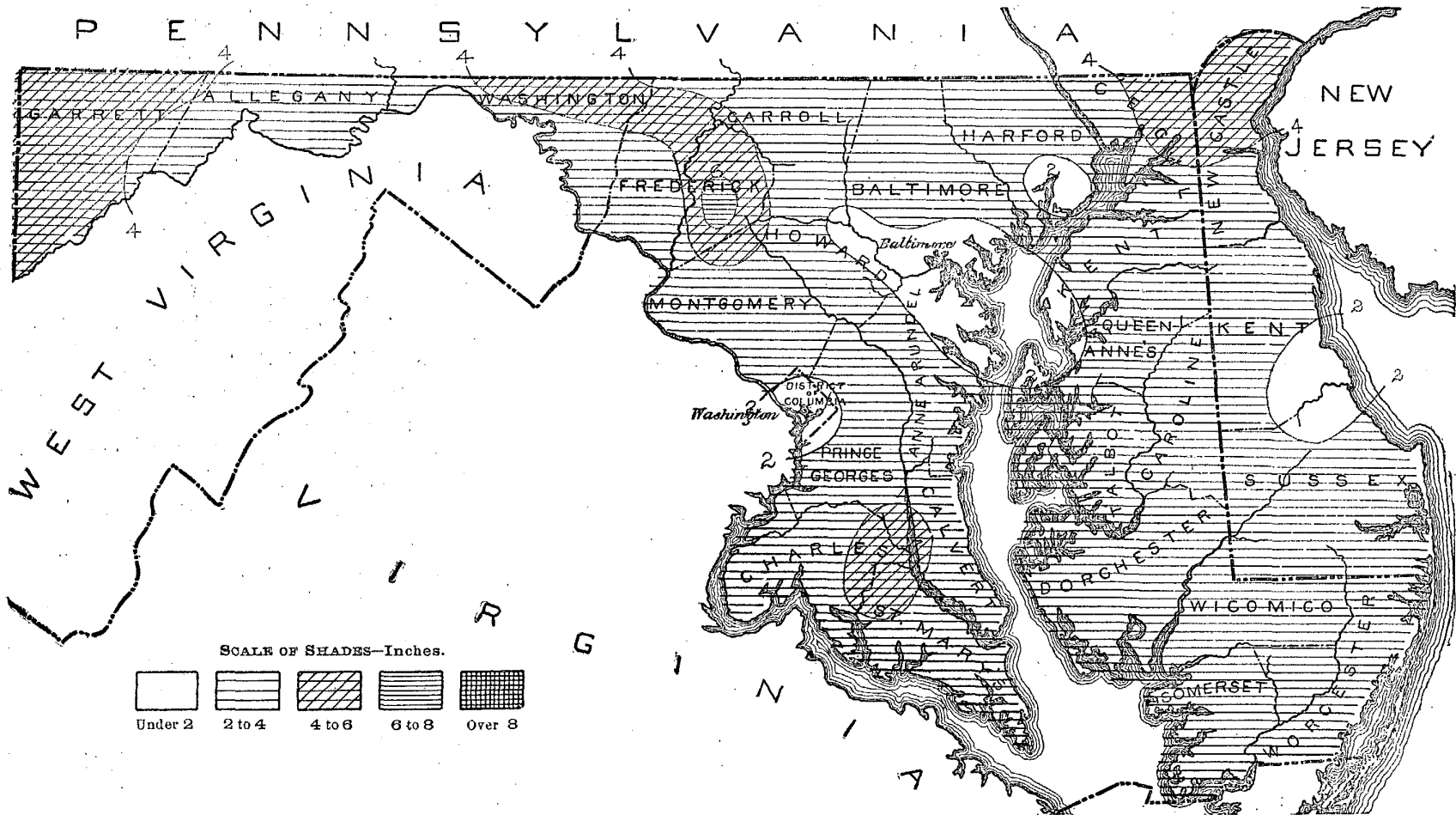
Lunar Corona.—Laurel, 15; Millsboro, 2, 4, 8; Rock Hall b, 1.

Climatological data for Maryland and Delaware, July, 1900.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall (unmelted).	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	
WESTERN MARYLAND.																			
Boettcherville	Allegany	780	10	77.1	+3.5	105	17	42	1	48	3.65	+0.43	1.25	6				F. F. Brown.	
Boonsboro	Washington	600	2	78.4		104	16	52	1	43	3.36		0.99	7	20	8	3	C. E. Huntzberg.	
Chewsville	Washington	530	2	76.8		101	16	44	1	42	4.34		1.38	7	18	13	0	W. A. Henneberger.	
Clear Spring	Washington	500	2	75.6		102	17	50	1	41	5.41		1.58	11	9	22	0	E. I. Oswald.	
Cumberland	Allegany	722	41	78.3	+2.1	99	17	56	1	31	3.09	-0.31	1.37	6				W. W. Frantz.	
Deer Park	Garrett	2,457	9	67.6	+1.0	90	17	35	1	48	4.49	-2.31	1.00	8				Howard Shriver.	
Frostburg	Allegany	2,200	5	72.1		95	17	42	1	36	4.10		1.24	10	22	7	2	S. P. Specht.	
Grantsville	Garrett	2,400	7	69.6	+1.0	92	17	39	1	38	5.61	-1.59	1.95	9	12	11	8	Mrs. G. G. Townsend.	
Green Spring Furnace	Washington	450	8	77.3	+1.1	106	17	47	1	46	3.31	-0.46	0.98	20	20	10	1	J. S. Miller.	
Hagerstown	Washington	552	9	77.8	+3.8	105	16	47	1	42	4.94	+0.53	1.22	19	5	7	2	E. G. Kinsell.	
Hancock	Washington	455	2	77.7		105	17	45	1	55	2.92		1.10	17	12	2	2	Clyde B. Stouffer.	
Sharpsburg	Washington	420	6	78.0	+3.3	102	16	51	1	40	3.60	-0.68	1.20	19	10	2	2	J. D. Stottemeyer.	
Smithsburg	Washington	750	2	76.7		102	16	45	1	43	3.49		1.15	20	10	1	1	R. L. Hilberger.	
Smithsburg	Washington	900	2	76.8		101	16	50	1	37	5.66		2.63	13	14	3	3	Chas. K. Shank.	
Sunnyside	Garrett	2,440	8	68.0	+0.6	91	17	38	1	42	5.31	-0.87	1.44	11	13	11	7	Dr. D. W. Crowther.	
Westernport	Allegany	1,000	6	73.9	-0.7	97	17	48	1	40	2.61	-1.67	1.75	8				J. G. Knauer.	
Average				75.1	+1.7						4.12	-0.70		8	17	11	3	Prof. O. H. Bruce.	
NORTHERN-CEN. MD.																			
Bachman's Valley*	Carroll	860	7	75.5	+2.0	102	17	47	1	36	2.98	-1.00	1.35	6	29	2	0	J. M. Myers.	
Baltimore	Baltimore	123	66	80.1	+2.9	100	17	58	1	27	1.51	-3.19	0.46	9	15	13	3	U. S. Weather Bureau.	
Baltimore, J. H. Hosp.	Baltimore	112	6	79.1	+2.9	100	17	54	2	30	1.74		0.50	6	19	6	6	W. L. Woods.	
Chase	Baltimore	25	2	77.0		100	18	46	1	35	2.16		0.64	10	18	12	1	J. W. Crouch.	
Darlington Academy.	Harford	339	11	77.4	+2.6	101	18	49	1	30	3.83	-0.50	0.98	6	23	4	2	Prof. A. F. Galbreath.	
Fallston School	Harford	450	32	77.6	+3.4	102	18	49	1	35	2.21	-2.32	0.87	9	4	20	1	G. G. Curtiss, A. M.	
Frederick	Frederick	275	28	79.2	+3.3	101	17	54	1	34	3.47	-0.20	1.28	11	20	9	2	McClintock Young.	
Great Falls	Montgomery	200	12	77.3	+1.2	99	17	54	1	33	3.79	+0.18	1.20	7	24	0	7	Washington Aqueduct.	
Harney	Frederick			77.1	+2.9	100	17	54	1	32	3.40	-0.63	0.70	7	27	2	3	Daniel Bowersox.	
McDonogh	Baltimore			74.6	-0.7	100	17	50	1	32	4.15	+0.66	1.93	9	18	7	6	W. E. Byrd.	
Mt. St. Mary's Coll.	Frederick	720	40	74.6	-0.7	100	17	50	1	32	4.15	+0.66	1.93	9	18	7	6	J. A. Mitchell, Ph. D.	
New Market	Frederick	550	17	77.5	+0.3	100	17	51	1	34	6.13	+2.04	2.10	10	17	13	1	H. H. Hopkins, M. D.	
St. Charles College	Howard	500	6			95	17	44	10	40	1.51	-0.76	0.48	8	10	20	1	Rev. George L. Harig.	
Takoma Park	Montgomery		1	77.8		99	17	55	2	33	2.44		0.63	9				G. A. Warren.	
Taneytown	Carroll	490	8	80.0	+2.6	105	17	56	14	42	2.39	-3.52	0.60	11	10	15	6	Prof. H. Meier.	
Van Bibber	Harford	22	5	77.7	+1.0	98	18	57	1	27	1.95	-3.08	0.67	10	21	0	10	H. A. Wroth.	
West'n Maryland Coll.	Carroll	900	6															Prof. Roland Watts.	
Woodstock College	Baltimore	392	31	78.1	+3.5	99	17	54	2	35	1.78	-1.86	0.62	8	16	13	2	D. T. O'Sullivan, S. J.	
Average				77.9	+2.2						2.82	-1.10		9	17	10	4	SW.	
SOUTHERN MARYLAND.																			
Annapolis	Anne Arundel	45	27	79.8	+1.3	100	17	60	2	26	2.00	-2.75	0.60	6	18	10	3	SW.	
Charlotte Hall School	St. Mary's	167	7	78.6	+2.2	100	4	55	29	35	5.44	+1.49	2.72	9	16	15	0	W.	
Distrib'g Reservoir†	Dist. of Columbia	120	10	80.4	+3.2	102					1.26	-2.43	0.54	6				Washington Aqueduct	
Jewell	Anne Arundel	165	13	76.6	+0.7	97	17	56	1	27	3.81	-3.21	1.31	9	23	7	1	J. Plummer.	
Laurel	Prince George's	150	6	77.3	+2.0	103	17	47	1	43	3.90	-0.90	1.25	7	8	22	1	Dr. T. M. Baldwin.	
Md. Agricultural Coll.	Prince George's	170	9	79.3	+5.1	103	18	50	2	43	2.08	-2.26	0.41	7	24	6	1	Prof. J. H. Patterson.	
Prince Fredericktown	Calvert																	Alfred Presson.	
Receiving Reservoir†	Dist. of Columbia	160	10	79.8	+2.8						1.41	-2.19	0.60	5				Washington Aqueduct	
Solomon's	Calvert	20	9	81.4	+3.3	99	17	60	1	26	2.66	-1.50	1.10	10	12	8	11	W. H. Marsh, M. D.	
Washington	Dist. of Columbia	112	30	79.0	+2.2	99	18	56	2	31	1.25	-3.34	0.40	9	18	8	5	U. S. Weather Bureau.	
Average				79.1	+2.5						2.65	-1.90		8	17	11	3	SW.	
EASTERN MARYLAND.																			
Berlin	Worcester																	Dr. E. J. Drickson.	
Cambridge	Dorchester																	J. A. Jordan.	
Chestertown	Kent	80	16	78.4	+2.5	96	18	57	1	29	2.37	-1.14	1.03	9	19	11	1	SW.	
Coleman	Kent	80	2															Hon. M. de K. Smith.	
Denton	Caroline	42	11	81.1	+4.9	100	16	62	39	23	3.43	+0.15	1.95	3	0	29	2	James S. Harris.	
Easton	Talbot	35	11	79.5	+3.2	99	17	56	2	31	2.12	-2.07	0.71	7	24	7	0	SW.	
Mardela Springs	Wicomico	23	13															F. C. Ramsdell.	
Ocean City	Worcester	10	2															Henry Shreve.	
Pocomoke City	Worcester	37	7	79.6	+1.4	98	5	58	28	26	3.98	-0.50	0.95	9	12	18	1	A. E. Acworth.	
Port Deposit	Cecil	25	3															E. M. Scott.	
Princess Anne	Somerset	20	20	77.6	+0.4	98	8	55	12	30	2.97	-2.26	0.77	8	8	22	1	R. M. Stevenson.	
Queenstown	Queen Anne	20	2															J. I. France.	
Rock Hall	Kent	20	2															J. R. Stewart.	
Rock Hall	Kent	25	2	79.3		98	18	55	2	26	1.81		0.58	7	21	7	3	Dr. W. K. Carroll.	
Sandy Point	Worcester	12	2															Chas. N. Satterfield.	
Sudlersville*	Queen Anne		2	76.3		97	17	51	1	37	4.93		1.45	8	20	10	1	Isaac L. Leary.	
Average				79.2	+2.5						2.78	-1.16		7	14	16	1	J. B. Dirickson.	
DELAWARE.																			
Milford	Kent	20	21	81.4	+4.9	99	8	62	28	25	1.50	-1.89	0.80	3	28	1	1	SW.	
Millsboro	Sussex	23	8	78.6	+2.5	100	17	56	2	29	2.57	-2.77	0.62	7	22	6	3	S.	
Newark (Del. Coll.)	Newcastle	136	7	77.4	+2.3	98	17	54	2	31	4.68	+0.50	1.08	9	19	3	6	SW.	
Seaford	Sussex	40	10	80.2	+4.9	100	18	58	1	32	2.34	-2.22	1.00	7	19	6	9	SW.	
Wyoming	Kent		2											9	15	14	0	SW.	
Average				79.4	+3.6						2.69	-1.60		7	21	6	4	SW.	
General average				77.5	+2.3						3.17	-1.25		8	17	11	3	SW.	

NOTE.—All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. Letters of the alphabet indicate the number of days missing. † Mean of 7 a. m. + 2 p. m. + 2. † Incomplete record.
 * Not included in means. ‡ On other dates also.

TOTAL PRECIPITATION, JULY, 1900.



SCALE OF SHADES—Inches.

Under 2	2 to 4	4 to 6	6 to 8	Over 8

Daily precipitation for Maryland and Delaware, July, 1900.

Table with columns for Stations, Day of month (1-31), and Total. Rows are categorized by region: WESTERN MARYLAND, NORTHERN-CENTRAL MARYLAND, SOUTHERN MARYLAND, EASTERN MARYLAND, and DELAWARE. Each station entry shows daily precipitation values and a total for the month.

† Trace, when precipitation is less than 0.01 inch.

‡ Incomplete record.

* Precipitation included in that of following day.