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U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR AUGUST, 1897.

VIRGINIA SECTION

OF THE

CLIMATE AND CROP SERVICE

OF THE

WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

WILLIS L. MOORE

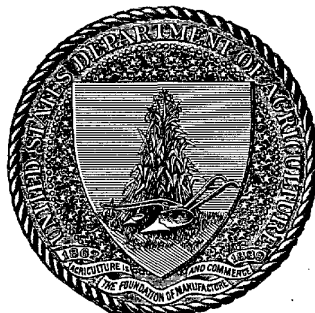
CHIEF OF WEATHER BUREAU

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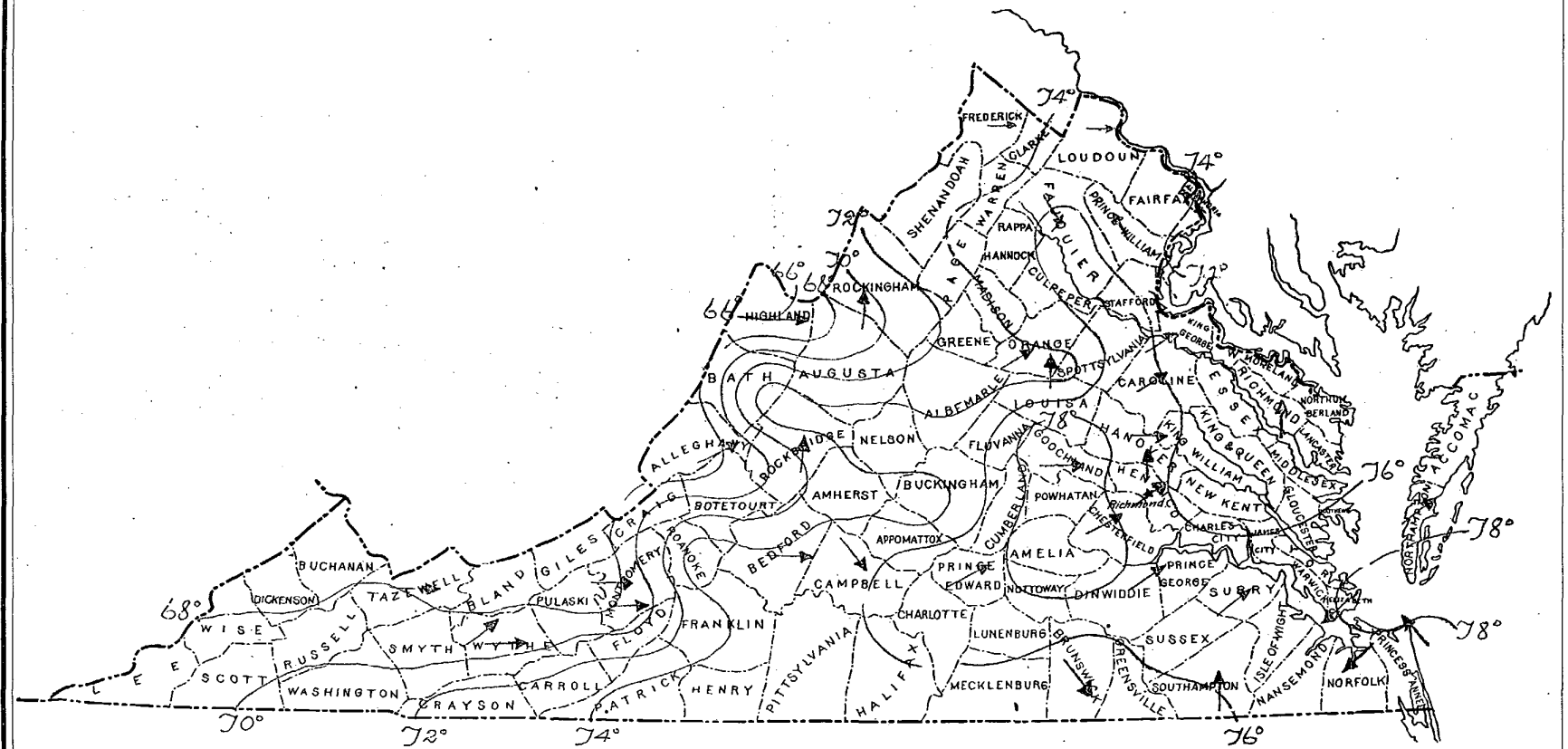
EDWARD A. EVANS

SECTION DIRECTOR,

RICHMOND, VA.



MONTHLY MEAN TEMPERATURE FOR AUGUST, 1897.



U. S. DEPARTMENT OF AGRICULTURE,

CLIMATE AND CROP SERVICE

OF THE

WEATHER BUREAU.

Central Office,
WASHINGTON, D. C. }} WILLIS L. MOORE,
Chief.

VIRGINIA SECTION,

E. A. EVANS, Section Director,
RICHMOND, VA.

VOL. VIII.

RICHMOND, VA.

No. 8.

AUGUST CROP CONDITIONS.

During the first week of the month the progress of the crops was highly satisfactory. There was sufficient rain for all crop purposes, and this combined with favorable temperatures was rapidly maturing them and placing them beyond danger. Corn and tobacco were doing well, the latter especially. Cotton improved, gardens and pastures were in good condition, and fall plowing was being pushed vigorously. This favorable condition was followed by a period of dry, almost droughty, weather the effect of which was immediately noticeable. There was a general falling off in tobacco and corn, especially the late planted, peanuts and potatoes and pastures began to fail. Later, "firing" of tobacco, began and the ground became too hard to plow for fall seeding. Light showers near the close of the month gave passing relief to vegetation, but much of the corn was beyond aid. Pastures improved slightly with the rain, but tobacco, corn and potatoes were not benefitted to any extent. Fodder pulling progressed rapidly during the month, and considerable cutting and curing of tobacco was done.

CYCLES IN METEOROLOGY.

Concluded from last month.

Lamprecht derives his results from over 52,000 months of total rainfall, a number vastly greater than those used by any of his predecessors, and his stations are scattered throughout Germany, Austria, Italy, Sumatra, Java, and the East Indies. He first examines this mass of data for lunar periods. The synodic lunar month has an average length of 29.63059 days; the anomalistic month is 27.55457 days. The common period for these two is 411.7934 days. Within this interval the moon experiences the greatest disturbance in the form of its orbit, whose eccentricity varies between 0.044 and 0.066. Arranging his monthly data with reference to this period he finds that for six groups of stations in Prussia, Saxony, Austria, Italy, and Sumatra, the precipitation is a maximum when the perigee of the moon agrees with the lunar octant. For Java and Sumatra he had only sixteen years of observations, which was not quite long enough to demonstrate the action of the moon. His conclusions may be expressed in other words as follows: The influence of the moon is such that the greatest rainfall occurs when the lunar perigee coincides with the full moon, and the least rainfall when the perigee coincides with the new moon. The excess when the perigee agreed with the full moon averaged about 10 millimeters in forty-one days, or 1 millimeter in four days, over the minimum rainfall when the perigee agreed with the new moon. In a second check computation Lamprecht considers only the

number of the rainy and the dry months, calling those months rainy that had an excess of rain over the normal, and those dry that had a deficiency. He finds that 61 per cent of the months when the perigee agrees with the full moon are also wet months, leaving 38 per cent that do not agree with his previous conclusions. This is quite opposed to the hypothesis of Falb, according to whom the moon exerts its greatest influence in producing rain when the perigee agrees with the new moon. Having firm faith in the physical reality of the 411 or 412 day period, or 14-month period of the rainfall for Europe, Lamprecht assumes that it applies to the whole earth, and undertakes to explain the corresponding necessary action of the moon on the atmosphere in order to produce this period. He goes into a discussion of the zodiacal light considered as a ring of matter revolving around the earth and subject to perturbations from the moon, and urges that photographs of this light be obtained for further investigation. After some lucubrations on atmospheric electricity, he passes to the discussion of another period in the rainfall, namely, 423.82 days. This gives him for Europe a maximum rainfall at the middle of the period. The difference between the length of the lunar period, 411.79, and this new astronomical period, 423.82 days, is almost exactly twelve days, and the period common to them both is 39.732 years. Lamprecht says:

I consider the period of 423.82 days as that in which the node of my hypothetical ring of matter circulating around the earth describes 360 degrees on the earth's equator, but it is very possible that my period is identical with Chandler's period in the variation of the earth's axis, so that this latter remarkable variation may be due to the oscillations of the ring of matter around the earth.

Lamprecht then passes to the study of a period of 11.8846 days, and considers that its existence is established with sufficient accuracy, and that it is caused by the synodic revolution of this ring around the earth. "In general, these various periods, and others that may be established, are the cause of the great variety of weather that we experience from day to day."

To this latter remark the Editor would offer the suggestion that by careful arrangement of data we may be able to work out an immense number of periods whereby to represent the occurrence of any series of phenomena; but we are not justified in saying that the periods cause the phenomena, or that the phenomena are the result of these periodicities. Who, for instance, would say that school children have a periodic tendency to go schoolward in the morning and homeward in the afternoon, and that their general behavior is the result of a number of such periodic tendencies? The fact is that they, like the rain and weather, are controlled by laws higher than mere arithmetic periodicities. The study of the fundamental laws of nature gives us a higher style of meteorology than the study of periodicities.

A MACHINE FOR CALCULATING PERIODICITIES.

Our readers are doubtless familiar with many forms of calculating machines; those for mere addition and multiplication are in use in every large counting house; the Hollerith machine, invented for the use of the United States Census Bureau, for the purpose of classifying and averaging a great variety of data, was recognized as a labor saving contrivance of immense importance. A desire has often been expressed for a machine that should discover recurring periods in any given series of numbers. The Editor has often worked over the sine and cosine formula for this purpose, but neither that or the purely arithmetical, nor the purely graphical methods are entirely satisfactory when we wish to discover wholly new periods. For this purpose Mr. Lamprecht tells us that he has used such a machine, and the Editor hopes to obtain a description of it for publication.

Extract, February, 1897, Weather Review.

ATMOSPHERIC PRESSURE.

—o—

The mean monthly air pressure as deduced from the U. S. Weather Bureau Stations at Lynchburg, Norfolk and Washington, D. C., was 30.01 inches; highest 30.22 inches, at Norfolk, on the 4th, and Lynchburg, and Washington, D. C., on the 11th; lowest 29.70 inches, at Washington, D. C., on the 11th; range 0.52 of an inch.

TEMPERATURE. (DEG. F)

—o—

TIDEWATER VIRGINIA.—Highest monthly mean, 77.7, at Hampton; lowest monthly mean, 75.0, at Warsaw; maximum temperature, 100, at Petersburg, on the 30th; minimum temperature, 47, at Doswell, on the 10th; greatest daily range, 46, at Doswell.

MIDDLE VIRGINIA.—Highest monthly mean, 78.2, at Nottoway C. H.; lowest monthly mean, 72.6, at Stanardsville; maximum temperature, 100, at Farmville, on the 3d, and Bon Air, and Nottoway C. H., on the 30th; minimum temperature, 50, at Guinea, on the 11th; greatest daily range, 44, at Leesburg.

THE GREAT VALLEY.—Highest monthly mean, 75.4, at Salem; lowest monthly mean, 66.5, at Monterey; maximum temperature, 98, at Woodstock, on the 4th; minimum temperature, 47, at Dale Enterprise, on the 26th; greatest daily range, 44, at Dale Enterprise.

FOR THE STATE.—Average of the monthly mean temperatures, 73.7; average of the maximum temperatures, 94; average of the minimum temperatures, 55; average of the greatest daily range, 31.

September was, in the main, a cool month, the mean temperature for the State, 73.7 degrees, being 1.3 degrees below the normal. But, notwithstanding this generally cool condition, quite high temperatures prevailed for short periods during each decade; the extreme being 100 degrees observed at various points in the State on the 3d and 30th. The maximum and minimum temperatures were, however, well within the record. The month opened warm, readings of 90 degrees and over being recorded until the 6th when a change to cooler set in which, with the exception of temporary rises on the 10-11th and 14th to 16th, lasted until the 30th when it was again decidedly warmer. The coolest days were the 7th, 10th, 18th, 25th and 29th. The month was noteworthy for its freedom from cloudiness, there being only an average of four wholly cloudy days, and its generally cool nights.

PRECIPITATION.

—o—

TIDEWATER VIRGINIA.—Greatest monthly precipitation, 5.62 inches, at Warsaw; least monthly, 1.20 inches, at Petersburg;

greatest amount in any twenty-four consecutive hours, 3.00 inches, at Birdsnest, on the 24th.

MIDDLE VIRGINIA.—Greatest monthly precipitation, 3.29 inches, at Manassas; least monthly, 0.33 of an inch, at Farmville; greatest amount in any twenty-four consecutive hours, 2.00 inches, at Manassas, on the 10th.

THE GREAT VALLEY.—Greatest monthly precipitation, 4.63 inches, at Marion; least monthly, 0.68 of an inch, at Dale Enterprise; greatest amount in any twenty-four consecutive hours, 3.00 inches, at Clifton Forge, on the 2d.

FOR THE STATE.—Average total precipitation, 2.42 inches.

The average total precipitation for the State, 2.42 inches, was 1.17 inches below the normal for the month.

By sections Tidewater Virginia was 0.88 of an inch below the normal; Middle Virginia, 1.87 inches, below, and the Great Valley, 0.70 of an inch below.

The rainfall, though much less than the usual amount deposited for the month, was quite well distributed, but as it occurred mostly in the form of local showers, many of which, yielding small amounts of rain, were totally inadequate for crop purposes, there was a decided and general need of rain in all districts during the latter part of the month, and crops had begun to deteriorate noticeably from this cause. In some counties of the Middle Section, notably Bedford, Campbell, Buckingham and Prince Edward counties, the deficiency in moisture was large producing a drouthy condition which seriously injured the standing crops.

The average number of days on which 0.01 of an inch or more of rain or snow fell, was 6 in Tidewater Virginia; 5 in Middle Virginia, and 7 in the Great Valley. Average for the State, 6.

WIND.—The prevailing direction of the wind in the different sections was as follows: Tidewater Virginia SW.; Middle Virginia, SW.; the Great Valley, W. Prevailing direction for the State, SW.

WEATHER.—Tidewater Virginia, average number of clear days, 14; partly cloudy, 10; cloudy, 7. Middle Virginia, average number of clear days, 20; partly cloudy, 9; cloudy, 2. The Great Valley, average number of clear days, 13; partly cloudy, 13; cloudy, 4. For the State, average number of clear days, 16; partly cloudy, 11; cloudy, 4.

NOTES AND COMMENTS.

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The cloud chart, recently distributed by this office to the voluntary observers of the Virginia section, by direction of the Chief of the Weather Bureau, are commended to them as being valuable for study and reference. They give excellent representations of the various cloud forms, and this, together with the modern designations, and full explanation of each kind, make them simple and complete.

Climatological Data for August, 1897.

| 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 of rainy days. | Number clear days. | Number partly cloudy days. | Number cloudy days. | | Prevailing direction of wind. | |
| TIDEWATER VIRGINIA. | | | | | | | | | | | | | | | | | | | | | |
| Ashland | Hanover | 220 | 5 | 75.6 | +0.4 | 95 | 10 | 56 | 7 | 29 | 2.28 | -0.05 | 0.62 | ..... | 5 | 2 | 24 | 5 | s. | E. L. C. Scott. | |
| Birdsneest (r) | Northampton | 40 | 28 | 77.5 | -0.7 | 90 | 30 | 67 | 7 | 29 | 3.65 | -1.11 | 3.00 | ..... | 8 | 16 | 16 | 8 | sw. | C. R. Moore. | |
| Cape Henry | Princess Anne | 17 | 22 | 77.4 | +1.0 | 96 | 30 | 66 | 29 | 27 | 1.53 | +0.01 | 0.62 | ..... | 6 | 12 | 11 | 8 | se. | U. S. Weather Bureau. | |
| Doswell | Hanover | 134 | 0 | 76.6 | ..... | 98 | 14 | 47 | 10 | 46 | 2.40 | ..... | 1.50 | ..... | 3 | 18 | 6 | 7 | w. | C. W. Butterworth. | |
| Hampton | Elizabeth City | 3 | 9 | 77.7 | +0.1 | 91 | 4 | 30 | 65 | 27 | 2.42 | -2.00 | 1.03 | ..... | 14 | 14 | 14 | 14 | ne. | J. T. Davidson. | |
| Norfolk | Norfolk | 3 | 25 | 77.3 | -0.5 | 92 | 30 | 66 | 26 | 24 | 2.08 | -4.03 | 0.61 | ..... | 16 | 10 | 9 | 9 | ne. | U. S. Weather Bureau. | |
| Petersburg | Dinwiddie | 11 | 9 | 77.3 | -0.1 | 90 | 30 | 58 | 7 | 18 | 3.5 | -1.20 | 0.50 | ..... | 6 | 13 | 0 | 1 | sw. | Prof. Jas. M. Colson. | |
| Richmond (near) | Henrico | 96 | 21 | 76.4 | -0.1 | 95 | 4 | 5 | 30 | 57 | 6 | ..... | ..... | ..... | 30 | 0 | 7 | 1 | sw. | Capt. J. C. Shafer. | |
| Spottsville | Surry | 15 | 7 | 76.6 | -0.9 | 95 | 4 | 30 | 58 | 7 | 3.2 | -0.70 | 0.71 | ..... | 8 | 19 | 7 | 5 | sw. | B. W. Jones. | |
| Sunbeam | Southampton | 60 | 2 | 75.8 | -0.9 | 94 | 5 | 61 | 25 | 29 | 3.04 | -1.16 | 0.95 | ..... | 5 | 16 | 11 | 4 | s. | Dr. W. H. Daughtry. | |
| Warsaw | Richmond | 200 | 3 | 75.0 | -0.9 | 91 | 4 | 56 | 7 | 35 | 5.62 | +2.88 | 2.96 | ..... | 7 | 12 | 18 | 1 | s. | C. H. Constable. | |
| Williamsburg | James City | 0 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | L. S. Williams. | |
| MIDDLE VIRGINIA. | | | | | | | | | | | | | | | | | | | | | |
| Alexandria | Alexandria | 35 | 37 | 73.8 | -2.7 | 94 | 14 | 57 | 17 | 32 | 2.73 | +0.92 | 0.84 | ..... | 6 | 10 | 18 | 3 | se. | H. C. Slaymaker. | |
| Barboursville | Orange | 0 | 0 | 73.7 | ..... | 92 | 15 | 56 | 7 | 28 | 1.08 | ..... | 0.75 | ..... | 5 | 20 | 11 | 0 | sw. | Dr. Thos. H. Ellis. | |
| Bedford City (i) | Bedford | 900 | 6 | 74.1 | +0.9 | 96 | 14 | 55 | 5 | 36 | 0.87 | -2.84 | 0.56 | ..... | 12 | 17 | 10 | 3 | w. | J. T. Davidson. | |
| Bon Air | Chesterfield | 130 | 2 | 78.0 | -1.4 | 96 | 30 | 56 | 7 | 35 | 1.73 | -1.34 | 0.75 | ..... | 6 | 19 | 10 | 4 | sw. | Wm. H. Pleasants. | |
| Buckingham | Buckingham | 550 | 3 | 74.1 | -1.6 | 96 | 30 | 55 | 12 | 28 | 0.73 | -1.88 | 0.63 | ..... | 5 | 16 | 5 | 0 | sw. | Dr. W. E. Pratt. | |
| Callville | Brunswick | 570 | 2 | 75.2 | -0.6 | 93 | 15 | 59 | 25 | 28 | 2.52 | 0.00 | 1.10 | ..... | 6 | 12 | 17 | 2 | n. nw. | F. M. Gage. | |
| Farmville | Prince Edward | 0 | 0 | 77.0 | ..... | 100 | 3 | 58 | 7 | 28 | 35 | 0.33 | ..... | ..... | 1 | 27 | 4 | 0 | sw. | Jno. R. Martin. | |
| Fredericksburg | Spottsylvania | 47 | 3 | 75.8 | +0.1 | 95 | 4 | 57 | 7 | 30 | 2.04 | -0.42 | 0.70 | ..... | 9 | 23 | 4 | 4 | se. | E. C. Rowe. | |
| Gordonsville | Orange | 0 | 0 | 73.0 | ..... | 88 | 2 | 60 | 4 | 7 | 26 | ..... | ..... | ..... | ..... | 27 | 0 | 4 | s. | H. S. Smithers. | |
| Guinea | Caroline | 100 | 0 | ..... | ..... | ..... | 50 | 11 | ..... | ..... | 2.50 | -1.39 | 1.00 | ..... | 4 | 19 | 10 | 2 | sw. | M. A. Nunn. | |
| Leesburg | Loudoun | 0 | 0 | 75.4 | ..... | 98 | 11 | 31 | 52 | 17 | 29 | 4.46 | ..... | ..... | 4 | 27 | 4 | 0 | w. | C. A. English. | |
| Lynchburg | Campbell | 525 | 17 | 75.2 | -0.3 | 94 | 4 | 57 | 25 | 30 | 0.94 | -3.07 | 0.55 | ..... | 5 | 13 | 10 | 8 | nw. | U. S. Weather Bureau. | |
| Maidens | Goocland | 185 | 1 | ..... | ..... | ..... | 30 | 56 | 7 | 24 | 1.04 | ..... | 0.38 | ..... | 5 | 19 | 10 | 2 | e. | J. R. Hopkins. | |
| Manassas | Prince William | 317 | 2 | 74.1 | -1.3 | 94 | 30 | 55 | 8 | 27 | 3.29 | +1.03 | 2.00 | ..... | 4 | 18 | 13 | 0 | se. | Thos. H. Lion. | |
| Nottoway C. H (a) | Nottoway | 7 | 7 | 78.2 | +0.7 | 100 | 30 | 58 | 25 | 36 | 1.25 | -2.71 | 0.37 | ..... | 9 | ..... | ..... | ..... | ..... | George Dunn. | |
| Quantico | Prince William | 33 | 0 | 73.8 | -1.2 | 92 | 4 | 55 | 7 | 28 | ..... | ..... | ..... | ..... | 28 | 1 | 2 | ..... | s. se. | E. V. King. | |
| Rocky Mount | Franklin | 1150 | 2 | 74.4 | -1.0 | 94 | 4 | 55 | 28 | 32 | 2.65 | +0.54 | 0.75 | ..... | 6 | 13 | 17 | 1 | ..... | J. H. Binford. | |
| Stanardsville | Greene | 560 | 2 | 72.6 | -1.0 | 91 | 14 | 55 | 7 | 13 | 2.27 | -1.17 | 1.40 | ..... | 4 | ..... | ..... | ..... | ..... | W. N. Parrott. | |
| Warrenton | Fauquier | 0 | 0 | 76.4 | ..... | 91 | 14 | 17 | 64 | 25 | 2.3 | ..... | 1.05 | ..... | 6 | 24 | 5 | 2 | nw. | J. T. Preston. | |
| THE GREAT VALLEY. | | | | | | | | | | | | | | | | | | | | | |
| Big Stone Gap | Wise | 1966 | 6 | 68.5 | -1.4 | 91 | 3 | 48 | 18 | 38 | 2.85 | -1.38 | 1.08 | ..... | 11 | 11 | 12 | 8 | ..... | John W. Fox. Sr. | |
| Blacksburg | Montgomery | 2100 | 7 | 67.7 | -1.9 | 91 | 4 | 49 | 13 | 25 | 3.49 | -0.11 | 1.40 | ..... | 9 | 7 | 17 | 7 | w. | Prof. W. B. Alwood. | |
| Bristol | Sullivan, Tenn. | 1676 | 2 | 70.8 | -1.2 | 90 | 3 | 54 | 17 | 24 | 26 | 3.18 | -1.82 | 0.94 | | 6 | 21 | 5 | 5 | w. | J. Bunting, Jr. |
| Burke's Garden | Tazewell | 0 | 0 | 68.1 | +0.5 | 88 | 28 | 49 | 18 | 29 | 3.22 | -0.11 | 1.35 | ..... | 8 | 12 | 14 | 5 | w. | C. H. Greever. | |
| Christiansburg | Montgomery | 2160 | 9 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3.23 | ..... | 1.22 | ..... | 9 | 22 | 3 | 6 | w. | H. D. Walters. | |
| Clifton Forge | Allegheny | 1047 | 2 | 67.7 | -3.3 | 90 | 6 | 52 | 13 | 21 | 27 | 4.32 | +2.21 | 3.00 | | 8 | 16 | 7 | 8 | sw. | T. P. Halloran. |
| Dale Enterprise | Rockingham | 1350 | 10 | 70.4 | -2.8 | 95 | 4 | 47 | 20 | 44 | 0.68 | -3.08 | 0.34 | ..... | 4 | 10 | 14 | 1 | s. | L. J. Heatwole. | |
| Dwale | Dickenson | 0 | 0 | ..... | ..... | ..... | 4 | ..... | 20 | 24 | 27 | 1.6 | ..... | ..... | 11 | 10 | 13 | 8 | ..... | Frank M. Beverly. | |
| Goshen | Rockbridge | 1590 | 0 | 73.8 | -3.9 | 95 | 4 | 49 | 29 | 39 | | | 0.86 | | | 7 | 7 | 20 | 4 | sw. | David Graham. |
| Graham's Forge | Wythe | 1 | 3 | 68.6 | -4.4 | 89 | 4 | 46 | 25 | 34 | 3.62 | +0.15 | 0.86 | ..... | 3 | 17 | 23 | 1 | ..... | A. M. Stimson. | |
| Hot Springs | Bath | 2195 | 4 | 73.6 | +4.3 | 92 | 4 | 57 | 13 | 23 | 3.2 | -1.22 | 0.72 | ..... | 7 | 12 | 18 | 1 | se. | Prof. H. C. Campbell. | |
| Lexington | Rockbridge | 946 | 23 | 72.0 | -1.0 | 92 | 4 | 53 | 18 | 25 | 3.3 | -0.65 | 1.08 | ..... | 7 | 12 | 18 | 1 | ..... | A. T. Lincoln. | |
| Marion (r) | Smyth | 2124 | 8 | 68.8 | -1.6 | 89 | 1 | 49 | 27 | 36 | 4.63 | +0.61 | 0.95 | | 15 | 18 | 16 | 16 | 2 | w. | Jos. Jones. |
| Monterey | Highland | 3008 | 2 | 66.5 | -0.2 | 90 | 4 | 48 | 7 | 26 | 1.60 | -0.52 | 1.10 | ..... | 3 | 16 | 13 | 2 | w. | Prof. S. C. Wells. | |
| Salem | Roanoke | 1200 | 6 | 75.4 | -0.1 | 93 | 4 | 60 | 27 | 29 | 1.76 | -0.69 | 0.46 | ..... | 8 | ..... | ..... | ..... | ..... | A. K. Grim. | |
| Stanleyton | Page | 1064 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | W. C. Hedrick. | |
| Staunton | Augusta | 1380 | 6 | 72.3 | -1.0 | 94 | 4 | 53 | 13 | 32 | 2.30 | -0.70 | 1.06 | ..... | 5 | 14 | 15 | 2 | w. | W. B. Steele. | |
| Stephens City | Frederick | 4 | 3 | 73.0 | -1.8 | 94 | 4 | 53 | 8 | 13 | 3.4 | +0.65 | 1.55 | ..... | 8 | 17 | 13 | 1 | w. | J. H. Steele. | |
| Sword's Creek † | Russell | 0 | 0 | 69.2 | ..... | 92 | 4 | 48 | 24 | 32 | 2.44 | ..... | 1.30 | ..... | 4 | 23 | 0 | 8 | ..... | H. F. Miley. | |
| Woodstock | Shenandoah | 927 | 0 | 74.0 | ..... | 98 | 4 | 53 | 7 | 39 | 2.74 | ..... | 1.39 | ..... | 10 | 4 | 27 | 0 | w. | Dr. P. B. Green. | |
| Wytheville | Wythe | 2370 | 25 | 71.4 | +1.8 | 93 | 4 | 54 | 25 | 59 | 4.13 | -0.58 | 1.53 | ..... | 8 | 16 | 10 | 5 | w. | ..... |  |

† Estimated. ‡ Incomplete. tr. trace, or less than 0.01 of an inch. (r) Means from 7 am, 2 and 9 + 9 pm, observations. Letters following name of station indicate number of days missing from the report, as b = 2 days, etc.
 Note— Estimated and incomplete data not considered in means.

MISCELLANEOUS PHENOMENA.

Thunderstorms: Ashland, 5, 10, 23, 25; Doswell, 8; Spotts-ville, 30; Alexandria, 4, 16, 30; Barboursville, 4, 10, 15, 21, 23, 25; Bon Air, 10, 16; Buckingham, 1, 4, 6, 14, 15, 16, 23, 31; Fredericksburg, 10, 23; Maidens, 10, 25; Manassas, 10; War-renton, 4, 9, 10, 21, 23, 30; Bristol, 16, 30; Blacksburg, 23; Burke's Garden, 4, 10, 21, 23, 25, 31; Dale Enterprise, 10, 23; Graham's Forge, 2, 3, 4, 15, 16, 22, 23, 25; Lexington, 1, 4, 10, 14, 15, 22, 25; Salem, 2, 4, 10, 16, 23, 24, 31; Staun-

ton, 1, 4, 15, 22, 25; Woodstock, 4, 10, 21, 22, 23; Wythe-ville, 5, 23, 31.
Halos, Lunar: Petersburg, 2.
Halos, Solar: Spottsville, 6, 7; Woodstock, 19.
Fogs, Dense: Spottsville, 23, 24, 27; Bristol, 23, 24, 25, 26, 28; Wytheville, 4, 23.
Fogs, Light: Bon Air, 6, 9, 23, 31; Hot Springs, 11, 22, 23, 25; Woodstock, 9; Wytheville, 6, 26.
Hail: Spottsville, 30; Sunbeam, 5; Manassas, 10; Quantico, 23; Stephens City, 10; Wytheville, 16.
Earthquakes: Blacksburg, 26.

Daily Precipitation for August, 1897.

| Stations. | Day of Month. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total. | | | | | |
|---------------------|---------------|-----|------|------|------|------|-----|-----|-----|------|------|-----|-----|----|-----|-----|------|-----|-----|----|----|----|-----|------|------|------|-----|-----|-----|-----|-----|--------|-----|------|------|------|------|
| | 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 | | | | | | |
| TIDEWATER VIRGINIA. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ashland | | | | .62 | | | | | .57 | | | | | tr | | | | | | | | tr | | .50 | .09 | | .50 | | | | | | | 2.28 | | | |
| Birdsnest | | | | | | | | .25 | | | .20 | | | | | | | | | | | | .10 | | | | | | | | | | | 3.05 | | | |
| Cape Henry | | | | | | | | | | .30 | .44 | | | | | | | | | | | | | .04 | | .62 | | | | | | | | 1.53 | | | |
| Doswell | | | | | | | | | | .50 | 1.50 | | | | | | | | | | | | | | .40 | | tr | | | | | | | | 2.40 | | |
| Hampton | | | | | | | | tr | tr | tr | .36 | | | | | | | | .01 | tr | | | | .31 | .71 | | | | | | | | | 2.42 | | | |
| Norfolk | | .32 | | | .01 | | | | | .01 | .08 | | | | | | | | | | | | .04 | .26 | .01 | .59 | | | | | | | | 2.08 | | | |
| Petersburg | tr | | | | .09 | | | tr | tr | | .37 | | | | | | | | | | | | .09 | .10 | | | | | | | | | | 1.20 | | | |
| Spottsville | | tr | | | .55 | | | tr | tr | .30 | .45 | | | | | | | | | | | | .22 | .08 | .74 | | | | | | | | | 2.91 | | | |
| Sunbeam | | | | | .60 | | | tr | tr | | .44 | | | | | | | | | | | | .72 | | .32 | | | | | | | | | 3.04 | | | |
| Warsaw | | | | | tr | | | | .56 | tr | 2.96 | | | | | | | | | | | | | .52 | 1.21 | .15 | .02 | | | | | | | 20 | 5.62 | | |
| MIDDLE VIRGINIA. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alexandria | | | | .50 | tr | | | | | .84 | | | | | tr | .43 | | | | | tr | tr | | .24 | | .53 | | | | | .19 | | | 2.73 | | | |
| Barboursville | | | | .01 | .05 | | | | | .22 | tr | | | | tr | | | | | | | | | .75 | | .05 | | | | | | | | 1.08 | | | |
| Bedford City | tr | | | .56 | tr | | | | | | | | | | | | | | | | | | | | | .15 | | | | | | | | 0.87 | | | |
| Bon Air | | | | | | | | | | | .75 | | | | | | | | | | | | .08 | .15 | .57 | | | | | | | | | 1.73 | | | |
| Buckingham | tr | | | tr | .05 | | | | | .16 | | | | tr | .28 | .07 | .13 | | | | | | | | | | tr | | | | | | | 0.72 | | | |
| Callville | | | | | | | | tr | tr | | .13 | | | | tr | .13 | | | | | | | .40 | .58 | .18 | 1.10 | | | | | | | | 2.52 | | | |
| Danville | | .82 | | | .09 | tr | .32 | | | tr | .88 | | | | .01 | .18 | .40 | | | | | | | .99 | | .18 | | .41 | | | | | | .89 | 5.17 | | |
| Farmville | | | | | | | | | | | | | | | | | | | | | | | | .33 | | | | | | | | | | | 0.33 | | |
| Fredericksburg | | | | | .34 | | | | .02 | .04 | .70 | | | | | .13 | | | | | | | .06 | | .50 | | tr | .10 | | | | | | tr | .15 | 2.04 | |
| Guinea | | | | tr | | | | | | 2.00 | | | | | | | | | | | | | | 1.00 | | .30 | | | | | | | | 2.50 | | | |
| Leesburg | | | | | | | | | | .88 | | | | | | | | | | | | | | .10 | | .22 | | | | | | | | .26 | 1.46 | | |
| Lynchburg | tr | | | .22 | .09 | tr | | | | tr | tr | | | | | tr | | | | | | | | tr | tr | .05 | tr | tr | .03 | | | | | | .55 | 0.94 | |
| Maidens | | | | | .13 | | | | | .12 | | | | | | | | | | | | | | .09 | .32 | | .38 | | | | | | | | 1.04 | | |
| Manassas | | | | .67 | | | | | | 2.00 | | | | | | tr | | | | | | | | | .39 | | tr | | | | | | | .23 | 3.29 | | |
| Nottoway C. H. | | .06 | | | .01 | | | | | | .10 | | | | | | .09 | | | | | | | .07 | .15 | | .37 | | | | | | | .33 | 1.25 | | |
| Rocky Mount | tr | .48 | | .75 | .45 | .48 | | | | tr | tr | | | | | | .02 | | | | | | | | tr | | tr | | .17 | | | | | | tr | 2.05 | |
| Stanardsville | | | | | | | | | | .27 | .40 | | | | | | .20 | | | | | | | | | | | | | | | | | | 1.27 | | |
| Warrenton | | | | .49 | | | | | | .06 | .11 | | | | | | | | | | | | | | .01 | | .06 | | | | | | | | 1.05 | 1.78 | |
| THE GREAT VALLEY. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Big Stone Gap | | .03 | | tr | .40 | 1.08 | | .16 | tr | .03 | | | | | tr | tr | | | | | tr | | .03 | .54 | .12 | | .03 | | | | | .12 | .31 | 2.85 | | | |
| Blacksburg | | | | | | .60 | | .03 | | | .12 | | | | | .14 | .40 | | | | | | .05 | 1.40 | .30 | | .45 | | | | | | | | 3.49 | | |
| Bristol | .70 | | | tr | | .12 | .30 | | | | | | | | | .94 | .80 | | | | | | | | | | | | | | | | | | 3.18 | | |
| Burke's Garden | | tr | | .34 | 1.35 | .06 | | | tr | .18 | | | | tr | .37 | | | | | | | | | .44 | | .08 | | .40 | | | | | | | tr | tr | 3.22 |
| Christiansburg | tr | | | | .20 | 1.02 | .22 | | | tr | .02 | .97 | | | | | .09 | | | | | | | | .29 | | .29 | | | | | | | | | 3.23 | |
| Clifton Forge | .28 | .04 | | | .35 | | | | | | .10 | | | | | .10 | | | | | | | | | 3.00 | | | | | | | | | | .15 | 4.32 | |
| Dale Enterprise | | | tr | | tr | .02 | | | tr | .01 | .31 | | | | | tr | tr | | | | | | | | .34 | | | | | | | | | | | 0.68 | |
| Dwale | | | | | .30 | .42 | | | | tr | | | | | | tr | .30 | | | | | | | | | | | | | | | | | | | .08 | 3.24 |
| Goshen | | .21 | | | | | | | | | | | | | | | | | | | | | | | .15 | .70 | .65 | | .15 | | | | | | | 3.62 | |
| Graham's Forge | | | | .52 | | .86 | | | tr | tr | .32 | | | | | tr | .82 | | | | | | | tr | tr | .06 | .62 | | | | | | | | | tr | 3.03 |
| Hot Springs | | | | .72 | | | | | | | 1.08 | | | | | tr | .02 | | | | | | | | | .32 | .04 | | | | | | | | | 1.08 | |
| Lexington | | .21 | | | .81 | | | | | | | | | | tr | .02 | | | | | | | | | | .10 | | .58 | | .23 | | | | | | 3.03 | |
| Marion | | tr | | | | | | | | 2.50 | | | | | | | .08 | | | | | | | | | .50 | | | | | | | | .60 | .95 | 4.63 | |
| Monterey | | | 1.10 | | tr | | | | tr | .20 | | | | | tr | tr | tr | | | | | | | | | .30 | | | | | | | | | | 1.60 | |
| Salem | | .40 | | tr | .46 | .06 | | | | | .08 | | | | | tr | .12 | | | | | | | | | | | | | | | | | | tr | tr | 1.76 |
| Stanleyton | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Staunton | | .22 | | 1.06 | tr | | | | tr | tr | | | | | | | .28 | | | | | | | | | | | | | | | | | | | | 2.30 |
| Stephens City | | | tr | .47 | | | | | tr | tr | .99 | .05 | .05 | | | tr | | | | | | | | | | | | | | | | | | | | 3.32 | |
| Sword's Creek | | | | | .44 | .50 | | | tr | tr | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.44 |
| Woodstock | tr | | | | .79 | .05 | | | tr | tr | .11 | tr | | | | tr | tr | | | | | | | | | | | | | | | | | | | | 2.74 |
| Wytheville | tr | .18 | | tr | .15 | .85 | | | tr | tr | tr | | | | | tr | 1.22 | .05 | | | | | | | | | | | | | | | | | | 4.13 | |

tr. Trace, or less than .or of an inch.