U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR APRIL, 1897.

VIRGINIA SECTION

OF THE

CLIMATE AND CROP SERVICE

OF THE

WEATHER BUREAU,

IN COOPERATION WITH THE

VIRGINIA STATE BOARD OF AGRICULTURE.

PREPARED UNDER THE DIRECTION OF

WILLIS L. MOORE,

CHIEF OF BUREAU.

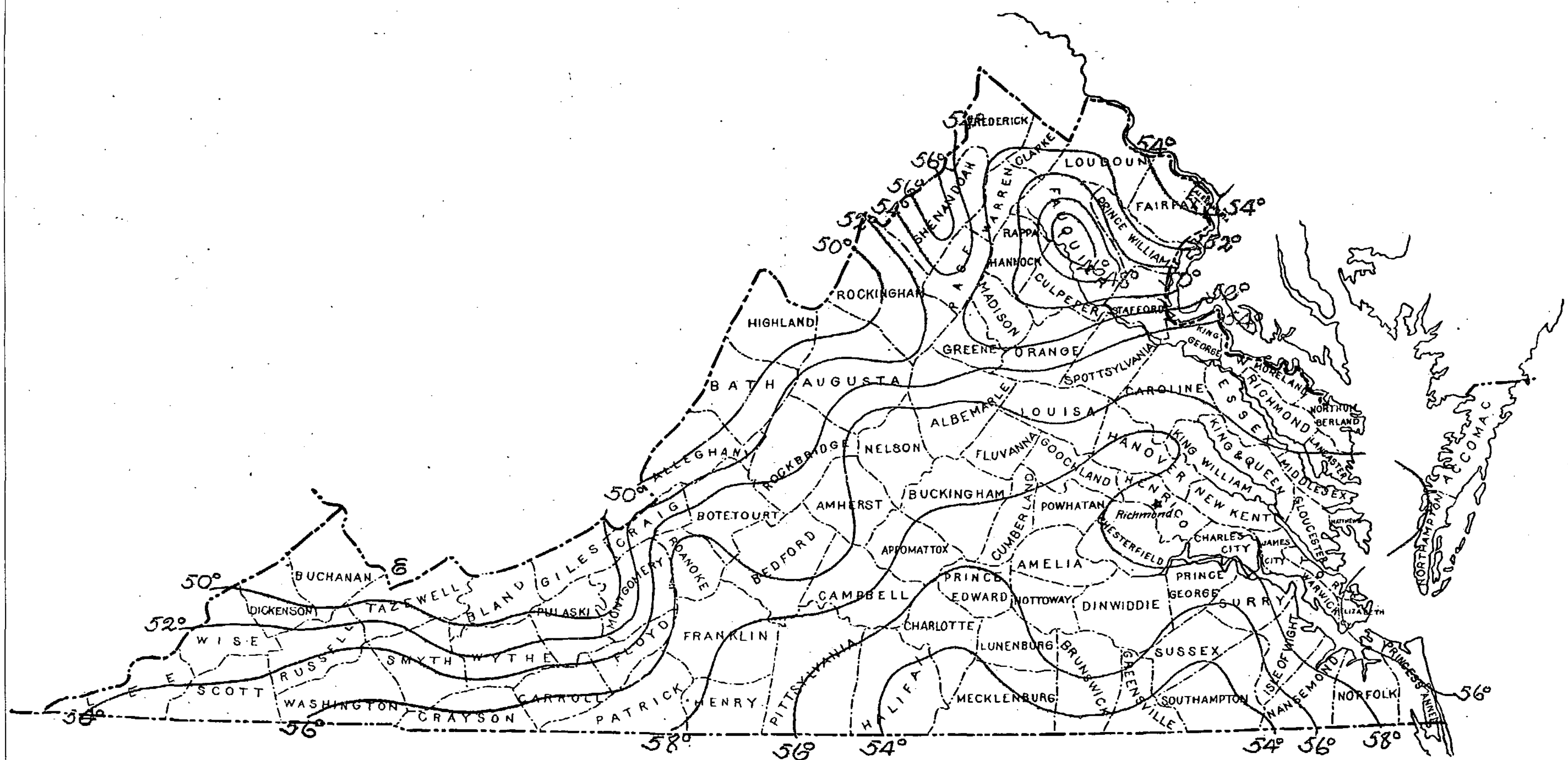
BY

EDWARD A. EVANS

SECTION DIRECTOR,

RICHMOND, VA.

MONTHLY MEAN TEMPERATURE FOR APRIL, 1897.



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

VIRGINIA SECTION,

E. A. EVANS, Section Director,

RICHMOND, VA.

VOL. VII. RICHMOND, VA. No. 4.

THE PERIODICITY OF GOOD AND BAD SEASONS.

Concluded from last month.

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Remarks on the above.—For some years past the search for periodicities in meteorological phenomena has apparently abated; the small value of the so-called sun spot or 11- year period in recent years seemed to show that after all there were no important astronomical periodicities in meteorology, and students have therefore directed their attention more to the complex results that flow from the variations of moisture and of insolation combined with the irregularities of the earth's surface. It has, in fact, been very plausibly shown to be probable that no long-continued periodicity can be maintained in the atmosphere by the annual and diurnal changes in insolation, and that if such periods exist they must be maintained (or their existence must be forced) by the direct action of some external body. Inasmuch as the 11-year sun spot and the 28-day lunar periods are rarely appreciable and inasmuch as Laplace has shown that solar and lunar semidiurnal tidal waves in the atmosphere, due to the action of gravitation, must be inappreciable it would seem that there is very little reason left to expect any other periodicity to be forced upon the atmosphere. On the other hand Mons. A. Poincare, of the Meteorological Society of France, by a laborious study of the daily international maps of the Northern Hemisphere showed that there is a small systematic periodic northward and southward movement of the large areas of high pressure that form a permanent feature of the Atlantic and Pacific Oceans, and that this movement depends upon the movement of the moon from the north to the south side of the earth's equator, or *vice versa*, in the course of its monthly revolution around the earth in its own orbit. This oscillation north and south of the tropical areas of high pressure is therefore a semimonthly or 14-day lunar tide. By virtue of this tide the regions of easterly trades and of westerly winds have their boundaries periodically displaced and any one station near their boundaries would probably experience a variation in the intensity and direction of the wind depending upon the lunar month; probably a similar variation in rainfall and cloudiness would also be found for such locations, but not necessarily for the world in general.

It is evident that when the sun and moon conspire, that is to say, when both are north of the equator, or both south, these tidal influences will be most conspicuous, and this is what happens when eclipses occur. Inasmuch as eclipses recur every eighteen years and eleven and one-third days one would therefore naturally look for an 18-year period superposed upon the lunar monthly period already indicated and this 18-year period would show itself not only in the time of occurrence, but especially in the intensity of the disturbances. For example, if the high area, with its northeast winds and clear skies, which bring dry weather to Spain and Portugal, moves eastward or northward whenever the moon is farthest north of the equator, and especially so when the sun is also farthest north, then this combination (which occurred on the 28th of June, 1878, and on the 8th of July, 1896) should mark the year when droughts may be expected in that region; of course the rainy regions are also pushed farther north in Europe and Great Britain. During the whole of the years 1878 and 1896 the moon attained extreme northerly and southerly positions, and under the tidal influence of the moon there was a tendency of the areas of high pressure throughout the world to assume a more northerly position than in 1887, which is midway between.

If the semimonthly lunar tide, explained in the previous paragraph, has any influence on the tropical areas of high pressure and on the weather at their boundaries, then when the moon is persistently farthrest north in combination with the sun, as in the summers of 1878 and 1896, we ought to have relatively warm, clear, dry weather in western Europe and on the west coast of North America; relatively cold and rainy weather south of latitude 40° S. In Australia and South America; relatively dry, warm, and clear in the rest of Australia, in southern Africa, and on the west coast of South America. It is plausible that by assembling a large number of predictions, based on the general circulation of the atmosphere one may demonstrate that during the last half century, or since the beginning of the publication of daily weather maps there has been an appreciable connection between the motions of the moon and the general character of the seasons on the borders of the great areas of high pressure. Inasmuch, however, as the lunar tidal influence can stimulate the production of rain in one region of the globe while it simultaneously produces drought in another, therefore one must be very careful not to consider the droughts in any two regions as comfirmatory of the lunar influence unless these regions have the proper geographical situation relative to the areas of high pressure, and unless corresponding unusual rains occur in other properly located regions.

As a rule, droughts that are sufficiently severe to seriously affect crops or produce famine, are, in the United States, the culmination of several years of rains so light that the ground has become dried out to a considerable depth, they are, however, distinctly of a local character, rarely covering twenty-five square degrees. They represent small spots of great deficiency, while a larger area of general deficiency exists near by, and other areas of excess exist farther away. From our limited point of view we consider the locations of these areas to be determined by accidental causes, the general outcome of which is the formation of areas of descending air, clear sky, and less than normal rainfall. But there are some cases in which the drought is due to the weakness of the horizontal wind, as in India, where a failure of the southwest monsoon—or in the Island of St. Helena, where the failure of the southeast trade—or the Barbadoes, where the failure of the northeast trade is disastrous; these are cases where the ordinary rain depends directly upon the ascent of air that is pushed from the lower stratum up over hills and mountains. One should be very careful about combining the records of droughts in these localities with the records from regions where rainfall is due to more general causes. Again, the records of famine in lower Egypt have little or no relation to the rainfall in that country but depend entirely upon the proper utilization of the annual overflow of the Nile, whose waters come from two sources, Abyssinia and central Africa.

This water supply for the Nile depends, like that of the Mississippi, upon two or three rainy regions, each of which is governed by its own laws. We should fall into hopeless confusion if we should indiscriminately combine together the records of droughts in such various climatic regions in hopes of deducing natural periodicities or other meteorological laws.

Extract, August, 1896, Weather Review.

ATMOSPHERIC PRESSURE.

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The mean monthly air pressure as deduced from the U. S. Weather Bureau Stations at Lynchburg, Norfolk and Washington D. C., was 30.14 inches; highest 30.71 inches, at Norfolk, Va., on the 21st; lowest 29.51 inches, at Norfolk, Va., on the 9th; range 1.20 inches.

TEMPERATURE. (DEG. F)

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Tidewater Virginia.—Highest monthly mean, 58.6, at Doswell and Petersburg; lowest monthly mean, 52.7, at Sunbeam; maximum temperature, 90, at Ashland, Petersburg, Richmond and Spottsville, on the 24th and 25th; minimum temperature, 24, at Doswell, on the 19th; greatest daily range 43, at Petersburg.

Middle Virginia.—Highest monthly mean, 58.1, at Bon Air; lowest monthly mean, 45.6, at Warrenton; maximum temperature, 95, at Farmville, and Bon Air, on the 23d and 25th, respectively; minimum temperature, 22, at Quantico, on the 23d, greatest daily range, 55, at Quantico.

The Great Valley. — Highest monthly mean, 54.4, at Sword's Creek; lowest monthly mean, 46.5, at Monterey; maximum temperature, 92, at Stanleyton, on the 25th; minimum temperature, 18, at Monterey, on the 20th; greatest daily range, 51, at Big Stone Gap.

For the state.—Average of the monthly mean temperatures, 53.9; average of the maximum temperatures, 85; average of the minimum temperatures, 28; average of the greatest daily range, 39.

The temperature conditions during the month were somewhat lower than the normal. The average, 53.9 degrees was 2.0 degrees below the normal based on eleven years record.

Frosts, both light and killing, were quite frequent and general in all portions of the state throughout the month, and as a consequence, fruit, berries and trucks suffered seriously. Peaches, apricots, plums, cherries and figs received the greatest injury. Strawberries were also much hurt, and trucks, tomato and potato vines and early corn, were nipped. The growth of grasses was checked. Staple cereals, wheat, oats and rye, were not damaged appreciably, the only effect being to retard growth.

PRECIPITATION.

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Tidewater Virginia.—Greatest monthly precipitation, 3.86 inches, at Sunbeam; least monthly, 1.47 inches, at Cape Henry; greatest amount in any twenty-four consecutive hours 1.78 inches, at Ashland, on the 9th.

Middle Virginia.—Greatest monthly precipitation, 4.90 inches, at Guinea; least monthly, 0.15 of an inch, at Bedford City, greatest amount in any twenty-four consecutive hours, 2.30 inches, at Guinea, on the 16th.

The Great Valley.—Greatest monthly precipitation, 4.61 inches, at Big Stone Gap; least monthly, 1.13 inches, at Clifton Forge; greatest amount in any twenty-four consecutive hours, 2.15 inches, at Big Stone Gap, on the 4th.

For the state.—Average total precipitation, 2.08 inches.

The average total precipitation for the State, 2.08 inches, was 0. 95 of an inch below the normal for the month.

By sections Tidewater Virginia was 0.77 of an inch below the normal; middle Virginia, was 0.88 of an inch below; and the Great Valley was 1.10 inches below. The deficiency in precipitation, combined with the cool weather, did much to check the growth of all crops and prevent the germination of seed.

The average number of days on which 0.01 of an inch or more of rain or snow fell, was 6 in Tidewater Virginia; 6 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, SE.; the Great Valley, W. Prevailing direction for the State, SW., and W.

Weather.—Tidewater Virginia, average number of clear days 15; partly cloudy, 7; cloudy, 8. Middle Virginia, average number of clear days, 18; partly cloudy, 8; cloudy, 4. The Great Valley, average number of clear days, 13; partly cloudy, 10; cloudy, 7. For the State, average number of clear days, 15; partly cloudy, 8; cloudy, 7.

NOTES AND COMMENTS.

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Voluntary observers who have not yet compiled Form 4029 Mis., "Description of Voluntary Observer's Station and Instruments" are requested to do so without delay, and forward to the central office.

Mr. W. B. Davis, voluntary observer, Hot Springs, has turned over his instruments to Mr. A. M. Stimson.

Mr. E. H. Kohn, voluntary observer Burke's Garden, has resigned and is succeeded by Mr. C. H. Greever. We extend a hearty welcome to these gentlemen.

Climatological Data for April 1897.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature: Mean.	Temperature: Departure from the normal.	Temperature: Highest.	Temperature: Date.	Temperature: Lowest.	Temperature: Date.	Temperature: Greatest daily range.	Precipitation: Total.	Precipitation: Departure from the normal.	Precipitation: Greatest in 24 hours.	Precipitation: Total snowfall (unmelted.)	Precipitation: Number of rainy days.	Sky: Number clear days.	Sky: Number partly cloudy days.	Sky: Number cloudy days.	Prevailing direction of wind.	Observers.
TIDEWATER VIRGINIA.																				
Ashland	Hanover	220	5	56.9	−0.4	90	24	28	21	39	2.82	−0.52	1.78	....	5	7	17	6	s. n	E. L. C. Scott.
Birdsnest (1)	Northampton	40	28	55.9	+1.0	79	25	36	20	....	1.65	−2.20	.85	....	7	12	10	8	swnw	C. R. Moore.
Cape Henry	Princess Anne	17	22	54.9	−1.5	79	19 25	34	21	33	1.47	−2.99	.85	....	8	5	10	15	se	U. S. Weather Bureau.
Doswell	Hanover	134	0	58.6	......	81	23	24	19	30	1.90	......	1.50	....	2	14	0	16	w.	C. W. Butterworth.
Hampton	Elizabeth City	3	9	56.3	+0.6	84	25	35	2	24	3.11	+0.40	1.18	....	9	13	5	12	sw.	C. L. Goodrich.
Norfolk	Norfolk	3	25	57.5	+1.4	87	25	34	21	31	1.51	−2.56	.43	....	9	16	9	5	se.	U. S. Weather Bureau.
Petersburg	Dinwiddie	11	9	58.6	+3.0	90	25	30	21	43	2.52	−1.37	1.58	....	7	17	5	8	sw.	Prof. Jas. M. Colson.
Richmond (near)	Henrico	96	21	55.0	−1.2	90	25	30	21	40	......	......	......	....	....	21	2	7	sw.	Capt. J. C. Shafer.
Spottsville	Surry	15	7	56.1	−3.1	90	25	26	2	42	2.06	0.0	.82	....	6	20	2	8	n.	B. W. Jones.
Sunbeam	Southampton	60	2	52.7	−4.1	79	24	28	2	27	3.86	−0.17	1.12	....	7	20	5	5	s.	Dr. W. H. Daughtry.
Warsaw	Richmond	200	3	54.7	−1.8	88	25	27	21	34	1.71	−0.52	.84	....	5	6	21	3	s.	C. H. Constable.
Williamsburg	James City	160	9	......	......	....	......	....	......	....	......	......	......	....	....	25	0	5	sw.	L. S. Williams.
MIDDLE VIRGINIA.																				
Alexandria	Alexandria	35	37	53.7	+0.2	86	24	28	19	49	2.68	+0.25	1.26	....	8	9	20	1	se.	H. C. Slaymaker
Barboursville*	Orange		0	53.4	......	88	25	29	21	36	2.06	......	.55	....	9	19	9	2	s.	Dr. Thos. H. Ellis.
Bedford City	Bedford	900	6	54.7	−1.6	88	25	25	1	42	1.50	−2.16	.06	....	5	15	14	1	w.	J. T. Davidson.
Bon Air	Chesterfield	130	2	58.1	−0.7	95	25	30	2	45	2.62	−1.29	1.71	....	7	17	4	9	w.	Wm. H. Pleasants.
Buckingham	Buckingham	550	3	54.6	+1.5	89	25	25	1	38	2.95	+0.74	1.05	....	7	18	9	3	sw.	Dr. W. E. Pratt.
Callaville	Brunswick	570	2	56.3	−1.4	89	25	26	2	41	2.05	−2.31	.92	....	5	15	14	1	s.	F. M. Gage.
Charlottesville	Albemarle		9	......	......	....	......	....	......	....	......	......	......	....	....	....	....	....	......	Prof. A. H. Tuttle.
Farmville	Prince Edward			55.8	......	95	23	28	21	45	1.01	......	.50	....	3	23	4	3	se.	Jno. R. Martin.
Fredericksburg	Spottsylvania	47	1	55.2	0.0	87	25	29	2	37	2.31	−0.28	.78	....	9	20	4	6	se.	E. C. Rowe.
Gordonsville	Orange		0	53.7	......	77	24	32	2	26	0.50	......	.50	....	1	26	4	0	s.	H. S. Smithers.
Guinea	Caroline	100	0	55.2	......	89	19	31	9	42	4.90	......	2.30	....	3	11	12	7	sw.	M. A. Nunn.
Leesburg	Loudoun			51.6	......	94	25	25	2	44	2.23	......	1.11	....	6	17	7	6	w.	C. A. English
Lynchburg	Campbell	525	17	56.0	+0.1	88	25	30	21	38	2.08	−1.28	.55	....	10	14	11	5	nw.	U. S. Weather Bureau.
Maidens	Goochland	185	1	......	......	....	......	....	......	....	2.08	......	1.15	....	7	16	11	3	w.	J. R. Hopkins.
Manassas	Prince William	317	2	54.0	......	90	25	28	21	38	2.09	......	1.06	....	6	17	11	2	se.	Thos. H. Lion.
Quantico	Prince William		7	49.9	......	88	25	22	23	55	......	......	......	....	....	23	3	4	se. nw	E. V. King.
Rocky Mount	Franklin	33	0	57.9	−1.4	86	25	30	2	39	2.34	−0.33	.85	....	5	10	18	2	......	J. H. Binford.
Smithville	Charlotte	1150	2	56.3	−1.6	85	25 26	31	2	34	1.70	−0.93	1.00	....	3	25	0	5	......	W. G. Williams.
Stanardsville	Greene	560	2	52.5	−3.1	89	25	26	21	39	1.86	−0.97	.50	....	6	....	....	....	......	W. N. Parrott.
Warrenton	Fauquier	....	6	45.6	......	86	24	31	20	36	2.06	......	.85	....	5	24	0	6	sw.	J. T. Preston.
THE GREAT VALLEY.																				
Big Stone Gap	Wise	1966	6	52.9	−1.5	85	28	24	11	51	4.61	+1.08	2.15	....	8	16	4	10	......	John W. Fox. Sr.
Blacksburg	Montgomery	2100	7	50.9	−1.8	80	25	24	21	40	1.69	−0.86	.67	....	7	13	9	8	sw.	Prof. W. B. Alwood.
Bristol	Sullivan, Tenn.	1676	2	53.9	−0.5	81	28	29	17	39	3.39	+1.22	.83	....	8	20	6	4	......	J. Bunting. Jr.
Burke's Garden	Tazewell		0	49.8	−2.2	78	28	24	21	44	1.97	−0.60	.78	....	7	15	10	5	w.	Rev. E. H. Kohn.
Christiansburg	Montgomery	2160	9	......	......	....	......	....	......	....	1.76	−0.72	.37	....	8	15	4	11	w.	H. D. Walters.
Clifton Forge	Allegheny	1047	2	52.1	......	88	28	27	2 21	45	1.13	......	.60	....	5	10	5	15	nw.	T. P. Halloran.
Dale Enterprise	Rockingham	1350	10	50.8	−3.0	87	24 25	22	2 20 21	46	1.70	−1.62	.83	....	8	15	11	4	s.	L. J. Heatwole.
Goshen	Rockbridge	1590	1	......	......	....	......	....	......	....	2.00	......	1.00	....	2	24	0	6	w.	J. B. Wood.
Graham's Forge(a)	Wythe		3	52.2	−3.5	82	25 29	28	2 11	47	1.47	−0.71	.48	....	5	6	21	3	sw.	David Graham.
Hot Springs	Bath	2195	4	49.7	−2.0	76	24 28 30	23	13	32	1.21	−0.83	.56	....	4	10	11	9	......	W. B. Davis.
Lexington	Rockbridge	946	23	53.3	−0.8	85	25	27	21	43	1.58	−1.44	.51	....	10	12	15	3	se.	Prof. H. C. Campbell.
Marion (e)	Smyth	2124	8	54.2	−0,7	83	28	28	12	46	1.57	−1.07	.50	....	5	13	6	11	......	A. T. Lincoln.
Monterey	Highland	3008	2	46.5	−3.1	78	25 29	18	20	40	1.65	−0.94	.80	....	5	14	9	7	w.	Jos. Jones.
Salem	Roanoke	1200	6	57.0	0.0	86	24 25	32	2 21	36	1.56	−1.06	.65	....	10	....	....	....	......	Prof. S. C. Wells.
Saltville	Smyth	1739	2	53.4	−1.7	84	28	27	25	49	2.14	+0.07	.90	....	9	....	....	....	......	C. M. Perry.
Stanleyton	Page	1064	0	53.8	......	92	25	27	25	39	1.98	......	.85	...	9	13	15	2	s.	A. K. Grim.
Staunton	Augusta	1380	6	53.4	−0.4	88	25	26	20 21	42	1.56	−0.86	.56	....	7	12	17	1	s.	W. C. Hedrick.
Stephens City	Frederick		4	52.7	−1.8	88	25	25	20	43	2.30	−0.45	1.37	...	7	14	12	4	w.	W. B. Steele.
Sword's Creek	Russell		0	54.4	......	85	28	28	21	45	1.28	......	.64	....	6	14	0	16	......	J. H. Steele.
Woodstock	Shenandoah	927	0	56.2	......	88	24	24	2	49	2.30	+0.12	.90	....	10	8	20	2	w.	H. F. Miley.
Wytheville	Wythe	2370	25	51.6	......	82	28	29	12	43	1.72	......	.52	....	9	12	9	9	w.	Dr. P. B. Green.

* Estimated. ‡ Incomplete. tr. trace, or less than 0.01 of an inch. (1) Means from 7 am, 2 and 9 + 9 pm. observations.

Note— Estimated and incomplete data not considered in means,

MISCELLANEOUS PHENOMENA.

Fogs: Fredericksburg, 9; Stanardsville, 6; Hot Springs, 5; Stanleyton, 5, 9.

Gales: Ashland, 19; Wytheville, 15.

Hail: Hampton, 16; Spottsville, 16; Sword's Creek, 11.

Frosts, Killing: Ashland, 2, 18, 21; Birdsnest, 1, 21, 22; Spottsville, 1, 2, 18, 21; Sunbeam, 1, 2, 21; Warsaw, 2, 20, 21; Alexandria, 20; Barboursville, 21; Buckingham, 17, 20, 21; Callaville, 1, 2, 18, 21; Fredericksburg, 21; Stanardsville, 20, 21; Warrenton, 20, 21, Blacksburg, 10, 11, 12, 18, 19, 20, 21; Burke's Garden, 12, 21; Clifton Forge, 21; Dale Enterprise, 2, 16, 18, 21; Graham's Forge, 2, 11, 18, 20, 21; Lexington, 2, 18, 20, 21; Salem, 21; Stanleyton, 20, 21; Staunton, 18, 21; Stephens City, 20; Sword's Creek, 18; Woodstock, 19; Bon Air, 2, 6, 7, 8, 10, 18, 20, 21; Gordonsville, 20.

Ice: Ashland, 20, 21; Birdsnest, 20, 21; Spottsville, 1, 2, 21, 22; Buckingham, 20, 21; Barboursville, 20, 21; Fredericksburg, 18. 20, 21; Staunton, 18, 21; Stephens City, 18, 20; Woodstock, 10; 17, 19; Wytheville, 11, 12, 13, 20, 21; Bon Air, 18; Gordonsville, 19, 20.

Daily Maximum and Mininum temperatures for April, 1897.

TIDEWATER VA.

Stations	1 Max.	1 Min.	2 Max.	2 Min.	3 Max.	3 Min.	4 Max.	4 Min.	5 Max.	5 Min.	6 Max.	6 Min.	7 Max.	7 Min.	8 Max.	8 Min.	9 Max.	9 Min.	10 Max.	10 Min.	11 Max.	11 Min.	12 Max.	12 Min.	13 Max.	13 Min.	14 Max.	14 Min.	15 Max.	15 Min.	16 Max.	16 Min.	17 Max.	17 Min.	18 Max.	18 Min.	19 Max.	19 Min.	20 Max.	20 Min.	21 Max.	21 Min.	22 Max.	22 Min.	23 Max.	23 Min.	24 Max.	24 Min.	25 Max.	25 Min.	26 Max.	26 Min.	27 Max.	27 Min.	28 Max.	28 Min.	29 Max.	29 Min.	30 Max.	30 Min.	31 Max.	31 Min.	Monthly Mean Max.	Monthly Mean Min.
Ashland	61	35	64	31	70	47	50	44	77	47	70	50	64	36	68	40	77	48	62	38	67	38	60	40	70	35	80	53	72	55	73	42	61	44	73	34	80	47	44	31	63	28	76	32	83	45	90	53	89	57	71	54	64	45	77	39	79	48	84	55	..	,,	70.6	43.2
Cape Henry	49	41	56	40	54	38	50	44	70	49	68	55	59	49	59	49	73	55	70	45	52	42	56	46	54	44	77	52	70	56	52	49	59	49	56	48	79	46	69	38	52	34	56	39	66	42	75	44	79	60	74	58	60	43	62	47	58	51	70	52	..	,,	63.0	46.8
Doswell	55	40	62	45	68	52	52	43	75	50	70	50	65	47	72	55	64	50	53	44	70	48	60	44	62	50	79	51	70	59	70	50	68	49	69	49	54	34	54	34	70	60	72	49	81	55	70	70	70	50	80	51	75	51	75	50	75	59	73	54	..	..	68.0	49.4
Hampton	52	41	59	35	62	49	53	46	73	50	73	56	62	47	62	52	68	55	55	45	53	43	57	48	57	45	73	54	70	60	69	48	62	50	61	42	74	50	46	37	53	37	63	45	70	51	78	56	84	60	66	57	64	50	66	45	58	54	76	54	..	,,	64.1	48.8
Norfolk	52	40	61	36	61	46	60	45	77	54	77	54	65	49	67	51	73	58	58	44	59	42	58	43	61	42	76	59	70	55	62	48	63	50	63	45	77	46	57	37	58	34	67	40	76	48	84	53	87	58	70	57	62	50	69	50	65	50	82	53	..	,,	67.1	47.9
Petersburg	55	40	67	28	70	48	58	43	78	48	74	54	64	42	67	48	75	52	78	38	63	40	64	40	75	40	78	60	70	54	73	43	67	44	65	35	80	45	70	33	65	30	73	40	78	50	86	55	90	59	80	53	67	47	79	36	75	49	83	53	..	,,	72.2	44.9
Richmond (near)	62	36	60	32	68	48	65	44	75	50	75	50	65	38	65	40	68	40	60	39	68	40	58	40	65	37	65	40	70	45	65	45	65	40	60	35	75	40	60	32	60	30	70	40	88	40	75	40	90	50	80	55	65	50	72	38	72	50	80	50	..	..	68.2	41.8
Spottsville	52	31	65	26	66	47	61	45	75	50	72	47	66	33	68	48	72	52	58	42	62	42	61	41	65	39	77	55	70	54	64	42	64	48	66	35	77	45	53	34	63	29	72	33	78	40	82	50	90	57	66	58	68	47	75	33	69	48	82	52	..	..	68.6	43.6
Sunbeam	44	32	44	28	54	48	58	44	66	58	67	51	61	42	64	58	68	61	53	41	55	41	55	44	65	41	69	51	64	57	60	47	60	48	58	37	61	41	44	36	48	29	48	33	63	45	79	52	74	57	59	56	58	52	61	38	62	49	69	52	..	..	59.7	45.6
Warsaw	51	33	62	30	62	43	63	41	73	45	71	47	65	35	61	38	72	48	70	40	58	40	61	33	78	48	55	41	68	45	64	39	63	43	61	35	76	45	47	30	61	27	68	38	78	47	83	52	88	65	72	50	63	44	72	40	73	46	82	52	..	..	67.4	42.0
Williamsburg	43	43	38	35	55	45	50	44	65	60	59	50	50	42	51	45	73	65	47	40	50	45	55	48	57	48	68	50	64	54	53	44	57	46	49	40	56	44	45	36	53	41	53	42	57	40	63	50	67	57	60	50	54	46	52	40	58	46	60	50	..	..	55.4	46.2

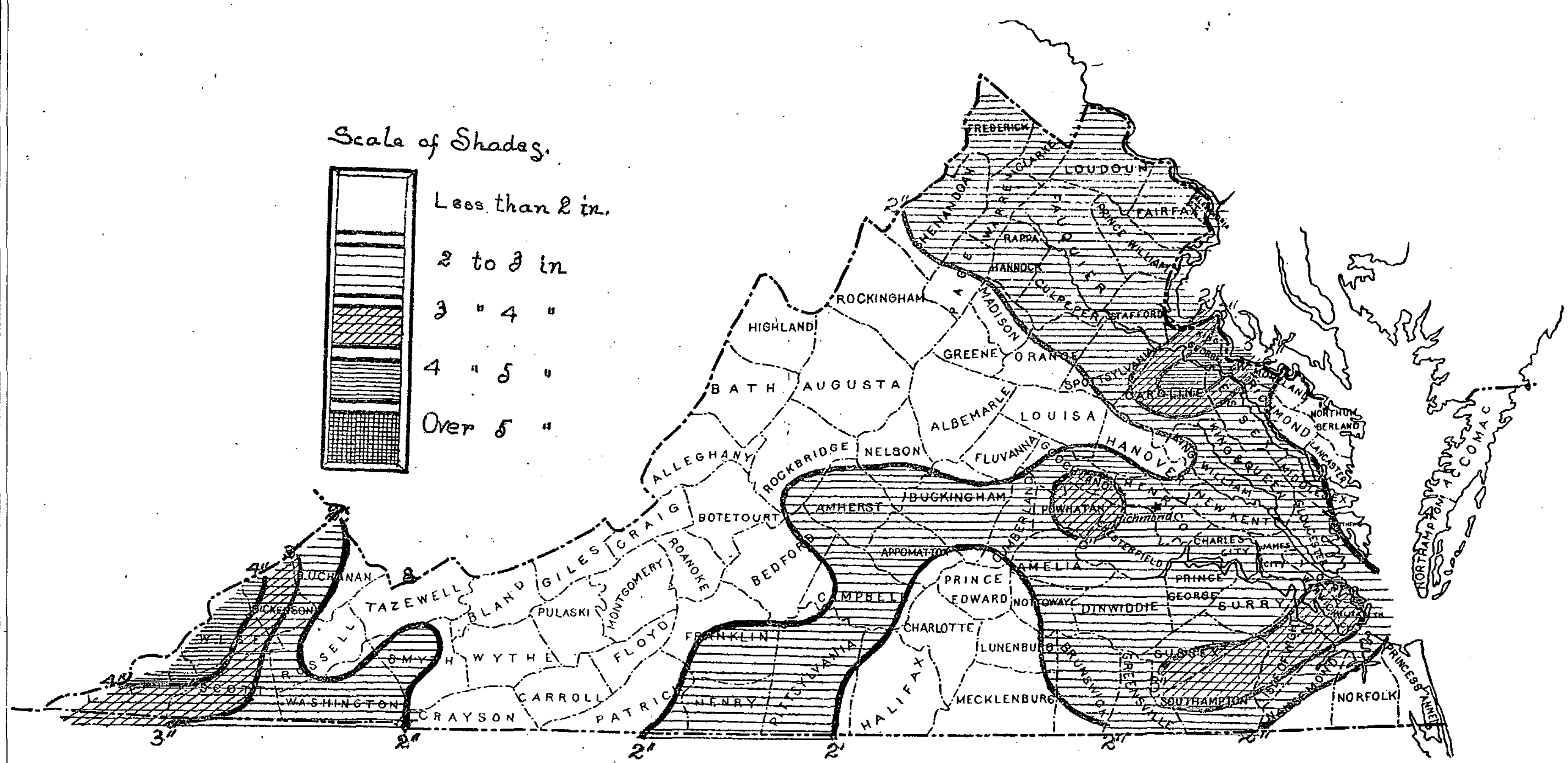
MIDDLE VA.

Stations	1 Max.	1 Min.	2 Max.	2 Min.	3 Max.	3 Min.	4 Max.	4 Min.	5 Max.	5 Min.	6 Max.	6 Min.	7 Max.	7 Min.	8 Max.	8 Min.	9 Max.	9 Min.	10 Max.	10 Min.	11 Max.	11 Min.	12 Max.	12 Min.	13 Max.	13 Min.	14 Max.	14 Min.	15 Max.	15 Min.	16 Max.	16 Min.	17 Max.	17 Min.	18 Max.	18 Min.	19 Max.	19 Min.	20 Max.	20 Min.	21 Max.	21 Min.	22 Max.	22 Min.	23 Max.	23 Min.	24 Max.	24 Min.	25 Max.	25 Min.	26 Max.	26 Min.	27 Max.	27 Min.	28 Max.	28 Min.	29 Max.	29 Min.	30 Max.	30 Min.	31 Max.	31 Min.	Monthly Mean Max.	Monthly Mean Min.
Alexandria	53	30	65	36	61	35	51	35	68	44	66	38	62	40	56	46	60	38	55	38	58	39	54	35	62	45	79	51	64	38	65	43	57	34	61	43	77	28	48	29	62	39	70	41	77	52	86	55	82	56	76	46	60	50	71	51	77	52	78	58	..	..	65.4	42.2
Barboursville	51	33	61	31	65	43	52	42	70	41	63	44	60	39	51	39	66	43	53	35	58	34	57	35	64	36	75	41	66	49	67	41	56	41	61	33	76	45	55	31	62	29	70	34	77	43	85	51	88	56	78	57	64	45	76	40	72	47	73	51	..	..	65.7	41.0
Bedford City	58	25	55	39	71	39	67	40	74	39	65	36	63	37	62	43	75	33	59	34	64	33	65	37	63	38	78	43	70	37	70	38	58	30	68	37	79	31	72	26	67	34	74	35	84	44	86	51	88	50	80	46	74	42	84	49	80	46	81	54	..	..	71.1	38.7
Bon Air	60	35	68	30	74	47	59	43	79	48	73	48	68	37	69	42	76	49	60	37	66	38	62	42	72	35	82	46	74	59	73	42	66	44	70	31	82	45	64	31	69	30	79	44	87	42	89	50	95	58	78	55	70	43	81	49	78	48	72	53	..	..	73.2	43.3
Buckingham	61	25	65	45	71	43	67	42	74	40	70	34	62	35	63	41	67	34	57	35	63	35	52	37	68	41	78	53	69	39	72	41	64	30	66	42	79	34	55	26	66	28	73	40	80	47	81	48	89	55	75	45	70	35	79	44	74	49	71	49	..	..	69.4	39.7
Callaville	56	32	62	26	64	48	58	45	73	53	70	49	56	36	72	50	74	59	57	41	60	39	63	41	68	37	76	57	69	55	70	45	62	48	64	32	76	44	51	35	62	26	69	34	77	45	82	50	87	56	68	55	66	48	75	34	74	49	79	58	..	..	68.0	44.2
Charlottesville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Farmville	59	30	60	39	62	35	69	40	68	45	65	30	60	32	59	40	65	42	60	35	58	38	68	40	70	40	69	45	70	55	70	48	65	45	68	40	70	38	72	35	70	28	75	40	95	45	90	45	90	45	75	45	76	48	80	39	80	48	82	50	..	.0	70.7	40.8
Fredericksburg	57	33	66	29	68	46	49	41	75	45	69	47	66	36	59	39	68	48	55	40	59	40	56	40	64	38	75	53	66	55	67	44	59	47	62	36	76	46	51	34	61	32	69	40	77	43	81	52	87	57	74	59	64	47	74	42	71	50	76	57	..	..	66.7	43.9
Gordonsville	45	39	40	32	60	49	63	50	67	55	53	51	54	43	50	47	63	49	62	43	65	40	68	42	60	43	68	56	60	53	60	50	50	48	45	40	67	47	49	34	50	33	50	35	65	52	77	67	75	62	70	65	63	49	60	49	71	53	65	60	..	..	59.8	46.9
Guinea	70	39	64	35	66	40	63	37	67	35	65	36	62	34	69	38	64	31	58	38	60	37	66	35	60	33	78	38	74	49	69	50	70	39	80	42	89	50	82	46	90	48	84	42	75	39	78	42	80	40	72	38	65	40	64	42	63	37	60	42	..	..	70.3	39.7
Leesburg	53	31	63	25	60	32	53	33	66	42	65	43	61	31	56	42	54	44	50	36	55	31	52	36	60	32	74	44	64	48	64	34	65	39	73	33	74	36	55	27	64	26	70	34	76	38	85	45	94	50	77	53	59	41	73	35	74	44	75	49	..	..	65.5	37.8
Lynchburg	54	38	58	31	69	45	53	43	73	43	66	44	62	41	61	42	75	44	53	39	60	38	62	40	63	41	75	55	66	50	69	43	56	41	65	34	79	41	56	37	64	30	71	39	81	45	86	49	88	53	78	55	68	50	83	47	74	51	70	53	..	..	67.9	43.4
Maidens	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Manassas	62	32	64	30	58	34	48	36	75	42	68	45	61	36	53	40	63	44	55	37	59	35	50	40	68	34	78	52	64	49	65	39	64	42	64	39	77	41	60	29	65	28	71	39	80	42	84	49	90	54	75	54	69	42	74	39	74	55	74	53	..	..	67.0	41.1
Quantico	68	34	62	29	62	32	49	35	70	40	69	43	61	32	67	32	67	50	62	44	60	37	52	38	62	32	62	34	64	34	62	34	64	44	62	32	68	29	52	30	61	28	65	26	78	22	82	27	88	33	76	38	62	26	74	27	72	28	77	50	..	..	66.0	34.0
Rocky Mount	63	38	54	30	68	41	65	45	70	42	74	50	62	40	63	49	72	48	57	36	63	40	67	40	64	44	74	54	68	50	68	45	57	44	68	36	76	45	68	39	67	30	73	45	82	49	85	54	86	60	79	60	74	49	84	45	79	50	70	60	..	..	70.0	45.3
Smithville	54	36	60	31	66	45	61	45	65	45	66	50	62	40	65	49	70	48	59	38	58	39	60	41	66	40	74	56	64	57	70	44	60	44	62	35	75	45	69	35	61	33	69	42	76	50	82	55	85	55	85	55	65	47	75	44	75	50	70	53	..	..	67.7	44.9
Stanardsville	54	34	62	27	67	44	45	37	74	39	64	39	60	38	51	36	69	41	51	36	59	29	59	35	62	35	76	41	66	48	66	40	56	38	62	33	76	38	54	28	62	26	71	36	78	41	86	51	89	54	75	54	63	42	78	39	73	44	73	47	..	..	66.0	39.0
Warrenton	58	37	60	37	60	48	48	42	70	43	66	50	56	46	54	47	58	45	56	39	57	40	56	43	61	41	74	52	62	52	64	44	58	45	68	39	75	46	52	31	62	36	76	40	82	54	86	63	78	58	76	55	60	45	72	47	70	49	74	55	..	..	64.9	45.6

GREAT VALLEY.

Stations	1 Max.	1 Min.	2 Max.	2 Min.	3 Max.	3 Min.	4 Max.	4 Min.	5 Max.	5 Min.	6 Max.	6 Min.	7 Max.	7 Min.	8 Max.	8 Min.	9 Max.	9 Min.	10 Max.	10 Min.	11 Max.	11 Min.	12 Max.	12 Min.	13 Max.	13 Min.	14 Max.	14 Min.	15 Max.	15 Min.	16 Max.	16 Min.	17 Max.	17 Min.	18 Max.	18 Min.	19 Max.	19 Min.	20 Max.	20 Min.	21 Max.	21 Min.	22 Max.	22 Min.	23 Max.	23 Min.	24 Max.	24 Min.	25 Max.	25 Min.	26 Max.	26 Min.	27 Max.	27 Min.	28 Max.	28 Min.	29 Max.	29 Min.	30 Max.	30 Min.	31 Max.	31 Min.	Monthly Mean Max.	Monthly Mean Min.
Big Stone Gap	60	38	51	36	74	42	60	49	70	43	65	34	64	36	78	41	64	34	55	28	50	24	68	27	72	46	73	41	56	39	61	30	63	29	68	25	73	34	61	28	73	26	76	36	80	39	82	40	82	42	74	48	70	40	85	34	83	47	74	54	..	..	68.8	37.0
Blacksburg	49	33	45	29	68	42	55	40	67	43	60	35	59	36	63	38	69	35	48	32	56	30	60	31	60	41	70	40	62	44	62	34	51	37	62	31	71	31	56	29	63	24	69	35	76	36	78	45	80	55	72	52	64	42	80	41	76	43	64	52	..	..	63.9	38.7
Bristol	57	36	58	38	71	52	57	47	65	42	61	38	57	43	76	52	60	33	57	29	57	31	60	40	70	45	73	44	57	34	58	33	57	29	65	36	71	32	60	37	70	39	72	43	75	45	79	47	79	50	70	42	68	40	81	52	80	57	72	55	..	..	66.4	41.4
Burke's Garden	44	36	45	35	63	43	51	46	60	46	54	37	53	30	67	33	59	54	44	27	51	25	61	31	60	39	65	45	47	43	53	39	49	33	64	32	73	49	54	25	64	24	69	43	73	40	75	40	74	53	66	46	61	39	78	34	77	49	61	56	..	..	60.5	39.1
Clifton Forge	52	34	62	27	67	34	61	43	69	44	56	39	57	35	59	34	70	38	57	39	62	41	56	35	59	40	75	44	64	49	69	37	56	43	67	32	56	34	60	32	66	27	73	33	79	34	77	46	86	46	76	55	71	42	88	42	69	44	60	45	..	..	66.0	38.9
Dale Enterprise	54	28	62	22	68	41	46	38	70	38	60	40	58	33	48	33	67	38	49	33	60	28	57	32	60	31	73	43	61	41	66	32	52	38	64	25	73	39	52	22	65	22	72	38	80	40	84	45	84	49	78	47	70	38	80	34	76	42	78	48	..	..	65.6	35.9
Goshen	53	42	62	40	67	40	62	47	56	50	58	44	56	46	53	40	56	50	52	41	62	56	64	47	65	52	74	60	60	57	66	51	70	48	74	50	70	50	66	52	68	51	72	50	72	48	70	60	74	70	70	66	74	68	75	68	75	70	76	70	..	.,	66.1	52.8
Graham's Forge	56	36	41	28	68	40	56	44	70	45	63	37	59	34	72	37	71	39	55	33	61	28	61	29	64	40	74	47	62	42	65	35	58	36	65	29	72	34	56	32	64	24	71	37	77	37	80	42	82	45	72	53	73	..	81	34	82	46	68	53	..	..	66.6	37.8
Hot Springs	46	30	53	24	62	43	46	38	60	38	48	38	49	30	45	30	62	30	44	29	51	28	54	27	48	23	52	40	63	43	60	40	60	42	60	42	58	52	57	38	60	42	64	46	70	50	76	45	76	48	68	48	71	46	76	52	72	54	76	59	..	..	59.6	39.8
Lexington	56	34	60	28	71	46	54	44	69	43	62	38	59	36	58	35	71	45	54	38	61	34	61	32	59	36	75	44	66	48	66	39	57	39	64	30	76	35	57	31	64	27	71	34	80	41	84	46	85	48	75	55	68	45	81	38	75	48	72	52	..	..	67.1	39.6
Marion	..	..	..	..	69	35	65	51	65	47	63	37	58	34	74	40	69	45	50	34	..	..	64	28	68	42	71	45	67	47	60	34	54	36	..	..	69	29	65	31	67	33	73	39	76	40	80	44	78	46	72	52	69	45	83	37	82	50	..	..	..	,	68.3	40.0
Monterey	48	26	50	22	60	40	42	40	64	42	42	40	48	38	44	32	60	48	42	28	42	26	54	28	48	40	64	44	52	44	56	28	40	34	60	24	40	40	50	18	60	22	66	40	74	40	75	45	78	50	70	50	52	34	75	35	78	40	74	50	..	..	56.9	36.3
Salem	69	36	53	32	68	45	61	42	74	43	68	48	66	41	63	45	74	49	56	38	61	38	63	38	60	40	76	51	69	51	65	42	61	42	65	36	77	45	64	38	64	32	72	40	81	45	86	54	86	58	81	59	70	49	84	50	79	52	70	57	..	..	69.5	44.5
Saltville	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	....
Stanleyton	54	31	63	31	64	40	50	39	70	42	65	47	59	37	46	37	60	45	49	45	59	32	61	37	63	36	78	40	70	49	67	36	62	42	63	33	75	49	52	27	65	29	72	37	79	48	87	52	92	60	80	53	60	41	78	39	75	48	79	52	..	..	66.6	41.1
Staunton	56	32	61	29	69	45	52	40	72	38	63	43	58	38	54	34	70	42	54	36	62	32	59	35	60	34	76	48	66	50	68	36	57	41	68	30	74	42	54	26	68	26	76	40	82	44	87	49	88	58	77	53	66	42	78	38	72	46	72	48	..	..	67.3	39.8
Stephens City	60	28	68	30	67	35	68	37	73	41	57	43	56	38	50	38	63	39	48	33	62	30	57	37	65	37	75	49	57	41	67	33	51	36	70	32	70	33	56	25	69	26	75	38	80	45	84	54	88	58	79	45	59	40	81	39	76	44	78	49	..	..	67.0	38.4
Sword's Creek	56	49	47	40	70	46	63	55	61	45	60	40	58	37	76	42	67	55	55	33	58	29	50	31	69	47	71	44	65	46	64	35	58	33	60	30	68	37	61	32	64	28	70	38	75	44	80	43	80	45	75	50	70	43	85	40	80	51	70	63	..	..	64.6	41.7
Woodstock	72	26	73	24	75	38	53	44	79	45	69	40	64	37	52	44	73	38	61	32	71	37	68	36	68	42	82	49	69	35	71	42	56	33	70	40	71	29	57	30	69	40	78	42	85	50	88	49	87	53	81	42	69	42	80	47	83	47	84	59	..	..	72.3	40.7
Wytheville	52	37	43	32	67	40	50	45	64	43	59	40	54	36	69	40	62	36	50	32	55	30	63	29	62	41	68	41	54	47	58	34	59	36	67	32	68	38	58	30	65	30	72	38	76	40	79	50	78	51	72	51	67	42	82	39	79	50	62	54	..	..	63.8	39.5

TOTAL PRECIPITATION FOR APRIL, 1897.



Daily Precipitation for April, 1897.

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	Total.
TIDEWATER VIRGINIA.																																
Ashland				.13	.27			tr	1.78						tr		.25									.09				.30		2.82
Birdsnest					.85	.05		tr	.30		.20				.10		.10									.05						1.65
Cape Henry					.70	.15		.03	.02	.01	.10				.43			.03														1.47
Doswell †					.40				1.50																							1.90
Hampton			tr	tr	.40	.30	tr		1.18		.31			tr	.05		.68									.15				tr		3.11
Norfolk			.03	tr	.43	.15	tr	.12	.09	.07	.42				.07		tr									.13						1.51
Petersburg		tr		.10	.42	.10			1.58	.04					.08		.10									.10				tr		2.52
Spottsville				.42	.52			.03	.42	.12						.55	tr													tr		2.06
Sunbeam			tr	1.10				.68	1.12	tr	.35					.32										.09				.20		3.86
Warsaw					.53					.84					.10	.20										.04						1.71
MIDDLE VIRGINIA.																																
Alexandria				1.26	.08			.50	.21		.08			.09	.14	.32									tr	tr				tr		2.68
Barboursville				.55	.52		tr	.01	.40			.01			.35		.37									.03				.02		2.06
Bedford City				.60	.10			.30							.40	.10																1.50
Bon Air				tr	.44	tr			.27	1.71						.08	.02									.02	.08					2.62
Buckingham			tr	.54	.11			1.05	13		tr		.11		.30										tr					.71		2.95
Callaville				.02	80				.92							.18										.13				tr		2.05
Charlottesville																																
Farmville			.01		.50				.50																							1.01
Fredericksburg				.30	.28	.08	tr	tr	.28			.01		tr	.12		.48									.05				.21		2.31
Guinea								1.30								2.30														1.30		4.90
Leesburg				1.11				.58						.12	.09		.30													.03		2.23
Lynchburg		tr		.55	.39		tr	.14	.14		tr			.03	.21	.02	.26									.03				.31		2.08
Maidens				.07	.34	.06			1.15						.12		.28									.06						2.08
Manassas				1.06				.11	.44			.06		.19			.23															2.09
Rocky Mount		tr		.50	.85		tr	tr	.44		tr				.37	tr	tr									.18						2.34
Smithville				.30					1.00																	tr				.40		1.70
Stanardsville				.50	.31			tr	.35		.05				.23		.42									tr						1.86
Warrenton					.85				.56		.06					.25		.34														2.06
THE GREAT VALLEY.																																
Big Stone Gap		.20		2.15			tr	.20	.65				.03	.40	.60	tr										.38				tr		4.61
Blacksburg		.10		.67	tr				.37		.06				.25	.05									tr					.19		1.69
Bristol	.18	.20	.12	.83			tr	.60						.56											.50				tr	.40		3.39
Burke's Garden		.08		.78	.16		.05	.03	.47		tr				.40	tr														tr		1.97
Christiansburg			.32	.02	.03				.34			.35			.37		.15									.15						1.76
Clifton Forge			.60								.20				.18											.05				.10		1.13
Dale Enterprise				.83	.20		.02	.43							.18	.01										.01				.02		1.70
Goshen †				1.00							1.00																					2.00
Graham's Forge		.02		.40					.48	tr					.36	tr										tr			tr	.18		1.47
Hot Springs				.56	.17		.26								.22																	1.21
Lexington				.51	.18		tr		.36			.03		.02	.20	.07	.05									.10				.06		1.58
Marion		.20		.45					.30		.12				.50										tr							1.57
Monterey				.80	tr		tr	.20	.35					.10	20															tr		1.65
Salem		.03	.07	.65	.02				.45		.04				.08		.08									.05				.08		1.56
Saltville		.20		.90				.03	.23		.05		.15		.38											.18				.02		2.14
Stanleyton				.85	.19		.01	.28	.18		.01			tr	.25	.17										.04				tr		1.98
Staunton				.56	.16			tr	.22		.12			.03	.14	tr										tr				.33		1.56
Stephens City				1.37	tr	.08	tr	.21	tr		tr	.16		.31	tr	.09									tr	.08				tr		2.30
Sword's Creek			.10	.64	.12				.34		tr				.06											.02						1.28
Woodstock				.90	.10		tr	.42	.03		.01		tr	.42	.04	.07									.04	tr				.27		2.30
Wytheville		.07		.50	.01				.52		.05				.41										.02				.11	.03		1.72

† Rainfall estimated. ‡ Incomplete. tr. Trace, or less than .01 of an inch.