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**GENERAL SUMMARY.**

The year 1908, as a whole, was warmer and wetter than usual. It opened cold, the mean temperature for January and February being below normal and the precipitation above. The spring months were warmer and rather dry, however, but the summer was cool, on the whole, with more than the ordinary amount of rainfall, while autumn was warm and dry. The year closed warm and wet.

The annual temperature of the State,  $55.4^{\circ}$ , was  $0.1^{\circ}$  above the normal. Norfolk, with an annual mean temperature of  $60.1^{\circ}$ , was the warmest station and Burkes Garden, with an annual mean of  $48.7^{\circ}$ , the coldest. The highest and lowest temperatures were  $102^{\circ}$ , on July 14th, and  $20^{\circ}$  below zero, on January 30th, at Lincoln, Loudoun county, and Burkes Garden, Tazewell county, respectively.

In the eastern and western parts of the State the last general killing frost of spring occurred on May 1st. The first killing frost of autumn occurred in the western half of the State on September 30th and in the eastern half on October 3d.

The annual precipitation was above the normal in all parts of the State, except in Wise, Smyth, Shenandoah and Rockingham counties, in the Great Valley, Campbell and Loudoun counties, in Middle Virginia, and Norfolk and Princess Anne counties, in the Tidewater division, where it was somewhat deficient. August, with an average rainfall of 6.38 inches, was the wettest month of the year and November, with an average of 1.42 inches, the driest. The annual precipitation ranged from 56.69 inches, at Burkes Garden, Tazewell county, to 34.42 inches, at Shenandoah, Page county. The greatest local monthly rainfall occurred at Petersburg, 11.68 inches, in August and the least, at Nokesville, 0.40 inch, in November. The average number of rainy days in the driest part of the State was 108, and in the wettest, 117 days.

Snow fell in all parts of the State in each winter month; also locally in May in the northern and northwestern border counties, and as early as October in the extreme southwestern counties of the Great Valley. By months, the greatest local monthly snowfalls were: January, 20.5 inches; February, 24.0 inches; March, 7.2 inches; April, trace; May, trace; October, 4.0 inches; November, 15.0 inches, and December, 21.0 inches.

There were 162, or 44 per cent, of clear days; 108, or 30 per cent, partly cloudy days, and 96, or 26 per cent, cloudy days during the year. The prevailing wind direction for the State was from the southwest.

**THE WEATHER BY MONTHS.**

DURING the first twenty-six days of January the temperatures were about normal, or slightly above. On the night of the 26-27th, however, there was a decided fall in the temperature and cold weather persisted until the close of the month, so

that the average for the month,  $34.8^{\circ}$ , was  $0.4^{\circ}$  below the normal. The maximum and minimum temperatures were each within the record. Precipitation was generally above the average, especially in the central portion of the Tidewater division and the southeastern portion of Middle Virginia. The average for the State, 3.82 inches, was 0.73 inch above the normal. The average number of rainy days was below the normal, however, and the percentage of sunshine high. Snow fell on various dates in all parts of the State. The average amount was 3.7 inches. Thunderstorms occurred on the 12th, 26th and 27th.

FEBRUARY was cold and, altho there were no unusually low temperatures, the mean for the State was 2.8 degrees below the normal. In the Tidewater and Middle Virginia divisions the maximum temperatures were in all cases observed on the 15th, while in the Great Valley they occurred on the 12th and 15th. The 3d and the 9th were the coldest days. Five general storms past over the State and most of the monthly precipitation occurred in connection with them. The average, 3.79 inches, was 0.35 inch above the normal. Considerable snow fell in all sections, especially in the Great Valley, where the average amount was 14.4 inches. A thunderstorm occurred on the 15th. Sunshine was deficient.

MARCH weather was warm and the mean temperature,  $50.2^{\circ}$ , was  $5.0^{\circ}$  above the normal. High day temperatures occurred on the 18th, 27th, 28th and 29th, when registrations varying from  $80^{\circ}$  to  $86^{\circ}$  were observed. The minimum temperature,  $8^{\circ}$ , the low, did not equal the record for the month by  $11^{\circ}$ . Precipitation was deficient; the month averaging nearly half an inch below the normal; but the number of rainy days was greater than usual. The snowfall, in both frequency and amount, was, on the other hand, below the average for the State. Considered by sections, however, Tidewater Virginia had more than the average. Thunderstorms occurred on various dates between the 2d and 31st. Sunshine was deficient.

DURING April warm weather continued, the daily temperatures being, for the most part, quite uniformly above the average, and at the close of the month the departure was  $+3.8^{\circ}$ , constituting, with one exception, the warmest April on record. The highest temperature occurred on the 24th, when  $93^{\circ}$  was recorded, while the lowest was  $20^{\circ}$ , on the 3d. Precipitation was again below the average, the deficiency being practically half an inch, as compared with the normal. Snow fell locally in the Great Valley division on the 18th and 30th. Sunshine was abundant.

NORMAL temperature conditions prevailed thruout May, as a whole, but persistent cold and warm periods alternately caused a considerable departure from the normal in the first and last decades, respectively. The highest temperature,  $95^{\circ}$ , and the lowest,  $28^{\circ}$ , were both well within the record for the month. Precipitation was above the normal by 0.67 inch. The number of rainy days was also above the average. Some heavy 24-hour rainfalls occurred on the 19-20th and the 22d in connection with thunderstorms. A trace of snow fell on the 1st and 3d in the extreme northwest part of the State.

IN JUNE, the mean temperature was decidedly below the normal, the departure being  $1.5^{\circ}$ . Only two Junes of record were cooler than this month. Generally, the deficiency was greatest in the interior districts, where it amounted, in some cases, to as much as  $3.0^{\circ}$ . During the first twenty days the weather was quite cool at night, and the lowest temperatures during the month were recorded within this period, while in the last ten days there was a reaction toward warmer weather, and the highest temperatures generally occurred between the 21st to 25th, inclusive. For the State, as a whole, precipitation was a little above the normal; the average total, 4.44 inches, being but 0.13 inch in excess. Considered by divisions, however, only two sections, Middle Virginia and Tidewater

Virginia, had more than the normal amount, while the Great Valley was deficient by nearly three-quarters inch. There were two general rainy periods, the 3-5th and the 15th. During the first of these, nearly half of the entire monthly fall occurred at most stations. The thunderstorms of the last decade, tho not attended by heavy rains, were severe with respect to lightning, and a number of fatalities from this source, as well as considerable damage to property, were reported.

JULY, as a whole, was slightly warmer than the average, the departure being 0.1°. Heated periods occurred from the 10th to the 15th, inclusive, and from the 18th to the 22d, inclusive, while during the remainder of the month the weather was cooler than usual. The highest temperatures reported, 97° to 102°, occurred during either one or the other of these heated spells, while the lowest, 43° to 51°, were observed, for the most part, on the 15th and 16th, inclusive. The number of rainy days and the average precipitation were both above the normal. The distribution of the rainfall was very unequal, however, and during the first and second decades, a general drought prevailed in all parts of the State in consequence of the light and scattered nature of the precipitation. A rainy period began on the 21st, and thereafter until the 31st, either general rains or well distributed local showers were of daily occurrence. Sunshine was abundant.

COOL, wet weather, with more than the usual number of rainy days, prevailed during August. The mean temperature, 72.1°, was 2.1° below the normal, while the average precipitation, 6.38 inches, was 1.85 inches above the normal. Compared with preceding Augusts of record there is but one having a lower mean temperature than that of the current year, while with respect to precipitation there are but two, practically, that had more. The 3d to the 5th included the hottest weather of the month at most stations, while the coolest weather obtained from the 26th to the close of the month. Over the eastern half of the State, or in the Middle Virginia and the Tidewater sections, six, or more, inches of rain occurred, the higher amounts ranging up to about eleven and two-thirds inches. In the Great Valley division from three to six and a half inches fell. Heavy 24-hour rains fell in all sections, but they were more limited in area and amount in the Great Valley than in either of the other two sections. Severe electrical storms did some damage, locally, on the 19th. Sunshine was somewhat deficient.

THE month of September was cool, the mean temperature, 66.1°, being 2.1° below the normal. Warm days occurred, however, in each decade, while cool spells prevailed on the 17th and the 29-30th. Freezing weather occurred locally in the Great Valley division on the last-named date, and killing frosts were recorded in Bath, Grayson, Montgomery and Tazewell counties. Light frosts were also observed on the same date in Middle Virginia and in the western part of Tidewater Virginia. Precipitation was deficient and, except for the general rains of the 5-6th and the 27th to 29th, inclusive, the month was droughty. During the twenty days from the 7th to the 26th, inclusive, no rain in excess of trace fell at any station, except in small areas in a few northern and western border counties, where amounts of .01 to .04 inch occurred. Comparison with dry Septembers of other years show this period to have been the longest on record with so little rain. The wind movement for the month was unusually light and the sunshine abundant. Brilliant auroral displays were observed in all parts of the State on the 11th and the 29th.

OCTOBER, as a whole, was slightly warmer than usual, tho in the central-west and the northwest portions, the temperature was below the normal. Alternate cool and warm periods prevailed, the former giving minimum temperatures of from 16° to 26°, on the 31st, and the latter maximum temperatures of 88° to 92°, on the 17th. Precipitation was generally above the normal, but its distribution was unequal, and this resulted

in a deficiency in some portions of the State, as in the eastern and northern counties, and in an excess in others, as in the western and southern counties. Dry periods prevailed from the 1st, practically, to the 8th, inclusive, and from the 12th to the 21st, inclusive; during the remainder of the month moderate to heavy rains occurred. Snow fell locally in the Great Valley division on the 29th. In most instances it was light, but at Burkes Garden, in Tazewell county, the fall amounted to four inches, making a new record for the month. Sunshine was abundant.

NOVEMBER averaged 1.0° warmer than the normal. Two cold periods occurred. The first of these prevailed from the 1st to the 6th, inclusive, and the second from the 12th to the 17th, inclusive, when the coldest weather of the month occurred in all parts of the State. In each of these periods, the daily temperature ranged from normal to 15° below normal. The last twelve days of the month were, however, quite warm, the daily excess in temperature ranging from 1° to 20°. The average precipitation was about half of that usually occurring. General rain prevailed on the 11th, and light, scattering showers on various other dates, while snow occurred on the 14th in amounts ranging from a trace in portions of Tidewater Virginia to 15.0 inches in portions of the Great Valley. The average depth of snow on this date was almost double the highest average of all preceding Novembers of record and was six times the November snowfall average. Sunshine was abundant.

THE mean temperature for December was 1.4° above the normal. The cool periods occurring were milder than usual, while the warm periods were well marked. Precipitation was deficient in the extreme southeast and the northwest portions of the State, but elsewhere it was above the normal, and for the State, as a whole, there was an excess of 0.69 inch. A severe storm occurred on the 22d, when heavy rain and snow occurred generally, doing much damage to orchard and forest trees and to telegraph and telephone lines. Two fatalities resulted from exposure to the cold and snow. The record of average depth of snowfall for the month was broken, the amount for this storm exceeding the monthly total of any other December of record. The number of days with precipitation was greater than the average and the sunshine was deficient.

ERRATA.

Annual Summary, 1907, page 101: Williamsburg, total precipitation, 54.95, should be 54.65; Stephens City, total precipitation, 42.20, should be 42.04. Page 102: Spottsville, annual mean temperature, 57.0, should be 57.1; Roanoke, annual mean temperature, omitted, should be 56.7. Page 105: Williamsburg, total precipitation, December, 4.95, should be 4.65; annual, 54.95, should be 54.65; Stephens City, total annual precipitation, 42.20, should be 42.04.

KILLING FROSTS.

Station.	Last killing frost in Spring.	First killing frost in Autumn.	Station.	Last killing frost in Spring.	First killing frost in Autumn.
<b>TIDEWATER VIRGINIA.</b>			<b>MIDDLE VIRGINIA—Continued.</b>		
Ashland .....	Apr. 17	Nov. 1	Nokesville .....	Apr. 17	Oct. 31
Cape Henry .....	Mar. 22	Nov. 6	Quantico .....	Apr. 22	Oct. 13
Dinwiddie .....	Apr. 17	Oct. 3	Rocky Mount .....	Apr. 4	Oct. 13
Doswell .....	Apr. 17	Oct. 31	Saxe .....	Apr. 17	Oct. 13
Hampton .....	Mar. 22	Nov. 3	Washington, D.C. ....	Apr. 3	Nov. 1
Ivor .....		Oct. 31	<b>THE GREAT VALLEY.</b>		
Newport News .....	Mar. 22	Nov. 2	Big Stone Gap .....	Apr. 4	Oct. 3
Norfolk .....	Mar. 22	Nov. 2	Blacksburg .....	Apr. 22	Sept. 30
Petersburg .....	Apr. 17	Nov. 1	Bristol .....	Apr. 4	Oct. 31
<b>RICHMOND</b> .....	Apr. 4	Oct. 31	Burkes Garden .....	May 1	Sept. 30
Spottsville (near) .....	Apr. 17	Nov. 1	Dale Enterprise .....	May 1	Oct. 2
Warsaw .....	Apr. 22	Oct. 13	Elk Knob .....	Apr. 4	Nov. 5
Williamsburg .....	Apr. 17	Nov. 1	Galax .....	Apr. 22	Sept. 30
<b>MIDDLE VIRGINIA.</b>			Hot Springs .....	May 1	Sept. 30
Arvonnia .....	Apr. 17	Oct. 13	Lexington .....	Apr. 22	Oct. 3
Callaville .....	Apr. 4	Nov. 1	Marion .....	Apr. 13	Oct. 3
Charlottesville .....	Apr. 5	Nov. 5	Max Meadows .....	Apr. 29	Oct. 3
Columbia .....	Apr. 17	Oct. 31	Roanoke .....	Apr. 4	.....
Culpeper .....	May 1	Oct. 3	Shenandoah .....	Apr. 17	Oct. 3
Fredericksburg .....	Apr. 17	Oct. 31	Staunton .....	Apr. 17	Oct. 3
Lincoln .....	Apr. 14	Oct. 13	Stephens City .....	Apr. 17	.....
Lynchburg .....	Mar. 22	Nov. 1	Woodstock .....	Apr. 17	Oct. 3
Mount Weather .....	May 1	Oct. 31	Wytheville .....	Apr. 4	Oct. 3