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VIRGINIA SECTION,

EDWARD A. EVANS, Section Director.

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GENERAL SUMMARY.

Considering the year as a whole, the average temperature for the State was slightly above the normal. The excess, 0.7 degree, accumulated in the months of January, February, April, June, and November, each of which was from 1.3° to 9.0° warmer than normally. The remaining months of the year were relatively cold. Precipitation was deficient, the departure, 4.85 inches, being greater than that of any year of record during the past thirteen, except 1902, 1903, and 1904. Considered by months, April, May and June were wetter than the average, while each of the remaining months were drier, conditions being droughty at times.

The mean annual temperature of the State, 55.5°, was 0.7° above normal. Hampton, with an annual mean temperature of 59.9°, was the warmest station, and Burks Garden, with an annual mean of 48.6°, the coldest. The highest and lowest temperatures were 102°, on August 9th, and 5° below zero, on December 30th, the former occurring at Lincoln and the latter at Big Stone Gap and Burks Garden.

The last killing frost of the spring occurred in the Appalachian and Blue Ridge portions, on the 12th of May; in Middle Virginia, on the 3d of May, and in Tidewater Virginia on the 12th of April, while the first killing of the autumn was recorded in these divisions on the 26th of September and 13th of October.

The annual precipitation was below the normal in all parts of the State, except in the extreme southwestern portion and at a few scattered stations east of the mountains, where it was slightly in excess. June, with an average of 6.24 inches, was the wettest, and November, with an average of 0.78 inch, the driest month of the year. The annual precipitation ranged from a maximum of 51.71 inches, at Big Stone Gap, in Wise County, to a minimum of 26.89 inches at Shenandoah, in Page county. The greatest local monthly rainfall, 10.76 inches, occurred at Elk Knob, in Lee County, in June, and the least, 0.54 inch, at Charlottesville, in Albemarle County, in July. The average number of rainy days in the driest part of the State was 55, and in the wettest part 216. Snow, in varying amounts, fell in all parts of the State in each month from November to March, inclusive; also locally in April in the mountain portions, and in October at the highest stations in the extreme north and the extreme southwest portions. By months, the greatest local monthly snowfalls were: January, 12.5 inches; February, 9.0 inches; March, 12.0 inches; April, 2.0 inches; May, trace; October, trace; November, 2.8 inches, and December, 12.0 inches.

There were 171, or 47 per cent, of clear days; 104, or 28 per cent, of partly cloudy days, and 90, or 24 per cent, of cloudy days during the year. The prevailing wind direction for the State was southwest.

JANUARY was warm and dry. The number of days with precipitation equaled the average for the month, but the num-

ber of cloudy days was 20 per cent in excess. Changes in temperature were frequent and decided, but the extremes were within the record. The period beginning on the 20th and ending with the 29th was very warm, departures ranging from 18° to 35° above the normal on the 22d to 25th, inclusive. The only severe storm of the month occurred on the 15-16th, when there was a heavy fall of freezing rain, sleet and snow, which, locally, did much damage to orchards and forest trees, and to telegraph and telephone lines. The precipitation was slightly below the normal, but it was well distributed throughout the month.

FEBRUARY had remarkably high mean and maximum temperatures, and light precipitation. The percentage of sunshine very nearly equaled the average, but the number of rainy days was 25 per cent in excess. The mean temperature for the State was 9° above the normal, which gives the month the record of the warmest February since 1890. Isolated records prior to that year, however, indicate several months of this name with nearly if not quite as high means, for instance those of 1825, 1826, 1828, 1840, 1842, 1863, and 1884. While the rainfall averaged somewhat below normal, its distribution, both geographically and through the month, was such that at the end of the month the ground was well soaked, and the comparatively low stages of the rivers during the month indicate that by far the greater part of the moisture remained in the ground. The total snowfall for the State was but little more than a third of the usual amount. High, damaging winds prevailed on several dates.

MARCH was cold and dry, but not abnormally so. There were the usual number of rainy days, but no protracted periods of cloudy weather, so that the percentage of sunshine was high. The mean temperature and the total precipitation departures from the normal varied greatly at the different stations. The temperature departures ranged from 0.4° above the normal to 4.7° below, and the precipitation departures from 4.50 inches above to 3.12 inches below. The snowfall was slightly greater than usual. The principal feature of this month's weather was the storm of the 3d-4th in the extreme northeastern part of the State. This storm yielded several inches of snow and sleet. Heavy frosts occurred as late as the 29th, while the last one of the season that reached to the coast formed on the 25th and the 26th.

APRIL was warm, with about the normal amount of sunshine and precipitation. The warm and the cool periods were well defined, the daily mean temperatures averaging twenty degrees above normal on the 6th and 19th, and fourteen degrees below normal on the 11th. The maximum temperatures for the month were not high although the minimum temperatures were considerably below the normal. The second period of cool weather, 9th to 12th, included the lowest temperature of the month, with daily deficiencies on the 10th and 11th of ten to seventeen degrees. Light snow flurries fell from time to time in the extreme northern counties and along the western border of the State. Killing frosts were general in the interior on the 10th, 11th and 12th.

MAY was cool, with about the normal amount of precipitation. The number of rainy days was below the average, and the percentage of sunshine above. There were two periods with unseasonably low night temperatures. Killing frosts occurred in Middle Virginia and in the Great Valley on the 2d and 3d, and light frosts in Tidewater Virginia on the 3d. Frosts were again general in the northern and western portions of the State on the 12th, and this was the last killing frost reported during the spring. The periods of rainfall were well marked, the 1st and 10th being days with general and quite heavy precipitation. Moderate rains were continual from the 20th to the 27th, inclusive. The geographical distribution was good.

JUNE was warm and wet, with about the normal amount of sunshine. The means and extremes of temperature were well within the record, as the unbroken warm spell of the last decade was remarkable only for its persistency. The extreme high temperatures were very uniform, especially in the Tidewater section, where the stations reported maximum readings of 92° to 95°. The number of rainy days was the greatest in the June records, while the average of the station totals, which ranged from 3 to 10 inches, has been exceeded but once in the past 18 years. The general rain of the 3d-4th was very heavy, stations reporting as high as 3.50 inches.

JULY—The temperature averaged from 64° in the mountains to 76° on the coast, while the departures from the normal of this element showed the month to be uniformly from 2° to 4° cooler than the mean. The deficiency in precipitation was also general, but far from uniform. Throughout the central part of the State the month was one of the driest in the July records of this service, while in the southeastern and southwestern counties the amounts were but slightly deficient. A local storm, which did some damage to standing crops, occurred in the southwestern part of the State on the 23d.

AUGUST opened with an unusually heavy fall of rain in the central and southeast counties, followed on the 5th by a severe wind and electrical storm that caused some loss of life and considerable damage to property in the vicinity of Staunton; and on the 9th, by the culmination of a heated spell during which the annual maximum temperature (102°) was recorded at Lincoln. The monthly mean temperature varied from 65° in the southwestern mountains to 75° on the seashore, while the total rainfall though light over most of the State was moderately heavy in the southeastern and south-central counties.

SEPTEMBER—The month was nearly as cool as any September of which there is record, besides being the third successive one since the opening of summer that was deficient in this element. Since the night temperatures were not unusual this accumulated deficiency must be accredited to the large number of cool and cloudy days. The monthly means ranged from 58° in the southwest to 70° on the coast. Morning fogs became frequent in the mountains, and, as is usual for this month and section, the first frost of the season was deposited. The total wind movement, as indicated by the Richmond anemometer, exceeded the previously established high September record. The rainfall was generally deficient, and especially so along the coast and over the headwaters of the James. The most important features of the month's weather were the occurrence of the first frost in the State on the 2d, the heavy fall of rain within 100 miles of Richmond on the 9-10th, and the prevalence of a great magnetic disturbance on the 25th.

OCTOBER was the fourth successive month in which the average temperature for the State was below the normal. The seasonal deficiency here indicated, however, was not sufficient to equalize the large excess that accumulated during the late winter and early spring. October was also the fourth successive month of deficient precipitation. The mean temperature averaged from 48° in the mountains to 58° on the seashore, while the deficiency in precipitation was marked east of the Blue Ridge and especially over the middle portions of the east-flowing streams. On the 11th, rain measuring from 1 to 3 inches fell in the mountain region, but the ground was so dry that comparatively small amounts reached the main streams. On the 13th, 17th, and 20th, killing frosts occurred, the last-named reaching nearly to the coast. The frosts fortunately came after the harvest season.

NOVEMBER—The month was dry and warm, with an abundance of sunshine and more than the normal wind movement. The mean temperature ranged from 44° in the southwestern

mountains to 55° in the lower James River valley. A relatively small portion of the State received more than an inch of rainfall during the month and in consequence the drought continued almost without interruption. In the mountain regions springs and wells went dry and much suffering resulted to cattle. There were forest fires during the month in Rockingham County.

DECEMBER—The mean temperature averaged about 5° below normal, and ranged from 26° degrees at stations in the mountains to 39° at those in the extreme southeast. There was more than the average amount of sunshine, while the precipitation was deficient, especially in eastern counties lying along the North Carolina border and in the mountains. General rains on the 7th and 12-13th broke the drought that had become severe in many localities. There was another general fall of precipitation on Christmas Day. This fall came as snow, and in amounts that covered the mountain sections to a depth of from 3 to 8 inches and Tidewater counties to a depth of from 1 to 3 inches. This snow fell during the prevalence of the most severe cold spell of the year, in which, on the 30th and 31st, the temperatures went below zero at several mountain localities.

KILLING FROSTS.

Station.	Last killing frost in Spring.	First killing frost in Autumn.	Station.	Last killing frost in Spring.	First killing frost in Autumn.
TIDEWATER VIRGINIA.			MIDDLE VIRGINIA—Continued.		
Ashland	Apr. 12	Oct. 13	Mount Weather	Mar. 31	Oct. 13
Cape Henry	Mar. 26	Nov. 19	Nokesville	Apr. 12	Oct. 16
Dinwiddie	May 12	.....	Quantico	Apr. 26	Oct. 13
Doswell	May 2	.....	Rocky Mount	May 3	Oct. 13
Hampton	Mar. 23	Oct. 25	Saxe	May 3	Oct. 2
Ivor .....	.....	Nov. 5	Washington, D. C.	Apr. 12	Oct. 13
Newport News	Mar. 23	Nov. 19	THE GREAT VALLEY.		
Norfolk	Feb. 26	Nov. 19	Big Stone Gap	May 2	Oct. 13
Norfolk (near)	Mar. 25	Oct. 30	Blacksburg	May 3	Sept. 28
Petersburg	Mar. 25	Nov. 4	Burkes Garden	May 12	Sept. 26
RICHMOND	Apr. 12	Oct. 20	Dale Enterprise	May 12	Oct. 3
Spottsville (near)	Apr. 10	Oct. 17	Elk Knob	May 2	Oct. 13
Warsaw	Apr. 11	Nov. 18	Galax	May 3	Sept. 26
Williamsburg	Apr. 11	Oct. 29	Hot Springs	May 12	Oct. 13
MIDDLE VIRGINIA.			Ivanhoe	May 12	Oct. 2
Arvonia	Apr. 11	Oct. 13	Lebanon .....	.....	Oct. 13
Callaville	Apr. 12	Oct. 20	Lexington	May 3	Oct. 14
Catawba .....	.....	Oct. 13	Marion	May 3	Oct. 2
Charlottesville	Apr. 11	Oct. 13	Max Meadows	May 3	Oct. 13
Clarksville	Apr. 10	.....	Mendota .....	.....	Oct. 13
Columbia	Apr. 29	Oct. 13	Shenandoah	May 12	Oct. 20
Culpeper	May 3	Oct. 13	Staunton	Apr. 12	Oct. 13
Danville	Apr. 11	Oct. 25	Stephens City	May 4	Oct. 13
Fredericksburg	May 3	Oct. 13	Woodstock	May 12	Oct. 13
Lincoln	May 3	Oct. 13	Wytheville	May 3	Oct. 13
Lynchburg	Apr. 11	Oct. 17			

NOTE.

The change in the method of publishing climatic data, as outlined in the June 1909. Bulletin, has been continued throughout the remainder of the year. Data from stations in the northern half of the State are published with the North Atlantic States Group; those in the southern section with the South Atlantic and East Gulf States Group, and those in the southwest with the Ohio Valley Group. Copies of this publication may be had on application.

ERRATA.

ANNUAL SUMMARY, 1908.—Pages 101 and 105, total precipitation, Quantico, 46.20, should be 46.23.
 JANUARY, 1909.—Page 5, Randolph, total precipitation blank, should be 1.21; Ivanhoe, monthly mean temperature 38.1, should be 38.0; page 6, Ivanhoe, minimum temperature on the 9th, 30, should be 26; mean minimum, 31.2, should be 31.0.
 FEBRUARY, 1909.—Page 13, Hot Springs, monthly mean temperature 38.8, should be 38.4; page 14, maximum on the 7th, 42, should be 33; maximum on the 25th, 45, should be 35; mean maximum, 49.3, should be 48.6.
 MARCH, 1909.—Page 21, Norfolk, prevailing wind direction, NW, should be S.
 APRIL, 1909.—Page 29, Charlottesville, monthly mean temperature, 56.0, should be 57.0; Blacksburg, monthly mean temperature and departure, 51.4 and +1.4, should be 51.0 and +1.0; Burks Garden, monthly mean temperature and departure, 49.2 and +2.0, should be 49.1 and +1.9; page 30, Blacksburg, minimum temperature on the 29th, 64, should be 39; mean temperature 38.4, should be 37.6; Burks Garden, minimum temperature on the 30th, 54, should be 50, and mean minimum, 37.3, should be 37.2.
 MAY, 1909.—Page 37, Norfolk (near), monthly mean temperature, 64.6, should be 64.7; Quantico, total precipitation, 3.87, should be 3.77; page 38, Norfolk (near), maximum temperature on the 13th, 63, should be 70, and mean maximum, 75.8, should be 76.0; page 40, Quantico, total precipitation, 3.87, should be 3.77.