

U. S. DEPARTMENT OF AGRICULTURE,  
**CLIMATOLOGICAL SERVICE**

OF THE  
**WEATHER BUREAU.**

CENTRAL OFFICE: WASHINGTON, D. C.

VIRGINIA SECTION,  
 EDWARD A. EVANS, Section Director.

VOL. XX.

RICHMOND, VA., YEAR 1910.

No. 1.

**GENERAL SUMMARY.**

The annual mean temperature for the State shows the year 1910 to have been but one-tenth of one degree below the normal. This condition was brought about by the cool weather prevailing from May to August, inclusive, and in November and December. The first four months of the year were warm for the season, as also were September and October, but the excess in temperature accumulating during these six months was not quite sufficient to bring the annual mean up to the normal. The average of all station reports shows the year to have been dry, the average deficiency being slightly more than three inches. January, April, June, July and October were wet, the other seven months being generally dry. The counties of greatest precipitation were Surry, Southampton, Scott and Craig, while droughty conditions prevailed in Rockbridge and those counties in the extreme north.

The mean annual temperature of the State,  $54.7^{\circ}$ , was  $0.1^{\circ}$  below normal. Newport News, with an annual mean temperature of  $59.7$ , was the warmest station, and Burkes Garden, with an annual mean of  $47.7^{\circ}$ , the coldest. The highest and lowest temperatures were  $102^{\circ}$ , on June 22d, and July 26th and 27th, and  $9^{\circ}$  below zero, on December 22d, the former occurring at Lincoln and the latter at Burkes Garden.

The last killing frost of the spring occurred in the Appalachian and Blue Ridge portions, on the 15th of May; in Middle Virginia, on the 20th of March, and in Tidewater Virginia on the 8th of April, while the first killing of the autumn was recorded in these divisions on the 24th, 29th and 30th of October, respectively.

The annual precipitation was below the normal in all parts of the State, except in localities in the eastern and upper tidewater counties and along the western border, where it was slightly in excess. June, with an average of 6.46 inches, and November, with an average of 1.47 inches, were the wettest and the driest months, respectively, of the year. The annual precipitation ranged from a maximum of 55.29 inches at Speers Ferry, in Scott County, to a minimum of 31.02 inches at Lexington, in Rockbridge County. The greatest local monthly rainfall, 11.11 inches, occurred at Dale Enterprise, in Rockingham County, in June, and the least, trace, at Stephens City, in Frederick County, in March. Snow, in varying amounts, fell in all parts of the State in the first, third, and last two months of the year; also locally in April, May and October in the mountain portions. By months, the greatest local monthly snowfalls were: January, 2.33 inches; February, 9.0 inches; March, 6.5 inches; April, 2.0 inches; October, 3.0 inches; November, 2.1 inches, and December, 21.1 inches.

There were 151, or 41 per cent, of clear days; 116, or 32 per cent, of partly cloudy days, and 98, or 27 per cent, of cloudy days during the year. The prevailing wind direction for the State was southwest.

JANUARY, while not an unusual month, was about  $5^{\circ}$  warmer than the preceding December. The mean temperature ranged from  $31^{\circ}$ , in the mountains, where the daily readings varied between zero and  $73^{\circ}$ , to  $42$  in the southeast, where the monthly extremes were  $15^{\circ}$  and  $70^{\circ}$ . The month opened with seasonable temperature, which rose on the 2d and 3d causing mild weather, followed on the 4th by a fall in temperature of from  $40^{\circ}$  to  $50^{\circ}$ , carrying the mercury to  $10^{\circ}$  in the northwest and to below freezing in the southeast. The cold wave was followed on the 5th by an unusually cold rain which fell during temperatures of from  $10^{\circ}$  to  $15^{\circ}$  below freezing. The records show another severe storm, that of the 28th, which yielded as much as 10 inches of snow at several stations. The monthly precipitation averaged from 4 to 6 inches in the middle and southwest counties and about 2 inches in the extreme north and the extreme southeast.

FEBRUARY.—The mean temperature for the month ranged from  $29^{\circ}$  in the mountains to  $43^{\circ}$  in the extreme southeast, while the monthly totals of precipitation varied from about 3.5 inches along the eastern slope of the Blue Ridge to slightly less than 2 inches over isolated areas. Generally the month was warm and dry with more than the normal amount of sunshine. The prevailing winds were southwest. Potato planting was begun on the Eastern Shore on the 15th. On the 11-12th snow measuring from a trace to more than 8 inches fell generally. The ground was bared by the heavy rain of the 17-18th, the storm being accompanied by high wind which reached a velocity of 76 miles per hour at Mount Weather, and was followed by a cold wave with temperatures slightly below zero in the Southwest.

MARCH.—This month was remarkable for the total absence of the usual weather conditions that give character to this season of the year. The high temperatures, the scanty precipitation, the large amount of sunshine, the light wind, and the hazy condition of the atmosphere were much more in keeping with conditions that prevail during fall months in times of drought than during the month of March. The excess of temperature for the State as a whole averaged  $7^{\circ}$  per day, while the average precipitation was about 40 per cent of the normal. The mean temperatures ranged from  $46^{\circ}$  in the Southwest to  $54^{\circ}$  near the mouth of the James, while the monthly amounts of precipitation varied from less than an inch in the middle and western counties to from 3 to 3.5 inches in the Southeast, where the heaviest fall of snow in that section for the season fell on the night of the 12-13th. The last generally destructive frost to reach the coast occurred on the 16th.

APRIL was characterized by an excess in both temperature and precipitation and was remarkable for the absence of the marked cool spells which are usually experienced in this month. The mean temperature ranged in the mountains from  $48^{\circ}$  to  $56^{\circ}$ , while throughout nearly all of the middle and tidewater counties it varied from  $58^{\circ}$  to  $60^{\circ}$ . The precipitation was very unevenly distributed, being below normal in the extreme Southeast and much above normal in the upper tidewater section. The principal feature of the month's weather was the rain of the 16-17th, which measured nearly 6 inches at many places in a narrow strip extending 50 miles to the north and south of Richmond. The last killing frosts of the spring to form in the middle counties and the upper tidewater counties occurred on the 8th and 9th.

MAY.—The average temperature near the mouth of James River was slightly in excess of the normal. Proceeding westward this excess changed to a deficiency reaching  $3^{\circ}$  at the head of tidewater and  $5^{\circ}$  at many mountain stations. The monthly precipitation was also deficient except near Hampton Roads. On the 5th and 6th, there were light frosts east to the coast,

while from the 13th to 17th frosts were quite general and, in the mountains, they were destructive to vegetation.

JUNE was remarkable for the sudden and complete reversal in the general character of the weather that took place about the 18th. Previous to that time there were frequent rains, much cloudiness and several cool days with temperatures ranging from freezing down to 29 degrees, the lowest point ever reached in June in Virginia. After the 18th there was much fair weather with several days having temperatures exceeding 90°. The monthly mean temperature increased from 60 degrees in the southwestern mountains to 72 degrees in the Hampton Roads district. The total precipitation exceeded 10 inches, quite generally at highland stations between Blacksburg and Dale Enterprise, and it was above normal at nearly all other stations in the State. From the 16th to the 19th flood stages prevailed in James River.

JULY contained much oppressive and unpleasant weather, the temperature exceeding 90 degrees on nearly half of the days over a large section of the State, and rains being of almost daily occurrence except for a short period in the first half of the third decade, when clear, cool weather prevailed. The monthly mean temperatures were below the normal, and ranged from 68° in the Southwest to 78° in the tidewater section of the James River valley. The monthly precipitation exceeded the normal in nearly all sections, but it was very unevenly distributed geographically and was below the normal in the Roanoke-Staunton valley.

AUGUST was the fourth consecutive month with a mean temperature below normal. The month was also unusual for the small number of days on which the temperature exceeded 90°. The means ranged from 64° in the Southwest to 76° in the Southeast. The precipitation was very unevenly distributed, and was below normal except over a large number of tidewater counties, where the rains of the 13-19th brought the totals up to from 6 to 9 inches.

SEPTEMBER was the fifth consecutive cool month, the mean temperatures being below the normal generally and ranging from 62°, along the West Virginia border, to 75° at the mouth of James River. There was also a deficiency of precipitation except at a few southwestern border stations, the total amounts of rain being less than 2 inches over most of the eastern half of the State.

OCTOBER.—Generally October was warm and wet although there were many bright days and a few at its close with temperatures much below freezing. The mean temperatures ranged from 52°, in the southwest mountains, to 65 degrees in the extreme Southeast. The monthly precipitation was less than 4 inches throughout most of the mountain section and the Hampton Roads district, while it exceeded 6 inches at several tidewater stations. This excess was due to the coast storm of the 19-20th, which while causing no great damage in this section produced from 4 to 5 inches of rain in 24 hours. Light frost formed generally on the 24th, followed on the 29th and 30th by a killing frost that swept the State to within a few miles of the Atlantic coast. In the northern and western counties this frost, which was the first of the fall, was from two to three weeks later than its average annual date of occurrence. This cold wave was accompanied by general snow flurries except in the Southwest, where from 3 to 4 inches fell.

NOVEMBER.—The uniform deficiency in temperature of about 5° reported quite generally throughout the State grades this month as the coldest November that has been experienced in Virginia for many years. The mean temperature ranged from 35° along the Virginia-West Virginia line, to 46° in the extreme Southeast. In precipitation the month was also deficient, especially in the central and northern mountain regions where the totals averaged less than an inch and droughty con-

ditions, in some cases severe, prevailed. The month was also unusual in that it closed without snows of consequence; also there were no severe cold waves or general storms of importance.

DECEMBER.—There was an increase in mean temperature of about 12° between the western border of the State, where the average was 26°, to the Hampton Roads district, where the means reached 38°. Half of this increase in temperature occurred within the mountain district. Generally throughout the State the weather was cold for the season, although the month was not so cold as the corresponding one of last year. The monthly precipitation was about half an inch below the normal. The distribution was very uneven, the southern counties east of Danville and west of Bristol and the counties in the Potomac watershed receiving abundant amounts, while in the central counties, and especially in the central mountain district, the fall was scanty. The month was without special weather features of interest except for the low temperature reported on the 22d, 9° below zero. This is the lowest December temperature in the State for the past five years.

### KILLING FROSTS.

Station.	Last killing frost in Spring.	First killing frost in Autumn.	Station.	First killing frost in Autumn.	Last killing frost in Spring.
<b>TIDEWATER VIRGINIA.</b>			<b>MIDDLE VIRGINIA—Continued.</b>		
Ashland.....	Apr. 8	Oct. 30	Mount Weather.....	Mar. 18	Oct. 29
Cape Henry.....	Mar. 12	Nov. 30	Quantico.....	May 17	Oct. 29
Diamond Springs.....	Mar. 18	Oct. 31	Rocky Mount.....	May 15	Oct. 29
Doswell.....	Apr. 8	Oct. 30	Saxe.....	Mar. 20	Oct. 29
Eastville.....	Mar. 18	Nov. 9	Washington, D.C.....	Mar. 18	Oct. 30
Hampton.....	Mar. 16	Oct. 30	<b>THE GREAT VALLEY.</b>		
Ivor.....	Apr. 9	Oct. 26	Big Stone Gap.....	Apr. 21	Oct. 29
Newport News.....	Mar. 16	Oct. 30	Blacksburg.....	May 15	Oct. 24
Norfolk.....	Mar. 18	Nov. 9	Buchanan.....	May 15	Oct. 30
Petersburg.....	Mar. 19	Oct. 30	Burkes Garden.....	June 4	Oct. 24
Richmond.....	Mar. 16	Oct. 30	Dale Enterprise.....	May 15	Oct. 29
Spottsville (near).....	Apr. 9	Oct. 30	Elk Knob.....	May 15	Oct. 28
Warsaw.....	Mar. 21	Oct. 30	Galax.....	May 15	Oct. 24
Williamsburg.....	Mar. 18	Oct. 30	Hot Springs.....	May 15	Oct. 24
<b>MIDDLE VIRGINIA.</b>			Ivanhoe.....	May 15	Oct. 27
Arvonnia.....	Mar. 18	Oct. 30	Lebanon.....	May 15	Oct. 24
Callville.....	Apr. 9	Oct. 30	Lexington.....	May 15	Oct. 24
Charlottesville.....	Mar. 18	Oct. 30	Marion.....	May 15	Oct. 30
Columbia.....	Mar. 20	Oct. 29	Max Meadows.....	May 15	Oct. 24
Culpeper.....	May 16	Oct. 29	Staunton.....	May 15	Oct. 29
Fredericksburg.....	Mar. 22	Oct. 29	Stephens City.....	May 16	Oct. 24
Lincoln.....	May 16	Oct. 30	Woodstock.....	May 6	Oct. 30
Lynchburg.....	Mar. 18	Oct. 30	Wytheville.....	May 15	Oct. 24

### NOTES.

Tables giving the daily temperature extremes and the daily precipitation, and also charts showing the differences between the normals and the monthly averages of temperature and the total monthly amounts of precipitation, at the several stations, have been published regularly during the year in the Monthly Weather Review, separates of which containing the data for Virginia will be furnished on application at the Local Office of the Weather Bureau, Richmond, Va.

Indexes to special articles published in the several monthly and annual issues of this Bulletin will be found in the annual summary for 1905 and in the monthly summary for June, 1909.

### ERRATA ANNUAL SUMMARY, 1909.

- Page 53: Petersburg, total precipitation blank, should be 41.20; Shenandoah, total precipitation 25.89, should be 27.59; Staunton, mean temperature blank, should be 55.1, and total precipitation 36.98, should be 37.16; Stephens City, mean temperature 53.9, should be 53.6.
- Page 54: Stephens City, annual temperature and departure 53.9 and 0.0, should be 53.6 and -0.3.
- Page 57: Petersburg, June and annual precipitations and departures blank, should be 6.66, +2.23, and 41.20, -4.46; Shenandoah annual precipitation and departure 26.89 and -7.36, should be 27.59 and -6.46; Staunton, September and annual precipitation and departures 2.92, -0.54, and 36.98, -2.40, should be 3.10, -0.36, and 37.16, -2.22.

## 1910 Year Was Very Dry.

The average of all station reports shows the year to have been dry, the average deficiency being slightly more than three inches. January, April, July and October were wet, the other seven months being generally dry. The counties of greatest precipitation were Surry, Southampton, Scott and Craig, while droughty conditions prevailed in Rockbridge and those counties in the extreme north.

The mean annual temperature of the State, 54.7 degrees, was 0.1 degree below the normal. Newport News, with an annual mean temperature of 59.7, was the warmest station, and Burkes Garden, with an annual mean of 47.7 degrees, the coldest. The highest and lowest temperatures were 102 degrees, on June 22 and July 26 and 27, and 9 degrees below zero, on December 22, the former occurring at Lincoln and the latter at Burkes Garden.

The last killing frost of the spring occurred in the Appalachian and Blue Ridge portions, on May 15; in Middle Virginia, on March 20, and in Tidewater Virginia, on April 8, while the first killing frost of the autumn was recorded in these divisions on October 24, 29 and 30, respectively.

### Precipitation Below Normal.

The annual precipitation was below the normal in all parts of the State except in localities in the eastern and upper Tidewater counties and along the western border, where it was slightly in excess. June, with an average of 6.46 inches, and November, with an average of 1.47 inches, were the wettest and the driest months, respectively, of the year. The annual precipitation ranged from a maximum of 55.29 inches at Speers Ferry, in Scott county, to a minimum of 31.02 inches at Lexington, in Rockbridge county. The greatest local monthly rainfall, 11.11 inches, occurred at Dale Enterprise, in Rockingham county, in June, and the least trace at Stephens City, in Frederick county, in March. Snow, in varying amounts, fell in all parts of the State in the first, third and last two months of the year; also locally in April, May and October in the mountain portions. By months, the greatest local monthly snowfalls were: January, 2.33 inches; February, 9.0 inches; March, 6.5 inches; April, 2.0 inches; October, 3.0 inches; November, 2.1 inches, and December, 21.1 inches.

### Richmond Conditions.

Climatological data for the year at Richmond follows:

Temperature—Annual mean temperature, 57.2 degrees, or 1.3 degrees colder than normal; highest temperature, 93 degrees, on September 6; lowest temperature, 10 degrees, on February 7.

Precipitation—Total precipitation for year, 43.14 inches, or 1.51 inches greater than normal; greatest monthly precipitation, 8.74, in April; least monthly precipitation, 0.98 inches, in November; total snowfall, 9.1 inches; number of rainy days, 127.

Sky Conditions—Clear days, 88; partly cloudy days, 169; cloudy days, 108. Prevailing direction of the wind, south.

Last killing frost in spring, March 16; first killing frost in autumn, October 30.