

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
VIRGINIA SECTION.

EDWARD A. EVANS, Section Director.

VOL. XXIV. RICHMOND, VA., YEAR 1914. No. 13.

GENERAL SUMMARY.

Although the mean temperature of the year corresponded closely with the average of the preceding 23 years, there were comparatively few months that did not show decided departures from their respective normals; and the year was even more unusual in regard to precipitation, in that each of the nine consecutive months between January and November were deficient in moisture. The dry period early in the summer brought greatly reduced yields of berries and truck, besides delaying the planting of tobacco. In June the drought was intensified by a severe hot wave and by the close of that month early corn had suffered greatly, as did also the late-planted crop under similar conditions in August. After the growing season the rainfall increased, becoming copious in December, in which month, as in the first three of the year, there were heavy falls of snow.

The mean temperature of the State, 55.0° , was 0.2° below normal. Norfolk, with an annual mean temperature of 58.6° , was the warmest station, and Burkes Garden, with an annual mean of 48.5° , the coldest. The highest and lowest temperatures were 103° on June 12, and -17 on December 16 and 17, the former occurring at Ivor and the latter at Burkes Garden.

December, with an average of 5.38 inches of precipitation, and May, with an average of 1.64 inches, were the wettest and driest months, respectively, of the year. The annual precipitation ranged from a maximum of 47.76 inches at Speers Ferry, in Scott County, to a minimum of 25.19 inches at Woodstock, in Shenandoah County. The greatest local monthly rainfall, 9.60 inches, occurred at Blacksburg, Montgomery County, in July, and the least, 0.21 inch, at Max Meadows, Wythe County, in June.

Snow fell in January, February, March, April, and December in Tidewater and Middle Virginia and in the first five and the last two months of the year in the Great Valley. By months the greatest local monthly snowfalls were: January, 36 inches; February, 26 inches; March, 25 inches; April, May, and October, a trace each; November, 5 inches; and December, 17 inches.

JANUARY.—This month, like the opening one of all but three of the past nine years, was relatively warm, though not so unseasonably so as was that of 1913, the warmest January of which there is authentic record. As to precipitation the month was unusual only in the large average yield of the several storms, which though fewer in number than has occurred in any January since 1900, gave a total slightly in excess of the normal. Of these storms but one was of statewide importance, that of the 2d-4th, which caused heavy snow in the mountains and rains and high winds on the coast. There was one short period when at a few stations the temperature fell to slightly below zero.

FEBRUARY.—Taken as a whole the month was cold and dry, but there were no unusually cold days nor long periods without precipitation over large areas. On three occasions the temperature fell at a few stations to points slightly below zero, but the coldest day gave a minimum temperature of only -6° , which is more than 20° higher than the lowest previously known in February. Four days of moderately heavy precipitation appear in the records, and on three of these there was snow of importance. High wind prevailed in the southwest on the 7th, and an even more severe blow was re-

corded on the 14th, when the anemometer at Mount Weather recorded 70 miles per hour.

MARCH.—Cold weather, as in February, continued with but slight response to the advancing season and the close of March found vegetation still dormant. The cold weather was general throughout the State, and in all but the southwestern section there was less than the average fall of precipitation, although the snows of the month were heavy. Four heavy snowstorms occurred, which, in addition to a number of lesser ones, brought the month's total snowfall above that of any preceding March of which there is record. The wind attained hurricane force on the 2d, and during one of the cold waves the temperature fell to -15° , the lowest reading ever known in Virginia in March.

APRIL.—The month had nearly normal temperature, but the precipitation was comparatively light, and in only a small section came in the form popularly designated as April showers. The wind attained storm velocities in the northern mountains on the 8th and there were gales along the coast on the 2d, 15th and 20th. Light flurries of snow fell at scattered stations early in the month, and killing frosts occurred quite generally above Tidewater as late as the 10th, but owing to the backward condition of vegetation no widespread damage resulted. During the last fortnight shade trees began to show signs of life, and in southern Virginia the month closed with maples nearly in full leaf.

MAY.—This month opened cold, with the last killing frost of the season forming at exposed places in the mountains, but at its close one of the most severe hot waves ever known during May in Virginia was terminated. During this hot spell the temperatures east of the mountains rose into the 90's daily from the 26th to the 30th. Preceding the hot wave the weather had been dry for more than two weeks, and the monthly deficiency in precipitation, which has been exceeded but once, when combined with those of March and April give to 1914 the record of the driest spring known in the State. The month brought considerable distress to truck and tobacco growers, the latter waiting in vain for a favorable season for transplanting.

JUNE.—The frequency of showers increased during the month, and in some of the lower Tidewater counties vegetation revived, but generally the rains were too few and scattered to be of material benefit. The drought that began to develop in the Shenandoah Valley in May spread over the southern Piedmont section and the northern counties. Complaint was also heard from the Eastern Shore where, with the rapid approach of the close of the growing season for the earliest crops, a greatly reduced yield was apparent. In the southern section much tobacco remained unplanted, but as the end of the month approached showers brought relief there locally. From the 20th to the 29th there prevailed one of the most severe hot waves ever experienced in June.

JULY.—This was the sixth successive month with the State average precipitation below normal. Since midwinter there had been copious rains at a number of stations, and even moderately large groups of counties reported single months with more than the normal fall, but such favorable conditions were confined mostly to the east. In the Great Valley, from Staunton southwestward to Wytheville, and in the adjacent Piedmont section, from Charlottesville to Rocky Mount, the drought was severe, these sections having received but from 55 to 65 per cent of the normal rainfall since the first of March; however, the July rains though insufficient brought a widespread improvement in the agricultural situation.

AUGUST.—This month was above the normal in mean temperature, but like the six preceding ones was deficient in precipitation, although large amounts were received at some stations. The uneven distribution of precipitation during the

month changed the limits of the severe drought, which by the close embraced the section extending from Augusta, Albemarle, and Louisa counties southward over Henry, Pittsylvania, Halifax, and Mecklenburg counties. This section, the heart of the Virginia tobacco region, had, since the first of March, only 60 to 70 per cent of the normal rainfall. From the 17th to the 25th a severe hot wave prevailed, and corn, tobacco, and truck continued to deteriorate, and by the 23d in the southern counties maple trees began to lose their leaves.

SEPTEMBER.—This month increased the already large seasonal deficiency in rainfall in the Piedmont region, and the growing season closed with less than 16 inches of rain since March 1 in Nelson, Amherst, Buckingham, Appomattox, Campbell, Prince Edward, Charlotte, Pittsylvania, and Halifax counties, while the middle and upper Shenandoah and the upper Rappahannock valleys had but slightly more. However, in the Surry County neighborhood and in the extreme southwest the generally destructive drought was more moderate. The first frost occurred in the mountains on the 10th, and another, with record-breaking low temperatures, swept eastward to the coast on the 29th. For the State as a whole the unfavorable season greatly reduced the yields of corn, oats, tobacco, hay, truck, and peanuts.

OCTOBER.—But one other October in the last 23 years had a higher mean temperature than this, although its extremes were well within the record. Interest, however, was centered in the rainfall, not because of the unusual amount, which was but little below normal, but because the deficiency classes the month as the ninth successive dry one. There were, however, widespread areas where the catch was large, and one of these was the region of greatest seasonal shortage, but there, as elsewhere, the rains came after the harvest and their beneficial effects were thus greatly minimized. The first snow of the season, a trace, occurred on the 27th and the first killing frost to reach tidewater formed on the following morning.

NOVEMBER.—Although many of the stations reported mean temperature and total precipitation near or above normal the month was made up largely of cold, dry, and windy days. Such results involved large ranges in the thermometer, protracted periods of heat and cold, and a few notable occurrences of precipitation, but no extreme records were broken. Two moderately cold waves occurred, and during the second of these the line of killing frost, which three weeks earlier was halted in Tidewater, advanced eastward to the coast. The most important snowstorm of the season occurred on the 20th, laying a cover of 2 to 6 inches in depth over southwest Virginia. High winds prevailed on the 8th and 9th and again on the 15th and 16th.

DECEMBER.—While the departures from normal conditions this month were not so important as those for the preceding months, especially during the growing season, it was nevertheless the most abnormal month in 1914. As to temperature there were two cold waves, neither of which has before been equaled during December in point of low temperature reached. The average precipitation was higher than for any other month of the year; the number of both cloudy and rainy days was greater than has ever before been known in this month; and the average snowfall was also unprecedented. The month will long be remembered for a period of cloudy, rainy weather with northeasterly winds, which prevailed for an almost unbroken period of nearly two weeks.

ERRATA.

Annual summary, 1913, page 4: Killing frost, Ivanhoe, March 7, should be April 22. Page 6, Charlottesville, November and December temperature and departures, 50.1+2.4 and 43.8+6.1 should be 50.0+2.3 and 43.6+5.9 respectively. Page 7, Charlottesville, November and December dates, †20 and 6 should be †19 and 5, respectively.

COMPARATIVE ANNUAL DATA.

Year.	Mean temperature.	Highest.	Lowest.	Average precipitation.	Average snow-fall.	No. of rainy days.	No. of clear days.	No. of partly cloudy days.	No. of cloudy days.
1892	54.8	106	-8	40.01	.....	95	163	101	102
1893	55.1	104	-26	46.83	23.1	103	156	100	109
1894	57.0	106	-11	35.97	17.0	88	166	104	95
1895	54.6	107	-18	38.09	38.8	94	174	103	88
1896	56.4	105	-10	42.89	12.3	93	163	106	97
1897	56.0	103	-15	40.81	11.8	92	172	99	95
1898	56.5	105	-9	44.80	8.7	108	162	101	102
1899	56.4	106	-29	43.18	36.7	98	176	95	94
1900	57.0	107	-8	39.33	18.6	86	181	91	93
1901	55.3	106	-14	50.17	9.5	100	167	94	104
1902	55.6	108	0	51.42	14.9	95	170	97	98
1903	55.1	105	-13	44.85	8.4	95	172	89	104
1904	53.8	100	-14	36.18	24.9	96	170	101	95
1905	54.8	98	-15	43.58	18.5	111	155	112	98
1906	56.3	102	-2	49.56	15.2	124	143	120	102
1907	54.3	97	-16	44.19	17.4	115	159	115	91
1908	55.4	102	-20	45.21	30.0	110	162	108	96
1909	55.5	102	-5	39.81	12.9	101	171	104	90
1910	54.7	102	-9	41.37	20.3	112	151	116	98
1911	56.8	104	0	41.50	9.2	115	149	110	106
1912	54.5	100	-25	39.19	24.6	103	165	106	95
1913	57.2	102	-3	42.75	4.0	100	178	98	89
1914	55.0	103	-17	37.17	39.8	101	168	100	97

CLIMATOLOGICAL DATA, 1914.

Month.	Precipitation.			Temperature.			No. of days.			
	Mean.	Highest.	Lowest.	Average.	Greatest 24-hour rain.	Average snow-fall.	Rain.	Clear.	Partly cloudy.	Cloudy.
January	39.4	76	-1	3.23	2.80	5.1	6	12	10	9
February	32.8	69	-6	3.21	1.90	12.9	10	12	7	9
March	40.6	79	-15	3.16	2.07	14.0	11	12	9	10
April	54.3	95	14	2.61	2.10	T.	8	14	9	7
May	65.6	98	26	1.64	1.65	0	5	19	8	4
June	74.0	103	40	2.68	2.95	0	9	14	12	4
July	74.3	102	36	4.27	3.80	0	10	13	13	5
August	75.0	102	46	3.24	3.12	0	9	14	10	7
September	65.6	100	28	1.65	1.65	0	5	18	6	6
October	59.5	88	18	3.06	2.26	T.	7	15	8	8
November	45.7	82	7	2.53	3.60	0.6	4	18	6	6
December	34.3	72	-17	5.38	2.30	7.8	14	8	5	18

KILLING FROSTS, 1914.

Stations.	Last in spring.	First in autumn.	Stations.	Last in spring.	First in autumn.
TIDEWATER VIRGINIA.			MIDDLE VIRGINIA—CON.		
Ashland	Apr. 10	Oct. 23	Mount Weather	Mar. 30	Oct. 27
Cape Henry	Apr. 11	Nov. 21	Quantico	Apr. 14	Oct. 28
Diamond Springs	Mar. 24	Oct. 29	Randolph	Apr. 10*	Oct. 28
Doswell	Apr. 10*	Oct. 28	Rocky Mount	Apr. 11	Oct. 28
Eastville	Apr. 11	Nov. 21	Ruckersville	Apr. 21	.....
Ivor	Apr. 11	Oct. 23	Stuart	Apr. 11	.....
Mount Moriah Farm	.....	Oct. 23	Sweetnam	Apr. 10	Oct. 28
Newport News	Mar. 23	Nov. 21	Washington, D. C.	Apr. 10	Oct. 28
Norfolk	Mar. 22	Nov. 21	THE GREAT VALLEY.		
Petersburg	Apr. 10	Oct. 28	Blacksburg	May 1	Oct. 27
Richmond	Apr. 10	Oct. 28	Buchanan	Apr. 10	Oct. 28
Runnymede	Apr. 11	Oct. 28	Burkes Garden	Apr. 21	Oct. 27
Wachapreague	Apr. 10	Oct. 28	Catawba Sanatorium	Apr. 10*	Oct. 28
Warsaw	Mar. 24	Oct. 28	Dale Enterprise	Apr. 10	Oct. 28
West Point	Mar. 24	Oct. 28	Elk Knob	Apr. 10	Oct. 27
Williamsburg	Apr. 10	Oct. 28	Emory	Apr. 13	Oct. 28
MIDDLE VIRGINIA.			Hot Springs	Apr. 12	Oct. 27
Arvonnia	Apr. 10	Oct. 28	Ivanhoe	Apr. 10	Oct. 28
Callaville	Apr. 10	Oct. 28	Lexington	Apr. 11	Oct. 28
Charlottesville	Apr. 10	Oct. 28	Max Meadows	Apr. 13*	Oct. 28*
Clarksville	Apr. 10	Oct. 28	Mendota	Apr. 13	Oct. 28
Columbia	Apr. 10	Oct. 28	Mountain Lake	May 1	Oct. 27*
Culpeper	Apr. 10	Oct. 28	Radford	Apr. 13	Oct. 28
Danville	Apr. 10	Oct. 28	Roanoke	Apr. 11	Oct. 28
Dry Bridge	Apr. 10	Oct. 28	Speers Ferry	Apr. 13	Oct. 28
Fredericksburg	Mar. 25	Oct. 28	Staunton	Apr. 10	Oct. 28
Gordonsville	Apr. 10*	Oct. 28	Waynesboro	Apr. 10	Oct. 28
Lassiter	Apr. 11	Oct. 28	Winchester	Apr. 10	Oct. 28
Leeds Manor	Mar. 24*	Oct. 28	Woodstock	Apr. 11	Oct. 28
Lincoln	May 1	Oct. 28	Wytheville	Apr. 13	Oct. 27
Lynchburg	Apr. 10	Oct. 28			

* Date estimated