

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.  
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# CLIMATOLOGICAL DATA.

## VIRGINIA SECTION.

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VOL. XXXII. RICHMOND, VA., YEAR 1923. No. 13.

### GENERAL SUMMARY.

There was a deficiency of temperature for the first eleven months of the year, although January and June were considerably warmer than usual; but May, October, and November were cold, and offset any accumulated excess. December, however, with a mean temperature nearly nine degrees above normal, changed the accumulated deficiency of preceding months to an excess for the year, the mean for 1923 being nearly one degree above normal. Killing frosts in the first two weeks of April seriously damaged fruits in all parts of the State, while the dry weather of May and June, excepting over the southwestern counties of the State, retarded vegetation and planting of important crops. The latter part of the growing season, however, was more favorable in that respect. The outstanding feature of the weather of the year with regards to temperature was the mildness of the last month, the warmest December of record. At only a few points in the State was the mean minimum temperature of that month as low as freezing. Grasses and winter grains continued fresh and green to its close.

Precipitation was not well distributed as to time. The lack of moisture early in the season seriously retarded crops, but this adverse condition was largely offset by abundant rains later, and by continued mild weather into autumn, so that crop yields were quite satisfactory. Unusual and unprecedented rains fell in July and August in Orange, Henrico, and James City Counties, while in June local heavy rains fell in the extreme southwest part of the State, particularly over Smyth, Wythe, Tazewell, and Russell Counties:

The year was quite free from damaging wind and hail storms, but records were broken by the heavy rains that fell in June, July, and August. Mention of damaging storms may be found in the issues of CLIMATOLOGICAL DATA for those months.—H. A. F.

## CLIMATOLOGICAL DATA, 1923.

Month.	Temperature.			Precipitation.			Number of days.			
	Mean.	Highest.	Lowest.	Average.	Greatest 24-hour rain.	Average snow-fall.	Rainy.	Clear.	Partly cloudy.	Cloudy.
January.....	38.7	74	7	3.57	1.80	2.9	10	10	8	13
February.....	35.4	72	-1	3.02	2.00	7	9	10	10	12
March.....	46.7	85	5	5.11	4.50		10	14	5	10
April.....	54.1	87	3	3.57	2.90		8	17	5	8
May.....	62.5	94	25	1.95	2.00		8	13	10	8
June.....	73.8	103	34	3.10	5.72	0.0	7	18	7	5
July.....	74.3	100	44	5.09	7.25	0.0	11	13	10	8
August.....	73.7	99	38	4.63	7.85	0.0	11	14	9	8
September.....	68.9	93	35	3.92	6.80	0.0	8	14	9	7
October.....	55.6	86	17	1.50	2.90	0.5	4	19	6	6
November.....	45.0	78	12	2.63	1.60	T.	8	13	6	11
December.....	45.8	76	5	2.75	2.60	1.3	9	13	7	11

## 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	83
1896.....	56.4	105	-10	42.89	12.3	93	163	106	97
1897.....	56.0	103	-15	40.81	11.8	92	171	101	99
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	95	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	41.87	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
1915.....	55.8	101	-5	39.12	13.5	97	160	116	89
1916.....	55.5	102	-11	39.36	18.6	103	165	106	95
1917.....	55.3	103	-27	40.82	23.7	114	158	107	100
1918.....	55.3	108	-22	44.43	24.7	105	159	97	109
1919.....	56.8	103	-16	41.56	7.4	102	161	98	106
1920.....	54.8	99	-9	46.80	7.1	105	162	89	115
1921.....	58.4	104	-12	34.94	13.8	97	161	102	102
1922.....	57.1	100	-13	44.72	24.8	110	145	107	113
1923.....	55.2	103	-1	40.84	10.3	104	168	96	101

## Climatological Data for the Year 1923.

Stations.	Counties.	Elevation, feet.	Temperature, degrees Fahrenheit.					Precipitation, in inches.						Number of rainy days.	Sky.			Prevailing direction of wind.		
			Length of record, years.	Annual mean.	Highest.	Date.	Lowest.	Date.	Length of record, years.	Total for the year.	Greatest monthly.	Month.	Least monthly.		Month.	Total snowfall.	Number of clear days.		Number of partly cloudy days.	Number of cloudy days.
Tidewater Virginia.																				
Ashland	Hanover	221	30	59.4	99	June 25	21	Feb. 19	21	36.35	6.55	Mar.	1.13	May	2.5	133	128	114	128	sw.
Cape Henry	Princess Anne	20	49	55.8	99	July 21	13	Feb. 17	4	42.23	5.61	Mar.	0.76	May	14.0	126	104	113	148	nw.
Dahlgren	King George	21	4	60.3	97	July 21	18	Feb. 16	15		7.30	Sept.	1.93	June	0.0	208	90	67	sw.	
Diamond Springs ††.	Princess Anne	25	15	59.6	100	June 26	15	Feb. 16	5	39.20	6.83	Mar.	1.23	June	1.5					ne.
Franklin	Southampton	21	5																	de.
Hopewell	Prince George	40	7	60.2	99	June 23*	12	Feb. 17	7	41.36	6.44	Mar.	0.77	June	7.0	108	75	175	115	sw.
Langley Field ††.	Elizabeth City	5	4	59.7	98	July 2	14	Feb. 16	4	32.69	5.99	July	1.21	Dec.	0.1	99				sw.
Newport News	Warwick	13	20	58.3	98	July 21	13	Feb. 16	20	39.98	7.80	Mar.	1.69	Dec.	7.0	120	173	92	100	ne.
Norfolk	Norfolk	91	53	60.3	97	July 21	19	Feb. 16	53	32.21	5.12	Mar.	1.43	June	2.0	105	127	121	117	s.
Onley	Accomac	40	5	56.6	95	June 28*	12	Feb. 16	5	38.27	7.55	Mar.	0.91	June	0.0	66				w.
Richmond	Henrico	144	44	58.0	97	July 21	15	Feb. 17	44	48.96	10.87	July	1.16	May	6.5	117	148	115	102	ne.
Runnymede (near) ††.	Surry	25	34	58.8	98	July 21	12	Feb. 16*	34	47.30	8.61	July	0.69	Dec.	6.0	79				s.
Warsaw (near)	Richmond	180	31	55.7	95	June 23	8	Feb. 17*	31		7.64	July	1.68	May	9.0					s.
Williamsburg	James City	70	30	58.8	97	June 23	13	Feb. 16*	30	55.10	10.84	Aug.	1.24	May	7.0	107	171	86	108	se.
Means and extremes				58.5	100	June 26	8	Feb. 17*		41.24	10.87	July	0.69	Dec.	5.7	106	142	113	110	sw.
Middle Virginia.																				
Arcola	Loudoun	300	7	54.8	99	June 20*	10	Feb. 8*	7	36.25	6.92	Sept.	0.78	Feb.	15.2	107	194	99	72	sw.
Callville	Brunswick	350	29	57.2	99	July 11	8	Feb. 17	29	46.01	7.05	Sept.	0.84	May	5.0	71	230	75	60	w.
Charlottesville (near)	Albemarle	854	32	57.1	97	July 11	11	Feb. 16	32	38.84	7.18	Aug.	1.29	Oct.	10.2	101	134	100	131	nw.
Clarksville	Mecklenburg	286	26	57.1	94	July 21	11	Feb. 7*	26	44.47	7.99	Aug.	0.94	May	8.5	78				w.
Chattham	Pittsylvania		1						1											
Columbia	Fluvanna	246	25	57.4	99	June 22*	9	Feb. 19	25	39.13	6.37	Mar.	1.18	Oct.	13.5	73	184	79	102	w.
Culpeper	Culpeper	450	16	55.1	97	July 21	7	Feb. 24	16	37.81	5.80	Aug.	1.06	Oct.	7.0	90				s.
Danville	Pittsylvania	413	23	60.3	103	June 22	16	Feb. 19	23	43.25	6.75	Sept.	1.24	May	6.5	117	165	122	28	s.
Fredericksburg (near)	Spottsylvania	100	33	56.6	97	July 21	7	Feb. 16	33	45.84	6.93	July	1.75	May	8.8	97	187	102	76	s.
Guinea Mills	Buckingham		2						2	37.84	7.20	July	1.07	May	16.5	112	203	78	84	sw.
Hawfield ††	Orange	400	6						6	43.49	7.42	Aug.	1.12	Oct.						
Leeds Manor ††	Fauquier	500	9	54.7	96	June 21	5	Feb. 18	9		7.71	July	1.25	May	21.5		247	69	49	sw.
Lincoln ††	Loudoun	501	22	55.5	101	June 21	4	Feb. 18	22	35.26	4.41	Dec.	1.65	May	17.5	91	184	75	106	w.
Lynchburg	Campbell	631	52	57.7	96	July 11	14	Feb. 18	52	32.03	5.91	Mar.	1.50	Oct.	8.4	110	145	113	107	w.
Macon	Powhatan																			
Manassas	Prince William	317	12						12	35.91	4.34	Sept.	1.55	Oct.	7.5	112	204	53	108	
Mayhurst ††	Orange	500	8	56.7	97	July 21	10	Feb. 24	8	46.10	11.14	July	0.75	Oct.	T.	86	205	53	107	ne.
Mineral (near)	Louisa	300	8	54.4	95	July 11	4	Feb. 19	8	40.12	5.94	Mar.	1.10	Oct.	3.0	98				s.
Mount Weather ††	Loudoun	1,726	19	51.1	91	June 20	2	Feb. 18	19	40.17	7.07	July	1.43	Mar.	15.0	96	72	109	184	w.
New Canton	Buckingham	300	29	56.7	95	July 21	8	Feb. 17*	29	42.39	7.19	July	0.94	Oct.	14.5	104	158	135	72	sw.
Quantico	Prince William	17	23	57.3	97	July 21*	10	Feb. 24	23	34.70	5.37	Mar.	1.20	May	7.7	98				s.
Randolph	Charlotte	334	18						18	40.85	6.03	Mar.	0.62	May		97				s.
Rocky Mount	Franklin	1,150	28		90	July 11	12	Feb. 6*	28	41.55	7.37	Mar.	1.60	Oct.	7.5	97				nw.
Stuart	Patrick	1	57.5	94	July 11	11	Feb. 24	1	49.36	9.42	Mar.	1.67	Oct.	6.8	111	189	100	76	w.	
Washington	Dist. Columbia	112	53	56.1	98	June 21	11	Feb. 18	53	35.60	4.92	July	1.36	Oct.	15.7	117	137	106	122	nw.
Means and extremes				56.3	103	June 22	2	Feb. 18		40.33	11.14	July	0.62	May	10.3	98	177	92	96	w.
The Great Valley.																				
Blacksburg	Montgomery	2,170	32	52.5	89	June 21*	5	Feb. 18	32	42.12	6.43	June	1.08	Sept.	12.9	116	127	68	170	w.
Buchanan	Botetourt	820	22	57.0	98	June 11	12	Feb. 18	22	40.32	5.93	Aug.	1.65	Oct.		96	164	64	137	w.
Burkes Garden	Tazewell	3,250	28	48.8	93	June 21*	-1	Feb. 18*	28	52.25	7.17	June	0.30	Oct.	21.0	90	142	58	165	w.
Catawba Sanatorium	Roanoke	2,100	13	54.8	92	June 22	7	Feb. 18	13	42.03	9.76	Aug.	2.29	Oct.	12.5	101	223	77	65	.....
Dale Enterprise	Rockingham	1,350	44	54.2	98	July 11	4	Feb. 19	44	31.02	7.19	Aug.	0.77	Oct.	11.5	108	165	115	85	s.
Dante	Russell	2,000	6	54.5	89	June 17*	4	Feb. 19	6	51.98	8.45	June	1.20	Oct.	22.1	135	187	108	70	.....
Hot Springs	Bath	2,195	31	51.7	88	July 11	3	Feb. 18	31	42.26	8.48	Aug.	1.29	Oct.		146	161	137	17	.....
Ivanhoe	Wythe	2,028	17						17	38.80	5.21	June	1.64	Oct.	2.8	114				.....
Lexington	Rockbridge	1,060	46	55.2	94	July 20	10	Feb. 16	46	32.23	5.13	Mar.	1.85	Oct.	11.9	97	213	49	103	.....
Marion	Smyth	2,145	2	54.3	90	June 19	7	Feb. 18	2	49.50	11.17	June	1.51	Oct.	21.5	144	152	102	111	w.
Mendota	Washington	1,350	18						18	51.88	7.33	Jan.	1.45	Oct.		142				.....
Narrows	Giles	1,519	9						9	37.63	5.17	Feb.	0.78	Oct.	7.5	71				.....
Pulaski	Pulaski	1,919	4	54.0	89	Aug. 7	8	Feb. 18	4	36.68	4.29	June	1.56	Oct.	10.0	116				.....
Radford	Montgomery	1,773	23						23	36.51	6.77	July	1.64	Apr.	10.0	87				w.
Roanoke	Roanoke	907	19	57.4	97	July 11	12	Feb. 18	19	41.53	7.10	Aug.	1.54	Oct.	16.0	113	191	121	53	nw.
Spears Ferry	Scott	1,221	27						27	38.09	6.30	Jan.	0.70	Oct.	11.0	95				w.
Staunton	Augusta	1,880	33	55.7	95	June 19*	7	Feb. 16	33	30.19	4.41	July	1.04	May	12.2	101				sw.
Winchester	Frederick	717	19		96	June 23*	7	Feb. 18	19	30.89	4.88	July	1.03	May		98				nw.
Wise	Wise	2,474	2																	
Woodstock	Shenandoah	927	32		96	June 21	9	Feb. 18	32	27.25	3.43	July	0.54	May	15.8	86	180	69	116	w.
Wytheville	Wythe	2,304	29	52.7	88	July 15	7	Feb. 18	29	40.82	8.07	June	1.37	Oct.	16.9	140	156	107	102	w.
Means and extremes				54.1	98	July 11	-1	Feb. 18		39.70	11.17	June	0.30	Oct.	18.4	188	171	90	104	w.
State means and extremes				56.2	103	June 22	-1	Feb. 18		40.84	11.17	June	0.30	Oct.	10.3	104	168	96	101	w.

Estimated and incomplete data not considered in means.

All other records are used in determining section and division means, but the mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation.

Reference letters, a, b, c, appearing in the tables indicate number of days missing; for example, b represents two days, etc.

\* Also on other dates.

†† Post-office addresses of these stations are as follows: Diamond Springs, Norfolk; Runnymede, Elberon; Hawfield, Rapidan; Leeds Manor, Markham; Lincoln, Purcellville; Mayhurst, Orange; Mount Weather, Bluemont; Langley Field, Hampton.

T. Precipitation is less than 0.01 inch rain or snow.

Monthly and Annual Precipitation for the Year 1923, with Departures from the Normal.

Stations.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Annual.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
<i>Tidewater Virginia.</i>																										
Ashland	4.75	+1.99	3.26	+0.35	6.05	+2.55	3.31	-0.29	1.40	-2.68	3.23	-0.94	.....	.....	3.13	-2.97	4.15	+0.07	1.81	-2.07	2.03	-0.71	2.05	-1.38	36.35	-13.54
Cape Henry	2.51	-0.84	2.08	-1.69	6.55	+2.23	5.85	+1.98	1.13	-2.90	1.42	-8.00	3.64	-2.21	3.13	-2.97	4.15	+0.07	1.81	-2.07	2.03	-0.71	2.05	-1.38	36.35	-13.54
Dahlgren	4.92	.....	3.14	.....	5.61	.....	5.27	.....	0.76	.....	2.64	.....	5.27	.....	4.87	.....	3.53	.....	1.14	.....	2.10	.....	2.98	.....	42.23	.....
Diamond Springs	.....	.....	.....	.....	7.05	+3.58	6.85	+8.74	2.45	-1.24	1.93	-3.20	4.60	-1.12	3.42	-0.44	7.30	+4.22	3.10	+0.58	3.56	+1.48	1.97	-1.60	.....	.....
Franklin	3.24	.....	2.56	.....	6.83	.....	4.99	.....	8.28	.....	1.23	.....	3.64	.....	4.00	.....	4.00	.....	1.32	.....	1.71	.....	1.71	.....	39.20	.....
Hopewell	3.61	.....	3.06	.....	6.44	.....	3.64	.....	1.59	.....	0.77	.....	5.89	.....	5.98	.....	5.72	.....	1.17	.....	2.03	.....	1.46	.....	41.36	.....
Langley Field	1.57	-1.09	1.52	-2.24	4.01	+0.07	3.42	+0.10	2.27	-1.29	2.19	-1.74	5.99	+1.06	3.15	-1.84	3.33	+0.40	1.45	-1.64	2.58	-0.14	1.21	-1.81	32.69	-10.16
Newport News	2.62	-0.69	2.98	-0.52	7.80	+3.92	4.83	+1.64	2.37	-1.09	2.36	-2.67	4.67	-1.64	3.86	-1.80	1.78	-1.05	1.75	-0.84	3.34	+1.17	1.69	-2.07	39.98	-5.64
Norfolk	1.74	-1.63	2.01	-1.74	5.12	+0.84	3.59	-0.20	1.90	-2.17	1.48	-2.90	4.14	-1.66	4.47	-1.50	3.23	-0.83	1.70	-2.21	1.95	-0.77	0.93	-2.56	32.21	-17.33
Onley	2.35	.....	3.86	.....	7.55	.....	3.40	.....	2.05	.....	0.91	.....	4.05	.....	2.38	.....	1.65	.....	3.55	.....	4.26	.....	2.73	.....	38.27	.....
Richmond	4.61	+1.59	3.09	-0.01	5.88	+2.16	3.96	+0.51	1.16	-2.69	2.09	-1.43	10.87	+6.45	6.41	+2.00	4.25	+0.82	2.16	-1.16	2.20	-0.19	2.28	-0.72	48.96	+7.33
Runnymede (near)	3.83	-0.63	3.44	-0.62	6.83	+2.28	5.06	+1.19	2.17	-1.34	0.95	-4.02	8.61	+2.54	6.31	+1.23	4.11	+0.67	1.95	-1.70	2.81	+0.11	0.69	-2.65	47.30	-1.58
Warsaw (near)	4.90	+1.80	3.96	+0.54	5.28	+1.68	4.85	+1.62	1.68	-1.82	1.25	-2.06	7.64	+8.15	5.91	+1.71	3.95	+1.38	.....	.....	2.73	+0.20	2.45	-0.27	.....	.....
West Point	3.62	-0.46	.....	.....	6.24	+2.22	4.65	+0.98	1.24	-2.27	2.07	-2.65	9.45	+8.31	10.84	+4.42	7.10	+3.65	2.14	-0.96	2.89	+0.22	2.35	-0.19	55.10	+8.81
Williamsburg	3.28	-0.08	3.85	+0.13	6.24	+2.22	4.65	+0.98	1.24	-2.27	2.07	-2.65	9.45	+8.31	10.84	+4.42	7.10	+3.65	2.14	-0.96	2.89	+0.22	2.35	-0.19	55.10	+8.81
Mount Moriah Farm	4.71	.....	2.50	.....	4.44	.....	4.30	.....	1.09	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Means	3.48	+0.22	2.88	-0.63	6.11	+2.15	4.53	+1.12	1.81	-1.95	1.81	-2.46	6.04	+1.09	4.97	+0.09	4.16	+1.04	1.94	-1.25	2.64	+0.15	1.88	-1.47	41.24	-5.59
<i>Middle Virginia.</i>																										
Arcola	2.47	.....	0.78	.....	2.16	.....	1.97	.....	2.08	.....	3.69	.....	5.18	.....	4.35	.....	6.92	.....	1.55	.....	2.26	.....	2.84	.....	36.25	.....
Callaville	4.55	+1.25	3.49	-0.11	6.72	+2.30	4.12	+0.67	0.48	-3.00	1.38	-2.87	6.62	+0.66	4.72	-0.10	7.05	+3.71	1.85	-0.91	2.81	+0.67	1.86	-1.50	46.01	+0.67
Charlottesville	3.74	+0.43	1.89	-1.11	4.88	+1.37	3.73	+0.30	1.45	-2.96	2.19	-3.47	4.40	-0.45	7.18	+2.17	2.86	-1.04	1.29	-2.14	2.93	+0.98	2.30	-0.97	38.84	-7.49
Chatham	.....	.....	.....	.....	.....	.....	.....	.....	1.13	.....	1.74	.....	6.22	.....	2.26	.....	5.75	.....	0.80	.....	1.70	.....	3.45	.....	.....	.....
Clarksville	4.00	+0.72	3.46	+0.16	5.61	+1.85	5.18	+1.86	0.94	-3.09	2.21	-2.27	4.86	+0.42	7.99	+3.18	4.66	+1.79	1.07	-1.60	2.03	-0.53	2.51	-1.02	44.47	+1.47
Columbia	3.43	-0.01	2.77	-0.27	6.37	+2.94	3.32	-0.29	1.21	-2.45	2.02	-2.63	5.80	+1.45	6.29	+1.85	2.01	-1.15	1.18	-1.93	2.93	+0.65	1.80	-1.60	39.13	-3.62
Culpeper	3.00	-0.22	1.80	-0.67	3.93	+1.23	3.41	+0.07	2.13	-1.62	2.60	-2.80	4.48	+0.53	5.80	+1.84	4.49	+1.38	1.05	-1.59	2.96	+0.46	2.16	-1.06	37.81	+2.45
Danville	3.60	+0.48	4.00	+0.79	5.38	+1.95	3.67	+0.45	1.24	-2.68	1.54	-2.86	6.49	+2.33	4.51	-0.42	6.75	+3.80	1.40	-1.51	2.14	-0.10	2.53	-0.84	43.25	+1.39
Fredericksburg	4.49	+1.26	2.41	-0.58	5.40	+1.84	4.90	+1.33	1.75	-2.18	2.49	-2.29	6.93	+2.63	5.73	+0.89	4.74	+1.59	1.83	-1.25	2.73	+0.42	2.44	-0.89	45.84	+2.83
Guinea Mills	3.64	.....	3.75	.....	6.05	.....	3.66	.....	1.07	.....	1.42	.....	7.20	.....	2.60	.....	1.77	.....	1.10	.....	2.91	.....	2.67	.....	37.94	.....
Hawfield	3.20	-0.30	2.20	-0.96	5.01	+1.49	3.61	+0.12	2.03	-2.55	3.13	-1.48	4.11	-0.77	7.42	+3.72	5.81	+2.25	1.12	-2.09	3.12	+0.63	2.73	-0.21	43.49	-0.15
Leeds Manor	3.89	.....	1.67	.....	2.85	.....	3.08	.....	1.25	.....	3.87	.....	7.71	.....	4.16	.....	4.34	.....	1.97	.....	3.05	.....	3.48	.....	.....	.....
Lincoln	3.79	+0.76	2.38	-0.05	3.43	+0.43	2.14	-1.31	1.85	-1.54	1.85	-3.61	3.87	-0.19	3.59	-0.93	3.92	+1.16	2.09	-0.84	2.63	+0.55	4.42	+1.56	35.26	+4.01
Lynchburg	2.25	-1.47	2.88	-1.11	5.91	+2.10	2.71	-0.46	1.66	-2.33	2.12	-1.77	2.52	-1.51	3.44	-0.81	2.84	-0.79	1.50	-1.88	1.98	-0.81	2.72	-0.53	32.03	-11.39
Macon	.....	.....	2.27	.....	5.96	.....	4.09	.....	0.80	.....	1.65	.....	4.01	.....	3.02	.....	4.24	.....	1.47	.....	2.18	.....	2.57	.....	.....	.....
Manassas	3.11	.....	0.74	.....	4.14	.....	3.75	.....	2.19	.....	2.78	.....	3.01	.....	4.18	.....	4.34	.....	1.55	.....	2.52	.....	2.59	.....	35.91	.....
Mayhurst	2.65	-0.61	1.59	-1.27	5.35	+1.68	3.69	-0.44	2.14	-2.28	2.58	-2.95	11.14	+6.34	6.55	+1.57	4.34	+1.15	0.75	-2.63	2.52	+0.30	2.69	-0.89	45.10	-0.89
Mineral (near)	4.18	-0.78	2.94	-0.08	5.94	+1.62	4.65	+1.16	1.40	-2.38	1.76	-2.95	4.30	-1.21	4.59	+0.25	4.44	-2.39	1.10	-0.73	1.91	+1.28	2.23	-0.79	40.12	-0.49
Mount Weather	2.19	-0.91	2.14	+0.04	1.43	-1.17	2.94	-0.51	1.64	-1.81	3.74	-1.72	7.07	+3.35	6.12	+0.94	3.94	+0.86	0.62	-0.98	3.25	+1.17	3.09	-0.19	40.17	-0.65
New Canton	3.54	+0.08	3.19	+0.11	6.73	+2.74	3.67	+0.43	1.50	-1.99	1.60	-2.40	7.19	+3.38	4.61	-0.24	3.31	-0.07	0.94	-2.17	3.46	+1.16	2.65	-0.45	42.39	+0.58
Quantico	3.05	-0.07	2.17	-0.49	5.37	+2.14	2.55	-0.63	1.20	-2.25	3.29	-1.24	3.88	-0.23	4.55	-0.12	2.96	-0.14	1.22	-1.78	2.20	+0.29	2.26	-0.74	34.70	-5.26
Randolph	3.40	+0.08	4.49	+1.48	6.03	+2.45	4.38	+1.48	0.62	-3.21	1.57	-2.55	4.79	+0.11	4.02	+0.09	5.19	+2.60	1.15	-1.68	2.48	+0.26	2.78	-0.56	40.85	+0.55
Rocky Mount	3.48	+0.33	3.29	-0.16	7.37	+3.35	2.85	-0.61	1.89	-2.03	3.41	-1.30	3.98	-0.94	2.11	-2.33	5.48	+2.16	1.60	-2.12	3.09	+0.52	3.00	-0.63	41.55	-3.76
Stuart	2.46	.....	3.63	.....	9.42	.....	3.91	.....	3.81	.....	2.64	.....	4.74	.....	6.27	.....	3.25	.....	1.67	.....	3.77	.....	4.29	.....	49.36	.....
Washington, D. C.	4.24	+0.87	2.19	-1.23	4.47	+0.62	3.94	+0.69	1.50	-2.33	2.80	-1.88	4.92	+0.27	2.19	-2.21	3.15	-0.44	1.36	-1.73	2.04	-0.67	2.80	-0.36	35.60	-7.90
Means	3.45	+0.10	2.63	-0.31	5.25	+1.72	3.58	+0.28	1.54	-2.37	2.40	-2.36	5.40	+0.89	4.69	+0.52	4.34	+1.17	1.41	-1.64	2.68	+0.37	2.75	-0.62	40.33	-3.16
<i>The Great Valley.</i>																										
Blacksburg	3.39	+0.17	4.17	+1.00	4.34	+0.62	2.28	-0.90	2.41	-1.42	6.43	+1.82	4.98	-0.32	3.04	-0.95	1.98	-1.16	2.07	-0.91	3.18	+0.93	3.85	+0.84	42.12	-0.23
Buchanan	4.00	+0.46	2.16	-0.56	4.58	+1.55	2.35	-0.60	1.91	-2.04	2.56	-1.72	4.19	-0.78	5.93	+1.86	5.23	+1.79	1.65	-1.99	3.54	+1.54	2.22	-1.09	40.32	-1.26
Burkes Garden	5.10	+1.43	5.84	+2.34	4.44	-0.66	3.18	-0.69	4.46	+0.12	7.17	+2.01	3.48	-1.23	4.66	+0.15	5.46	+1.94	0.80	-2.87	5.00	+0.19	5.16	+1.57	52.25	+4.80
Catawba Sanatorium	2.70	-0.61	2.36	-0.51	3.43	-0.60	3.07																			

**Monthly and Annual Mean Temperatures for the Year 1923, with Departures from the Normal.**

Stations.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Annual.	
	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.
Tidewater Virginia.																										
Ashland.....	38.4 <sup>a</sup>	+1.9	35.2	-1.5	47.2	+0.4	55.0	-0.8	63.2	-2.4	75.4	+3.1	76.2	-1.3	77.4	+0.5	72.8	+1.0	60.5	-1.6	51.0	-1.1	50.2	+6.5	59.4	+0.8
Cape Henry.....	43.6	+3.4	38.6	-2.6	48.4	+1.8	55.2	+0.6	62.4	-1.8	76.4	+3.5	76.2	.....	77.4	.....	69.2	.....	56.0	.....	44.6	.....	45.0	.....	58.8	.....
Dahlgren.....	37.8	.....	34.0	.....	45.0	.....	52.6	.....	61.3	.....	73.8	.....	75.2	.....	74.5	.....	69.2	.....	56.0	.....	44.6	.....	45.0	.....	58.8	.....
Diamond Springs.....	44.0	+2.5	40.6	-1.5	51.8	+3.1	57.8	+0.3	64.2	-1.8	76.2	+3.6	76.2	-0.4	77.2	+0.3	72.0	-0.3	59.2	-3.1	51.4	+0.5	50.6	+8.6	60.3	+0.9
Franklin.....	43.2	.....	39.2	.....	51.5 <sup>a</sup>	.....	58.2	.....	65.3	.....	78.0	.....	77.3	.....	76.8	.....	70.0 <sup>a</sup>	.....	57.0	.....	48.3	.....	49.4	.....	59.6	.....
Hopewell.....	42.6	.....	39.0	.....	51.6	.....	57.8	.....	66.0	.....	78.2	.....	78.2	.....	78.1 <sup>a</sup>	.....	74.0 <sup>a</sup>	.....	58.9 <sup>b</sup>	.....	48.0	.....	49.5	.....	60.2	.....
Langley Field.....	42.3	+1.8	38.6	-1.6	47.5	-0.4	55.4	-0.5	63.4	+2.4	74.2	+2.8	76.6	-2.4	77.2	-0.5	72.6	+0.6	60.2	-0.9	50.0	0.0	50.0	+7.9	59.7	+0.8
Newport News.....	42.2	+1.1	37.4	-2.4	48.6	+0.7	55.0	-1.9	63.0	-4.5	75.6	-2.2	75.5	-2.5	75.7	-1.5	71.2	-0.6	58.6	-3.5	48.3	-1.9	48.4	+6.9	58.8	-0.7
Norfolk.....	43.9	+3.3	39.2	-3.5	49.6	+1.4	57.2	+0.4	65.6	-0.6	77.2	+2.8	77.0	-1.7	77.4	.....	73.6	+2.0	61.0	-1.6	50.6	-0.8	51.1	+8.0	60.8	+0.8
Onley.....	39.2	.....	35.0	.....	47.1	.....	53.2	.....	61.3 <sup>a</sup>	.....	75.2	.....	74.4	.....	74.6	.....	69.4	.....	56.4	.....	47.2	.....	46.0	.....	56.6	.....
Richmond.....	40.1	+2.1	37.0	-2.9	48.0	+1.1	55.8	-1.4	64.4	-2.9	76.0	+0.9	76.4	-2.8	75.2	-2.3	70.8	0.0	57.7	-2.1	46.8	-2.0	47.6	+6.6	58.0	-0.5
Runnymede (near).....	43.5	+4.0	38.6	-0.4	51.2	+3.2	54.0	-2.2	63.6	-2.6	75.8	+2.7	75.2	-2.0	75.8	0.0	71.3	+1.8	57.4	-1.5	48.7	-1.0	50.2 <sup>a</sup>	+10.0	58.8	+1.1
Warsaw (near).....	39.2	+2.5	34.0	-8.0	46.4	+0.7	53.2	-1.5	62.4	-8.1	74.3	+1.8	73.4	-3.0	72.5	-3.0	67.0	-2.3	54.8 <sup>b</sup>	-2.5	46.4	-0.6	44.9	+7.3	55.7	-0.7
Williamsburg.....	42.6	+2.4	38.5	-1.9	51.1	+2.7	56.6	-0.2	64.2	-0.9	74.3	+4.1	75.7	-1.1	75.9	+3.3	71.2	+1.7	57.6	-4.3	47.8	-0.5	48.5	+8.0	56.8	+1.0
Means.....	41.7	+2.5	37.5	-2.1	48.9	+1.5	55.5	-0.7	64.0	-1.8	76.2	+2.8	76.0	-1.9	76.0	-0.7	71.2	+0.4	58.1	-2.3	48.5	-0.7	48.6	+7.8	58.5	+0.4
Middle Virginia.																										
Arcola.....	35.4	.....	32.4	.....	43.6	.....	52.6	.....	62.6	.....	74.6	.....	74.8	.....	73.1	.....	68.2	.....	54.2	.....	43.6	.....	43.0	.....	54.8	.....
Callsville (near).....	40.3	+1.3	37.5	-0.8	48.0	+0.4	54.4	-0.5	63.4	-2.5	75.4	+2.5	75.0	-0.9	74.5	-0.7	69.2	+0.2	56.2	-3.2	44.8	-3.8	44.1	+4.1	57.2	-0.5
Charlottesville (near).....	38.4	+2.3	34.4	-2.8	47.0	+0.9	55.5	-0.5	63.4	-2.5	75.6	+3.7	75.8	+0.7	74.0	-1.7	69.8	+1.3	57.4	-1.1	48.7	-1.1	48.0	+8.4	57.1	+0.7
Chatham.....	.....	.....	.....	.....	.....	.....	.....	.....	67.6	.....	76.6	.....	76.6	.....	76.8	.....	70.4	.....	57.0	.....	45.8	.....	48.1	.....	57.1	.....
Clarksville.....	39.2	.....	37.2	.....	47.4	.....	56.1	.....	64.6	.....	73.4	.....	76.2	.....	75.4	.....	70.2	.....	55.8	.....	44.4	.....	44.1	.....	57.1	.....
Columbia.....	39.2	+2.5	35.8	-0.7	48.7	+2.2	55.2	+0.3	64.2	-1.6	75.8	+4.5	77.0	+1.7	75.4	+1.0	70.8	+3.0	56.0	-1.8	45.2	-0.9	45.3	+8.4	57.4	+1.6
Culpeper.....	38.0	+2.0	32.2 <sup>a</sup>	-2.7	46.9 <sup>a</sup>	+2.8	54.4	-0.1	61.6	-3.3	73.9	-4.7	74.2	-0.8	72.6	-0.9	67.9	+1.3	54.4	-2.0	43.4	-0.6	43.4	+8.7	55.1	+0.6
Danville.....	42.5	+4.1	40.1	-2.1	49.7	+2.4	58.2	-1.2	66.6	-1.6	79.0	+2.9	79.4	+0.4	78.6	+0.7	73.4	+0.9	59.4	-2.8	48.2	-1.7	48.7	+7.9	60.3	+0.4
Fredericksburg (near).....	38.4	+2.1	34.8	-0.9	48.5	+2.3	55.0	0.0	62.6	-2.6	74.0	+1.9	74.4	-2.1	73.6	-1.5	69.4	+0.6	56.4	-1.6	45.2	-1.5	46.3	+9.8	56.6	+0.6
Leeds Manor.....	34.6	.....	31.2	.....	43.0	.....	52.0	.....	61.4	.....	73.4	.....	72.6	.....	71.8	.....	67.0	.....	58.2 <sup>a</sup>	.....	44.6	.....	46.8 <sup>a</sup>	.....	54.7	.....
Lincoln.....	35.0	+3.2	30.8	-1.0	44.7	+1.5	53.6	+0.4	62.8	-1.2	75.6	+5.0	76.7	+0.8	73.8	+0.1	68.8	+1.2	56.2	-0.6	44.6	+0.3	43.8	+10.9	55.5	+1.7
Lynchburg.....	39.8	+2.3	37.8	-2.5	47.9	+0.6	55.8	-1.5	63.8	-3.5	75.6	+1.0	76.5	-1.0	74.8	-0.8	70.0	+1.0	56.6	-1.9	46.1	-1.1	47.4	+7.9	57.7	+0.1
Mayhurst.....	38.0	-2.1	35.2	-0.1	47.2	+1.4	55.1 <sup>a</sup>	-0.1	64.0	-1.4	75.2	+3.5	75.2	-0.9	74.4	-0.5	68.4	-0.2	56.5	-2.5	45.3	+0.1	46.0	+9.7	56.7	+0.9
Mineral (near).....	36.2	+3.1	33.0 <sup>a</sup>	-4.1	45.2 <sup>a</sup>	-2.4	53.2	-1.5	60.9	-2.0	72.2	+2.1	73.2	-1.5	72.2 <sup>a</sup>	-1.0	67.8	+0.4	53.1	-2.6	42.4	-2.8	43.8	+8.1	54.4	-0.4
Mount Weather.....	30.9	+0.6	28.2	-0.3	39.8	+1.1	49.4	+0.5	60.0	+0.8	69.8	+3.6	70.9	+0.2	67.4	-2.1	64.4	+0.5	51.0	-2.9	40.8	-0.8	40.9	+9.6	61.1	+0.9
New Canton.....	39.8	+3.1	36.2	-0.4	48.8	+2.1	55.0	-0.9	61.8	-3.6	74.5	+2.4	74.8	-1.5	73.6	-1.3	68.6	-1.1	55.5	-2.0	45.8	-0.6	45.8	+8.7	56.7	+0.6
Quantico.....	37.3	+3.4	33.8	+0.7	47.2	+2.2	55.2	-1.1	63.8	.....	71.6	+5.7	74.4	-0.7	73.8	+1.3	68.6	+3.5	57.8	+0.6	44.4	+0.5	45.6	+10.2	57.3	+2.4
Rocky Mount.....	39.5	+1.7	37.8	+0.1	47.9	+0.7	55.6	.....	63.3	.....	73.9	-0.4	72.0	-3.3	71.2	-3.2	65.7	-3.4	53.4	-4.3	43.6	-4.2	44.2	+5.6	.....	.....
Stuart.....	40.8	.....	38.5	.....	48.6	.....	55.6	.....	62.3	.....	72.8	.....	74.5	.....	74.6	.....	69.7	.....	57.2	.....	47.0	.....	48.0	.....	57.5	.....
Washington, D. C.....	36.8	+3.4	32.6	-2.7	45.4	+2.8	53.6	+0.3	63.4	.....	75.6	+3.4	75.7	-1.0	74.4	-0.6	69.6	+1.5	56.1	-1.3	45.1	-0.1	45.0	+8.4	50.1	+1.1
Means.....	37.8	+2.5	34.7	-1.3	46.7	+1.1	54.4	-0.3	63.2	-1.8	74.6	+2.5	75.2	-0.7	73.9	-0.7	69.1	+0.8	55.9	-2.0	44.9	-1.2	45.3	+8.4	56.3	+0.7
The Great Valley.																										
Blacksburg.....	36.1	+3.2	33.2	+0.5	48.2	+0.5	50.4	0.0	58.4	-1.9	67.4	-0.2	69.6	-1.1	69.8	0.0	65.2	+1.2	51.6	-1.7	41.3	-0.9	43.4	+9.4	52.5	+0.8
Buchanan.....	39.6	.....	38.4	.....	48.0	.....	55.9	.....	65.1	.....	74.2	.....	75.9	.....	74.4	.....	69.5	.....	55.9	.....	43.7	.....	42.8	.....	57.0	.....
Burkes Garden.....	35.2	+0.6	31.4	+0.7	39.9	-0.8	46.9	-0.2	55.2	-2.2	63.6	-0.1	65.0	+1.0	65.5	-0.6	60.4	+0.5	46.2	-3.6	38.4	-1.6	41.2	+9.7	48.8	+0.3
Catawba Sanatorium.....	35.4	+1.2	35.5	-2.5	46.4 <sup>a</sup>	+0.4	56.2 <sup>a</sup>	+1.8	60.0	-3.1	69.4	-0.5	70.1	-2.3	71.8	+0.3	66.2	-0.1	55.3	-2.1	43.6	-2.7	45.2	+7.2	54.8	-0.2
Dale Enterprise.....	37.5	+2.4	33.9	+0.1	43.7	+1.2	51.2	-1.1	60.6	-2.1	72.9	+2.7	73.4	-0.2	71.0 <sup>a</sup>	-1.1	67.6	+1.4	53.6	-1.8	42.5	-1.1	44.2	+9.6	54.2	+0.9
Dante.....	38.6	.....	34.2	.....	45.6	.....	54.2	.....	61.0	.....	69.7	.....	70.6	.....	71.3	.....	67.9	.....	53.6	.....	43.0	.....	45.2	.....	54.5	.....
Hot Springs.....	34.8	+3.4	32.4	+1.5	41.5	-0.5	50.4	-0.4	58.8	-1.1	67.9	+1.3	69.4	+0.3	68.6	+0.3	63.6	+1.5	50.7	-1.8	40.3	-0.5	42.4	+9.2	51.7	+1.1
Lexington.....	37.6	+3.8	35.0	+1.5	45.2	+1.4	52.6	+0.5	61.4	-1.6	72.2	+1.6	72.6	-1.8	74.4	+0.8	68.8	+2.5	54.9	-0.5	43.1	-2.6	44.7	+9.5	55.2	+1.1
Marion.....	38.1	+4.2	34.3	-1.5	45.0	+2.1	51.8	-0.6	60.6	-1.7	69.5	-0.5	71.0	-1.5	71.8	+0.5	68.0	+2.7	53.4	+0.7	42.8	-1.1	45.8	+9.8	54.3	+1.0
Pulaski.....	38.1	.....	35.1	.....	46.0	.....	51.9	.....	59.9	.....	68.4	.....	70.2	.....	70.4	.....	66.4	.....	53.0	.....	42.8	.....	45.0	.....	54.0	.....
Roanoke.....	40.2	+3.3	39.2	+2.7	48.9	+1.8	55.0	-0.9	63.6	-1.8	74.8	+4.0	75.9	+0.7	74.5	+0.1	69.4	+2.7	55.4	-1.9	45.1	-0.8	46.5	+9.4	57.4	+1.6
Saltville.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	73.8 <sup>a</sup>	.....	.....	.....	.....	.....	71.0 <sup>a</sup>	.....	64.4 <sup>a</sup>	.....	42.2 <sup>b</sup>	.....	44.8 <sup>a</sup>	.....	.....	.....
Staunton.....	37.8	+2.4	35.4	+0.5	46.2	+1.7	53.7	+0.3	62.2	-1.4	73.2	+2.7	74.1	+0.1	72.8	-0.3	67.8	+0.6	55.0	-1.3	44.2	-0.2	46.4 <sup>a</sup>	+9.7	55.7	+1.1
Winchester.....	.....	.....	31.6 <sup>a</sup>	-2.0	45.0	+3.1	52.4	-0.5	61.6	-2.2	74.2	+2.7	74.1	-1.3	72.8	.....	67.8	+0.9	54.1	-2.1	44.0	-0.7	43.8	.....	.....	.....
Woodstock.....	36.0	+2.8	33.6	+1.2	42.6	+1.1	50.5	-1.9	58.0	-5.7	70.4	+0.7	70.9	-3.7	.....	.....	65.6	-1.5	50.9	-5.7	40.2	-4.4	41.2	.....	.....	.....
Wytheville.....	36.4	+3.4	33.1	-2.0	43.3	+1.0	51.2	-0.8	58.0	-3.4	68.4	-0.3	69.8	-2.8	70.0	-0.5	65.1	+1.5	52.2	-1.4	41.4	-1.6	43.8	+7.0	52.7	+0.1
Means.....	37.0	+2.8	34.4	-0.1	44.7	+0.9	52.3	-0.3	60.4	-2.4	70.5	+1.1	71.5	-1.0	71.5	-0.2	66.9	+1.2	53.1							

For explanation of reference marks see page 50.

### KILLING FROSTS, 1928.

Stations.	Last in spring.	First in autumn.	Stations.	Last in spring.	First in autumn.	Stations.	Last in spring.	First in autumn.	Station.	Last in spring.	First in autumn.
TIDEWATER VIRGINIA.			MIDDLE VIRGINIA.			MIDDLE VIRGINIA-CON.			THE GREAT VALLEY—Continued.		
Ashland .....	Apr. 10		Arcola .....	Apr. 10	Nov. 2	New Canton .....	Apr. 10	Nov. 2	Dante .....	Apr. 10	Nov. 1
Cape Henry .....	Apr. 2	Nov. 18	Callaville .....	Apr. 10	Nov. 1	Quantico .....	Apr. 2	Nov. 1	Hot Springs .....	Apr. 25	Oct. 21
Dahlgren .....	Apr. 2	Nov. 1	Charlottesville .....	Mar. 15	Nov. 1	Rocky Mount .....		Nov. 1	Guinea Mills .....	Apr. 2	Nov. 1
Diamond Springs .....	Apr. 2	Nov. 20	Clarksville .....	Apr. 10	Nov. 1	Stuart .....	Apr. 10	Nov. 1	Lexington .....	Apr. 10	Nov. 1
Franklin .....	Apr. 10	Nov. 10	Columbia .....	Apr. 10	Oct. 27	Washington, D. C. .....	Apr. 9	Nov. 1	Marion .....	Apr. 10	Oct. 10
Hopewell .....	Apr. 10	Nov. 1	Culpeper .....	Apr. 15	Nov. 1				Pulaski .....	Apr. 10	Nov. 1
Langleigh Field .....	Apr. 2	Nov. 10	Danville .....	Apr. 10	Nov. 2	THE GREAT VALLEY.			Roanoke .....	Apr. 10	Nov. 1
North News .....	Apr. 2	Nov. 1	Fredericksburg .....	Apr. 10	Nov. 2				Staunton .....	Apr. 15	Oct. 27
Norfolk .....	Apr. 2	Nov. 18	Bawfield .....	Apr. 10	Nov. 2				Winchester .....	Apr. 15	Nov. 2
Onley .....	Apr. 10	Nov. 9	Leeds Manor .....	Apr. 15	Nov. 2	Blacksburg .....	Apr. 10	Oct. 10	Wise .....	Apr. 15	Oct. 21
Richmond .....	Apr. 2	Nov. 1	Lincoln .....	Apr. 15	Nov. 1	Buchanan .....	Apr. 10	Nov. 1	Woodstock .....	Apr. 15	Nov. 2
Runnymede .....	Apr. 10	Nov. 2	Lynchburg .....	Apr. 10	Nov. 1	Burkes Garden .....	Apr. 25	Oct. 27	Wytheville .....	Apr. 10	Oct. 10
Warsaw .....	Apr. 10	Nov. 10	Mayhurst .....	Apr. 10	Nov. 1	Catawba Sanatorium .....	Apr. 10	Nov. 2			
West Point .....			Mineral .....	Apr. 17	Nov. 1	Dale Enterprise .....	Apr. 18	Oct. 27			
Williamsburg .....	Apr. 10	Nov. 1	Mount Weather .....	Apr. 18	Nov. 1						