U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU CHARLES F. MARVIN, Chief

CLIMATOLOGICAL DATA

VIRGINIA SECTION

W. P. STEWART, Meteorologist

Vol. XL

RICHMOND, VA., YEAR 1930

No. 13

GENERAL SUMMARY

The year was warmer and much drier than usual, not only for the State, as a whole, but for each of its divisions. Temperatures were not continuously high, the average for the State being in the June, July, and December issues of this publication. below the normal in 5 of the 12 months; December averaged 3.1° below normal. On the other hand, it was the warmest September of record, and February was much milder than usual. All high temperature records in Virginia were broken on July 20th when 109° was recorded at Woodstock, Shenandoah County.

The outstanding feature of the year's weather was the drought, which, for severity and duration, was unprecedented. This was by far the driest year in the climatological history of Virginia. Also, low precipitation records were established for the periods December to August, March to August, June to August, July, August, and July and August combined. Only 35 per cent of the normal rainfall occurred in August, and only 38 per cent in July. Every station in Virginia received less than the usual annual precipitation, the departures ranging from -5.54 inches at Dante, Russell County, to -25.05 inches at Catawba Sanatorium, Roanoke County. The average departure for the State was -17.42 inches. The deficiency in precipitation began in December, 1929, and continued throughout 1930. The deficiency was largest in the Great Valley, where the average departure for the year was -18.03 inches; in Middle Virginia it was -17.86inches; and in Tidewater Virginia, -15.30 inches. The Tidewater division received a small excess in January and a somewhat larger excess in June. Aside from these, none of the divisions reported an excess for any month.

In the early spring the light rainfall was favorable for agricultural operations, but by the end of April moisture was needed in most localities. Crops were beginning to show the effects of the drought, and the planting of cotton and corn was delayed by dry ground. Copious showers revived all vegetation in the latter half of May, but the relief was temporary. These conditions continued all summer, infrequent showers reviving crops, but never enough moisture to be of lasting benefit, except in a few localities. The dry weather was favorable for the harvesting of grain in midsummer. By the middle of July the drought was felt in all sections, including the coast counties. In the valley and southwestern sections pastures had dried up, and by the end of July many water courses had failed. The high temperatures, especially in July and September, intensified the effects of the drought. In August plowing was greatly delayed by dry ground, pastures were brown, corn was drying up, and tobacco firing. Over more than one-half of Virginia little or no fall plowing was done until after the middle of September. By mid-August water was being carried to many orchards in an effort to save the fruit. By the middle of September there was a shortage of water for all purposes in about one-half of the counties in Virginia, and it was difficult to obtain water for stock in about half of the remainder. Most streams were the lowest of record, and hydroelectric plants were depending upon steam.

While the drought in most localities remained unbroken at the end of the year, streamflow had increased slightly as autumn advanced because of decreased evaporation as temperatures be-

came lower. The flow in deep wells and of some springs, however, had not improved at the end of the year, the ground having dried to so great a depth.

Over much of Virginia there was a briefer span between killing frosts in spring and fall than in 1929, yet in most localities the length of the growing season did not differ greatly from the average, and the heat and dryness of the summer months tended to hasten the maturity of crops that withstood the drought.

Notes on severe windstorms, hail, and heavy snow appeared

MONTHLY STATE DATA, 1930

· · · · · · · · · · · · · · · · · · ·	Ter	nperat	ure	Pre	cipitat	ion	Number of days						
Month	Mean	Highest	Lowest	Average	Greatest 24- bour	Average snow-fall	Rainy	Clear	Partly cloudy	Cloudy			
January February March April May June July August September October November December	44.6 54.6 66.8 72.0 78.2 74.1 74.1 54.9	79 86 78 97 98 103 109 107 102 89 86 74	-13 -7 2 16 29 26 40 36 .32 10 -1 -7	2. 66 1. 46 2. 09 2. 19 2. 42 3. 26 1. 72 1. 71 1. 34 1. 22 2. 99	1. 40 1. 33 4. 00 2. 17 6. 51 3. 63 2. 05 2. 00 2. 31 1. 26 2. 28 2. 60	11. 1 1. 3 1. 0 T. 0. 0 0. 0 0. 0 0. 0 0. 0 T. 0. 0 10. 3	10 5 7 7 7 8 6 6 6 6 8 8	10 15 15 14 15 16 16 16 14 17	7 6 8 7 9 11 9 10 7 6 8	14 7 8 9 7 5 4 6 6 7 13			

COMPARATIVE ANNUAL DATA FOR THE STATE

Year	Mean tempera- ture	Highest	Lowest	Average pre- cipitation	Average snow-fall	No. of rainy days	No. of clear days	No. of partly cloudy days	No. of cloudy days
1892 1893 1894 1895 1896 1897 1896 1897 1899 1900 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1911 1912 1913 1914 1915 1916 1917 1918 19191 1919 1919 1919 1919 191	54. 8 1 55. 10 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	106 104 107 107 108 108 109 109 109 109 109 109 109 109 109 109	-86 -26 -26 -211 -116 -126 -29 -29 -29 -14 -16 -120 -5 -16 -120 -15 -17 -16 -17 -17 -17 -17 -17 -17 -17 -17 -17 -17	40. 01 46. 83 55. 97 88. 09 40. 81 44. 80 43. 18 39. 33 50. 17 51. 425 36. 18 44. 55 84. 18 49. 56 44. 19 45. 58 84. 18 89. 19 44. 87 89. 19 42. 75 89. 19 44. 80 44. 19 44. 72 44. 82 45. 84 47. 41 82. 55 41. 66 41. 72 42. 99 45. 92 42. 99 45. 92 42. 99 45. 92 42. 99 45. 92 46. 92 47. 47 47. 47 47 47. 47 47 47. 47 47 47 47 47 47 47 47 47 47 47 47 47 4	23.1 1.8 8 8.8 11.8 8 7 86.7 7 18.6 5 14.9 9 5 14.9 9 15.2 20.3 17.4 4.0 8 13.5 6 23.7 7 1.1 12.8 24.8 112.8 24.8 112.8 24.8 112.8 24.8 112.8 24.8 112.8 24.8 113.5 110.4 2 11.7 11.8 11.8 11.8 11.8 11.8 11.8 11.8	95 103 88 994 993 992 108 866 100 955 111 124 115 100 101 197 103 114 105 106 97 110 104 105 106 98 112 113 166 115 86 110 115 86 1103	163 156 164 174 163 171 162 176 170 170 170 170 170 170 170 170 170 170	101 1000 103 106 99 101 101 101 101 101 102 103 104 104 108 110 116 116 106 106 106 106 106 107 107 107 107 107 107 107 107 107 107	102 109 95 88 97 95 102 94 93 104 98 104 95 90 90 90 105 105 105 105 105 105 105 105 105 10
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Climatological Data for the Year 1930

				Tempe	rature	, degrees	Fahre	nheit			Pre	cipitati	on			ny		Sky		E
Stations	Counties	Elevation, feet	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 rai	Number of clear days	Number of partly cloudy days	Number of cloudy days	Prevailing direction of wind
Tidewater Virginia										ļ					ļ					
Cape Henry Christ Church Dahlgren Diamond Springs‡‡ Hopewell Langley Field	Princess Anne	20 87 21 25 40 5	57 7 11 22 14 11	59. 6 56. 8 60. 8 60. 1 59. 0	102 104 106 102 104 101	July 21 July 22 July 20 July 21 July 21* July 21*	20 12 4 . 16 . 9 15	Feb. 16 Feb. 16 Jan. 31 Dec. 25 Jan. 31 Feb. 16	57 7 11 22 14 11	80. 11 27. 28 20. 47 83. 66 25. 81 24. 50	6. 68 6. 36 3. 42 4. 82 4. 91 4. 12	June June Jan. June June June	0. 48 0. 67 0. 18 1.05 0. 67 0. 90	Sept. Aug. Aug. Nov. Sept. Nov.	7.2 11.0 18.5 10.0 14.2 8.1	108 85 86 67 84 86	144 111 180 131 129	114 139 117 162 126	107 115 68 72 110	sw. sw. nw. sw. sw. sw.
Norfolk Onley Richmond Runnymede(near) Wallaceton Williamsburg	Norfolk Accomac Henrico Surry Richmond James City	.91 40 144 25 160 70	60 12 51 41 	60. 6 57. 6 58. 7	100 103 103	Aug. 9 July 21 July 22	15 12 11 8	Feb. 16 Feb. 17 Jan. 31* Dec. 25	60 12 51 41 4 37	26. 91 29. 72 31. 26 129. 94 36. 02	5. 90 4. 08 5. 18 6. 93 6. 61	June Dec. June June June	0.57 0.88 1.07	Sept. Sept. Mar. Sept.	7.8 83.5 18.1 19.0 7.0	100 90 95 98	135 133 154 238	104 147 117 52	126 85 94 75	s. nw. sw.
Means and extremes				59.2	106	July 20	4	Jan. 31		28.54	6.93	June	0.18	Aug.	14.0	90	150	120	95	sw.
Middle Virginia Callaville	Brunswick Albemarle Pittsylvania Arlington Mecklenburg	250 854 852 200 286	36 39 8	57. 2 58. 5 58. 6	102 107 105	July 22 July 20 Aug. 5 June 24*	7 8 8 9	Jan. 21 Jan. 19 Feb. 1 Jan. 31*	36 39 8 5	29, 89 23, 66 27, 78 22, 66 28, 63	4. 29 2. 90 3. 57 3. 54 4. 51	June Apr. Nov. July Jan.*	1.00 0.57 0.98 0.24 0.39	Feb. Oct. Sept. Aug. Aug.	13.0 23.0 21.6 13.0 33.0	62 76 79 76 84	241 147 213 237	64 86 87 3	60 132 65 	w. sw. s.
Columbia Culpeper Danville Fredericksburg (near) Lincoln #	Culpeper	246 450 430 100 500	32 23 30 40 29	57.3 56.3 60.5 58.4 57.5	105 104 103 103 107	July 20 July 2 Aug. 5 July 21* July 20	$ \begin{array}{c c} -5 \\ -6 \\ 11 \\ 0 \\ -1 \end{array} $	Jan. 31 Jan. 19 Dec. 25 Jan. 31 Jan. 20	82 23 80 40 29	24. 24 20. 97 29. 10 22. 81 20. 08	3. 62 2. 75 4. 72 4. 41 3. 97	Jan. Dec. Dec. June June	0.70 0.19 0.72 0.65 0.28	Sept. Oct. Aug. Aug. Sept.	19. 0 27. 2 33. 2 20. 9 22. 0	67 78 94 74 60	178 167 169 180	81 119 117 95	106 79 79 90	s. sw. sw.
Lynchburg	Campbell Louisa Loudoun Buckingham Amherst	1, 726	59 15 26 36 4	58. 0 56. 0 52. 5 56. 8	102 108 97 103	July 20 July 20 July 20 July 29 July 22	7 -8 0 -5	Jan. 31 Jan. 31 Jan. 19 Jan. 31	59 15 26 36 4	19, 83 21, 55 22, 62 23, 91	2.80 3.88 3.98 3.34	Dec. June Apr. Jan.	0, 42 0, 51 0, 09 0, 60	Aug. Aug. Oct. Sept.	20. 0 30. 5 19. 7	90 72 62 96	83 173	127 138 117	87 144 75	w. s. w. sw.
Powhatan Quantico Randolph Rocky Mount Stuart Washington, D. C	Prince William Charlotte Franklin	344 1, 150	35 8 60	55.4 57.8 58.0 57.5	105 103 102 106	July 20 July 28 July 20 July 20	5 10 6	Jan. 31 Jan. 31 Jan. 19 Jan. 31	7 30 26 35 8 60	21.99 18.96 25.18 29.09 27.69 21.66	3,36 3,11 3,30 4,42 4,43 3,19	Apr. June June Mar. Dec. June	0.80 0.19 0.15 0.59 0.95 0.28	Mar. Aug. Aug. Feb. Feb. Oct.	13.0 25.3 25.0 18.0	79 80 63 73 65 86	126 105 243 197 157 145	65 156 29 6 153 113	174 104 93 162 55 107	sw. nw. sw. nw. sw. nw.
Means and extremes				57.2	108	July 20	-8	Jan. 31		24.20	4.72	Dec.	0.09	Oct.	22.2	76	171	92	102	sw.
The Great Valley Blacksburg Buchanan Burkes Garden Catawba Sanatorium Dalle Enterprise Damascus Dante	Rockingham Washington	3, 250 2, 100 1, 350 1, 900	39 29 35 20 51	53. 4 56. 5 55. 4 54. 5	99 107 97 102 104	July 28 July 28 July 28 July 29 Aug. 4 July 28	-6 0 -7 7 -13	Dec. 25 Dec. 25 Feb. 16' Jan. 19' Jan. 20	20 .51 4	21. 09 22. 27 27. 61 17. 53 17. 60 29. 42 41. 47	3.95 4.33 3.49 3.69 8.95 4.38 12.53	Dec. June Aug. Dec. June Aug. May	0. 93 0. 55 0. 27 0. 41 0. 08 1. 49 1. 65	July July June Sept. July June Jan.	32.0 26.5 36.0 37.0 26.3 38.7 25.4	104 57 53 58 92 108 126	203 178 182 229 148 131 133	41 48 53 96 119 150 127	121 139 130 40 98 84 105	nw. w. w. s. sw.
Deerfield	Washington Giles Bath Wythe Rockbridge	2, 100 1, 530 2, 195 2, 028 1, 060	38 62	53.0 51.2 54.9	97 95 105	Aug. 5 July 20 July 22	-7 -5 -5	Jan. 19 Feb. 16 Jan. 19	4 4 16 98 24 62 25	17.93 29.76 21.98 21.38 23.03 20.85 34.95	3.28 4.18 2.58 3.83 3.74 3.99 6.04		0.15 0.81 1.20 0.33 0.89 0.70 1.31	July July Sept. July Feb. July Sept.	32.0 34.0 25.1 29.7	68 131 105 97 81 81 115	149	143	73	w. w.
Radford Rosnoke Saltville Speers Ferry Staunton Winchester Woodstock Wytheville	Moutgomery Roanoke Smyth Scott Augusta Frederick Shenandoah Wythe	1,739 1,221 1,380 717 927	26 11 39 26 39 36	58. 2 55. 0 57. 3 52. 5	104 99 107 109 95	July 204 July 28 Aug. 4 July 20 July 28	0 1 -10	Jan. 21 Jan. 18 Feb. 16 Jan. 19 Jan. 19 Dec. 25	11 34 39 26 39	18. 79 23. 17 30. 86 32. 22 116. 76 116. 79 16. 44 21. 36	3.31 4.15 3.68 4.62 3.29 3.28 2.53 2.88	Dec. Dec. Aug. July June Dec. Dec. Dec.	0.80 0.69 1.53 0.70 0.22 0.12 0.88	Feb. Sept. June Jan. Oct. Oct. Feb.	34.0 34.0 28.2 28.6 15.5 39.6	78 81 133 93 94 113	184 191 204 113 141	131 48 49 71 116	50 126 112 181 108	w.
Means and extremes State means and ex	tremes			54. 5 56. 8	109 109	July 20 July 20	-13	Jan. 20	1	23. 67 24. 86	12.53 12.53	May May	0.08 0.08	July July	30. 7 23. 4	93 86	167 165	95 99	103 101	

Section and State averages are computed from monthly means. 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 10 or more years of observation.

Reference letters, *, b, o, appearing in the tables indicate number of days missing: for example, b represents two days, etc.

*Also on other dates. *Interpolated. *Partially interpolated. *Received too late to be included in means and extremes.

*It post-office addresses of these stations are as follows: Diamond Springs, Norfolk; Runnymede, Elberon: Lincoln, Purcellville; Mount Weather, Bluemont; Pedlar Dam, Pleasant View.

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

September.—Dante, page 34, precipitation departure, -1.51 inches.

December.—Mendota, page 47, precipitation on 1st, 0.09 inch; total, 1.91 inches. Page 46, total precipitation, 1.91 inches. -2.32. Chatham page 47, precipitation on 6th, 1.62 inches; total precipitation, 3.22 inches.

YEAR 1930	YEAR 1930 CLIMATOLOGICAL DATA: VIRGINIA SECTION 51 Monthly and Annual Precipitation for the Year 1930, with Departures from the Normal																									
	Jan	Monthly and Annual P						pitat pril	, .	for th		ne	· ·	with				mber		orma ober		mber	Dece	mber	Anı	mal
Stations	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
Tidevater								-																		
Cape Heury Christchurch Dahligren Diamond Springs Hopewell Langlev Field Norfolk	4, 48 3, 18 3, 42 4, 15 2, 69 3, 51 4, 09	+1.33 +0.56 +1.68 -0.28 -0.22 +0.99	1.84 1.82 1.31 2.30 0.97 1.34 1.24	-1.36 -1.36 -1.00 -2.58 -2.32 -1.98	$\begin{array}{c} 2,26 \\ 1,47 \\ 0.79 \\ 2,60 \\ 0.74 \\ 1,21 \\ 1,68 \end{array}$	-1.61 -2.41 -0.97 -3.61 -2.68 -2.09	1.78 2.80 2.61 2.98 3.22 1.70 2.38	-1.57 -1.21 -0.39 -0.27 -1.54 -0.85	2.88 2.34 2.99 2.13 3.60 1.53 1.63	-0.69 +0.27 -1.91 -0.56 -2.11 -2.18	6. 68 6. 36 2. 95 4. 82 4. 91 4. 12 5. 90	+2.72 -0.64 -0.49 +0.50 +0.68	2. 03 2. 62 0. 89 2. 70 2. 60 1. 82 2. 50	-3.34 -3.37 -3.01 -2.07 -3.08 -3.25	1.88 0.67 0.18 1.69 0.94 1.88 0.64	-2.98 -5.80 -2.57 -3.52 -2.92 -4.58	0. 48 0. 79 1. 28 2.30 0. 67 3. 01 0. 57	-2.38 -1.72 -1.15 -3.05 +0.14 -2.66	1. 59 1. 87 0. 75 2. 40 1. 67 1. 51 2. 00	-1.42 -1.57 -0.29 -1.18 -1.31 -1.04	0.87 0.99 0.98 1.05 1.41 0.90 1.26	-1.49 -1.58 -1.14 -0.92 -1.67 -0.90	3. 39 2. 32 2. 32 4. 54 2. 39 1. 97 3. 02	-0.05 -0.30 +0.75 -0.88 -1.03 -0.32	30. 11 27. 23 20. 47 33. 66 25. 81 24. 50 26. 91	-12.87 -19.13 -10.50 -18.42 -17.68 -17.18
Onley. Richmond. Runnymede (near). Tappahanmock. Wallacetown (near). Williamsburg. Means.	4. 67		2.26		2.29 1.13	-2.86	$\frac{2,95}{2,58}$	-i. 15	1, 53 2, 02	-1.64	6.61		2.92		1.98		1.27		2.13 1.77	-1.21	2.75 1.56	-0.55	4.66 3.22	+0.54	36.02	
Middle Virginia				İ																						
Callaville	3. 44 2. 62 3. 30 2. 75 4. 51 3. 62 2. 70 3. 56	-0.10 -0.80 -0.90 -0.15 -0.74 +0.13	1.00 1.24 1.42 1.57 0.98 1.25 1.65 1.69	-2. 62 -1. 70 -2. 26 -2. 26 -0. 83 -2. 28	2.60 2.72 2.14 2.16 1.36 1.91 2.45 2.60	-1, 85 -0, 77 -2, 43 -2, 43 -0, 34 -0, 93	2. 73 2. 90 1. 66 2. 81 2. 24 3. 38 2. 40 1. 81	-0.09 -0.48 -1.07 -0.07 -0.81 -1.46	2.72 1,66 3.38 1.89 3.18 2.83 2.72 2.93	-1.34 -2.79 -1.02 -0.95 -1.42 -0.95	4. 29 2. 89 3. 48 3. 26 4. 51 2. 30 2. 40 3. 48	+0. 18 -2. 51 +0. 24 -1. 98 -2. 72 -0. 52	2. 40 0. 78 1. 65 3. 54 2. 43 0.91 0. 92 2. 71	-3.47 -3.83 	2.00 2.39 1.67 0.24 0.39 2.29 0.41 0.72	-2.86 -2.59 -4.26 -2.16 -3.52 -3.86	1.78 1.76 0.98 1.00 1.50 0.70 1.04 1.02	-1.76 -1.93 -1.55 -2.44 -2.06 -2.15	1, 56 0, 57 1, 31 0, 31 1, 61 1, 03 0, 19 1, 57 1, 28	-1.26 -2.79 -1.04 -1.92 -2.28 -1.30	3. 26 1. 81 3. 57 0. 81 2. 19 1. 52 1. 84 2. 99 2. 43	+1.21 -0.69 -0.20 -0.72 -1.06 +0.81	2.11 2.41 3.22 2.32 3.73 2.50 2.75 4.72 2.60	-1. 19 -0. 84 -0. 37 -0. 84 -0. 34 +1. 46	29. 89 23. 66 27. 78 22. 66 28. 63 24. 24 20. 97 29. 10	-15.96 -21.72 -14.81 -18.19 -18.92 -12.52
Fredericksburg (near). Halliax Lincoln Lynchburg Manassos (near) Martinsville Mineral (near). Mount Weather	2.39 2.77	-0.72 -0.66	1.87	-0.52 -2.20	2.40 2.26	-0.65 -1.28	2.71 1.45	- 0.56 -1.50	1.38 1.75	$ \begin{array}{c} -2.15 \\ -1.88 \end{array} $	3.97 2.57	-1.06 -1.22	0.39 0.90	-3.09 -3.31	0.49 0.42	3.80 3.36	0. 28 0. 90	-2.41 -2.41	0.33 0.62	$ \begin{array}{r} -2.56 \\ -2.53 \end{array} $	1.24 2.44	-0.90 +0.11	2.63 2.80 2.35	-0.27 -0.46	20.08 19.83	-18.69 -20.70
New Canton pedlar Dam Powhatan Quantico Randolph Rocky Mount Stuart Washington, D.C.	3. 34 2. 57 2. 29 2. 91 2. 52 1. 61 2. 85	-0, 28 -0, 86 -0, 81 -0, 89 -0, 70	1. 14 1. 27 1. 74 1. 20 0. 59 0. 95 1. 64	-1.92 -0.82 -1.90 -2.77 -1.63	3.03 0.80 0.99 1.50 4.42 3.19 2.26	-1.00 -2.46 -2.22 +0.41	2. 76 3. 36 2. 47 2. 78 1. 55 1. 01 3. 12	-0.41 -0.45 -0.18 -1.88	2.34 1.77 2.52 3.26 3.26 2.47 1.81	-1. 20 -0. 79 -0. 81 -0. 72 -1. 89	1. 37 1. 70 3. 11 3. 30 4. 41 3. 65 3. 19	-2.38 -1.02 -0.42 -0.24 -0.94	2.26 0.53 2.08 1.55 0.92 1.19 1.17 2.30	-1.64 -2.46 -3.73 -3.71 -2.41	1. 67 1. 62 1. 64 0. 19 0. 15 1. 37 1. 30 0. 62	-2.99 -4.22 -3.62 -2.81 	0.60 0.54 1.59 1.02 2.46 1.33 2.67 0.76	-2.79 -1.83 -0.14 -2.21	1. 17 0. 76 1. 48 0. 65 1. 48 1. 20 2. 00 0. 28	-1.78 -2.24 -1.34 -2.40 -2.56	1. 79 2. 15 1. 73 1. 02 2. 13 3. 62 3. 24 0. 79	-0.53 -0.87 -0.04 +1.09 -1.58	2. 44 3. 05 2. 00 1. 41 3. 09 3. 63 4. 43 2. 04	-0.65 -1.48 -0.12 +0.10	23. 91 21. 99 18. 96 25. 18 29. 09 27. 69 21. 66	-17. 57 -19. 50 -15. 33 -16. 03
Means Great Valley	2.86	-0.52	1, 42	-1.50	2.21	-1.39	2, 52	-0.64	2.35	-1.52	3, 30	-0.93	1.53	-2.98	1.01	-3.48	1.20	-2.00	0.96	-2.04	1.99	-0.42	2.83	-0.44	24.20	-17.86
Balcony Falls	1. 78 2. 46 3. 20 1. 70 1. 98	3 -1, 56 3 -1, 28 0 -0, 48 0 -1, 55 0 -0, 78	1. 25 0. 91 3 2. 01 5 0. 60 1. 04	-1. 92 -1. 78 -1. 67 -2. 20 -1. 62	1. 02 2. 87 2. 88 1. 24 1. 92	$ \begin{array}{c} -2.60 \\ +0.05 \\ -1.98 \\ -2.62 \\ -1.16 \end{array} $	1. 54 1. 28 2. 22 1. 41 1. 19	-1.49 -1.32 -1.52 -1.55 -1.77	1. 79 0. 98 2. 78 0. 91 1. 20	-2.07 -2.89 -1.50 -2.53 -2.96	1, 37 4, 33 0, 27 3, 39 3, 95	$ \begin{array}{c} -3.11 \\ +0.23 \\ -4.80 \\ -0.98 \\ -1.10 \end{array} $	0. 93 0. 55 2. 61 0. 42 0. 08	-4.30 -3.41 -1.96 -4.33 -4.30	1. 08 0. 91 3. 49 1. 07 1. 11	$ \begin{array}{r} -2.85 \\ -3.19 \\ -0.91 \\ -3.55 \\ -2.78 \end{array} $	2.09 1:04 1.93 0.41 0.85	$ \begin{array}{c} -1.10 \\ -2.48 \\ -1.67 \\ -3.08 \\ -2.38 \end{array} $	1.33 0.92 1.10 0.99 0.31	-1.61 -2.48 -2.04 -2.45 -2.35	2.96 2.06 2.67 1.70 0.93	+0.69 -0.03 -0.12 -0.65 -1.19	4. 26 3. 95 3. 96 2. 45 3. 69 3. 04	+0.89 +0.69 -1.20 +0.44 +0.48	21. 09 22. 27 27. 61 17. 53 17. 60	-21.03 -17.84 -19.80 -25.05 -22.06
Damascus	1. 6 1. 6 1. 2 2. 5 2. 1 1. 6	$\begin{bmatrix} -2, 46 \\ -2, 46 \\ -1, 78 \\ -1, 79 \end{bmatrix}$	1. 65 2. 25 1. 35 1. 86 3 1. 70 1. 18	-1. 12 -1. 22 -1. 66	3. 79 3. 15 2. 34 2. 85 1. 55 3. 16	-0.60 -1.87 -0.59	2, 11 1, 88 1, 42 2, 65 1, 44 1, 63	-1. 95 -1. 13 -1. 65	3.00 12.53 0.29 3.31 2.38 1.42	+7.92 -0.49 -2.44	1,49 1,93 1,10 3,01 1,27 3,18	-2.76 -2.06 -1.48	2. 38 3. 46 0. 15 0. 81 1. 27 0. 33	-1.22 -2.76 -3.76	4.38 5.58 1.13 4.18 1.69 2.63	+1.28 -2.12 -0.82	3.17 1.86 3.28 2.13 1.20 0.40	-1.51 -0.99 -2.99	1. 87 1. 92 0. 78 2. 18 2. 26 0. 58	-1.39 -0.49 -2.34	1. 63 3. 17 1. 77 1. 64 2. 48 1. 45	+0. 33 +0. 74 -0. 87	2. 38 2. 07 3. 02 2. 62 2. 58 3. 83	-2.06 -0.61 +0.81	29. 42 41. 47 17. 93 29. 76 21. 98 21. 38	-5.54 -14.72 -19.58
Ivanhoe	1.72	-1.60	0.80	-1.97 -2.10	0.97 2.61	-2.50 -0.79	1.46 1.46	-1.23 -1.29	1.41	$-2.01 \\ -1.34$	1.86 2.42	$ \begin{array}{c} -2.12 \\ -2.05 \end{array} $	1. 19 1. 19	$-3.37 \\ -3.09$	1.77 1.43	-1.57 -2.08	1, 04 0, 6 9	-1.79 -2.33	1. 26 1. 29	-1.79 -1.86	2.00 2.25	-0.05 -0.11	3. 31 4. 15	+0.36 $+1.51$	18.79 23.17	-19.64 15.88
Saltville	2.08 0.70 1.99 1.56 1.48 1.68	$ \begin{array}{c} -3.44 \\ -3.44 \\ -0.85 \\ -1.15 \\ -1.45 \end{array} $	1.94 2.90 7 0.98 7 0.48 1 1.78 3 0.88	$ \begin{array}{c} 1 \dots \\ -1.08 \\ -1.74 \\ -1.41 \\ 3 -0.50 \\ -2.11 \end{array} $	2.84 2.60 1.62 2.22 1.89 2.05	$ \begin{array}{r} -2.54 \\ -1.79 \\ -0.46 \\ -1.01 \\ -1.39 \\ \end{array} $	2.59 1.30 1.46 1.79 1.59	-2.07 -1.51 -1.58 -0.93 -1.59	3. 47 4. 06 1 0. 91 3 1. 19 3 1. 51 2. 45	$ \begin{array}{c} +0.78 \\ -2.77 \\ -3.00 \\ -2.03 \\ -1.21 \end{array} $					3. 68 4. 33 †1. 38 0. 54 1. 17 2. 13		3. 48 1. 93 0. 67 1. 11 1. 34 1. 09	$ \begin{array}{r} -0.94 \\ -2.64 \\ -2.10 \\ -1.29 \\ -2.21 \end{array} $	2. 10 1. 66 0. 64 0. 22 0. 12 1. 10	-0.70 -2.38 -2.34 -2.45 -1.74	1.80 3.14 1.41 0.87 0.98 2.16	+0.68 -0.79 -1.62 -0.87 +0.02	3. 19 2. 83 2. 10 2. 3. 28 2. 53 2. 88	$ \begin{array}{r} -1,49 \\ -0.49 \\ +0.45 \\ +0.22 \\ -0.04 \end{array} $	30, 86 32, 22 ‡16, 76 ‡16, 79 16, 44 21, 36	-12.72 -22.87 -20.16 -17.97 -18.39

Note.—In this publication, annual means are computed from data for all stations; whereas, in monthly reports, means may not include all stations, as in some cases reports are not received in time to be used in the computations.

Monthly and Annual Mass	Tomporetures for the Veer 16	930, with Departures from the Normal

	Jan	uary	Feb	rua ry	Ma	rch	A	pril	М	ау	Jt	іле	Jı	ıly	Au	gust	Sept	ember	Oct	ober	Nove	ember	Dece	mber	Anı	nual
Stations	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																										
Cape Henry Christchurch Dahlgren Diamond Springs Hopewell Langley Field	41.1 36.2 45.8 42.2	$\begin{vmatrix} +1.1 \\ +3.4 \\ +2.8 \end{vmatrix}$	45.6 41.2	+3 3	47.0 47.2 44.6 49.8 48.3 46.8	$ \begin{array}{c} -1.6 \\ -0.2 \\ -0.6 \end{array} $	58.0 57.7	$ \begin{array}{c} -2.1 \\ 0.0 \\ +0.2 \end{array} $	66. 8 68. 6 70. 4	+5.1 +2.9 -3.1	74.5	+2.5 -0.2 +1.1	80.3	+1.1 +4.1 +1.5 +4.7 +0.1	°75.8	+1.8 -1.4 -0.2	74. 5 76. 8	$+4.4 \\ +6.2$	^a 57.4 55.3	-2.1	45.6 51.4 48.8	-1.3 0.0 -0.1	40. 7 438. 3 34. 8 42. 4 38. 4 38. 2	-3.4 -0.8 -2.2	56. 8 60. 8	+1.0 -1.4 +1.1 +1.6 +0.1
Norfolk Onley Richmond Richmond Runnymede (near) Tappahannock Williamsburg	41.2 39.6 42.4	+3.2 +1.7 +2.7	48. 2 44. 3 45. 3 47. 8	+4.2 +5.7	45. 5 46. 4	-0:8	53.3 55.6	-0.5 -1.0	69. 0 68. 6 68. 8	+6.3 +2.3	72.4	$\begin{array}{ c c c } +2.0 \\ +2.3 \\ -0.9 \end{array}$	78.8 79.8 78.6	+1.2 +1.3	74.9 76.1 75.3	-0.4	75. 8 76. 8 76. 9	+5.7 +6.3 +7.0	56. 7 57. 2	-2.4 -1.9	49.2 48.1	$ \begin{array}{c c} -1.1 \\ -0.2 \\ -0.2 \end{array} $	38.2	-3.0 -3.9	60. 6. 57. 6 58. 7	+1.1 +0.3 +0.8
Means	41.8	+2.5	46.1	+5.2	47. 3	-0.6	55.5	-0.5	68.8	+3.8	74.1	+0.8	79.4	+1.8	75.8	-0.6	76.6	+5.6	57.8	-2.6	49.0	-0.5	38.2	-2.7	59.2	+1.0
Middle Virginia]]	١					<u> </u>						05 -			
Callaville (near). Charlottesville (near). Chatham Clarksville Columbia	40.3 39.6	+1.5 +3.1	45.3 45.2 44.2	+8.6	44. 6 45. 8 46. 4 46. 9 45. 7	-0.7 -1.2	56.0 56.8 *55.4	-0.1 -1.1		+2.6 +5.9	71.1 74.6 72.8 74.7 72.5	$ \begin{array}{r} -2.1 \\ +1.9 \\ \\ +1.5 \\ +0.4 \end{array} $	80.2	+1.3 +5'0 +3.8 +3.8	74. 6 77. 3 77. 5 75. 3 75. 2	$ \begin{array}{r} -1.1 \\ +2.7 \\ \\ +0.2 \\ +1.0 \end{array} $	1 70.8	+5.5 +7.5 +6.3 +7.0	0b.U		I •16. ∪		35. 7 35. 8 36. 3 33. 6 35. 8	-2. 2 -5. 6	57.2 58.5 58.6 57.8 57.3	+0.7
Culpeper Danville Farmville Fredericksburg (near) Lincoln	42.0 39.5	+3.1	43.8	+5.2 +7.6	44.9 48.2 46.6 44.3	-0.2 -3.0 -0.1 $+1.2$			70.8	+3.6	73. 7	+1.4	80.3	+3.9	75.6	+0.8	77.5	+7.0	55. 4 56. 6	-i.2	47.9 45.9	-1.6 0.0	34. 5 37. 0 36. 4 35. 9 34. 2	-4.7 -1.5	56. 3 60. 5 58. 4 57. 5	+1.3 +0.7 -2.3 +3.4
Lynchburg Mineral (near) Mount Weather New Canton Pedlar Dam	39. 2 37. 0 31. 6 38. 2 38. 0	+3.6	41.0	+5.5 +8.4 +11.5 +6.8		-0.2	53.7 48.2	-1.2	66.4 61.3	+1.1 +4.5 +2.3 +2.2	°71. 0 68. 8	$ \begin{array}{c} -1.9 \\ +0.3 \\ +1.8 \\ -0.6 \end{array} $	78. 4 75. 0	+4.0 +4.8 +1.6	75. 4 74. 8 72. 8 73. 8 71. 6	+3.6 -0.8	74.5 74.8 71.5 74.2 *71.0	$^{+6.9}_{ +3.7}_{ +2.9}$	54.4 51.2	-0.4 -0.5 -3.3	43.8	$\begin{vmatrix} -1.0 \\ -1.4 \\ -1.6 \end{vmatrix}$	36. 5 34. 7 28. 8 35. 4 33. 8	-1.8 -3.2	58.0 56.0 52.5 56.8	+2.2
Quantico Rocky Mount. Stuart Washington, D. C.	40.0 41.0	+2.3	39. 6 45. 1 45. 5 41. 9	+7.0	46.2	-1.2	57. 2 57. 6	+1.1	65.4 68.8 68.2 67.3	+4.0	72. 2 72. 1	-0.1	80. 4 680. 6	+5.4	74.3 74.4	+0.4	74. 2. 74. 2	+5.2	55. 2 55. 4	-1.9	45,2	-2.9	35.0 36.2	-4.0	55. 4 57. 8 58. 0 57. 5	0, 0 +1.3
Means	38.0	+2.1	43. 7	+6.2	44.9	-1.5	54.8	-0.6	67.5	+2.8	73.0	+0.7	79.3	+3.4	75. 2	+1.1	74.9	+6.2	55.2	-2.2	45.5	-0.7	35.0	-2.6	57.2	+1.2
Great Valley	95 0	T0 4	41.0	n n	41.0	_1 0	E0 C	1.1.0	69.0	101	67.0	_0.0	75.0	140	71 1	.1.1	70.4	1.6 1	51.0		41.9	_0.5	20.0	_, ,	50 4	
Blacksburg Buchanan Burkes Garden Catawba Sanatorium Dale Enterprise	38, 6 34, 5 37, 6	+3.5 +3.0 +1.5	43. 2 39. 0 43. 3	+7.8 +7.7 +5.2	44. 8 88. 2 42. 6 43. 9	-1.8 -3.5 -2.7 -3.2 +0.9	55. 9 50. 7 53. 4	0.0 $+3.2$ -1.2	63. 0 66. 8 58. 9 65. 9 64. 4	+2.4 +2.2 +3.6	67. 6 71. 6 63. 9 70. 7 69. 0	-0.8 +0.1 +0.6	79.2 70.8 77.7	100	71.1 74.0 65.6 73.4 71.5	-0.3	79 9	+3.7	54.1 47.4 53.5	-4.9 -2.1 -3.3	44. 0 38. 6 42. 4	-2.3 -1.4 -3.6	30. 0 32. 3 28. 1 31. 9 32. 6	$-6.1 \\ -4.1$		
Dante Emory Hot Springs Lexington Roanoke	38.0 37.5 34.6 36.9 40.3	+3.1 +2.9	42. 8 40. 8 38. 8 40. 5 45. 2	+7.1 +5.2	40.5	-3.7 -3.1 -2.9 -1.8	53. 1 51. 0 53. 6	+0.9 +0.4	65.8	+1.4 +3.1	67 4	-i.3	173 O		1686	·—0. 5	68.1 66.8	+4.3 +6.9	50.8	-3.2 -2.9	42.4	-2.9 -0.9	33. 2 31. 4 28. 7 31. 8 36. 0	-5.1 -3.6	53.0 51.2 54.9	+0.9
Saltville Staunton Winchester Woodstock Wytheville	39.1 33.0 36.4	+3.7 +1.8 +3.3 +2.6	42.6 43.9 °40.6 43.2 41.6	+9.0 +10.1 +6.5	41.8 44.2 41.4 46.2 40.4	-0.3 -1.5 +2.2 -1.9	51.4 56.2	-1.9 +3.6	68.0	$+4.8 \\ +6.9$	70, 4 71, 8 74, 4 73, 4 66, 2	+1.3 +1.9 +8.3 -2.5	80.2	\$+1.6	75.2	+4.6 +2.1 -1.9	70.8 •72.8 •73.2 •74.0 68.0	°+5.6 +5.8 +6.5	53, 6 53, 2 54, 0 54, 0 50, 2	-3. 1 -2. 1 -2. 3	44. 0 42. 6 44. 2 45. 1 41. 0	-2.8 -0.7	32. 0 32. 6 32. 8 33. 5 29. 7	-3.2	55.0 57.3 52,5	+3.3 -0.2
Means	36.6	+2.8	41.9	+6.7	42.3	-1.8	53.8	+1.0	64. 7		69. 6		1		1	l	71.3	1 1	1	-2.8	42.7		31.8	1	54.5	+1.1
State	38.4	+2.5	43. 6	+6.1	44. 6	-1.3	54.6	-0.5	66.8	+3.3	72.0	+0.5	78. 2	+3, 1	74.1	+0.5	74.1	+5.7	54.9	-2.8	45.5	-0.9	34.8	-3.1	56.8	+1.1

For explanation of reference marks, see page 50.

KILLING FROSTS, 1930

				T.II.	DIM G I	10313, 1000					
Stations			Last in spring	First in	Stations	Last in spring	First in autumn	Stations	Last in spring	First in autumn	
Tidewater Virginia Cape Henry Christchurch Dahlgren Dlamond Springs Hopewell Langley Field Norfolk	Mar. 16 Mar. 30 Apr. 10 Mar. 28 Apr. 26 Mar. 23	Oct. 18 Oct. 21 Oct. 23 Oct. 19 Nov. 2	Charlottesville Chatham Clarendon Clarksville Columbia	Apr. 27 Mar. 28 Apr. 27 Apr. 25 Apr. 27	Oct. 6 Oct. 22 Oct. 21 Oct. 17 Oct. 22 Oct. 5	Middle Virginia—Con. New Canton. Pedlar Dam Powhatan Quantico. Randolph Rocky Mount Stuart.	Apr. 25 Apr. 24 Apr. 9	Oct. 2 Oct. 19 Oct. 19 Oct. 19 Oct. 20	Damaseus Dante Deerfield Emory Hot Springs.	Apr. 26 May 31 Apr. 27 Apr. 24 June 1 May 31	Oct. 18 Oct. 18 Oct. 18 Oct. 1 Oct. 1 Oct. 1
Onley Richmond Runnymede Wallaceton Williamsburg	Apr. 10 Mar. 5 Mar. 23 Apr. 1	Oct. 21 Oct. 22 Oct. 19 Oct. 19	Danville Farmville Fredericksburg Lincoln	Apr. 25 Apr. 24 Apr. 24 Apr. 1 Apr. 27	Oct. 22 Oct. 6 Oct. 21 Oct. 21 Oct. 22 Oct. 19 Oct. 5	Washington Great Valley Blacksburg Buchanan	Apr. 24 Apr. 27 Apr. 27 June 2	Oct. 2 Oct. 2 Oct. 2 Sept. 30	North River Dam Roanoke Saltville Staunton Winchester Woodstock Wytheville	Apr. 27 Apr. 26 Apr. 25 Apr. 26 Apr. 27	Oct. 1 Oct. 21 Oct. 18 Oct. 20 Oct. 19 Oct. 18

(WB-4-23-31-1,450)