

total precipitation, July, 4.41 should be 4.55; annual precipitation, 27.88 should be 28.02. Wytheville (B), annual precipitation, 25.02 should be 25.06.

KILLING FROSTS.

Table of Dates of Last Killing Frost in the Spring and the First Killing Frost in the Autumn.

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. 19	Oct. 22	Nokesville .....	.....	Oct. 22
Cape Henry	Mar. 16	Dec. 5	Quantico	Apr. 19	Oct. 14
Dinwiddie	Apr. 23	Oct. 13	Rocky Mount	Apr. 24	Oct. 13
Hampton	Mar. 16	Nov. 15	Saxe	Apr. 24	Oct. 13
Newport News	Mar. 16	Nov. 3	Stannardsville	Apr. 18	.....
Norfolk	Apr. 18	Nov. 4	Washington	Apr. 19	Oct. 22
Petersburg	Apr. 19	Oct. 13	THE GREAT VALLEY.		
RICHMOND	Apr. 19	Nov. 2	Big Stone Gap(A)	Apr. 19	Oct. 13
Spottsville (near)	Apr. 19	Oct. 13	Big Stone Gap(B)	Apr. 19	Oct. 13
Warsaw	Apr. 19	Oct. 22	Blacksburg	Apr. 19	Oct. 8
Wilkersons	Apr. 19	.....	Bristol	Apr. 19	Oct. 13
Williamsburg	Apr. 19	Oct. 13	Burkes Garden	Apr. 19	Oct. 9
MIDDLE VIRGINIA.			Dale Enterprise	Apr. 24	Oct. 8
Alexandria .....	.....	Oct. 22	Elk Knob	Apr. 17	Oct. 12
Arvonla	Apr. 24	Oct. 22	Grahams Forge	Apr. 19	Oct. 13
Barboursville	Apr. 19	Oct. 22	Hot Springs	Apr. 23	Oct. 12
Bedford City	Apr. 19	.....	Lexington	Apr. 19	Oct. 8
Callaville	Apr. 19	Oct. 13	Marion	Apr. 19	Oct. 13
Charlottesville	Apr. 18	Nov. 2	Roanoke	Apr. 19	Oct. 13
Columbia	Apr. 19	Oct. 13	Staunton	Apr. 19	Oct. 22
Farmville	Apr. 17	Nov. 3	Stephens City	Apr. 24	Oct. 7
Fredericksburg	Apr. 19	Oct. 22	Woodstock	Apr. 19	Oct. 22
Lincoln	Apr. 24	Oct. 22	Wytheville	Apr. 19	Oct. 13
Lynchburg	Apr. 19	Oct. 22			

GENERAL SUMMARY FOR THE YEAR 1905.

WEATHER colder than normally by 3.5 degrees obtained throughout the month, there being but seven days on which the mean temperatures recorded were not below the monthly average. Of these seven days, six, viz., 2d, 3d, 6th, 7th, 19th and 20th, did not depart very greatly from the normal, but the remaining day, the 1st, gave maximum readings ranging from 60 to 70 degrees. **January** These readings, though high for the month, were not as high as has heretofore been reported in January, the record being 79 degrees in 1898. However, while the weather was unusually cold, it is worthy of note that the lowest temperature reported was not as low as has been recorded in January of some other years, especially in 1895, when the lowest reading observed was 18 degrees below zero, and in 1896 when the record was 26 degrees below zero. It appears, therefore, that the deficiency occurring in the average monthly temperature, 3.5 degrees, was the result of a prolonged period of weather somewhat colder than ordinarily, and not to brief periods of excessive cold. The precipitation was below normal also, and though fairly well distributed as to area, was not well balanced as to time of occurrence, the first half of the month being too wet and the last half too dry. From the 1st to the 14th precipitation occurred almost every day in all sections. Dry weather then followed, which held until the 23d, inclusive, without interruption practically. The 24th and 25th gave moderate amounts of precipitation, and similar conditions obtained on the 29th and 30th. There were but three days of general precipitation, the 3d, 6th and 12th, on

which the amounts received could be considered as heavy. The average total amount for the State, 2.87 inches, was 2.13 inches less than the wettest January on record, that of 1895, while it was 0.93 of an inch more than the driest January, that of 1897. The greatest amount falling in any twenty-four consecutive hours, 2.10 inches, was exceeded by the record of January, 1895, 1897, 1899, 1900, 1901 and 1903. No special change occurred in the rivers of the State during the month.

Prevailing wind direction, W.

CONTINUED cold weather prevailed throughout the month, the mean temperature, 28.6 degrees, being 7.5 degrees below the February normal, and the lowest February mean temperature on record with one exception, that of 1895, when the mean, deduced from all stations reporting, was 26.7 degrees.

FEBRUARY The cold was practically uninterrupted throughout the month, there being but three days, the 12th, 24th and 25th, on which changes to warmer occurred, and in these instances the rise in temperature was unimportant. The record of absolute extremes of temperature, as compared with that of February of other years back to 1892, inclusive, was rather interesting. The absolute maximum, 63 degrees, was lower by 6 degrees than any previously reported, but the absolute minimum, 16 degrees below zero, was not as low as in 1895 and 1899, when 18 degrees below zero and 29 degrees below zero, respectively, were recorded. Precipitation for the month was frequent, but rather less than the normal in amount. Its character was, principally, snow, sleet or freezing rain. During the first and third decades, precipitation in one or the other of these forms fell every day, and was for the most part general. Throughout the second decade, however, there was a perceptible lessening in both frequency and amount of precipitation. Snow covered the ground in all parts of the State, except along the coast, during the entire month. The rivers of the State maintained normal stages.

Prevailing wind direction, W.

THE month was generally mild and pleasant, with many sunny days, forming a decided and agreeable change from the weather of the two preceding months. The mean temperature, 48.0 degrees, was 2.5 degrees above the normal. By decades, the first ten days gave temperatures about the

MARCH March average; the second was cooler than normally, and the third decidedly warmer. During this decade the maximum temperatures for the month were recorded. The absolute maximum and minimum occurring, 89, and 8 degrees, respectively, were within the record. Precipitation for the month was considerably below the normal, the average total amount, 2.59 inches, being 1.32 inches deficient. Light snow flurries fell on the 1st, followed by a period of fair weather until the 7th, on which date stormy weather set in, snow falling in the Great Valley division during the succeeding three days, and snow or rain intermittently in the Middle and Tidewater divisions until the 13th, inclusive. Local rains fell in the Middle and Great Valley divisions between the 14th and 19th and general rains on the 20th, 21st, 24th to 26th, and on the 30th. The heaviest rainfall of the month occurred on the 9th, and the greatest amount reported in any twenty-four consecutive hours was 2.10 inches. The James river was at a normal stage during the month.

Prevailing wind direction, SW.

GENERALLY mild weather prevailed throughout the month, which was 1.3 degrees warmer than normally, with many bright, sunny days. The maximum readings reported oc-

curred in most localities on the 10th-11th, and after they occurred the temperature fell, with frequent fluctuations towards warmer, until the 19th, on which date the coldest weather of the month was recorded. It then be- **APRIL** came warmer, and remained so throughout the last decade. The absolute maximum temperature recorded, 89 degrees, was lower than any other absolute maximum for April on record by from 1 to 11 degrees, but the absolute minimum, 19 degrees, was within the record. Precipitation for the month fell mainly during three periods, viz., 4th-7th, 11th-16th and 26th-27th. Scattered showers fell on the 21st and 29th. The average number of days with a measurable amount of rain was greater than ordinarily for the month, but the total amount of precipitation was about half an inch below normal; that is, there was an increase in frequency of precipitation, but a decrease in the quantity deposited. Snow flurries prevailed in the Great Valley division on the 7th, and over the whole State on the 16th, the depths for the month ranging from trace, to as much as 3.00 inches in the Valley section. The greatest amount of precipitation in any 24 consecutive hours for the month, 2.75 inches, was exceeded by the record of April, 1901, by 2.09 inches, while it was greater than the least amount ever reported for April by 1.00 inch. The rivers of the State were uniformly low all the month.

Prevailing wind direction, SW.

THE mean temperature for the month, 66.6 degrees, was 1.8 degrees above the normal. While there were no unusually warm or cool periods, yet the mean monthly temperature was the highest on record excepting that of 1896. The absolute maximum temperature, 92 degrees, though high, was considerably below the record, while the minimum extreme, 31 degrees, is 13 degrees higher than the lowest pre- **MAY** viously reported for the month. The coolest period of the month was the 17th to 20th, except in the Great Valley division, where the lowest temperatures were generally observed on the 1st-2d. The average total precipitation for the month, 4.76 inches, was 0.67 inch below the normal. The greatest rainfall recorded in any 24 consecutive hours, 3.20 inches, was two and a half inches less than the high record for the month, and one and three-fourths inches greater than the low record. With the exception of the 1st-2d and the 19th to 25th, inclusive, when conditions were somewhat dry, precipitation was, as a rule, well distributed both as to area and time of occurrence. General rains fell on various dates between the 3d and 16th and again on the 30th and 31st, while quite extensive local showers occurred on numerous other dates. No destructive rains were reported, however. The James river carried more than the normal quantity of water all the month and a minor rise resulted from the rains of the 12th, but at no time was there sufficient water to render the issue of flood warnings necessary.

Prevailing wind direction, S.

HEATED terms of short duration prevailed in each decade of the month, the dates of occurrence being 5th and 6th, 17th to 19th and 21st to 23d. The mean monthly temperature was, as might be inferred, above the normal, though the excess was small, 0.2 degree. As a rule, the average daily temperatures were moderate and near about the normal. During the prevalence of the hot weather the maximum tem- **JUNE** peratures recorded ranged from 90 to 98 degrees.

Comparison with the June record of other years shows these readings to be not as high as has been reported. On the other hand the absolute minimum temperature for the State, 33 degrees, was considerably lower than ordinarily, there

being but one instance of a lower temperature in the month, that of 30 degrees in 1897. Precipitation for the month, 3.87 inches, was somewhat below normal, but the discrepancy was relatively slight. The number of days with measurable amounts of rain was, however, considerably greater than the average. There was a popular impression that the month was wetter than usual, and there is no doubt that this arose from the frequency of rain. When it is considered that some rain fell on 29 out of the 30 days of the month, it will be easy to understand how the opinion became current. Both the average amount for the State, 3.87 inches, and the greatest amount in any 24 consecutive hours, 3.21 inches, were well within the record. There were no freshets in any of the rivers of the State.

Prevailing wind direction, SW.

THE generally cool weather that prevailed over the State throughout the month was due to several persistent periods of temperatures slightly below the normal. By sections, the deficiency was least in Tidewater division, 0.1 degree, and greatest in the Great Valley, 1.2 degrees. In the first decade,

JULY excepting the 4th to 6th, which days were hot and rather sultry, the temperature was about normal and remained so until the latter part of the second decade, when a hot wave, accompanied by a high percentage of humidity, prevailed for three days, causing numerous heat prostrations and much suffering generally. This was followed by cool weather, which continued throughout the last decade, and gave the minimum temperatures for the month in all sections. The absolute minimum recorded, 34 degrees, occurred in the Great Valley division and was noteworthy as being the lowest temperature on record for the month of July in the State. The average precipitation for the State, 6.92 inches, was 2.58 inches above the normal, and constituted the greatest July rainfall on record for the State with one exception, 1896, when 6.99 inches occurred. Examination of the tabulated statement of precipitation shows that some rain fell on each day of the month, but the measured amounts were not unduly large in the various sections except locally. The number of rainy days, or frequency of rain, however, was about double the average. The various streams of the State carried more water than ordinarily during the entire month, and from the 13th to 15th the James river was at freshet stages over most of its course, forewarning of which was duly issued.

Prevailing wind direction, S.

DURING the first five days of the month the temperature conditions prevailing were moderate, but on the 6th a heated spell set in which, with some slight fluctuations toward cooler, prevailed practically until the 13th. At a majority of the stations the maximum readings for the month occurred on the 6th-7th. Cooler weather obtained after the

AUGUST 13th, which held quite persistently until the close of the month, and the deficiency in the mean monthly temperature, 1.5 degrees, was, no doubt, due to this fact. Compared with August of other years back to 1891, inclusive, the mean for the month, 73.0 degrees, is 6.4 degrees cooler than the highest reported and 1.9 degrees warmer than the lowest. The absolute maximum temperature, 97 degrees, was the lowest on record with one exception, and the absolute minimum, 41 degrees, was not as low by 9 degrees as the lowest on record for the month. August precipitation showed a quite extended period of rainfall between the 4th and 16th, comprising both general rains and well distributed local showers. A period of dry weather then set in, which lasted until

the 24th, followed by three rainy days and then fair weather until the close of the month. Except on the 25th, when general and heavy rains occurred, the greatest precipitation in the various sections resulted from local showers (thunderstorms), which were rather frequent during the first half of the month. Some heavy 24-hour rains occurred, notably 2.95 inches at Fredericksburg on the 25th, but this was well within the record. The average amount for the State, 5.03 inches, though 1.03 inches greater than normally, was not as great as has heretofore occurred in the month by 3.83 inches. No freshet stages occurred in the James river.

Prevailing wind direction, SW.

THE first day of the month was marked by high temperatures in nearly all parts of the State, but on the 2d there was a perceptible moderation, and from that time until the 17th, inclusive, normal conditions obtained. On the 18th a heated spell of three days duration set in, which yielded the maximum temperature readings at nearly all stations. The reaction from this hot weather **SEPTEMBER** was sharp and decided, culminating on the 26th and 27th in quite cool weather. The minimum values for the month were, without exception, observed on either one or the other of these dates, readings as low as 33 degrees being recorded, and light frosts were reported at various points in the State. The absolute maximum for the State, 93 degrees, was the lowest on record with one exception, 90 degrees, in 1892. The absolute minimum, 33 degrees, was well within the September record. Excepting local showers, the precipitation of the month occurred during three general rainstorms, the 2d to 4th, inclusive, 11th and 12th, and 17th and 18th, the first mentioned giving the greatest amount. The average monthly amount for the State, however, was nearly three-quarters of an inch deficient, as compared with the normal. Some heavy 24-hour rainfalls were recorded, the heaviest being 4.00 inches, at Rocky Mount, Franklin county, on the 2d. The James river was at a low stage throughout the month.

Prevailing wind direction, SW.

THERE were two periods in the month during which temperatures higher than the normal prevailed, viz., the 1st and 2d, when the maximum readings in all parts of the State were observed, and the 15th to 20th, inclusive. On the other hand, temperatures lower than normally were recorded on the 12th and 13th and from the 21st until the end of the month, practically. On the 13th, light to killing frosts occurred in various parts of the State, **OCTOBER** and on the 22d killing frosts were quite general except immediately along the coast. However, while the mean temperature, 56.9 degrees, was low, it was not nearly as low as in October, 1895, when the lowest mean temperature for the month on record, 52.5 degrees, occurred. Both the absolute maximum and minimum readings reported, 93 degrees and 15 degrees, respectively, were within the October record. Four general storms, of which that of the 11th gave the greatest amount of precipitation, except as noted below, passed over the State during the month. The dates of occurrence were, 3d, 11th, 20th and 25th-26th. The exception referred to was the storm of the 25th-26th, which in the Tidewater division of the State yielded greater amounts of precipitation than did that of the 11th. Very little snow fell, only trace occurring in the various sections. The average amount of precipitation for the State, 2.54 inches, was again nearly three-fourths of an inch below normal, but the average number of

rainy days was exactly normal. The James river was at a low stage during the month.

Prevailing wind direction, W.

Cold weather prevailed over the State from the 1st to the 5th, inclusive, and again from the 15th to 17th, inclusive; also on the 20th-21st and 29th-30th. Killing frosts occurred in those portions of the Tidewater division not reporting them during the preceding month. At nearly all stations the

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lowest temperature occurred on the 15th, and it is worthy of note that the Tidewater division, in which the highest minimum

readings are usually observed, had in this month the lowest, 8 and 9 degrees, at Dinwiddie C. H., and Petersburg, respectively. The monthly mean, 45.6 degrees, was 1.2 degrees below normal. Both the absolute maximum, 79 degrees, and the absolute minimum, 8 degrees, were within the record, but the former was only 2 degrees higher than the lowest absolute November temperature previously observed. While the average number of rainy days was practically equal the 15-year normal, the average precipitation for the State, 0.78 inch, was much below the normal for the month. Comparison with November of other years, shows that since beginning of rec-

ord in 1891 there has not been any similar month in which so small an amount has occurred. This is equally true, also, of the greatest 24-hour precipitation. Measurable amounts of snow fell at quite a number of stations on the 14th and the 19th-20th, and it is again worthy of note that the heaviest falls occurred in the Tidewater division where, as a rule, the lightest snowfall occurs. No special changes in the low stage of water in the James river took place during the month.

Prevailing wind direction, W.

THERE was considerable cloudiness throughout the month and the mean temperature, 37.7 degrees, was slightly below normal. However, there were no extreme or protracted cold periods, and in so far as the temperature was concerned the

month was pleasant enough. Nearly all stations reported the coldest weather during the first decade, while the early days of the last decade furnished the warmest. In the first instance, the absolute minimum, 3 degrees, was well within the record, but as to the absolute maximum, 68 degrees, the month was a record-breaker, there being nothing since the beginning of observation in 1891 that approached it. Precipitation was out of the ordinary also. There were six general storms, the first four of which gave the heaviest amounts of precipitation. Some sleet and snow occurred with the freezing rain of the 14th-16th and snow was quite general on the 31st; otherwise all precipitation was in the form of rain. The average amount

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for the State, 5.10 inches, was the greatest with one exception, 6.45 inches in 1901, of any December of record, while the average number of days with precipitation was three in excess of the normal. The James river was more or less swollen during the month, and at one time, the 22d, reached stages nearly at

the danger line, due to the heavy rains of the 20th-21st over its watershed. Advisory warning of this condition was duly issued by the Bureau, and no interests suffered.

Prevailing wind direction, SW. and NW.