

Heights of rivers referred to zeros of gages—Continued.

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
<i>Cumberland River.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>			<i>Feet.</i>	<i>Feet.</i>
Burnside, Ky.....	434	50	-0.4	12-15, 23-31	-0.7	7	-0.5	0.3
Carthage, Tenn.....	237	40	0.5	18	-0.1	8	0.2	0.6
Nashville, Tenn.....	175	40	1.0	18	0.6	2, 3, 6, 7, 9, 10	0.8	0.4
<i>Arkansas River.</i>								
Wichita, Kans.....	736	10	3.1	27	1.5	15	1.9	1.6
Webbers Falls, Ind. T....	413	33	2.4	31	1.3	18-15, 19-25	1.4	1.1
Fort Smith, Ark.....	351	32	3.1	31	1.4	10, 11	1.9	1.7
Dardanelle, Ark.....	256	21	1.6	3-5	0.9	26, 27	1.2	0.7
Little Rock, Ark.....	176	23	2.9	1, 2, 6	2.3	24-31	2.6	0.6
<i>White River.</i>								
Newport, Ark.....	150	26	1.3	19, 20	0.7	11, 12	1.0	0.6
<i>Yazoo River.</i>								
Yazoo City, Miss.....	80	25	-2.3	31	-2.6	11-28	-2.5	0.3
<i>Red River.</i>								
Arthur City, Tex.....	688	27	13.7	30	4.8	24-26	5.9	8.9
Fulton, Ark.....	565	23						
Shreveport, La.....	449	39	2.4	2	-0.7	30, 31	0.4	3.1
Alexandria, La.....	139	33	-0.5	7-11	-2.4	23-28	-1.6	1.9
<i>Ouachita River.</i>								
Camden, Ark.....	340	39	3.0	31	2.4	14-20	2.6	0.6
Monroe, La.....	100	40	0.0	1-31	0.0	1-31	0.0	0.0
<i>Atchafalaya River.</i>								
Melville, La.....	100*	31	3.8	5-8, 11, 12	2.3	31	3.3	1.5
<i>Susquehanna River.</i>								
Wilkesbarre, Pa.....	178	14	-1.0	1, 2	-2.0	5-31	-1.9	1.0
Harrisburg, Pa.....	70	17	1.1	1	0.2	24-26	0.5	0.9
<i>W. Br. of Susquehanna.</i>								
Williamsport, Pa.....	35	20	0.5	2, 3	0.1	30, 31	0.3	0.4
<i>Juniata River.</i>								
Huntingdon, Pa.....	80	24	3.0	1-9	2.8	10-31	2.9	0.2
<i>Potomac River.</i>								
Harpers Ferry, W. Va....	170	16	1.2	1	0.2	29-31	0.6	1.0
<i>James River.</i>								
Lynchburg, Va.....	257	18	0.6	8	0.0	18-30	0.1	0.6
Richmond, Va.....	110	12	0.7	8	-2.8	29	-1.2	3.5
<i>Roanoke River.</i>								
Weldon, N. C.....	90	40	10.4	10	7.5	4, 5	8.1	2.9
<i>Cape Fear River.</i>								
Fayetteville, N. C.....	100	38	17.0	9	1.4	5	4.6	15.6
<i>Lumber River.</i>								
Fairbluff, N. C.....	10	6	2.7	21	0.3	7	1.4	2.4
<i>Edisto River.</i>								
Edisto, S. C.....	75	17	5.0	11	1.2	5	2.9	3.8
<i>Pedee River.</i>								
Cheraw, S. C.....	145	27	7.1	9	0.7	4, 5	1.9	6.4

Heights of rivers referred to zeros of gages—Continued.

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
<i>Black River.</i>	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
Kingstree, S. C.....	60	12	3.0	1	1.6	24-31	2.1	1.4
<i>Lynch Creek.</i>								
Effingham, S. C.....	35	12	8.5	16	2.3	6	3.9	6.2
<i>Santee River.</i>								
St. Stephens, S. C.....	50	12	7.0	13	-0.9	7	2.2	7.9
<i>Congaree River.</i>								
Columbia, S. C.....	37	15	3.7	6	0.0	1, 3, 24	0.5	3.7
<i>Watauga River.</i>								
Camden, S. C.....	45	24	15.0	9	2.7	4, 5, 25	4.6	12.3
<i>Waccamaw River.</i>								
Conway, S. C.....	40	7	3.0	7	1.2	1, 2	2.1	1.8
<i>Savannah River.</i>								
Calhoun Falls, S. C.....	347		3.9	8	2.1	2, 3, 27, 28	2.5	1.8
Augusta, Ga.....	268	32	14.0	9	4.7	3	6.7	9.3
<i>Broad River.</i>								
Carlton, Ga.....	30		4.3	8	1.9	1-4	2.2	2.4
<i>Flint River.</i>								
Albany, Ga.....	80	20	3.4	22	-0.4	1	1.8	3.8
<i>Chattahoochee River.</i>								
West Point, Ga.....	239	20	3.1	16	1.7	11	2.3	1.4
<i>Coosa River.</i>								
Rome, Ga.....	225	30	1.0	11	0.3	2-5	0.6	0.7
Gadsden, Ala.....	144	18	0.5	12	-0.8	1-6	-0.5	1.3
<i>Alabama River.</i>								
Montgomery, Ala.....	265	35	0.8	23	-0.4	2, 3	0.2	1.2
Selma, Ala.....	212	35	0.0	24, 25	-1.6	7	-0.6	1.6
<i>Tombigbee River.</i>								
Columbus, Miss.....	235	33	-3.5	21, 20, 30	-3.8	1, 2, 11, 12, 16	-3.7	0.3
Demopolis, Ala.....	155	35	-3.3	1-6, 20	-3.6	2, 3, 25	-3.5	0.3
<i>Black Warrior River.</i>								
Tuscaloosa, Ala.....	90	43	-0.6	23	-1.8	3, 4	-1.1	1.2
<i>Columbia River.</i>								
Umatilla, Ore.....	270	25	6.6	1, 2	4.7	21, 31	5.5	1.9
The Dalles, Ore.....	166	40	10.0	1	6.6	31	7.8	3.4
<i>Willamette River.</i>								
Albany, Ore.....	99	20	11.5	21	1.2	14-16	3.2	10.3
Portland, Ore.....	10	15	7.8	20, 21	2.3	14	4.4	5.5
<i>Sacramento River.</i>								
Red Bluff, Cal.....	241	23	4.0	21	-0.9	1-10	0.2	4.9
Sacramento, Cal.....	70	29	17.5	22	7.4	4-12	9.9	10.4

* Distance to Gulf of Mexico.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches.

Alabama.—The mean temperature was 66.2°, or 3.3° above normal; the highest was 94°, at Jasper on the 13th, and the lowest, 29°, at Jasper on the 1st. The average precipitation was 2.18, or 0.08 above normal; the greatest monthly amount, 7.03, occurred at Newton, and the least, 0.55, at Warrior.—*P. P. Chaffee.*

Arizona.—The mean temperature was 63.0°, or 1.1° below normal; the highest was 107°, at Sentinel on the 1st, and the lowest, 15°, at Snowflake on the 27th. The average precipitation was 0.80, or 0.06 below normal; the greatest monthly amount, 4.89, occurred at Flagstaff, while none fell at several stations.—*W. G. Burns.*

Arkansas.—The mean temperature was 65.6°, or 4.0° above normal; the highest was 101°, at Conway on the 13th, and the lowest, 28°, at Mossyville on the 31st. The average precipitation was 2.88, or 0.55 above normal; the greatest monthly amount, 6.52, occurred at Winslow, and the least, 0.76, at Helena.—*E. B. Richards.*

California.—The mean temperature for the State, obtained by weighting the reports from 281 stations, so that equal areas have about the same weight, was 58.1°, or 2.7° below normal, as determined from 195 records; the highest was 107°, at Healdsburg, Sonoma County, on the 8th, and the lowest, zero, at Bodie, Mono County, on the 14th. The average precipitation, as determined by the records of 300 stations, was 3.50; the excess, as indicated by reports from 204 stations, which have normals, was 2.59; the greatest monthly amount, 13.30, occurred at Laporte, Plumas County, while none fell at six stations in southern California.—*Alexander G. McAdie.*

Colorado.—The mean temperature was 46.4°, or nearly normal; the

highest was 97°, at Holyoke on the 1st, and the lowest, 8° below zero at Lake Moraine on the 27th. The average precipitation was 1.76, or 0.66 above normal; the greatest monthly amount, 6.36, occurred at Parachute, while none fell at Hugo, and only a trace at Cheyenne Wells, Crook, Fox, Seibert, Springfield, and Wray.—*P. H. Brandenburg.*

Florida.—The mean temperature was 73.4°, or 1.5° above normal; the highest was 94°, at Clermont on the 6th, and the lowest, 49°, at De Funiak Springs on the 30th. The average precipitation was 6.10, or 2.30 above normal; the greatest monthly amount, 29.10, occurred at Sebastian, and the least, 0.97, at Stephenville.—*A. J. Mitchell.*

Georgia.—The mean temperature was 65.4°, or 1.3° above normal; the highest was 94°, at Jesup on the 19th, and the lowest, 31°, at Clayton on the 1st. The average precipitation was 3.89, or 1.73 above normal; the greatest monthly amount, 8.24, occurred at Marshallville, and the least, 0.74, at Adairsville.—*J. B. Marbury.*

Idaho.—The mean temperature was 43.3°, or 2.2° below normal; the highest was 90°, at Hagerman on the 5th, and the lowest, 4°, at Chesterfield and Van Wyck on the 10th and 12th, respectively. The average precipitation was 2.29, or 1.18 above normal; the greatest monthly amount, 5.48, occurred at Idaho City, and the least, 0.42, at Burnside.—*S. M. Blandford.*

Illinois.—The mean temperature was 59.4°, or 4.9° above normal; the highest was 94°, at Decatur and Plumhill on the 14th, and the lowest, 23°, at Scales Mound on the 29th and at Streator on the 31st. The average precipitation was 3.23, or 0.96 above normal; the greatest monthly amount, 5.26, occurred at Cisne, and the least, 1.03, at Scales Mound.

Fall seeding was completed, with about the usual acreage of wheat, rye, and grasses, except in central district, where less wheat than usual was sown, owing to the continued dry weather the first decade of the month. Wheat is generally reported to be in splendid condition.—*C. E. Linney.*

Indiana.—The mean temperature was 59.2°, or 5.6° above normal; the highest was 95°, at Washington on the 15th, and the lowest, 22°,

at Auburn, Cambridge City, and Fairmount on the 1st. The average precipitation was 2.91, or 0.54 above normal; the greatest monthly amount, 4.60, occurred at Syracuse, and the least, 1.25, at Hammond.

Wheat germinated well, and at the end of the month most of the fields were a bright green, the blades of the early sown being from 2 to 3 inches high, and the late sown just coming up, well prepared for winter weather.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 56.7°, or about 6.0° above normal; the highest was 95°, at Moor on the 13th, and the lowest, 17°, at Hampton on the 29th. The average precipitation was 1.73, or about 0.75 below normal; the greatest monthly amount, 4.64, occurred at Thurman, and the least, 0.15, at Hamburg.—*J. R. Sage, Director; G. M. Chappel, Assistant.*

Kansas.—The mean temperature was 61.8°, or 5.4 above normal; the highest was 96°, at Colby on the 1st and at Toronto on the 15th, and the lowest, 18°, at Wallace on the 15th. The average precipitation was 1.75, or 0.15 below normal; the greatest monthly amount, 6.04, occurred at Campbell, while none fell at Norton and Oberlin.

Early sown wheat was growing rapidly at the end of the month and generally presented a fine stand; the late sown was coming up.—*T. B. Jennings.*

Kentucky.—The mean temperature was 61.3°, or 3.8° above normal; the highest was 93°, at Hopkinsville on the 13th and 14th, and the lowest, 28°, at Catlettsburg on the 1st. The average precipitation was 2.42, or nearly normal; the greatest monthly amount, 4.18, occurred at Earlington, and the least, 1.25, at Catlettsburg.

At the close of the month winter wheat had made a good start and was in a thriving condition; apparently about the usual acreage has been sown.—*H. B. Hersey.*

Louisiana.—The mean temperature was 70.0°, or 3.1° above normal; the highest was 94°, at Plain Dealing on the 13th, at Prevost on the 19th, and at Monroe on the 22d, and the lowest, 31°, at Robeline on the 30th. The average precipitation was 1.93, or 1.05 below normal; the greatest monthly amount, 4.86, occurred at Houma, and the least, 0.30, at Covington.—*W. T. Blythe.*

Maryland and Delaware.—The mean temperature was 57.6°, or 2.5° above normal; the highest was 88°, at Jewell, Md., on the 23th, and the lowest, 15°, at Deerpark, Md., on the 1st. The average precipitation was 2.80, or 0.24 below normal; the greatest monthly amount, 5.34, occurred at Millsboro, Del., and the least, 0.35, at Clearspring, Md.—*F. J. Wala.*

Michigan.—The mean temperature was 52.3°, or 4.6° above normal; the highest was 88°, at Berrien Springs on the 15th, and the lowest, 11°, at Mancelona on the 1st. The average precipitation was 2.95, or 0.25 above normal; the greatest monthly amount, 5.25, occurred at Vassar, and the least, 0.81, at Ludington. The month is distinguished by the two features of a high mean temperature and a small amount of snowfall; it is the warmest October of which this office has record (back to and including October, 1887). The snowfall was comparatively light in all parts of the State, especially over the Upper Peninsula, where an average of over 4 inches usually occurs during October, while this year there was only a trace.—*O. F. Schneider.*

Minnesota.—The mean temperature was 49.0°, or about 4.0° above normal; the highest was 87°, at Lake City on the 23d, and the lowest, 11°, at New Folden on the 19th. The average precipitation was 3.22, or 0.98 above normal; the greatest monthly amount, 7.95, occurred at St. Cloud, and the least, 1.05, at Minnesota City.—*T. S. Outram.*

Mississippi.—The mean temperature was 67.9°, or about 4.0° above normal; the highest was 96°, at Port Gibson on the 14th, and the lowest, 34°, at Batesville on the 1st and at Macon on the 2d. The average precipitation was 1.13, or 0.74 below normal; the greatest monthly amount, 2.42, occurred at Ripley, and the least, 0.27, at Brookhaven.—*H. E. Wilkinson.*

Missouri.—The mean temperature was 62.3°, or 6.5° above normal; the highest was 100°, at Appleton City on the 13th, and the lowest, 24°, at Elmira on the 17th. The average precipitation was 2.92, or 0.61 above normal; the greatest monthly amount, 6.33, occurred at New Madrid, and the least, 0.47, at Liberty.

In most of the eastern, central, and southern counties the weather during October was favorable for wheat sowing, and, although in some districts the soil was too dry for quick growth, as a rule the seed germinated well, and at the close of the month the crop looked very promising, but in many of the northern and western counties drought prevailed until the 25th; the soil was extremely dry; considerable seed failed to germinate, and some that came up died from lack of moisture. Over the greater portion of the State seeding was practically completed by the close of the month; pastures continued very dry and short, as a rule, but improved considerably after the rains of the 25-27th; there was also a scarcity of stock water in many places.—*A. E. Hackett.*

Montana.—The mean temperature was 41.3°, or 3.5° below normal; the highest was 87°, at Fort Benton on the 5th and 8th, and the lowest, 9° below zero, at Kipp on the 14th. The average precipitation was 1.47, or 0.59 above normal; the greatest monthly amount, 3.80, occurred at Dearborn Canyon, and the least, 0.40, at Red Lodge. The greatest total snowfall for the month was 35 inches at Dearborn Canyon. The storm of the 14th and 15th in north-central Montana and extending

southward along the eastern slope of the Rocky Mountains was very severe; several sheep herders lost their lives and many thousand sheep were frozen to death.—*E. J. Glass.*

Nebraska.—The mean temperature was 53.0°, or 2.9° above normal; the highest was 98°, at Beaver on the 1st and at Tecumseh on the 23d, and the lowest, 11°, at Callaway on the 16th and at Gering on the 31st. The average precipitation was 1.00, or 0.54 below normal; the greatest monthly amount, 4.90, occurred at Eden, while none fell at a number of stations in the central and southwestern portions.

The dry, warm weather the first three weeks of October was exceptionally favorable for outstanding crops and for finishing fall work, with the exception of plowing and seeding. The soil was so dry during this period that very little plowing or seeding was done. Some wheat sown in September came up and was injured by this dry spell, while considerable seed remained in the ground and did not sprout, or came up unevenly, until the rains in the eastern part of the State on the 15th, 24th, and 25th. Warm weather followed these rains, and fall-sown grain improved in condition rapidly. Corn husking commenced unusually early, and although corn was broken down badly, rapid progress was made in securing the crop.—*G. A. Loveland.*

Nevada.—The mean temperature was 45.5°, or about 4.0° below normal; the highest was 89°, at Silver Peak on the 1st, and the lowest, 4°, at Fenelon on the 14th. The average precipitation was 0.74, or 0.22 above normal; the greatest monthly amount, 2.45, occurred at Lewers Ranch, while none fell at several stations.—*J. H. Smith.*

New England.—The mean temperature was 51.2°, or 3.1° above normal; the highest was 84°, at Waterbury, Conn., on the 12th and at Hawleyville, Conn., on the 13th, and the lowest, 14°, at Grafton, N. H., on the 22d. The average precipitation was 2.01, or 1.67 below normal; the greatest monthly amount, 3.99, occurred at Enosburg Falls, Vt., and the least, 0.70, at Jacksonville, Vt.

The weather during the month was especially favorable to outdoor work, and harvesting of crops and thrashing of grain progressed to a finish under the most suitable conditions. Plowing and seeding were completed in good season.—*J. W. Smith.*

New Jersey.—The mean temperature was 56.6°, or 3.3° above normal; the highest was 86°, at Friesburg on the 13th and the lowest, 18°, at Belvidere on the 22d. The average precipitation was 2.72, or 0.88 below normal; the greatest monthly amount, 4.65, occurred at Woodbine, and the least, 1.07, at Boonton.—*E. W. McGunn.*

New Mexico.—The mean temperature was 53.3°, or 0.6° below normal; the highest was 90°, at Mesilla Park on the 1st, and the lowest, 7°, at Monero on the 27th and 28th. The average precipitation was 0.45, or 0.49 below normal; the greatest monthly amount, 2.30, occurred at Monero, while there was none recorded at Galisteo, Hillsboro, Lordsburg, Rincon, and Cambray, and only a trace at Albuquerque, Bernalillo, Deming, Los Lunas, White Oaks, and Strauss.—*R. M. Hardings.*

New York.—The mean temperature was 52.5°, or 4.0° above normal; the highest was 86°, at Cedarhill on the 12th, and the lowest, 13°, at New Lisbon on the 22d. The average precipitation was 2.27, or 0.92 below normal; the greatest monthly amount, 4.48, occurred at North Lake, and the least, 0.24, at Mount Morris.

The weather has been favorable for all farm work and crops have been housed without material damage. While the month has been rather dry, the conditions have been favorable for the seeding and germination of fall grain; wheat and rye were very fine at the close of the month, with prospects of being strong and healthy at the beginning of the winter weather.—*R. G. Allen.*

North Carolina.—The mean temperature was 60.8°, or 1.2° above normal; the highest was 89°, at Tarboro on the 19th, and at Mocksville and Newbern on the 20th, and the lowest, 22°, at Linville on the 1st. The average precipitation was 4.31, or 0.62 above normal; the greatest monthly amount, 9.38, occurred at Hatteras, and the least, 1.01, at Biltmore.

The soil was in excellent condition for plowing, and winter grains germinated well and grew vigorously.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 42.0°, or 0.4° below normal; the highest was 86°, at Bismarck on the 6th and at Minot on the 1st, and the lowest, 7°, at Woodbridge on the 19th. The average precipitation was 1.14, or 0.18 above normal; the greatest monthly amount, 2.30, occurred at McKinney, and the least, trace, at Grafton.—*B. H. Bronson.*

Ohio.—The mean temperature was 57.4°, or 4.9° above normal; the highest was 94°, at Kenton on the 14th, and the lowest, 20°, at Wauseon on the 1st. The average precipitation was 2.14, or nearly normal; the greatest monthly amount, 4.50, occurred at Montpelier, and the least, 0.92, at Thurman.

The weather during the month was mild and pleasant, and generally favorable for all farm work. The condition of winter wheat at the end of the month, for the State as a whole, is not the best; a great many correspondents state that the dry weather prevented proper growth, and that many fields are thin and the plants weak.—*J. Warren Smith.*

Oklahoma.—The mean temperature was 65.9°, or 4.4 above normal; the highest was 99°, at Ryan on the 21st, and the lowest, 22°, at Woodward on the 31st. The average precipitation was 4.30; the greatest

monthly amount, 7.30, occurred at Tablequah, and the least, 1.77, at Beaver.—*C. M. Strong.*

Oregon.—The most conspicuous features of the meteorological conditions of the month were the abnormally low temperatures prevailing in many sections and the excessive precipitation.

The mean temperature, 48.7°, was the lowest on record, being 2.4° below normal; the highest was 93°, at Vernonia on the 4th, and the lowest, 2° below zero, at Riverside on the 9th, being the first time on record that zero temperatures occurred during the month of October in Oregon. At many stations of the Willamette Valley and Plateau region the minimum temperature reached the lowest point ever recorded. The average precipitation was 4.42, which is 1.0 above normal; the greatest monthly amount, 11.32, occurred at Nehalem, and the least, 1.32, at Burns. The rainfall was evenly distributed throughout the month, falling in two well-defined periods, viz, from the 10th to the 12th and from the 15th to the 26th. Snow fell over the Plateau region on several days, the fall at Sparta in Union County being the heaviest on record in that section for October.—*B. S. Pagus.*

Pennsylvania.—The mean temperature was 54.6°, or 3.9° above normal; the highest was 94°, at Derry Station on the 16th, and the lowest, 15°, at Dushore and Hawley on the 22d. The average precipitation was 1.55, or 1.75 below normal; the greatest monthly amount, 3.81, occurred at St. Marys, and the least, 0.53, at West Newton.—*T. F. Townsend.*

South Carolina.—The mean temperature was 64.2°, or nearly normal; the highest was 91°, at Blackville on the 19th and at Temperance on the 21st, and the lowest, 34°, at Spartanburg on the 23d. The average precipitation was 5.00, or 1.90 above normal; the greatest monthly amount, 9.63, occurred at Blackville, and the least, 1.97, at Gaffney.—*J. W. Bauer.*

South Dakota.—The mean temperature was 48.4°, or about 1.0° above normal; the highest was 96°, at Cherry Creek (P. O. Leslie), on the 1st, and the lowest, 10°, at Ashcroft, on the 31st. The average precipitation was 1.53, or about 0.27 above normal; the greatest monthly amount, 4.41, occurred at Desmet, and the least, 0.43, at Cherry Creek.—*S. W. Glenn.*

Tennessee.—The mean temperature was 62.2°, or 3.9° above normal; the highest was 92°, at Iron City and Trenton on the 13th, and the lowest, 24°, at Silver Lake and Erasmus on the 1st. The average precipitation was 2.47, or 0.12 above normal; the greatest monthly amount, 4.27, occurred at Lynnville, and the least, 0.94, at Bluff City.

On the whole, the month was favorable for harvesting crops, preparing the soil, and sowing wheat; much of the early-sown grain was germinating well.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 43 stations distributed throughout the State, was 2.1° above normal. There was a slight deficiency over the extreme western portion of the State, while over the other portions there was a general excess, ranging from 1.0° to 4.4°, with the greatest over east Texas and the eastern portion of north Texas; the highest was 98°, at Panter on the 7th and at Grapevine on the 15th, and the lowest, 30°, at Marathon on the 27th and at Tulla on the 28th. The average precipitation, determined by comparison of 49 stations distributed throughout the State, was 1.35 above normal; there was a slight deficiency over the western portion of the State and the extreme eastern portion of the coast district, while there was a general excess elsewhere, ranging from 1.00 to 5.85, with the greatest excess over the central portion of the coast district. The rainfall for October was not well distributed throughout the State, and the number

of rainy days ranged from none at Sanderson to 12 at Fort Brown and Fort Clark. The greatest monthly amount, 9.00, occurred at Brazoria, and the least, trace, at Sanderson.

The weather, as a whole, has been exceptionally favorable for cotton picking during the season, and the crop has been picked closer than it would have been had not the continued drought retarded other farm work, thus increasing the yield of the crop to some extent. The top crop of cotton was generally a failure. The yield of the cotton crop is light, except in a few scattered localities, and, as a whole, is considerably below an average.—*I. M. Cline.*

Utah.—The mean temperature was 45.6°, or 2.8° below normal; the highest was 96°, at Pahreah on the 5th, and the lowest, 9°, at Woodruff on the 8th. The average precipitation was 1.50, or 0.66 above normal; the greatest monthly amount, 3.86, occurred at Huntsville, and the least, 0.06, at Elgin.—*L. H. Murdoch.*

Virginia.—The mean temperature was 58.5°, or 0.8° above normal; the highest was 88°, at Bigstone Gap on the 15th, and the lowest, 20°, at Burkes Garden on the 1st. The average precipitation was 2.97, or 0.24 below normal; the greatest monthly amount, 6.11, occurred at Callaville, and the least, 0.89, at Cliftonforge.—*E. A. Evans.*

Washington.—The mean temperature was 48.6°, or more than 1.0° below normal; the highest was 86°, at Southbend on the 4th and the lowest, 13°, at Cle Elum on the 14th. The average precipitation was 3.95, which is over an inch above normal. In the eastern section the precipitation was double the normal amount. The greatest monthly amount, 13.73, occurred at Clearwater, and the least, 0.39, at Connell.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 56.8°, or 2.8° above normal; the highest was 91°, at New Cumberland on the 5th, and the lowest, 19°, at Marlinton on the 1st. The average precipitation was 1.39, or 0.99 below normal; the greatest monthly amount, 3.81, occurred at Lanes Bottom, and the least, 0.23, at Powellton. Droughty conditions prevailed during the greater portion of the month; forest fires, which were very destructive to timber, were general over the eastern and central counties; wheat and oats are coming up very slowly, but look fairly well.—*E. C. Voss.*

Wisconsin.—The mean temperature was 52.1°, or about 3.6° above normal; the highest was 88°, at Prairie du Chien on the 23d, and the lowest, 15°, at Spooner on the 21st. Remarkably high temperatures were recorded in all portions of the State from the 22d to the 24th, the record for the last decade of October being broken at nearly all stations. The average precipitation was 2.50, or about normal; the rainfall was heaviest in the north-central counties, the greatest amount being 6.53 at Hayward, 3.69 of which fell in fourteen hours on the 14th and 15th; the least amount for the month was 1.04, at Valley Junction.

The dry weather during the latter part of September and the early part of October seriously interfered with plowing and seeding and rendered the germination of fall grains extremely slow. The droughty condition was broken, however, by the occurrence of liberal and well distributed rains from the 10th to the 16th, and pastures were revived and fall grains were greatly improved.—*W. M. Wilson.*

Wyoming.—The mean temperature was 40.6°, or 3.6° below normal; the highest was 91°, at Fort Laramie on the 1st, and the lowest, 1° below zero, at Fourbear on the 13th. The average precipitation was 1.54, or 0.70 above normal; the greatest monthly amount, 4.81, (47.6 inches of snow), occurred at Centennial, and the least, 0.35, at Lovell.—*W. S. Pawmer.*

SPECIAL CONTRIBUTIONS.

EFFECT OF WIND ON CATCH OF RAINFALL.

By G. J. SYMONS, dated London, October 24, 1899.

I desire to say a few words respecting the interesting article under the above title, on pages 308-310 of the MONTHLY WEATHER REVIEW for July, 1899.¹

¹In reference to the above important letter from Mr. Symons, we may say that when, on page 309, second column, lines 7 and 8, we stated that the pit gage is adopted as the standard in England and Europe, we had in mind those who have investigated the decrease of rainfall with altitude; in such studies the pit gage is considered to have its mouth at the level of the ground, or at altitude 0. It is only for such special researches that Mr. Symons encourages its use. For ordinary use at his thousands of rainfall stations, Mr. Symons always requires an altitude of 1 foot. In this matter, where uniformity is the main point, he is undoubtedly correct. On the average of all the investigations that have been made in Europe and America, it results that the difference between the pit gage and one established at an elevation of 1 foot, or the so-called deficit of the upper gage is between 3 and 4 per cent. In order that the reader may fully appreciate the reliability of this statement we reprint a large portion of the Editor's paper read before the Philosophical Society of Washington, November 24, 1888.—ED.

As regards the gages at Sacramento, the railroad gage must be of a very bad pattern if it really loses anything of consequence by evaporation. I have no idea what the pattern is, but assuming it to be fairly correct, I have no doubt that its deficit is due to its location "so placed on the roof, near the south end of the building that the wind strikes it with greater velocity than at almost any other location that could have been chosen." Now, if the reader will turn to the article, by the late George Dines in *British Rainfall, 1877*, pp. 15-25, he will see that this position is apparently precisely that in which the minimum of rain will be collected. While quite approving the suggestion that a shielded gage be established close to the offender, I would also suggest that, if the buildings permit, it would be well to put an unprotected gage 20 or 30 feet to leeward of the present one—according to Mr. Dines' experiments this should collect far more than the old gage.

I wish also to correct an erroneous impression that might be made by reading the paragraph at the top of the second