

## CLIMATE AND CROP SERVICE.

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

The following summaries relating to the general weather and crop conditions during November are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau:

**Alabama.**—The light yield of cotton was somewhat augmented by very favorable weather of first two decades, which matured much of the second growth and top crop, though all growth was stopped by the first general killing frost and freeze of autumn, which swept over the State on the 27th and 28th; some outstanding cotton was damaged by general and heavy to slightly excessive rains of last decade, which retarded all farm work, but benefited recently sown oats and wheat.—*F. P. Chaffee.*

**Arkansas.**—Temperature and rainfall considerably above normal; first general killing frost occurred on the 27th. All late crops made good growth and yielded well. Cotton picking progressed rapidly and was nearly completed in the northern counties and in some localities in other sections. Cotton made favorable progress; the yield will be greater than at first anticipated. Wheat sowing progressed rather slowly, except in the northwest; comparatively little had been sown in central and southern and a reduced acreage in the northeastern section. Wheat and oats germinated well and made rapid growth; a few report damage by the hessian fly.—*Edward B. Richards.*

**Arizona.**—November was a rather cool month, especially during the latter half. Quite heavy rains and snows fell over most of the territory during the early part of the third decade. These rains have greatly benefited the ranges, except in a few localities, and stock is now generally doing well. Orange picking began the latter part of the month, but the crop is rather light.—*M. E. Blystone.*

**California.**—Abnormally cool weather prevailed during the month, retarding to some extent the growth of grass and early sown grain. Severe frosts occurred in many places, but caused no material damage. The rainfall was above average in nearly all sections, notably in the central and northern districts, and greatly benefited all growing crops and pasturage. The overflow of creeks and rivers in some of the northern districts caused slight damage to late crops.—*Alexander G. McAdie.*

**Colorado.**—The month averaged warmer than normal east of the mountains and over a considerable area on the western slope. The precipitation was unevenly distributed. It was somewhat greater than normal over areas in the extreme western part of the State and generally along the eastern foothills, while a marked deficiency was noted along the eastern and southern borders and in the central mountain region.—*F. H. Brandenburg.*

**Florida.**—The month, as a whole, has been quite favorable for farm work. The remaining cotton was picked and the last of the corn crop housed. The sweet potato crop improved very much; the crop at one time promised to be very short, but favorable temperatures have done much toward making the crop a normal one. Good progress was made by truckers, except over detached sections, where local heavy rains did some damage to seed beds. Strawberries are making fair progress. Citrus fruits, pineapples, and vegetables are being shipped in moderate quantities.—*A. J. Mitchell.*

**Georgia.**—A remarkably mild month for the season, the mean temperature for many stations being 5° to 7° in excess of the normal. But few Novembers in the past quarter of a century have been warmer than, or so warm as, this one. Practically no freezing weather occurred until the extreme latter portion of the month. The first general killing frost of the season occurred on the 28th. The average rainfall was about one inch greater than normal. Fall wheat and oats are in good condition.—*J. B. Marbury.*

**Idaho.**—November was remarkable for heavy falls of snow on all the mountains of the State. At the close of the month the snow on the mountains above 5,500 feet exceeded the accumulated depth for the winter of 1901-2. Heavy rains fell over the winter stock ranges, assisting the growth of grass somewhat, but came too late to cause a material improvement.—*S. M. Blandford.*

**Illinois.**—The month was very warm, and the rainfall slightly above the normal and well distributed. The work of securing the corn crop continued under satisfactory conditions, and though there were some further reports of molding of the corn in shock, the crop was put up in good condition. Wheat and rye made rapid and healthy growth, and both are reported to be in exceptionally good condition to stand severe winter weather. Some injury to early sown wheat by hessian fly was reported in the southern portion of the State, but the spread of this insect seems to have been checked during the latter half of the month.—*Leon J. Guthrie.*

**Indiana.**—Weather conditions were exceptionally favorable to fall sown grains; wheat sown prior to September 25 was damaged by flies, but bulk of corn planted after that date made good growth and was in excellent condition for winter. Husking and shredding corn in shock made fair progress, but gathering from the stalk and cribbing was retarded by

dampness. Pastures continued to furnish good grazing, and live stock was in good condition.—*W. T. Blythe.*

**Iowa.**—The month was warmer than usual, with excessive cloudiness and moisture. Corn gathering was retarded by wet fields, and conditions not generally favorable for cribbing. At close of month more than the usual amount was unharvested. Pasturage excellent; conditions favorable for plowing dry upland fields; potato crop generally secured in good condition. Reports indicate about 53 per cent of corn soft and unmarketable except for immediate feeding.—*John R. Sage.*

**Kansas.**—Wheat in fine condition, good stand, good color, and growing well, except that early sown wheat in southeastern counties is being injured by fly; has begun to stool in some northern and is being pastured in some southern counties. Wet weather has interfered, in a measure, with gathering corn, and with its hardening for the sheller. Some late hay and some cane hay spoiled by the wet weather.—*T. B. Jennings.*

**Kentucky.**—The weather was very favorable for winter wheat, rye, and oats, and at the end of the month these crops were in excellent condition. There was some complaint of damage by hessian fly, but the area affected is small. Fall pasturage is fine, and stock of all kinds is in very good condition. Tobacco has cured up well and was in good condition for handling during the latter part of the month. Corn shucking progressed well.—*H. B. Hersey.*

**Louisiana.**—With the exception of heavy rains on the 4th, the weather during the first half of the month was favorable for maturing and gathering the remainder of the cotton crop. During the last fifteen days showery weather interfered with picking. A general killing frost occurred in the cotton-growing parishes on the 27th, which stopped the growth and development of the plant. The greater part of the month was so warm that sugar cane did not ripen well, but the weather was generally favorable for grinding; cool weather at the end of the month was very favorable for the crop.—*I. M. Cline.*

**Maryland and Delaware.**—Unusually mild temperatures, with sufficient rainfall, favored all growth. Flowers blooming in parts of interior and south, some fruit trees in leaf and blossom, raspberries and strawberries giving second crops, and protected tomato vines continuing light yields, until frosts of 29th. Wheat and fall sown grasses well rooted, but considerable fly in early wheat. Corn husking well advanced, but too warm to dry the ears properly. Tobacco cured nicely, except for hurtful periods of foggy weather. Pasturage good.—*Oliver L. Fassig.*

**Michigan.**—November was generally very favorable for winter wheat, which at the close of the month was in good condition, showing a healthy top of good color and fair size. Correspondents' reports indicated a decreased acreage and some hessian fly in the early sown wheat. Generally, wheat was sown quite late this year on account of the rainy weather that prevailed about the time the crop is usually sown. Much corn still remained in the fields because it was not fit to crib.—*C. F. Schneider.*

**Minnesota.**—No zero temperatures during the month, except at some northern points. Some snow fell in northern portions, and there was snow in parts of the south on the 14th and 15th and after the 25th. Shallow lakes in southern portions were not frozen till late in the month, and deep ones were still open at its close. Plowing was being done in the south till the 29th. Pastures were green and furnished feed nearly all the month. There is still some thrashing to do, but stacks are damp.—*T. S. Outram.*

**Mississippi.**—The month was very warm, having the highest November mean temperature on record. The first half was uniformly mild and pleasant, with but little rainfall, while during the latter half much cloudiness prevailed, and heavy rains were general on the 24th and 25th, followed by much colder weather with snow flurries in the northern counties on the 27th. On the 28th freezing temperatures occurred, except in the extreme southern counties.—*W. S. Belden.*

**Missouri.**—Except in portions of the northwest section, the mean temperature of the month was the highest ever recorded for November, and the warm, showery weather caused wheat to make a vigorous growth. There was much complaint of fly in the early sown, and some damage by rust, but the bulk of the crop was reported in excellent condition. Corn gathering was retarded by rains in the northern and western sections, and some corn was damaged. Fall pastures continued in excellent condition.—*A. E. Hackett.*

**Montana.**—The month opened warm and was mild until the 7th, when the temperature began to fall very rapidly, and the remainder of the month was generally cold. The precipitation was generally in excess of the normal; the heaviest amounts occurred in the northwestern part of State, while the lightest fall was in the southeastern counties. A little plowing was done during the first few days of the month, but after the advent of cold weather, practically nothing in an agricultural line was done.—*Montrose W. Hayes.*

**Nebraska.**—The unusually large number of cloudy, moist, and rainy days in the southeastern part of the State made the month unfavorable for fall work in that section of the State; corn husking progressed slowly; fall sown grain made rapid and vigorous growth and enters the winter in

excellent condition. In other parts of the State the month was exceptionally fine for pushing fall work, and grain generally made excellent growth.—*G. A. Loveland.*

**Nevada.**—The month was slightly colder and much wetter than the average November, especially in the eastern, western, central, and southern sections of the State. Storms were somewhat general during the middle portion of the month, being quite severe in the high mountains, where the fall of snow was much heavier than usual for this time of the year. The weather conditions were very favorable to stock interests.—*J. H. Smith.*

**New England.**—The weather was unusually mild, with mean temperature above the normal at all stations, and in a number of instances broke all previous records of the month. The range of temperature at many points was noticeably small on account of the high minima. There was a marked deficiency in precipitation in all sections. The snowfall was light. Sleet storms were quite general on the 13th and 26th, but no great damage resulted. The weather was very favorable for all outdoor work.—*J. W. Smith.*

**New Jersey.**—The month was abnormally mild, the mean temperature being the highest recorded in November for the past seventeen years; only on four days did the thermometer fall below the freezing point. The rainfall was below the average in all sections, the least amounts being recorded in the extreme northern portion of the State. Winter grain and grass are in fine condition, fields green, and the stand very good. It was a most favorable month for all farming operations.—*Edward W. McGinn.*

**New Mexico.**—Rather more pleasant than usual. Drought continues in northeastern sections, but there has been little complaint, as flocks and herds have been greatly decreased to meet the scarcity of food and water. Elsewhere stock has wintered well thus far.—*R. M. Hardinge.*

**New York.**—The temperature was decidedly above, and the precipitation decidedly below, the normal, but the weather was extremely favorable for wheat and rye, which are in excellent condition for wintering. Wheat was sown very late, but it has the usual growth. Much plowing was done, and some apples and potatoes are yet to harvest.—*R. G. Allen.*

**North Carolina.**—November was the warmest on record in North Carolina. The conditions were highly favorable for all farm work and for the growth of winter crops. A large crop of winter wheat was sown in well prepared soil and grew nicely; at the close of the month fields were green, showing rapid growth, healthy appearance of the plants, and good stands; there was more complaint of damage to early sown wheat by hessian fly than usual in this State. Winter oats and rye were also in excellent condition. The first general killing frost occurred on the 28th; flurries of snow in the west on the 27th.—*C. F. von Herrmann.*

**North Dakota.**—Warm weather, with but little precipitation, allowed such thrashing as remained unfinished to be done, while stock continued to feed on the ranges during the entire month. There was an almost entire absence of severe weather.—*B. H. Bronson.*

**Ohio.**—This was the warmest November on record. The precipitation was a little below normal. Wheat made excellent growth; the earliest sown became very large, and fly appeared in a few fields; late sown is in excellent condition. Rye is doing well. Corn was damaged in shock, and fodder injured by wet weather. Pastures are unusually good.—*B. L. Waldron.*

**Oklahoma and Indian Territories.**—Mild, cloudy weather, with excessive rains, caused wheat to make a rapid growth, becoming too rank the early part of the month, since the ground was too wet to permit pasturing the crop; general prospects were good for the coming year; some evidences of rust and green louse; no damage. The heavy rains delayed cotton picking and did much damage to the remainder of the crop; complaint was made that the bolls opened too slowly or not at all. The corn harvest was ended. Potatoes and turnips made a rapid growth; kaffir corn will make a large second crop. Grass, pastures, and stock are in good condition.—*Chas. A. Hyle.*

**Oregon.**—Owing to heavy and prolonged rains much of the ground in the western portion of the State has been kept too wet and soft to plow or seed, and the farmers generally are much behind with their fall work; in the eastern sections the weather has been more favorable. Wheat sown during the previous month was slow in germinating and also made a slow growth after it came up. The wheat that is above the ground has a good stand and color and appears vigorous and healthy, notwithstanding its slow growth.—*Edward A. Beas.*

**Pennsylvania.**—The mean temperature for the month was 11.3° higher than that for the corresponding period in 1901, and the highest since the service was established. The average precipitation was only 60 per cent of what fell during November, 1901, and the least since 1890. The month, as a whole, was favorable for harvesting late crops, corn husking, and the growth of grains and grasses, but in some sections plowing and seeding were retarded by dry soil, and a few early sown wheat fields were turning yellow or affected by fly. Latest reports were to the effect that grains were well rooted, in favorable condition, and making vigorous growth; that pasturage was ample; that plowing was nearing completion, and the corn crop practically all housed.—*H. A. McNally.*

**Porto Rico.**—This month's weather was highly favorable to all agricultural interests, and young crops look very promising. The new coffee

crop has been successfully gathered, the yield being eminently satisfactory. Older canes were permanently injured by the drought of last month, but the young canes made excellent progress, and the preparation of land and the planting for gran cultura is well advanced. New tobacco made flattering progress. Considerable seed will probably yet be sown. Small crops and pastures are in about their normal condition. The shipping of new oranges was actively begun.—*E. C. Thompson.*

**South Carolina.**—The weather was unusually mild and equable until the 27th and 28th, when a moderate cold wave swept the State, bringing the first snow and sleet of the season, as well as the first killing frost, which occurred on the 28th. Wheat and oats were in fine condition, having come up to good stands. Cotton opened some late bolls, and late crops were gathered in abundance, owing to the prolonged growing season. Truck was exceedingly promising at the close of the month.—*J. W. Bauer.*

**South Dakota.**—The weather during the month was unusually pleasant and free from storms, periods of cold, or heavy snowfalls, and was highly favorable for the completion of autumn farm work and the uninterrupted grazing of live stock on the ranges. Live stock kept in good condition, but the absence of general snows of any consequence caused free range stock west of the Missouri River to reduce the pasturage near the streams and water holes more than usual.—*S. W. Glenn.*

**Tennessee.**—The month was remarkably favorable for farm work and the growth of winter grains until the last week, when heavy rains fell, followed by cold weather and light snow on the 27th. Wheat and other grains made rapid growth and were more promising than for years, and in many sections were affording excellent pasturage. Fly appeared in some early sown wheat. Corn and cotton were mostly gathered, but in the western division considerable cotton was still unpicked at the end of the month.—*H. C. Bate.*

**Texas.**—Killing frosts were reported from the northwestern counties on the 16th and 17th and from the entire State, except the coast district and the southeastern counties, on the 27th; otherwise the temperature during the month was higher than is usual for November. Rains were frequent and in many sections excessive, putting a stop to all farm work and causing flood conditions to prevail in the rivers in the eastern and northern portions of the State. The weather conditions were unusually favorable for the growth of wheat, and in some of the early seeded fields it was from 12 to 18 inches high and liable to suffer serious damage from the first hard freeze; otherwise its condition and that of other cereals were never more promising. Late planted and second growth (top crop) cotton were badly damaged by the prolonged period of wet weather and the subsequent killing frost; bolls have failed to open and are rotting and falling off. Cotton that opened just prior to the rains and was not picked when the rains began was badly stained and much of it beaten to the ground and rendered valueless. The increment to the yield in sight the first of October is very disappointing. Rice in shock suffered considerable damage from wet weather. The bulk of the cane crop was made up during the month, with the yield very satisfactory. Pasturage is excellent and stock in fine condition.—*Edward H. Bowie.*

**Utah.**—Sugar beet digging was completed during the first decade. The last two decades were too stormy and cold for outdoor farm work. The heavy precipitation placed the ground in good condition and furnished plenty of water for stock. Range feed is very scarce and cattle are already beginning to show the effects of the shortage. Fall grain received a poor start on account of the drought during September and October, and is only in fair condition.—*L. H. Murdock.*

**Virginia.**—The month was generally mild and open in character until its close, when there was considerable cloudiness and rains. The growth of crops in all sections of the State was unusually good. Fall sown wheat where put in early attained fine stands, and that late seeded germinated and started off well. In all portions of the State where winter wheat is grown the prospects are very encouraging.—*Edward A. Evans.*

**Washington.**—The month was wet throughout, especially over the eastern section of the State, where after raining for three weeks the rain turned to snow. October was so unusually dry that only one-third of the fall wheat crop was sown before stopped by rain. Germination was slow, but there is a good stand and it is uninjured.—*G. N. Salisbury.*

**West Virginia.**—Although dry until the last week, wheat, rye, and oats were in excellent condition at the close of the month, with generally a good stand; reports indicate that fall sown grain has not been in better condition for a number of years, although some complaint is made of injury by the fly; corn is mostly husked and cribbed; pastures very short, but stock in good condition.—*E. C. Vose.*

**Wisconsin.**—The unusually warm weather during the month, together with the abundant rainfall, was very favorable for the growth of winter grains and grasses; winter wheat and rye made excellent growth, are hardy and well rooted, and in good condition to withstand the winter season; clover is generally reported in satisfactory condition.—*W. M. Wilson.*

**Wyoming.**—No severe storm visited the State during the month, making the month favorable for the stock interests of the State. Over most of the State the precipitation was below the November normal, and over the Red Desert the lack of snow prevented the flockmasters from moving their sheep to the winter ranges on the desert.—*W. S. Palmer.*

In the following table are given, for the various sections of the Climate and Crop Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting greatest and least monthly precipitation, and other data, as indicated by the several headings:

Summary of temperature and precipitation by sections, November, 1902.

Section.	Temperature—in degrees Fahrenheit.								Precipitation—in inches and hundredths.						
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.				
			Station.	Highest.	Date.	Station.			Lowest.	Date.	Station.	Amount.	Station.	Amount.	
Alabama	68.0	+4.3	5 stations	85	{14, 15, 17}	Oneonta	21	28	4.22	+0.90	Opelika	6.75	Eufaula	1.95	
Arizona	51.5	-2.5	Astec	95	5	Flagstaff	7	24	2.10	+1.18	Flagstaff	6.85	Benson	T.	
Arkansas	56.5	+5.3	Helena	90	11	Pond	12	27	6.66	+2.68	Dallas	13.11	Marianna	3.55	
California	56.8	-2.4	Ogilby	95	1	Bodie	-10	24, 30	3.61	+1.05	Branscomb	27.26	Mammoth Tank	T.	
Colorado	35.9	-0.2	Lamar	82	11	Breckenridge	-20	28	0.70	-0.02	Marshall Pass	3.27	Grover	0.00	
Florida	68.4	+3.3	Micanopy	81	6	Wausau	28	28	3.25	+1.24	Carrabelle	7.82	Orlando	0.52	
Georgia	59.0	+4.8	Fleming, Millen	88	12	Tallahassee	21	28	3.69	+0.85	Jesup	6.88	Americus	1.32	
Idaho	35.5	-0.4	Boise, Pollock	70	10	Paris	-10	25	2.76	+0.53	St. Maries	7.13	Blackfoot	0.10	
Illinois	48.7	+7.9	Cobden	83	10	Lanark	9	30	3.13	+0.43	New Burnside	5.71	Fandon	1.71	
Indiana	49.5	+7.8	Richmond	86	2	Northfield	11	28	3.69	+0.10	Paoli	6.59	Auburn	2.07	
Iowa	41.2	+8.4	Carroll	79	1	Chester	4	30	2.13	+0.71	Stockport	4.19	SiouX City	0.16	
Kansas	46.4	+4.8	Medicine Lodge	85	1	Achilles, Colby	8	29	1.53	-0.64	Independence	6.26	Lebanon, Oberlin	0.00	
Kentucky	53.4	+6.7	Pikeville	80	14	Bowling Green	20	28	4.42	+0.37	Alpha	6.77	Lexington	3.69	
Louisiana	63.5	+4.8	Plain Dealing	88	8	N. La. Ex. Station	29	28	4.89	+0.31	Lakeside	8.70	Jeanerette	2.50	
Maryland and Delaware	50.9	+6.7	3 stations	80	13	Sunnyside, Md.	11	29	3.11	+0.07	Annapolis, Md.	5.40	2 stations	1.84	
Michigan	47.2	+7.7	Carsonville	76	11	Ishpeming	4	30	2.64	-0.10	Red Wing	6.00	Roscommon	0.40	
Minnesota	33.3	+5.0	St. Peter	68	2	Pokegama Falls	8	30	1.57	+0.50	Indianola	4.02	Ada	0.30	
Mississippi	66.0	+5.5	Edwards	89	1	Duckhill	24	28	4.61	+1.13	Indianola	8.20	Waynesboro	2.21	
Missouri	50.1	+7.3	Halfway	85	11	Maryville, Oregon	18	27	3.54	+1.36	Olden	6.21	Conception	1.51	
Montana	31.0	-0.5	4 stations	82	2, 7, 9	Fort Logan	-10	23	1.26	+0.30	Troy	5.91	Miles City	0.10	
Nebraska	38.7	+3.6	Franklin	79	12	Bridgeport	0	29	0.52	-0.15	Odell	3.50	2 stations	0.00	
Nevada	37.2	-0.5	Rioville	82	7, 9	Potts	-3	24	1.25	+0.66	Lewers Ranch	3.90	Waubuska	0.15	
New England	41.9	+4.8	Westboro, Mass.	71	14	Enosburg Falls, Vt.	-1	28	1.27	-0.93	Hyannis, Mass.	2.71	Pitchburg, Mass.	0.45	
New Jersey	49.3	+5.8	Bridgeton	80	13	Charlottesville	20	29	2.20	-0.79	Bridgeton	4.17	Sussex	0.87	
New Mexico	42.6	+0.6	Carlsbad	93	10	Bluewater	2	26	0.75	+0.05	Taos	2.00	Raton	0.11	
New York	43.5	+6.6	Mount Etrick	77	14	Winsors	4	30	1.40	-1.83	Number Four	4.36	Straits Corners	0.50	
North Carolina	55.2	+5.4	Pittsboro	88	11	Canton, Indian Lake	4	29	1.40	-0.74	Sloan	7.28	Asheville	1.90	
North Dakota	27.6	+5.2	3 stations	69	9	Linville	18	29	3.99	+0.46	Williston	0.72	6 stations	T.	
Ohio	48.5	+7.7	New Berlin	87	11	Milton	-12	29	0.24	-0.65	Greenville	3.84	Orangeville, Toledo	1.40	
Oklahoma and Indian Territories	53.5	+5.3	Claremore, Ind. T.	86	11	Hillhouse	12	29	5.56	+3.39	Goodwater, Ind. T.	12.10	Kenton, Okla.	0.29	
Oregon	42.6	-0.8	Prineville	76	1	Kenton, Okla.	12	29	5.56	+3.39	Goodwater, Ind. T.	12.10	Kenton, Okla.	0.29	
Pennsylvania	47.3	+7.0	Huntingdon Center Hall	78	1, 2, 13	Beulah	9	4	9.11	+3.44	Glenora	31.54	Klamath Falls	0.79	
Porto Rico	76.6	-0.8	Coatsville	78	13	Lawrenceville	9	30	1.53	-1.96	Aleppo	3.02	Wellisboro	0.50	
South Carolina	59.2	+5.0	Bayamon	95	10	Caguas	48	16	6.79	-1.73	Hacienda Perla	13.03	Yauco	1.82	
South Dakota	34.2	+3.5	Caguas	16, 22	10, 15	Greenville	22	28	3.80	+0.95	Summerville	7.01	Calhoun Falls	1.70	
Tennessee	54.5	+6.3	Severn	89	15	Leola	-5	30	0.40	-0.11	Gary	1.05	Ashcroft	T.	
Texas	61.8	+4.9	Gettysburg	77	7	Hohenwald	17	28	4.54	+0.66	Byrdstown	7.60	Bluff City	2.22	
Utah	36.9	-1.1	McKenzie	84	10	Rhineland	19	27	6.57	+4.30	Beaumont	22.74	Fort Ringgold	0.41	
Virginia	52.8	+5.1	Pope	11	11	Coyoto	-13	30	1.78	+0.82	Ranch	5.59	Terrace	0.04	
Washington	40.4	-0.3	Cotulla	95	15	Blacksburg	19	26	3.66	+0.76	Fredericksburg	5.16	Stanardsville	1.10	
West Virginia	50.3	+7.1	Fort Ringgold	24	24	Wilbur	5	29	6.82	+1.08	Clearwater	20.96	Trinidad	0.35	
Wisconsin	39.6	+7.3	Fillmore	81	9	Travellers Repose	12	29	3.27	+0.07	Byrne	4.56	Moscow	1.23	
Wyoming	32.8	+0.4	Laerosse	88	15	Haward	2	30	2.40	+0.65	North Crandon	5.75	New Holstien	0.65	
			Walla Walla	64	2	South Pass City	-10	26	0.38	-0.22	Fort Yellowstone	2.35	Lusk, Pinebluff	T.	
			Lind	13	13										
			Nuttallburg	83	11										
			Romney	12	12										
			Prairie du Chien	75	13										
			Alcova	77	11										

SPECIAL CONTRIBUTIONS.

HAWAIIAN CLIMATOLOGICAL DATA.

By CURTIS J. LYONS, Territorial Meteorologist.

GENERAL SUMMARY FOR NOVEMBER, 1902.

Honolulu.—Temperature mean for the month, 73.3°; normal, 73.8°; average daily maximum, 78.4°; average daily minimum, 68.6°; mean daily range, 9.8°; greatest daily range, 18°; least daily range, 5°; highest temperature, 83°; lowest, 59°.

Barometer average, 29.940; normal, 29.957; highest, 30.08, 11th; lowest, 29.79, 27th; greatest 24-hour change, that is, from any given hour on one day to the same hour on the next, 0.12; lows passed this point on the 2d, 18th, and 27th; highs on the 11th and 23d.

Relative humidity average, 77.8 per cent; normal, 76 per cent; mean dew-point, 65.5°; normal, 65.5°; mean absolute moisture, 6.95 grains per cubic foot; normal, 6.93 grains; dew on 9 mornings.

Rainfall, 9.80 inches; normal, 5.15 inches; rain record days, 23; normal, 17; greatest rainfall in one day, 3.10, on the 2d; total at Luakaha, 26.16 inches; normal, 10.16 inches; total at Kapiolani Park, 5.38 inches; normal, 4.05 inches.

The artesian well level rose during the month from 32.95 to

33.90 feet above mean sea level. November 30, 1901, it stood at 33.56. The average daily mean sea level for the month was 10.13 feet, the assumed annual mean being 10.00 feet above datum. For November, 1901, it was 10.21. Trade wind days, 19 (6 of north-northeast); normal, 17. Average force of wind during daylight, Beaufort scale, 2.2. Average cloudiness, tenths of sky, 5.5; normal, 4.6.

Approximate percentages of district rainfall as compared with normal: South Hilo, 100 per cent; North Hilo, 190 per cent; Hamakua, 165 per cent; Kohala, 160 per cent; Waimea (Hawaii), 180 per cent; Kona, 77 per cent; Kau, 55 per cent; Puna, 120 per cent; Maui, 100 to 200 per cent; Oahu, 160 per cent; Kauai, 175 per cent. The month has been decidedly a very rainy one. The heaviest monthly rainfall was at Punohua, Hilo, 36.10 the heaviest 24-hour, 15.83, same place; at Laupahoehoe, 10.32, 22d.

Mean temperatures: Pepeekeo, Hilo district, 100 feet elevation, mean maximum, 77.3°; mean minimum, 68.7°; Waimea, Hawaii, 2,730 elevation, 79° and 61°; Kohala, 521 elevation, 77.4° and 66.5°; Waiakoa, Kula, Maui, 2,700 elevation, 74.4° and 59.1°; Puunene (mill), mean temperature, 72.2°; Nahiku,