

## CLIMATE AND CROP SERVICE.

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

The following summaries relating to the general weather and crop conditions during December are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau; they are based upon voluntary reports from meteorological observers and crop correspondents, of whom there are about 3000 and 14,000, respectively:

**Alabama.**—Cold, dry month, with much freezing weather. Rainfall generally deficient, except slightly above normal in a few southwestern counties. Less than average acreage in wheat and oats, but more oats will be sown in January and February if conditions should be favorable; some November sown wheat and oats killed by cold, which much retarded germination of recent seeding. Comparatively little preparation for next season's crops. Rain on 25th beneficial. Fruit trees in good condition.—*F. P. Chaffee.*

**Arizona.**—Droughty conditions continued, though light rain and snow fell during the first half of the month. Early seeded winter grain was generally doing well, but much of that seeded late had not germinated on account of the drought. Range feed quite abundant, but stock water scarce; stock generally in good condition; no severe weather to cause stock to suffer.—*M. E. Blystone.*

**Arkansas.**—The first of the month was unusually cold, but the latter part was about seasonal. Continued dry weather prevented the usual amount of plowing. Small grain made little progress. Cotton picking progressed as the weather permitted, but at the close of the month some little remained in the fields. Fruit buds were uninjured. Stock was generally thrifty.—*Edward B. Richards.*

**California.**—The mean temperature for the State was slightly above normal, but extremely low temperatures occurred during the month in nearly all sections, and severe frosts were frequent. In the central and northern sections the rainfall was ample and crops made good growth, but in the south, where very little rain fell during the season, crops were backward, pasturage was scarce, and cattle were suffering, while the water supply was rapidly failing. Frosts caused trifling damage.—*Alexander G. McAdie.*

**Colorado.**—The mild weather was unusually favorable to live stock, but ranges were poor in parts of the Arkansas and Rio Grande valleys, and generally over the eastern foothill districts, and stock water was low on the slopes of the Divide, in the southeastern counties, and in areas on the western slope. The dryness was unfavorable to fall sown grain, much of which remained dormant. A fair flow of water was reported from the South Platte and Arkansas.—*F. H. Brandenburg.*

**Florida.**—The abnormally cold and very dry conditions seriously retarded most plant growth. Seed germinated slowly and considerable damage resulted to tender vegetables from frost during the first and last decades. Moderate shipments of celery and lettuce were made, but tomatoes, beans, and Irish potatoes were short. Citrus fruits were improved by cold weather. Pineapple growth was retarded very much. Plowing was advanced, and a good acreage was planted to oats.—*A. J. Mitchell.*

**Georgia.**—The deficiency in temperature was very marked, the mean being the lowest on record for December for the State at large. The weather was steadily cold throughout the month. The precipitation was below the normal in all sections, the greatest departure occurring in the northern section and the least in the southern. Germination and growth of wheat and oats were retarded by the cold weather, and oats were damaged in many sections.—*J. B. Marbury.*

**Idaho.**—Temperature about normal. Precipitation somewhat deficient. Weather clear during the first decade; cloudy from the 11th to the 22d, with some rain and snow, and generally bright and pleasant afterwards. The condition of winter range was generally above average during the month, with very little snow on the ground in valleys and low plains; stock did well, with less feeding than usual.—*S. M. Blandford.*

**Illinois.**—The condition of wheat was very uneven. In the northern district it was protected by snow; in the central district it was injured by alternate freezing and thawing, and by insufficient covering; reports indicate that the injury was confined to the tops; in the southern district growth was retarded on account of lack of moisture, and the plant was small and in poor condition to withstand severe cold. Much corn was soft and chaffy. Rye was in fair condition. Pastures had failed in the southern district. Apples and potatoes were not generally keeping well.—*William G. Burns.*

**Indiana.**—In the northern and the greater portion of the central sections wheat was in fair condition, although small; in the southern section it was not only small on account of having been sown late, but owing to the droughty conditions which prevailed during and following seeding, the stand was poor; considering the State, as a whole, the wheat crop was in only fairly good condition. Good progress was made in gathering corn.—*W. T. Blythe.*

**Iowa.**—December was extremely dry with less than usual amount of stormy weather. Though the temperature was slightly below normal

the month was very favorable for farm operations usual to the season, and for promoting health and growth of stock. The fields yielded good forage for the grazing herds. Fall wheat and rye suffered somewhat from bare fields and low temperatures, but the area of these crops was small.—*John R. Sage.*

**Kansas.**—The weather was favorable for field work, except on the 23d, 24th, and 25th. Some plowing done in the central, eastern, and southern counties. Much corn was gathered. Wheat in most of the State was in fair condition (much of it in good condition), and in the southeastern counties was being pastured. Early wheat was damaged by fly in a few central counties, but late wheat was in good condition. Cattle were in good condition.—*T. B. Jennings.*

**Kentucky.**—Cold, dry weather prevailed during the month, the temperature being almost continuously below normal. There was not enough snow to afford much protection. Wheat and oats were in an unsatisfactory condition at the beginning of winter, and the unfavorable weather during December still further lowered the chances for a good crop. The steady cold was quite favorable to fruit trees. Stock was in fairly good condition.—*H. B. Hersey.*

**Louisiana.**—General rains fell in all parts of the State during the month and the long drought was brought to an end. Preparations for spring crops were pushed forward as rapidly as possible. A small acreage was seeded to oats. Sugar harvest was completed except on a few large plantations, where grinding will continue well into January. The tonnage of cane per acre was much below the average, but the yield of sugar per ton was very satisfactory. Seed cane was successfully protected during the freezes and was in good condition. Some cane was planted during the month. Truck gardens and the berry crop showed effects of the severe drought. The orange crop was good.—*I. M. Cline.*

**Maryland and Delaware.**—Unusually hard freezing, the absence of snow, and the prevalence of high winds rendered December weather very damaging to wheat and grasses, particularly the late sown; except in the extreme west, where snow protection was afforded, the condition of wheat was very unpromising. No pasturage of consequence; early feeding necessary; stock in good condition. Very little plowing possible. Roads excellent for the winter operations of hauling fuel and produce. Ice houses filled.—*Oliver L. Fassig.*

**Michigan.**—Winter wheat and rye were generally well covered and protected by snow during the entire month. There was very little, if any, alternate freezing and thawing of the ground, and correspondents, with but very few exceptions, agree that no damage was done to winter grain. When wheat and rye went under the snow they were in a healthy and promising condition, although the plants were rather small.—*C. F. Schneider.*

**Minnesota.**—There were cold periods from the 12th to the 16th, and from the 25th to the 30th, and at no time during the month was there a minimum above 32°. The snow on the ground ranged from 2 or 3 inches in the southern part of the State to much greater depths in the timbered regions of the north; in the prairie regions the sleighing was not very good. Ice cutting began in the southern portions about the 28th, the ice being from 15 to 20 inches thick. No farming operations, except corn husking and the care of stock, were possible.—*T. S. Outram.*

**Mississippi.**—The month was unusually cold, with much freezing weather. The rainfall was generally light over the middle portion of the State, but nearly normal over the northern and southern portions. Cotton picking was completed and some plowing was done, but generally very little farm work was accomplished. A small acreage of wheat and oats was doing fairly well. Strawberries were in poor condition.—*W. S. Belden.*

**Missouri.**—In most sections of the State the month was cold and dry. Winter wheat received little protection from snow, and in many counties, especially in the central and southern sections, suffered from lack of moisture. The condition of the crop at the close of the month was, however, very near the average, except in portions of the central and southern sections, where in some counties it was very unpromising. The month was very favorable for gathering standing corn and that work was practically completed.—*A. E. Hackett.*

**Montana.**—The temperature was above normal, except during a moderately cold period from the 11th to the 14th. The precipitation was very generally deficient. Snows were fairly frequent about the middle of the month, but they were light. There was not enough snow in the eastern counties to give the soil the usual amount of winter moisture. Stock were wintering well.—*Montrose W. Hayes.*

**Nebraska.**—The unusually dry weather of the month was rather unfavorable for winter wheat, but probably no material damage resulted, as there was no unseasonably cold weather and no severe wind. The month was very favorable for farm work, and corn husking was about completed. All work on the farm was in unusually satisfactory condition for the winter.—*G. A. Loveland.*

**Nevada.**—The temperature was nearly normal, but the precipitation was remarkably light in all sections. Range feed was fairly good in most sections, and stock did well. The snowfall in the mountains was

much lighter than usual, and unevenly distributed over the several ranges. A fine crop of thick, clear ice was harvested the latter part of the month.—*J. H. Smith.*

**New England.**—The month was much colder than usual, the mean temperature being the lowest in the history of the New England Climate and Crop service, except in 1890, when it was 21.1°. The maximum temperature of the district was 57°, the lowest of record for December. The precipitation was deficient, except in Rhode Island and Connecticut, and the deficiency was severely felt in Vermont and New Hampshire, where springs and wells were low. The weather was favorable to ice harvesting, but unfavorable to the lumber interests.—*J. W. Smith.*

**New Jersey.**—The prevailing weather conditions were unfavorable to the late sown grain, especially wheat; almost continuous freezing temperature prevented growth and in some places germination; early sown wheat, rye, and grass were in fair condition; no injury from thawing.—*Edward W. McGann.*

**New Mexico.**—Drought continued. Grass was short on the stock ranges, and water very scarce, even for domestic purposes. Cattle and sheep, with but few exceptions, were reported to be in very good condition for the season.—*R. M. Hardinge.*

**New York.**—The month was unusually cold and the ground was frozen, but was generally covered with snow. Snow flurries were frequent, and there was very little thawing. Wheat and rye were in good condition and well protected by snow. On account of the early winter and continued cold weather, plowing was not finished and some corn was not saved. Some apples were also lost.—*R. G. Allen.*

**North Carolina.**—The month was characterized by continuously cold and rather dry weather. The mean temperature for the State was the lowest for the month since 1876, and the precipitation the least since 1872 with the single exception of December, 1889. On account of the dryness and the large average number of clear days the weather was not unpleasant, though unfavorable for the best growth of winter wheat and oats. The absence of snow covering, lack of sufficient moisture, and frozen condition of the ground prevented rapid growth, so that all the winter crops were very backward. Most of the wheat was not up; that which was up looked fairly well. Streams were very low, especially in the west. Some forest fires occurred in the lower portion of the Blue Ridge Mountains.—*C. F. von Herrmann.*

**North Dakota.**—There was considerable snow on the ground during the month, but it was drifted to such an extent that a large part of the ranges was bare, and as a rule stock was able to feed during the month.—*B. H. Bronson.*

**Ohio.**—The weather was not favorable for corn husking. Grass and winter grains were generally well protected by snow, except in extreme southern and southwestern districts; the snowfall was less in those districts than in other sections of the State. Early sown wheat was in fairly good condition in most sections; that sown late got a very poor start and the outlook was very poor in all central and southern counties.—*J. Warren Smith.*

**Oklahoma and Indian Territories.**—Moderate rains and even temperatures were beneficial to crops in the ground; droughty conditions were intensified in the western division, where the greater portion of wheat remained unsprouted; wheat generally made a slow growth and was small but in good condition; the Hessian fly caused damage in Kay County and Cherokee Nation; wheat seeding was nearing completion. Cotton picking was completed with short to fair yields. Corn husking was about completed; plowing for spring crops progressed. Stock did well.—*C. M. Strong.*

**Oregon.**—December was everywhere cooler and drier than usual and considerable foggy weather prevailed. On account of the cool weather germination was slow, and both early sown grain and forage plants made but little advance. Early sown fall wheat and oats started nicely and the plants were healthy and vigorous. Stock was in much better condition than at the same time last year, and less feeding was done. Pastures, as a rule, were still green and fruit trees were in good condition.—*Edward A. Beals.*

**Pennsylvania.**—The month, as a whole, was the coldest in seventeen years. The average precipitation was less than one-half the amount which fell during the corresponding period last year. Except in the southeastern and south-central counties, winter grains and grasses were amply protected. In districts not so favored the soil was necessarily exposed to continued high winds, and the fields looked thin and bare, but it is not thought that the roots were injured to any great extent.—*T. F. Townsend.*

**Porto Rico.**—Heavy rains delayed the maturing of cane and interrupted sugar making in some of the northern and eastern districts. Dry weather prevailed throughout the southern division and grinding continued without interruption until the holidays. The yield so far obtained was good. Cane not yet arrowed made fair progress. Coffee picking was finished; the crop was generally larger than in 1902 and of good quality. Transplanted tobacco did well and considerable seed was sown in the central districts. The continued showers caused cotton in the boll to become

spotted. Some rice, corn, sweet potatoes, and mafafos were harvested, and as far as practicable land was prepared for spring planting.—*E. C. Thompson.*

**South Carolina.**—The month was unusually cold, with much alternate freezing and thawing in the interior sections that was harmful to grain sown on moist lands. The prevailing clear weather favored heavy frost deposits, but these frosts did little damage, as practically all vegetation had been killed in November, except truck along the coast, that made a precarious growth. The precipitation was generally deficient. The snowfall was too light and melted too quickly to afford any protection to winter grain. Oats made no growth and looked poor. Wheat sowing made some progress, but germination was unsatisfactory. Very little winter fallowing was done.—*J. W. Bauer.*

**South Dakota.**—The bulk of the monthly snowfall occurred prior to the 13th, after which much fair weather prevailed. Cold period from 8th to 16th. Winter rye and the limited amount of winter wheat sown continued in satisfactory condition, being protected by snow during the cold period, and favored by absence of alternate freezing and thawing. In the east portion of State snow on ground necessitated a larger consumption of hay than usual; conditions on stock ranges in west portion generally favorable. But little corn in field on 31st.—*S. W. Glenn.*

**Tennessee.**—The month was generally cold and dry, and the outlook for winter grain at the close was the worst for many years, owing to frozen ground and surface thawing. Much of the crop was sown late in dry soil, so that it was slow in coming up and made little growth. There was not sufficient snow during the month to afford much protection, precipitation in general being slightly below the normal.—*H. C. Bate.*

**Texas.**—The moderate temperature conditions of the month were favorable for crops. However, the drought which prevailed was very unfavorable, especially in the western portion. West of the ninety-eighth meridian wheat, rye, barley, and fall sown oats suffered greatly and east of that meridian growth was greatly retarded. The harvesting of sugar cane was completed with satisfactory results. In the northern portion, the small amount of cotton which remained in the fields was practically all picked and in some localities the dry unopened bolls were picked and thrashed. Feed on the ranges was becoming very short, but as a result of the pleasant weather stock was generally in good condition.—*L. H. Murdock.*

**Utah.**—The temperatures throughout the section were generally below the normal. Precipitation was decidedly below the average, being the least recorded for the section during a record of thirteen years, and the outlook for irrigation water was unfavorable throughout the southern portion, where there had been a decided shortage in rainfall for the last three months. Winter grain was generally in good condition and well protected in northern counties by a good covering of snow. Owing to the long continued drought in the southern part of the section, ranges were poor and stock were not in thriving condition.—*R. J. Hyatt.*

**Virginia.**—Temperatures persistently lower than the normal and a decided deficiency in precipitation combined to make crop progress slow. In the absence of snow in many portions of the State, the ground became hard frozen, and there was much winter killing of wheat, oats, and clover, especially the late seeded. In trucking districts kale and spinach, the main winter crops, suffered serious injury, and in many cases were an entire failure. Winter plowing was at a standstill during the month.—*Edward A. Evans.*

**Washington.**—The comparatively dry weather and mild temperature were favorable for seasonable farm work, the growth of wheat, and the health and thriftiness of fruit trees. In the wheat belt there were 3 to 6 inches of snow during the second decade, which nearly all melted by the end of the month. The fall wheat grew well and had a fine stand.—*G. N. Salisbury.*

**West Virginia.**—Dry, cold weather prevailed during the month, and winter wheat, rye, and oats, which did not have much protection from snow over a great portion of the State, were damaged considerably, and at the close of the month they were in very poor condition. Practically no farm work was done, as the weather was too cold and the ground frozen too hard. Stock was reported in good order and feed plentiful.—*E. C. Vose.*

**Wisconsin.**—The month was extremely cold throughout, but the snow which fell in November remained on the ground and, with the additional snowfall during the month, afforded ample protection to the winter grains and grasses generally. In a few localities, however, where the high winds caused much drifting, the fields were exposed in places and some damage is believed to have resulted. The dry weather during the month interfered with the preparation of tobacco for market, and most of the crop was still in the sheds. Stock was generally reported as wintering in good condition.—*W. M. Wilson.*

**Wyoming.**—The month was unusually pleasant throughout the State, and no damaging storm occurred over any section. Stock continued in excellent condition, and practically no losses occurred. The limited snowfall in the mountains caused some apprehension of a scarcity of water for late summer irrigation during the coming season.—*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.

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation. Of course the number of such records is smaller than the total number of stations.

Summary of temperature and precipitation by sections, December, 1903.

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	40.9	-5.8	Daphne	71	24	Hamilton	11	27	2.93	-1.44	Citronelle	5.28	Anniston	0.69
Arizona	45.7	-0.2	Dragoon	84	3	Fort Defiance	12	6	0.12	-0.90	Pinal Ranch	0.86	14 stations	0.00
Arkansas	39.8	-3.1	Bee Branch	74	22	Oregon	6	26	3.43	-0.35	Putton	6.58	Conway	1.08
California	48.0	+0.4	Santa Paula	92	1	Bodie	9	4	1.44	-2.55	Branscomb	9.75	31 stations	0.00
Colorado	28.3	+2.5	Holly	76	20	Gunnison	-26	29	0.28	-0.54	Breckenridge	2.20	4 stations	0.00
Florida	53.1	-5.6	Orange City	85	24	Stephensville	-19	2	1.86	-1.02	De Funiak Springs	4.63	Miami	T.
Georgia	41.9	-5.2	Avon Park, Nocatee	85	25	Diamond	10	27	2.22	-1.72	Oakfield	4.04	Woodbury	0.90
Idaho	27.2	-4.7	Waverly	77	25	Chesterfield	-16	29	1.21	-0.79	Murray	2.60	Lost River	0.22
Illinois	24.1	-5.8	Blue Lakes	64	1	Lunark	-24	13	1.79	-0.56	Cairo	3.85	Martinton, Paris	0.29
Indiana	24.2	-7.7	New Burnside	59	7	Hammont	-17	13	2.16	-0.72	Reussleier	3.71	Indianapolis	0.58
Iowa	19.6	-3.9	Counersville	67	23	Sibley	-27	13	0.41	-0.88	Ridgeway	1.96	Storm Lake	T.
Kansas	33.8	+0.1	Hopely, Mt. Ayr	58	31	Baker	3	13	0.43	-0.61	Pleasanton	1.97	Hanover, Lebanon	0.00
Kentucky	30.7	-6.9	Osceola, St. Charles	58	31	Beattyville	0	27	2.88	-0.69	Alpha	4.25	Scott	1.09
Louisiana	48.2	-4.0	Cunningham	73	30	Scott	0	30	3.92	-0.58	Minden	5.55	Venice	1.52
Maryland and Delaware	30.2	-4.7	Alpha	53	23	Caspiana	17	6	2.46	-0.79	Milford, Del.	4.52	Westernport, Md.	0.32
Michigan	19.0	-6.8	Jackson	58	31	Oakland, Md.	9	29	2.46	-0.79	Kalamazoo	5.17	Plymouth	0.45
Minnesota	9.8	-6.0	State Ex. Station	85	24	Ironwood	-25	13	2.19	0.00	Mount Iron	2.73	Pipestone	0.13
Mississippi	42.9	-4.9	Mount Pleasant	43	24	Pokegema Falls	-45	25	0.84	0.00	Austin	6.63	Kosciusko	1.85
Missouri	30.2	-3.0	Winnebago City	50	6	Ripley	12	6	3.76	-1.05	New Madrid	4.62	Rockport	0.13
Montana	27.2	+4.7	Natchez	80	24	Montreal	-11	13	1.51	-0.77	Lamedeer	2.00	Chippook	0.00
Nebraska	28.4	+1.3	Arthur, Dean, Gano	65	31	Cut Bank	-27	14	0.72	-0.27	Agee, Kennedy	0.40	17 stations	0.00
Nevada	30.4	-0.8	Neosho, Protem	65	31	Wakefield	-13	13	0.10	-0.52	Battle Mountain	1.10	7 stations	0.00
New England*	22.3	-5.4	Chinook	65	1	McAfee's Ranch	9	7	0.14	-1.18	Cream Hill, Conn.	6.65	Cornwall, Vt.	0.85
New Jersey	28.6	-5.2	Almar	66	2	Van Buren, Me.	-24	15	3.18	-0.33	Atlantic City	5.49	Trenton	3.20
New Mexico	34.5	-0.2	Martins Ranch	71	20	Morrisville, Vt.	-24	15, 19	4.08	+0.36	Mountainair	0.52	7 stations	0.00
New York	21.2	-5.8	Narragansett Pier, R. I.	57	20	Layton	-13	19	2.76	-0.52	Number Four	9.56	Penn Yan.	0.75
North Carolina	36.7	-5.7	Lakewood	55	13	Mountainair	-11	5	0.97	-0.60	Hatteras	3.27	Marshall	0.60
North Dakota	11.6	-2.2	Beverly, Pemberton	55	20	Indian Lake	-26	27, 29	2.76	-0.52	Hamilton	1.67	2 stations	0.10
Ohio	23.4	-7.5	Carlsbad	84	2	Linville	-7	1	2.16	-1.70	Milfordton	3.46	Somerset	1.17
Oklahoma and Indian Territories	40.1	+0.8	Oyster Bay	56	20	3 stations	-33	12-14	0.77	+0.18	Webbers Falls, Ind. T.	3.06	7 stations	0.00
Oregon	37.0	-0.2	Whiteville	68	14	Milligan	-11	17	2.07	-0.65	Glenora	12.37	Prineville	0.09
Pennsylvania	25.4	-5.5	Sloan, Wilmington	68	25	Warsaw	-11	28	0.64	-1.18	Girardville	4.83	Davis Island Dam	0.92
Porto Rico	74.8	-5.2	Jamestown	57	3	Okeene, Okla.	7	13	3.16	-3.72	Cidra	15.75	Coamo	1.01
South Carolina	41.0	-5.2	Keaton, Okla.	73	2	Pine	-3	30	2.66	-0.58	Smiths Mills	3.48	Barksdale	0.57
South Dakota	18.4	-2.4	Gold Beach	70	1	Dushore	-14	27	0.65	+0.23	Aberdeen	1.86	Pine Ridge	0.09
Tennessee	34.9	-5.2	Franklin	60	12	Saegerstown	-14	29	1.3	-0.51	Trenton	5.45	Elizabethton	1.56
Texas	50.3	+0.1	San German	95	12	Barros, Cidra	51	2	1.28	-0.92	Columbia	6.04	13 stations	0.00
Utah	26.4	-1.3	Bennettsville	72	9	Spartanburg	10	27	0.37	-0.66	Park City	1.45	10 stations	0.00
Virginia	32.8	-5.7	Gillisonville	72	25	Forestburg	-34	13	2.07	-0.66	Elk Knob	4.21	McDowell	0.42
Washington	35.0	-0.1	Walterboro	72	25	Silver Lake	2	3	1.98	-1.13	Clearwater	11.21	Sunnyside	0.24
West Virginia	26.5	-8.4	Ashcroft	65	1	Mount Blanco	10	13	3.00	-2.44	Buckhannon	4.43	Moorfield	0.30
Wisconsin	12.7	-7.2	Waynesboro	67	31	Plateau	-26	27	0.87	-0.46	Beloit	2.17	Menasha	0.23
Wyoming	24.4	+2.3	Cottula	92	31	Marion	-4	1	2.00	-1.17	Battle	7.60	Fontenelle	T.
			Tropic	76	1	Lakeside	4	12	0.64	-0.27				
			Williamsburg	70	21	Marlinton	-11	1	0.64	-0.27				
			3 stations	63, 1.5, 13		Grand Rapids	-32	13	0.64	-0.27				
			Lillydale	59	25	Border	-21	28	0.64	-0.27				
			Prairie du Chien	50	7									
			Phillips	67	1									

\* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

SPECIAL CONTRIBUTIONS.

RECENT PAPERS BEARING ON METEOROLOGY.

Dr. W. F. R. PHILLIPS, Librarian, etc.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

Science. New York. N. S. Vol. 19.

Bigelow, Frank H. The New Cosmical Meteorology. Pp. 30-34.

Scientific American. New York. Vol. 90.

— Lunar Superstitions. P. 38.

Nature. London. Vol. 69.

Ramsden, W. Weather Changes and the Appearance of Scum on Ponds. P. 104.

Hillig, Fred J. Weather Changes and the Appearance of Scum on Ponds. P. 127.

— The Ionisation of Atmospheric Air. Pp. 154-155.

Rotch, A. Lawrence. The Unusual Sky Colours and the Atmospheric Circulation. Pp. 173-174.

L. W. J. S. Indian Meteorological Memoirs. Pp. 178-179.

Everett, J. D. Rocket Lightning. P. 224.

Lee, W. A. Rocket Lightning. P. 224.

L. W. J. S. The Climate of South America. P. 230.

Journal of the Scottish Meteorological Society. Edinburgh. 3d Ser. Vol. 12.

Buchan, —. The Rainfall of Scotland in Relation to Sunspots. Pp. 117-127.

Buchan, —. Meteorology of Christmas Island. Pp. 128-133.

Watt, Andrew. The Climate of Hebron (in Syria). Pp. 133-152.

Muir, T. S. Temperature Observations at the Midstation on Ben Nevis. Pp. 152-159.