school children then in it. No further reports of this storm have been received. Its path was 150 yards wide at Berryville.

Between 2 and 3 p. m. a severe tornado, with a path 30 yards wide, struck Cravens, Franklin County, Ark, destroying many buildings, killing four persons and injuring many others. This same storm killed fourteen persons at Watalula and injured several at Jethro, Franklin County, Ark., before it died out within 20 miles of the latter place.

Between 3 and 4 p. m. another tornado past northeastward and eastward along the Arkansas River between Piney, Johnson County, Ark., and London, Pope County, Ark., destroying much timber, several farm-houses, and injuring thirty or forty persons. The path of this storm was about 300 yards wide. The damage is estimated at $25,000. About the same time a tornado in Garland County, Ark., struck the small frame schoolhouse at Gardener Ferry, lifted it with the assembled school and set all down unhurt 20 feet distant. Another tornado past northeastward thru Crawford County, Ark., about one-half mile north of Uniontown, and mowed a clean path about 100 yards wide thru the forests and across farms. A number of small houses were demolished and one farmer was injured.

At 5 p. m. a tornado past 1 mile north of Rust, Polk County, Ark., and shortly afterward past thru the northern part of Mena, about 5 miles from Rust. Two persons were reported killed and three injured at Rust. At Mena two houses were wrecked and four or five persons injured. This storm had a path 50 to 100 yards wide and was followed by heavy hail. The damage was estimated at $5,000. At 6 p. m. a tornado past 1 mile north of McNeil, Columbia County, Ark., but at the time it was too dark to see the funnel-shaped cloud. Its path was about 150 yards wide and it destroyed houses and fencing to the value of $400 without injuring any persons. The indicated path of this tornado would seem to be a continuation of the one reported at Canfield at 1:30 p. m. the same day.

Tornado of November 25, 1908.

On November 25 a severe tornado traversed Green County, in northeastern Arkansas, from southwest to northeast. The The first report was from Lorado, near the southern line of the county. The tornado appeared here between 3:30 and 4 p. m., moved northeastward with a destructive path 75 to 150 yards wide and about 5 miles long. One child was killed and four other persons injured, the 3-room school building had one end blown outward from bottom to top, and two churches and a parsonage were also wrecked. The damage was estimated at $30,000. The storm continued to a point 2 miles east of Walcott, having there a path about 50 yards wide. Here one boy was killed and five adults injured, while damage to the extent of $20,000 was reported. Newspaper reports indicate considerable damage in the more rural districts from which no direct reports are available.

TORNADO IN OKLAHOMA.

Newspaper clippings report that a tornado past over the North Flats, near the Holmes Ranch, 30 miles northeast of Kenton, Okla., along the New Mexico–Oklahoma boundary, on November 23. Many piles of lumber were carried 50 miles from the South Flat region and dropt over the North Flats.—*C. A., jr.*

THE WEATHER OF THE MONTH.

By Mr. P. C. DAY, Acting Chief, Climatological Division.

PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure for December, 1908, over the United States and Canada, is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and III.

The variations of the mean pressure for the month from the December normal were not marked by any special features. Comparatively high pressure dominated the Gulf States, and the usual winter area of high pressure over the central Rocky Mountain district and thence westward to the Pacific, was somewhat more pronounced than usual.

The average pressure for the month was below the normal from the Missouri Valley eastward and southeastward to the Atlantic coast, while from Texas westward and northwestward to the Pacific coast, it was above the normal, the maximum excesses, .05 to .15 inch, embracing the Rocky Mountain region from southern New Mexico to British Columbia.

As in the preceding month the continued prevalence of moderately high pressure over the mountain districts was unfavorable to the formation of storm centers over those regions, and the majority of the low areas that developed during the month appear to have had their origin on the Great Plains of the Canadian Northwest.

The high pressure along the eastern slope of the Rocky Mountains and over the southern portions of the Great Plains, was probably instrumental in confining the storms that developed over the Canadian Northwest to the northern circuit in their progress eastward.

As a result but few storm centers crost the interior portions of the United States and the month, as a whole, was remarkably free from adverse weather conditions.

With high pressure over the Rocky Mountain region and thence southeasterly to the lower Mississippi Valley, the districts to the northeast were under the influence of frequent warm southerly winds. In the middle and southern Rocky Mountain, Plateau, and Pacific coast districts, cold northerly winds were of frequent occurrence.

TEMPERATURE.

The month of December, 1908, opened with an extensive area of high pressure covering the northwest, accompanied by the first well-marked cold wave of the season. Temperatures from zero to 10° below were reported on the mornings of the 1st and 2d from points in the upper Missouri Valley, and the cold area gradually overspread the eastern and southern districts during the 3d and 4th. A second cold wave appeared over the upper Missouri Valley on the morning of the 6th, with temperatures from 10° to 20° below zero over northern Minnesota, North Dakota, and Montana, and moved rapidly southeastward to the south Atlantic and Gulf coasts by the 8th. Moderate temperatures prevailed from the last-named date till about the 30th, when cold weather again set in over the northern Rocky Mountain district, and at the end of the year had overspread the district from the Rocky Mountains eastward to the Mississippi and Ohio valleys and Lake region, with temperatures from 10° to 20° below zero along the northern border from the upper Lakes westward to eastern Montana on the morning of the 31st.

During the first decade the mean temperature ranged from 4° to 10° below the normal over most of the interior districts, but was generally above normal along the Atlantic and Gulf coasts, the Mexican border, and generally over the Pacific coast States. Unusually high temperatures prevailed on the 1st along the immediate Atlantic and Gulf coasts, where temperatures as high or higher than previously recorded during the first decade of December occurred.

During the second decade the mean temperature was above the normal from 3° to 10° over all interior districts from the Rocky Mountains eastward, while over the western district it ranged from 3° to 7° below. From the 16th to the 18th some unusually high maximum temperatures occurred over the

more southern districts from the central portions of Texas and Oklahoma eastward to the Atlantic.

During the third decade the mean temperature was above the normal over practically all districts, the excess being greatest over the interior valleys east of the Rocky Mountains, where the mean ranged from 5° to 11° above the average.

As a whole the mean temperature for the month was above the normal over all districts east of the Rocky Mountains, except locally in the upper Lake region and along the New England coast, and it was generally below normal over the districts west of the Great Divide, except over the southern portions of New Mexico and Arizona.

Maximum temperatures above 80° were confined to the southern portions of the Gulf States, and freezing temperatures were reported from all districts, except along the immediate south Atlantic, Gulf, and Pacific coasts. Minimum temperatures from zero to more than 20°, and at exposed points to more than 30° below, occurred over interior New England, in the upper Mississippi and Missouri valleys, and in the Rocky Mountain districts from northern Arizona to Montana.

PRECIPITATION.

Precipitation from 4 to 8 inches occurred over a rather narrow strip from central Virginia and southern West Virginia southwestward to central Louisiana, and amounts from 2 to 4 inches were general over the remainder of the districts from the lower Mississippi Valley eastward to the Atlantic and northeastward over the Ohio Valley, the lower Lake region, and New England, except over the Florida Peninsula, where the amount of fall was generally less than 1 inch, and along the west coast of that State less than half an inch occurred.

Over portions of the upper Mississippi Valley, the Missouri Valley, and the Great Plains the precipitation was less than 1 inch, and over portions of western Kansas, the greater part of Oklahoma and western Texas, and the eastern portions of Colorado and New Mexico there was practically no precipitation.

Some unusually heavy rains occurred in southwestern Arizona, and the amount of precipitation from rain and melted snow was heavy over the greater part of the Territory.

More than the usual amount of precipitation occurred from the lower Mississippi Valley northeastward to southern New England, at a few points in the Lake region and central Texas, and from eastern South Dakota southwestward over a narrow strip to southern Arizona. Over the remaining districts there was less than the average amount of precipitation, the deficiency being greatest over the southern portions of the Gulf States, the middle Mississippi Valley, and along the Pacific coast.

SNOWFALL.

Snow occurred in measurable quantities over nearly all districts, except from Texas eastward over the Gulf States, and at the lower elevations of Arizona, California, and Oregon.

An unusually heavy fall of snow for the district and season occurred on the 22d and 23d along the eastern foothills of the Appalachian Mountains, and at the lower elevations from northern North Carolina northeasterly thru central Virginia, and eastern and southern Maryland to New Jersey, where local falls of from 8 to 20 inches occurred.

Some heavy falls occurred in the Adirondack regions of New York and snow was generally heavy over the northern and central portions of the Lower Michigan Peninsula.

Heavy snows occurred on the western slopes of the mountains of Colorado and Wyoming and over portions of northern Arizona, and it appears to have been largely drifted into the ravines and in condition to remain unmelted until late in the season.

Over the northern portion of the Rocky Mountain region there was generally less snow than usual and similar conditions prevailed in the mountains of California, Oregon, and Washington. In the mountain districts of Utah snow had accumulated to considerable depths and its condition was such as to indicate a good supply of water late in the season.

At the end of the month the snow covering was confined principally to the Rocky Mountain region, and from the upper Missouri Valley eastward over the Lake region, portions of northern Pennsylvania, and the interior of New York and New England, with small amounts locally in the Appalachian Mountain district as far south as central Virginia. Over the Sierra Nevada and Cascade ranges the snow remaining on the ground was confined to the high elevations, the lower levels of the mountains being generally bare of snow.

HUMIDITY AND SUNSHINE.

Over the districts from western Texas eastward to the Atlantic and northeastward over the lower Missouri and upper Mississippi valleys, Lake region, and New England the average humidity was below the normal. From the upper Missouri Valley westward and southwestward to the Pacific there was a general excess of humidity, ranging from 8 to 15 per cent in portions of North Dakota and Montana and the southern portions of the Rocky Mountain and Plateau districts.

There was a general excess of cloudy weather over the Atlantic coast districts, from New England to Florida, over portions of the Ohio Valley, and generally in the Lake region, where the amount of sunshine ranged from 30 to less than 10 per cent of the possible. Cloudy weather was also general over large portions of the districts from the Rocky Mountains westward.

Over the Great Plains, lower Missouri and middle Mississippi valleys, there was much sunshine, and outdoor occupations were pursued with few interruptions on account of inclement weather.

In Canada.—Director R. F. Stupart says:

The temperature was above the average at Dawson City, in the Yukon Territory, below in British Columbia and in the northern portions of Alberta and Saskatchewan, above elsewhere in the Western Provinces and over most of the Ontario Peninsula, average or below in the other portions of Ontario, and below average in Quebec and the Maritime Provinces.

In the Yukon Territory, Dawson City recorded 22 inches of snow, which is exactly twice as much as the average quantity. In British Columbia the precipitation was everywhere less than usual, varying from .90 of an inch at Kamloops, to 4.88 inches at Victoria. In Alberta the negative departure was from 59 to 82 per cent. In Saskatchewan, in the vicinity of Prince Albert, the snowfall appears to have been much more than the general amount, but elsewhere in the Province there was a deficiency equivalent to from 70 to 88 per cent. In Manitoba the deficit was from 36 to 70 per cent. In Ontario, over Lake Superior and from the Ottawa Valley eastward, there was a marked positive departure, while in the Peninsula the negative departure was equal to 1 inch at Kingston, and less elsewhere. In Quebec the average was well exceeded, except apparently in the extreme eastern portion. Montreal recorded a positive departure of more than 2 inches. In the Maritime Provinces the precipitation was above the average, the positive departures varying from 1.43 inches at St. John, to 2.64 inches at Halifax.

At the close of the month, the ground thruout Canada was, as a general rule, snow-covered, altho in some sections, notably southern Alberta, southern Ontario, and in Nova Scotia, the ground was practically bare of snow.

The higher levels of British Columbia were probably well covered with snow, and in that portion of the Western Provinces which was snow-covered, the depth varied between 4 and 14 inches.

In Ontario the mantle of snow varied in depth from a trace in the south, to about 24 inches in the Georgian Bay and upper Ottawa Valley. Quebec was snow-covered to a depth of from 20 inches in the western districts, to 38 inches in the east. The depth of snow in the Maritime Provinces decreased from about 20 inches in northern New Brunswick, to a trace near the Bay of Fundy.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	12	29.6	0.0	+ 9.9	+ 0.8
Middle Atlantic	16	35.9	+ 1.2	+ 6.1	+ 0.5
South Atlantic	10	51.1	+ 4.0	+13.0	+ 1.1
Florida Peninsula*	8	64.8	+ 4.2	+10.2	+ 0.8
East Gulf	11	53.7	+ 4.6	+15.5	+ 1.3
West Gulf	10	51.9	+ 3.5	+17.8	+ 1.5
Ohio Valley and Tennessee	13	39.3	+ 2.2	+17.3	+ 1.4
Lower Lake	10	29.2	− 0.1	+ 9.4	+ 0.8
Upper Lake	12	24.2	− 0.1	+22.3	+ 1.9
North Dakota*	9	14.0	+ 1.4	+27.6	+ 2.3
Upper Mississippi Valley	15	29.6	+ 2.3	+21.2	+ 1.8
Missouri Valley	12	30.9	+ 4.0	+28.0	+ 2.3
Northern Slope	9	25.0	+ 1.3	+11.2	+ 0.9
Middle Slope	6	35.9	+ 3.0	+15.1	+ 1.3
Southern Slope*	7	45.1	+ 2.7	+ 7.6	+ 0.6
Southern Plateau*	12	40.8	− 0.4	− 7.7	− 0.6
Middle Plateau*	10	24.6	− 3.2	−11.4	− 1.0
Northern Plateau*	12	28.6	− 1.9	+ 5.3	+ 0.4
North Pacific	7	40.1	− 1.5	− 0.8	− 0.1
Middle Pacific	8	44.5	− 3.8	− 4.7	− 0.4
South Pacific	4	50.3	− 2.3	+ 1.5	+ 0.1

* Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	72	− 4	Missouri Valley	73	− 2
Middle Atlantic	73	− 2	Northern Slope	76	+ 8
South Atlantic	78	0	Middle Slope	67	+ 1
Florida Peninsula	82	+ 1	Southern Slope	62	− 4
East Gulf	76	− 1	Southern Plateau	61	+15
West Gulf	74	0	Middle Plateau	72	+ 2
Ohio Valley and Tennessee	75	− 1	Northern Plateau	80	0
Lower Lake	77	− 1	North Pacific	87	+ 1
Upper Lake	80	− 2	Middle Pacific	84	+ 3
North Dakota	88	+ 9	South Pacific	70	+ 1
Upper Mississippi Valley	74	− 4			

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	6.5	+ 0.7	Missouri Valley	4.5	− 0.6
Middle Atlantic	6.3	+ 0.9	Northern Slope	5.5	+ 0.9
South Atlantic	5.4	+ 0.7	Middle Slope	4.0	0.0
Florida Peninsula	4.4	− 0.2	Southern Slope	5.2	+ 0.8
East Gulf	5.8	+ 0.6	Southern Plateau	4.0	+ 1.0
West Gulf	5.4	+ 0.1	Middle Plateau	4.8	− 0.3
Ohio Valley and Tennessee	6.5	+ 0.4	Northern Plateau	7.6	+ 0.5
Lower Lake	7.7	+ 0.1	North Pacific	7.5	+ 0.2
Upper Lake	7.7	+ 0.6	Middle Pacific	6.0	+ 0.6
North Dakota	5.4	+ 0.2	South Pacific	5.3	+ 0.9
Upper Mississippi Valley	5.4	− 0.3			

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	12	3.36	103	+ 0.1	− 7.6
Middle Atlantic	16	3.02	97	− 0.1	− 3.4
South Atlantic	10	2.65	73	− 1.0	− 0.2
Florida Peninsula*	8	0.94	36	− 1.7	− 2.8
East Gulf	11	3.27	73	− 1.2	− 5.4
West Gulf	10	1.59	55	− 1.3	− 0.1
Ohio Valley and Tennessee	13	2.64	77	− 0.8	− 7.0
Lower Lake	10	2.00	69	− 0.9	− 5.1
Upper Lake	12	1.52	72	− 0.6	− 3.5
North Dakota*	9	0.34	68	− 0.2	+ 0.9
Upper Mississippi Valley	15	1.01	53	− 0.9	− 2.0
Missouri Valley	12	0.68	61	− 0.4	+ 4.4
Northern Slope	9	0.52	63	− 0.3	+ 3.2
Middle Slope	6	0.13	18	− 0.6	+ 5.9
Southern Slope*	7	0.04	4	− 1.0	+ 5.2
Southern Plateau*	12	1.26	76	− 0.4	− 0.7
Middle Plateau*	10	1.05	100	0.0	+ 1.1
Northern Plateau*	12	0.76	46	− 0.9	− 2.4
North Pacific	7	5.67	72	− 2.2	− 7.5
Middle Pacific	8	2.69	59	− 1.9	− 7.5
South Pacific	4	1.00	85	− 1.2	− 2.9

* Regular Weather Bureau and selected cooperative stations.

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Atlanta, Ga	25	50	nw.	Nantucket, Mass	23	60	ne.
Bismarck, N. Dak	29	52	nw.	New York, N. Y	18	50	nw.
Do	30	60	nw.	North Head, Wash	7	56	se.
Block Island, R. I	2	50	nw.	Do	8	58	se.
Do	7	57	w.	Do	11	65	s.
Do	18	52	nw.	Do	12	74	s.
Do	23	57	ne.	Do	15	62	se.
Buffalo, N. Y	1	61	sw.	Do	24	60	s.
Do	7	60	w.	Do	25	72	s.
Do	27	54	w.	Do	27	60	s.
Do	31	52	w.	Point Reyes Light, Cal	16	71	nw.
Canton, N. Y	1	65	w.	Do	31	55	s.
Cheyenne, Wyo	24	52	nw.	Portland, Me	7	56	se.
Chicago, Ill	30	52	w.	Pueblo, Colo	24	59	nw.
Eastport, Me	7	60	se.	Sioux City, Iowa	30	50	nw.
Grand Haven, Mich	7	51	nw.	Southeast Farallon, Cal	16	52	nw.
Hatteras, N. C	23	52	nw.	Tatoosh Island, Wash	1	50	e.
Do	25	61	w.	Do	11	53	s.
Mount Tamalpais, Cal	16	52	nw.	Do	12	84	sw.
Mount Weather, Va	2	56	nw.	Do	13	52	sw.
Do	7	54	nw.	Do	25	90	sw.
Do	18	52	nw.	Do	26	52	sw.
Do	26	60	nw.	Do	28	50	sw.
Do	31	57	nw.	Do	31	62	e.
Nantucket, Mass	7	53	s.				