

## WEATHER, FORECASTS, AND WARNINGS.

By EDWARD H. BOWIE, District Forecaster.

*Alaska.*—Pressure averaged above normal for the month. Lows occurred about the 1st, 12th–13th, 22d, and 26th, and highs about the 5th, 17th–18th, 24th–25th, and 28th–30th.

*Honolulu.*—Pressure averaged slightly above normal, being low from the 2d to 7th, on the 19th, 22d–23d, and from the 27th to 29th. High pressure prevailed from the 8th to 13th, and on the 17th, 21st, and 25th.

*Azores.*—From the 1st to 4th, 12th to 15th, and from the 23d until the end of the month pressure was high for the season, while during the remainder of the month it was below the seasonal average. Pressure fluctuations were not marked. The most important storm of the month occurred on the 17th–18th.

*Iceland.*—On the 1st and 2d and from the 23d to 26th pressure was below normal; during the remainder of the month pressure was above normal, being particularly high from the 4th to 7th and on the 13th and 28th.

*Siberia.*—During the first decade pressure averaged above normal, during the second decade about normal, and during the last decade of the month below normal. Over the Asiatic east coast pressure was generally high during the first half and low during the last half of the month.

*Miscellaneous.*—Severe gales occurred over the north Atlantic steamship routes from the 18th to 21st. A rapid and unusually early melting of snow was reported in Switzerland during the latter half of the month.

In the United States the month opened with pressure relatively low from the upper lake region to Texas and in the northeast; elsewhere pressure was above the normal. The center of low pressure, which was over southern Iowa at the beginning of the month, moved northeastward during the two days following, causing showers and thunderstorms over the Missouri Valley and from the Mississippi Valley to the Atlantic coast, together with changes to cooler weather in all sections east of the Mississippi River.

The following weekly forecast was issued Sunday, June 2:

The distribution of barometric pressure over the American Continent and the adjacent oceans is such as to indicate that the coming week will be one of generally fair weather, except for scattered local thundershowers, with temperatures near or above the seasonal average throughout the Eastern and Southern States and generally over the Middle West. In the Northwestern States, the Rocky Mountain and Plateau regions, the temperature will average low for the season. No widespread disturbance is charted to cross the country during the coming week, although a barometric depression now over the far Northwest will move eastward along the northern border to the St. Lawrence Valley by Tuesday night or Wednesday. It will be attended by showers and be followed by cooler weather in the Northern States east of the Rocky Mountains.

From the 2d to the 5th a storm passed from Saskatchewan to eastern Quebec, attended by showers and thunderstorms from the Mississippi Valley eastward.

A high pressure area of slight intensity passed inland over the north Pacific coast on the 3d and had advanced to a position off the middle Atlantic coast by the 6th. It was attended by cooler weather in northern and cen-

tral districts from the Plains States eastward, very low temperatures for the season being reported in New England.

On the morning of the 5th pressure was low over the Southwest, and by the evening of that date it had fallen over the Upper Mississippi Valley and Middle Slope districts, causing showers and thunderstorms over those regions. By the following morning there was a low center over eastern Ontario, which during the next 24 hours had passed to New Brunswick, the area of showers having spread eastward to the Atlantic coast. Precipitation was heavy over portions of the East Gulf and South Atlantic States.

From the evening of the 3d to the 5th there were slight evidences of a disturbance over the western Gulf of Mexico and on the morning of the 6th there was a more or less well-defined circulation with center apparently south of the Louisiana coast. Small-craft warnings were issued on that date for the Gulf coast from Pensacola to Mobile. By the morning of the 7th the center of the disturbance was near the mouth of the Mississippi River. The storm remained of moderate intensity and passed eastward over the northern portion of the Florida Peninsula. Winds of storm force were reported along the South Atlantic coast at several stations, advices regarding which were issued previously.

On the morning of the 6th a high pressure area of marked intensity was central over western North Dakota. It advanced to Virginia by the morning of the 11th, having caused scattered frosts and cooler weather in northern districts. During the 36 hours following it passed off the coast with decreased intensity.

During the week ending June 10 some of the temperatures reported in Arizona and California were unusually high, while in New England, the lower Lake region, and portions of the Middle Atlantic States temperatures were recorded which were among the lowest ever observed in those districts during the first decade of June.

The following weekly forecast was issued Sunday, June 9:

The indications are that the coming week will be one of moderate temperature over the greater part of the country, a reaction to normal temperature, following several days of unseasonably cool weather over Middle West and the Southern and Eastern States, being probable during the first half of the week. Fair weather will prevail the next several days in the Eastern and Southern States, while an area of low barometric pressure that now covers the western plateau region will advance slowly eastward and give local rains the first part of the week in the Middle West and the latter part of the week in the Eastern and Southern States.

On the 9th a wireless vessel report from the middle Gulf of Mexico indicated the presence of a disturbance of moderate intensity in that region. Special observations were called for during the two days following from Gulf stations and shipping was kept advised as to probable conditions in the Gulf. On the morning of the 12th observations from west Gulf stations indicated that the disturbance was apparently approaching the eastern Texas or the Louisiana coast and advices were accordingly sent to Gulf stations and vessel interests. By the morning of the 13th the center had passed inland over Louisiana

causing some damage by the spreading of flood waters; no damage however was reported to shipping. The storm, which was of moderate intensity, passed east-northeastward to the North Carolina coast by the evening of the 14th, causing storm winds over the south Atlantic coast warnings of which were issued on the 14th. A severe local storm was reported near Fayetteville, N. C., during the 14th.

On the evening of the 8th a low center appeared over British Columbia, and by the 11th had passed to Minnesota having caused showers and thunderstorms during the preceding 24 hours in the Plains States and the upper Mississippi Valley. By the morning of the 12th it was over Ontario, with increased intensity. During the next two days it advanced almost due east to a position south of Newfoundland, causing showers and thunderstorms over the northern tier of States. It was followed by a high-pressure area of slight intensity that advanced from the Plains States on the 11th to New England by the morning of the 14th. Frosts occurred in Michigan on the 13th and in northern New York and New England on the 14th, the two latter being successfully forecasted.

The most widespread disturbance of the month appeared over British Columbia on the 12th, and by the morning of the 14th was over the eastern slope of the Rocky Mountains. It passed thence eastward and northeastward to the Canadian maritime provinces by the morning of the 18th, causing general showers and thunderstorms over almost the entire country east of the Rocky Mountains. Severe local storms occurred over portions of Missouri, Kansas, and Oklahoma on the 15th, and over Ohio, West Virginia, and Pennsylvania on the 16th.

The following weekly forecast was issued Sunday, June 16:

There will be showers the first part of the coming week in the Eastern and Southern States, attending the eastward movement of a disturbance that is now over the Great Lakes. This disturbance will be followed by rising pressure and a change to cooler weather which will last until the latter part of the week in the Middle West and the Eastern States. Over the Middle West and the far western States the weather will be fair during the next several days. The next disturbance to cross the country will appear in the Northwest about Thursday and prevail over the Middle West at the close of the week; it will be attended by local showers and thunderstorms and be preceded by a general rise in temperature.

Conditions over the Southwest were unsettled for several days preceding the 17th, and on the morning of the 18th there was a low center over western Tennessee, heavy rains having fallen over the West Gulf States, except near the coast. By the morning of the 19th the center of the disturbance had advanced to North Carolina and during the next 24 hours passed off the coast. It caused general precipitation over the Southwest and the Gulf States. Severe local storms occurred in connection with this storm over portions of Missouri and Kansas on the 17th, and a heavy snowstorm was reported in the mountains of Colorado on the same date.

A high pressure area that was central over eastern Montana on the 17th moved slowly southeastward to the West Gulf States by the morning of the 20th, with decreasing intensity.

From the 18th to the 21st conditions in the northern and central portions of the Mississippi Valley remained unsettled, and scattered showers occurred.

On the morning of the 20th a high pressure area appeared over Manitoba and by the morning of the 22d had moved to Lake Michigan, causing a termination of the unsettled weather in the central and upper Mississippi Valley before referred to. During the next 48 hours it passed off the Atlantic coast, reinforcing the ocean high of middle latitudes of the Atlantic.

The following weekly forecast was issued Sunday, June 23:

The pressure distribution over the American Continent and the adjacent oceans is such as to indicate that the coming week will be one of warm and generally fair weather over the Northern and Middle States east of the Rocky Mountains, while in the Southern States and generally west of the Rocky Mountains temperatures will average near the normal with local rains. The precipitation during the week will be light and local. It is not probable that a well-defined depression will cross the country during the week.

On the morning of the 24th pressure was relatively low over the East Gulf States and local showers had occurred over that region. During the next 24 hours the area of showers had spread northward to Virginia. From the 25th to 27th conditions became unsettled, and scattered showers and thunderstorms occurred in the Mississippi and Ohio Valleys. These conditions persisted until the end of the month and were practically coincident with the extension of the Atlantic high pressure area over the south Atlantic coast. Some of the warmest days of the season were experienced over portions of the Middle Atlantic States toward the end of the month.

A high pressure area of moderate intensity that appeared over western Ontario on the 29th was central on the last day of the month over the eastern portion of that Province, having caused changes to cooler weather over northern sections.

On the last day of the month a destructive tornado visited the city of Regina in the Province of Saskatchewan in western Canada about 6 p. m. Three hundred houses are reported destroyed and many persons killed.

The following weekly forecast was issued Sunday, June 30:

Warm weather will prevail during the next several days in the Great Central Valleys, and a change to considerably warmer weather will overspread the Lake region and the Eastern States Tuesday and Wednesday, and temperature above the seasonal average will continue in these regions thereafter until the close of the week. In the Northwestern States the prevailing warm weather will give way to moderate temperature conditions Tuesday and Wednesday. Normal temperature is probable during the week in the South Atlantic and Gulf States and generally west of the Rocky Mountains. The rainfall during the week will probably average below the normal but will be fairly well distributed. No important storm area is charted to cross the country during the coming week.

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 Jan. 1.	Average departures since Jan. 1.
New England.....	12	62.8	-0.8	-10.3	-1.7
Middle Atlantic.....	15	70.0	-1.6	-10.8	-1.8
South Atlantic.....	10	74.8	-1.3	- 5.9	-1.0
Florida Peninsula <sup>1</sup> .....	9	79.1	-0.7	+ 1.1	+0.2
East Gulf.....	11	75.6	-2.5	-11.1	-1.9
West Gulf.....	11	75.8	-3.2	-16.2	-2.7
Ohio Valley and Tennessee.....	14	70.0	-3.2	-19.0	-3.2
Lower Lakes.....	11	63.6	-3.4	-23.3	-3.9
Upper Lakes.....	13	61.0	-1.5	-24.2	-4.0
North Dakota <sup>1</sup> .....	9	62.4	-0.3	- 7.0	-1.2
Upper Mississippi Valley.....	14	67.9	-3.0	-23.9	-4.0
Missouri Valley.....	12	68.0	-2.9	-15.2	-2.5
Northern slope.....	9	61.9	-0.2	- 7.5	-1.2
Middle slope.....	6	68.4	-3.5	-18.2	-3.0
Southern slope <sup>1</sup> .....	8	74.8	-1.9	-12.4	-2.1
Southern Plateau <sup>1</sup> .....	9	76.0	-1.0	- 7.2	-1.2
Middle Plateau <sup>1</sup> .....	10	63.4	-0.7	- 2.3	-0.4
Northern Plateau <sup>1</sup> .....	11	64.2	+1.4	+ 1.2	+0.2
North Pacific.....	7	57.9	-0.2	+ 7.4	-1.2
Middle Pacific.....	7	62.5	+0.1	+ 0.3	0.0
South Pacific.....	4	66.2	0.0	+ 3.3	+0.6

<sup>1</sup> Regular Weather Bureau and selected cooperative stations.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England.....	11	0.69	22	-2.40	- 0.30
Middle Atlantic.....	15	2.77	75	-0.90	- 0.10
South Atlantic.....	11	6.25	129	+1.40	+ 3.10
Florida Peninsula <sup>1</sup> .....	9	12.55	154	+4.40	+11.00
East Gulf.....	11	5.97	131	+1.40	+12.80
West Gulf.....	10	4.51	122	+0.80	+ 0.70
Ohio Valley and Tennessee.....	14	3.72	88	-0.50	+ 1.80
Lower Lakes.....	10	1.99	57	-1.60	- 0.30
Upper Lakes.....	13	1.35	40	-2.00	- 2.70
North Dakota <sup>1</sup> .....	9	2.25	62	-1.40	- 0.50
Upper Mississippi Valley.....	15	2.65	61	-1.70	- 2.30
Missouri Valley.....	12	3.10	72	-1.20	- 1.90
Northern slope.....	9	1.36	60	-0.90	- 0.60
Middle slope.....	6	4.01	129	+0.90	+ 0.50
Southern slope <sup>1</sup> .....	8	3.62	106	+0.20	- 1.80
Southern Plateau <sup>1</sup> .....	9	0.78	205	+0.40	+ 0.20
Middle Plateau <sup>1</sup> .....	11	0.67	118	+0.10	- 0.50
Northern Plateau <sup>1</sup> .....	11	1.36	93	-0.10	+ 0.40
North Pacific.....	7	2.94	144	+0.90	- 3.20
Middle Pacific.....	7	0.96	267	+0.60	- 3.40
South Pacific.....	4	0.04	100	0.00	- 0.30

<sup>1</sup> Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England.....	68	-11	Missouri Valley.....	62	- 5
Middle Atlantic.....	71	- 2	Northern slope.....	58	+ 1
South Atlantic.....	77	- 1	Middle slope.....	62	+ 2
Florida Peninsula.....	81	+ 1	Southern slope.....	57	- 3
East Gulf.....	76	+ 1	Southern Plateau.....	36	+ 6
West Gulf.....	71	- 5	Middle Plateau.....	36	- 1
Ohio Valley and Tennessee.....	68	- 2	Northern Plateau.....	52	+ 1
Lower Lakes.....	66	- 5	North Pacific.....	75	- 2
Upper Lakes.....	69	- 4	Middle Pacific.....	65	+ 3
North Dakota.....	66	- 2	South Pacific.....	67	+ 1
Upper Mississippi Valley.....	66	- 4			

Average cloudiness and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England.....	4.6	-0.6	Missouri Valley.....	4.5	-0.4
Middle Atlantic.....	5.3	+0.3	Northern slope.....	4.5	-0.3
South Atlantic.....	6.9	+1.0	Middle slope.....	4.4	+0.4
Florida Peninsula.....	6.6	+1.4	Southern slope.....	3.5	-0.3
East Gulf.....	6.4	+1.7	Southern Plateau.....	2.3	+0.3
West Gulf.....	4.2	-0.1	Middle Plateau.....	3.9	+0.6
Ohio Valley and Tennessee.....	5.6	+0.6	Northern Plateau.....	4.6	0.0
Lower Lakes.....	4.0	-0.9	North Pacific.....	5.6	-0.5
Upper Lakes.....	4.3	-0.8	Middle Pacific.....	4.1	+0.8
North Dakota.....	4.2	-1.2	South Pacific.....	3.5	+0.2
Upper Mississippi Valley.....	4.7	-0.3			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Columbus, Ohio.....	16	60	nw.	New York, N. Y.....	17	61	nw.
El Paso, Tex.....	9	52	sw.	North Head, Wash.....	13	60	se.
Kansas City, Mo.....	5	67	n.	Parkersburg, W. Va.....	16	53	nw.
Do.....	15	60	s.	Point Reyes Light, Cal.....	9	52	nw.
Lewiston, Idaho.....	20	75	w.	Do.....	14	74	nw.
Modena, Utah.....	21	58	sw.	Do.....	15	60	nw.
Mount Tamalpais, Cal.....	11	58	nw.	Do.....	20	54	nw.
Do.....	13	56	nw.	Do.....	21	53	nw.
Do.....	14	58	nw.	Do.....	29	72	nw.
Do.....	19	51	nw.	Do.....	30	56	nw.
Do.....	20	66	nw.	Sand Key, Fla.....	10	54	n.
Do.....	21	60	nw.	Southeast Farallon.....	14	52	nw.
Do.....	26	62	nw.	Walla Walla, Wash.....	20	52	sw.
Mount Weather, Va.....	16	62	nw.	Washington, D. C.....	16	51	nw.
New York, N. Y.....	2	54	nw.				