velocity of 48 miles an hour was registered. Near Chicago a small yacht was capsized and a yachtsman drowned.

A severe local storm occurred in western Wisconsin during the early evening of the 12th, which was most destructive at New Richmond, a town of about 1,500 inhabitants, of whom 114 were reported to have been killed by the fury of the storm, which also wrecked a large number of the most substantial buildings in the main portion of the town. At Herman, Nebr., during the early evening of the 14th, a severe local storm killed several people and demolished several buildings. The forecasts on these occasions were for thunderstorms and showers.—*E. A. Beals, Inspector.*

PORTLAND, OREG., FORECAST DISTRICT.

No storm or frost warnings were issued during the month.

River bulletins were regularly issued, except on Sundays, and on the 30th the river rose and flooded cellars as far back as Fourth street, also some lumber mills along the water front. Owing to timely warnings issued by the Portland office, however, there was no loss of any kind, except such as resulted from inconvenience of moving goods.

Many compliments have been given the Bureau for its river work.—*B. S. Pague, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

Beginning June 1, 1899, a special wheat bulletin was issued daily, except on days when the weekly crop bulletin was printed. This wheat bulletin gave data from the chief points in the great valley of California. This valley is the great wheat growing section of California.

Maximum temperatures exceeding 100° occurred on many days during the month. No northers, however, occurred, and the conditions on the whole were most favorable for the ripening wheat. It is unusual for the month of June to pass without the occurrence of a norther. A sharp outlook was kept that warnings might be given in time, but happily the warnings were not needed.

The storm of May 31 and June 1 was successfully forecast, and rain warnings were issued generally throughout the State of California.

Beginning June 17 a special fog service was inaugurated. The ferry pilots are notified by telephone of the extent and density of the fog in the roadstead outside of the Golden Gate.—*Alexander G. McAdie, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During the month there were seven highs and six lows sufficiently well defined to be traced upon Charts I and II. The accompanying table gives the principal facts about the origin, disappearance and apparent velocity of these highs and lows, and the following description is added:

Highs.—All the highs of the month were first noted on the Pacific coast except VI (in Minnesota) and VII (in North Dakota). The general motion was toward the east and a little south of east. No. V was last noted in Ohio, and all the rest disappeared in the Atlantic. It should be noted that the observations at St. Johns, Newfoundland, were not available after the 3d, so that for both highs and lows the last appearance in that region could not be located exactly.

Lows.—All the lows except I (off the north Pacific) and II (in Idaho) were first noted to the north of Montana. There was evidently in this region a condition favorable to the development of lows, as can be easily seen by examining Chart II. The general tendency was eastward. All but VI (off the middle Atlantic coast) were last noted in the Gulf of St. Lawrence.

One of the remarkable features of the month was the phenominal fall of 33 inches of rain in ninety hours at Turnersville, Tex., although no low area of any moment was present. The conditions of this rainfall will be described in a special article in this REVIEW.

The following were the highest winds of the month: On the evening of the 1st, as low No. IX, of May, passed over the lower Lake region, Cleveland reported a south wind of 48 miles an hour, in connection with a thunderstorm. On the evening of the 4th Green Bay reported a thunderstorm wind of 40 miles from the southwest. On the evening of the 6th Detroit had a thunderstorm west wind of 40 miles, and Cleveland a similar wind from the north. On the morning of the 10th Norfolk reported a southwest thunderstorm squall of 40 miles, and Cape Henry one from the northwest of 48 miles. On the morning of the 13th, as low No. II was approaching the upper Lakes, Marquette had a southeast wind of 46 miles. As the same low approached New England, evening of the 15th, New York City reported a west wind of 46 miles. On the morning of the 29th, as storm No. VI approached the middle Atlantic coast Nantucket reported a northeast thunderstorm wind of 48 miles, and on the evening of the same day Cape Henry reported a thunderstorm wind from the northwest of 64 miles.

The following were the days of culminating thunderstorms as reported by telegraph from the regular stations of the Weather Bureau: 1st, 23; 2d, 21; 24th, 21; 25th, 21; and 28th, 23.—*H. A. Hazen, Professor.*

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	8, a.m.	36	123	5, p.m.	32	78	4,200	8.5	494	20.6
II	6, p.m	48	129	12, a.m.	41	68	3,210	5.5	584	24.3
III	12, p.m.	47	129	20, a.m.	31	79	3,900	7.5	520	21.7
IV	17, a.m.	46	126	23, p.m.	42	65	3,360	6.5	517	21.5
V	20, p.m.	44	126	24, p.m.	41	82	2,280	4.0	570	23.8
VI	24, p.m.	47	93	28, a.m.	33	77	1,680	3.5	480	20.0
VII	27, p.m.	48	102	†2, a.m.	37	73	2,400	4.5	533	22.2
Total							21,030	40.0	3,698	154.1
Mean of 7 paths							3,004		528	22.0
Mean of 30.0 days									526	21.9
Low areas.										
I	*30, p.m.	48	129	10, a m.	49	55	5,160	10.5	491	20.5
II	9, p.m.	54	114	16, p.m.	45	60	3,780	7.0	540	22.5
III	15, p.m.	52	114	19, a.m.	48	65	2,400	3.5	686	28.6
IV	17, p.m.	51	112	22, a m.	47	61	2,640	4.5	587	24.4
V	19, p.m.	51	117	24, p.m.	51	65	2,790	5.0	558	23.3
VI	24, a.m.	44	115	29, a.m.	39	74	3,000	5.0	600	25.0
Total							19,770	35.5	3,462	144.3
Mean of 6 paths							3,295		577	24.0
Mean of 45.5 days									557	23.2

*May. †July.

RIVERS AND FLOODS.

Except in the Columbia and Brazos river basins, the rivers in all sections of the country had a falling tendency, indicating the approach of the usual low-water stages of summer.

General and copious rains over the headwaters of the Mississippi and Missouri rivers during the first half of the month checked the fall and kept the water in the upper portion of those streams at a slightly higher stage than during May.