

since the publication of the July REVIEW: July 2nd, visible between the clouds. 3rd and 4th, visible after 8 p. m., intermittence sensible. 5th, visible after 9 p. m., intermittence seldom. 6th, visible at 8:30 p. m., with a constant uniform glare, no intermittence. 7th, 8 p. m., of little azimuthal extension and strongly inclined to south, shaded away on the north side, while on the south, the limit was sharply defined, light uniform, without intermittence; at 9:30 p. m., indifferent glare. 9th, 8:15 p. m., not very bright and no sensible intermittence. August 23rd, 7:45 p. m., visible, sensible intermittence, extraordinary inclination towards the south, little intensity, more a whitish glare than a yellow-reddish color. 24th, visible at 7:40 p. m.; 8:15 p. m., first intermittence, of long duration; inclination S. about 60 degrees. 25th, visible at 7:30 p. m.; 7:35 p. m., very sensible intermittence, almost to complete disappearance for about five minutes; inclination S. about 60 degrees. (Note.—“The luminous pyramid is subject to, or agitated by, strange, capricious, irregular movements, which either dart or shoot right through it, or commence on either side and invade it slowly and generally, producing in all cases a change in the appearance of the light.”) 26th, just visible. 27th, visible from 7:25 to 9:15 p. m.; 7:30 p. m., of great extension and of uniform warm color. (Note.—“Before the completion of the intermittences there is frequently a transitory aspect—the whole field of light appearing *spotted*.”) August 28th to September 5th, obscured. September 6th, 7:20 p. m., visible, several intermittences, very indifferent glare. 7th, visible, several intermittences, some to complete disappearance; 21st, visible, no intermittence, inclination to S. about 45 degrees. 22nd, visible at 7 p. m., little intensity, of whitish, yellowish tint, 10 to 12 intermittences noted—some of complete disappearance; inclination to S. about 45 degrees. 23rd, visible near horizon. 24th, visible; 25th, visible, not very intense, of great extension but no defined shape. 26th, same as yesterday. 27th and 28th, visible. 29th, visible at 7:15 p. m., extraordinary brightness and a warm tint not noted for months previously; of great extension, all of the stars of Bootes drowned in the light; inclination to S. about 45 degrees. October 1st, visible for a while, of good intensity and warm tint.

Auroras were nightly observed, from the 27th to the 30th, inclusive, over a wide extent of country, from Maine westward to Dakota, and as far south as latitude 40°. They were visible as far west as Fort Buford on the 27th, 28th, 29th, and at Bismarck on 30th. To the eastward they were observed as far as Grafton, N. H., on 27th, Bangor, 29th, and Gardiner, Me., 28th to 30th. The most southerly stations reporting on these four dates were St. Louis, Mo., and Clear Creek, Neb., 27th; Jacksonburg, Ohio, 28th; Newport, R. I., 28th and 29th, and New Haven, Conn., 30th. The displays were remarkable at no station. The colors were variously reported as white, red, yellow, pale yellow and dark emerald. The general characteristics were few or no luminous beams, dark segment, and arch of slight altitude. An aurora was observed on the morning of the 1st at New Corydon, Ind., and Atlantic City, N. J., and that evening at Bangor and Eastport, Me., Burlington, Vt., St. Vincent, Minn., and Yankton, Dak. On the morning of the 14th auroras were seen at Rochester, N. Y., and Woodstock, Vt., and in the evening at Waterburg, N. Y., Port Huron, Mich., Fort Buford, D. T., and St. Vincent, Minn. Displays observed only at one or two stations occurred as follows: St. Vincent, Minn., 4th, 6th, 8th, 25th, 26th; Bangor, Me., 2nd; South Lee, Mass., 5th; Clear Creek, Neb., 11th, 19th, 27th; Wooster, Ohio, 20th; Cincinnati, Ohio, and Woodstock, Md., 20th; New London, Conn., 24th; Yates Centre, Kan., 26th; the latter station was the most southerly at which a display was observed during the month.

MISCELLANEOUS PHENOMENA.

Butterflies.—St. Louis, 21st, many flying south were seen in the streets.

Prairie Fires.—Breckenridge, Minn., south of station, on the 27th, 28th.

Locusts.—Cresswell, Kan., flying south on the 7th, 11th, 12th, 19th, 28th; Jacksboro, Tex., 27th, moving south.

Trees in Bloom.—Logansport, Ind., on the 11th and Ashwood, Tenn., 20th, cherry trees in bloom for the second time this year.

Solar and Lunar Halos have been observed in considerable numbers but none of special interest have been reported. A lunar rainbow was observed at Key West on the 20th.

Volcano.—Capt. Smith, of the steamer *Josephine*, who arrived at Seattle, Wash. T., reports that while ascending the Skagit river on September 7th, when opposite Mount Baker, he observed that mountain in a state of violent eruption, flames streaming up from the summit, and large volumes of smoke ascending.

Sunsets.—The characteristics of the sky at sunset as indicative of fair or foul weather for the succeeding twenty-four hours have been observed at all Signal Service Stations. Reports from 137 stations show 4,088 observations to have been made, of which 23 were reported doubtful; of the remainder, 4,065 or 83.8 per cent. were followed by the expected weather.

Earthquakes.—Salt Lake City, Utah, 16th, 10:27 p. m., lasting 15 seconds; movement from SW. to NE.; shock reported to have been felt in various parts of the Territory. Charlotte, Vt., 23rd, about 6 p. m., lasting one minute. Los Angeles, Cal., 26th, 5:40 p. m., lasting about 3 seconds, horizontal movement from W. to E. Ft. Douglass, Utah, 16th, slight shock at midnight.

Meteorite.—On the night of the 22nd a meteoric stone fell to the ground on the west side of Schroon Lake, N. Y., "making it light as noonday and shaking the houses from cellar to garret." The stone, red-hot when it fell, was found in the morning to be a clear white rock, weighing about 125 lbs. The ground was indented to the depth of 6 inches, and the stone appeared to have come from the northeast. It is said to be unlike any other meteoric stone now known.

Meteors.—Meteors have been reported in considerable numbers; the following, however, are the only ones deserving of special notice: 21st, at Wickenburg, A. T., meteor 10° above the horizon moved in a westerly course about 30°, with increasing brightness till it resembled a rotating wheel of fire. It was visible about four minutes, and burst with a sound resembling a mining blast. At Seymour, ten miles east of Wickenburg it presented a similar appearance. Boston, Mass., 5th, 9:30 p. m., large meteor, like brilliant red ball of fire; apparent diameter one foot; moved from east to west, leaving bright red cloud 2° wide, which changed to bluish tinge and faded in about 1½ minutes. Little Rock, Ark., 7th, 10 p. m., bright yellow meteor, trail 8° long. St. Louis, Mo., 6th, 8:30 p. m., large and brilliant meteor moving north, color violet; path visible for 50°, when it exploded into 4 or 5 pieces.

Sun Spots.—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent Nautical Almanac Office, Washington, D. C.:

DATE— Sept., 1880.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
3rd, 4 p. m.	2	2	1	19	2	2	3	3	Spots probably disappeared by solar rotation. Broad areas of faculae. Faculae.
4th, 8 a. m.	0	1	0	0	0	0	3	4	
5th, 10 a. m.	1	7	0	0	0	0	4	11	
10th, 7 a. m.	2	68†			2	45	5	75†	
11th, 5 p. m.	0	10	0	0	0	0	5	55†	
12th, 12 m.	0	0	1	5	0	0	4	80†	
13th, 1 p. m.	0	0	0	5	0	0	4	75†	
14th, 3 p. m.	1	3	0	15	1	3	5	63†	
15th, 8 a. m.	0	0	0	15	0	0	5	48†	
16th, 7 a. m.	0	3	0	15	0	3	5	28†	
17th, 8 a. m.	0	4	1	15	0	0	4	15	
18th, 5 p. m.	3	10	2	5	0	0	5	20†	
19th, 9 a. m.	0	5	0	0	0	0	5	25†	
21st, 10 a. m.	0	0	2	5	0	0	3	20	
22nd, 5 p. m.	0	0	0	0	0	0	3	10	
24th, 5 p. m.	1	4	0	0	1	4	4	14	
25th, 8 p. m.	0	3	0	0	0	0	4	17	
26th, 8 a. m.	0	5	0	0	0	0	4	22	
28th, 10 a. m.	0	36†	1	10	0	0	3	50†	
29th, 9 a. m.	0	20	0	0	0	0	3	70†	

† Approximated.

Mr William Dawson, at Spiceland, Ind., reports: 1st, 3 groups, 21 spots, new group in SW. quadrant; 3rd, 2 groups, 7 spots, large spots W. of centre; 4th, 3 groups, 4 spots, new group at E. edge, air very poor; 5th, 4 groups, 24 spots, new group in SE. quadrant, air good; 6th, 4 groups, 27 spots; 8th, 9 groups, 60 spots; 9th, 6 groups, 80 spots, air poor; 10th, 6 groups, 140 spots; 13th, 5 groups, 90 spots; 14th, 5 groups, 90 spots; 15th, 6 groups, 62 spots; 16th, 4 groups, 26 spots; 17th, 5 groups, 24 spots; 18th, 5 groups, 43 spots; 19th, 6 groups, 44 spots; 21st, 4 groups, 31 spots, air poor; 22nd, 4 groups, 31 spots; 23rd, 5 groups, 28 spots; 24th, 4 groups, 19 spots; 28th, 5 groups, 80 spots; 29th, 4 groups, 85 spots, air poor. Mr. David Trowbridge, at Waterburgh, N. Y., reports: 1st, 2 spots; 2nd, 1 spot near centre; 3rd, same as 2nd; 4th, same as third and 1 new spot on E. edge; 5th, 3 groups, one near E. margin; 6th and 7th, the same; 10th, 3 groups, one very long containing 8 spots in the southern solar Hemisphere, 3 spots in the other 2 groups. The large group is one of those of the 5th. 11th and 12th, the same, the large group very extensive, occupying from W. to E., $\frac{2}{3}$ of the solar diameter, or 190,000 miles, I counted 21 spots, group faintly visible to the naked eye; 13th, 2 groups, 4 spots, one large one; 14th and 15th, the same, and a new spot just appearing on the E. with 2 spots, considerable change in the large group; 16th, 3 groups, 16 spots; 17th, the large group has disappeared by rotation; 18th, same as yesterday, 2 groups, 4 spots; 20th, 2 small spots near centre and the E. group of the 17th; 21st, same as yesterday and a new group of 4 small spots; 23rd, one spot near W. margin and the E. group of the 21st and a new spot near E. margin; 24th, the same as yesterday and a new spot near E. margin; 25th, same group, 5 spots; 26th, middle group of yesterday has disappeared; 28th, 4 groups, 12 spots; 29th, same as yesterday with 11 spots; 30th, the system of groups S. of equator containing 15 spots, the N. group, 5 spots. Cloudiness on the 8th, 9th, 19th, 22nd and 27th prevented observations.

NOTES AND EXTRACTS.

The Signal Service observer at St. Michaels, Alaska, reports the past winter as one of unusual severity. Long continued cold weather prevailed during January, February and March, 1880, accompanied by severe gales and much snow during the two latter months. The natives report that no winter of such severity has ever been known by them. The temperature at Fort Reliance, 400 miles southeast of Fort Yukon, reached —69°. Migrating birds were from eight to ten days late this