

vania; Providence, Rhode Island; Halifax, Nova Scotia; Charlottetown, Prince Edward Island.

15th.—Sidney, Nova Scotia.

16th.—Fort Myer, Virginia.

17th.—Westerville, Ohio; Grand Haven, Fort Brady, Manistique, Marquette and Swartz Creek, Michigan; Bismarck and Forts Buford and Totten, Dakota; Milwaukee, Wisconsin; Riley, Illinois.

18th.—Mount Washington, New Hampshire; Fort Brady, Michigan; Fort Totten, Dakota.

19th.—Saint Vincent, Minnesota; Fort Totten and Webster, Dakota.

20th.—Westerville, Ohio; Manchester, Iowa.

21st.—Fort Wayne, Indiana.

22d.—Beloit, Wisconsin.

23d.—Wabash, Indiana.

25th.—Westerville, Ohio.

26th.—Cornish, Gardiner and Orono, Maine; Newport, Vermont; Cambridge, Massachusetts; Westerville, Ohio.

27th.—Orono, Maine.

28th.—New Haven, Connecticut.

#### THUNDER-STORMS.

Thunder storms were reported in the various districts, as follows:

*New England.*—2d, 15th to 17th.

*Middle Atlantic states.*—1st, 2d, 8th, 14th to 17th, 25th to 27th.

*South Atlantic states.*—1st, 2d, 8th, 13th to 16th, 19th, 21st, 24th to 28th.

*Florida peninsula.*—5th, 6th, 12th, 14th to 17th, 20th to 23d.

*Eastern Gulf states.*—1st, 5th, 7th, 8th, 11th to 15th, 17th to 21st.

*Western Gulf states.*—1st, 3d, 4th, 5th, 10th, 11th, 13th, 14th, 17th to 20th, 26th to 30th.

*Rio Grande valley.*—11th, 20th, 27th to 30th.

*Tennessee.*—1st, 2d, 7th, 13th to 15th, 17th, 18th, 19th, 27th to 30th.

*Ohio valley.*—1st, 2d, 3d, 14th, 15th, 27th to 29th.

*Lower lake region.*—1st, 2d, 14th to 16th, 27th, 28th, 30th.

*Upper lake region.*—1st, 7th, 14th, 15th, 18th, 22d, 26th, 27th, 29th, 30th.

*Extreme northwest.*—Saint Vincent, Minnesota, 29th.

*Upper Mississippi valley.*—1st, 5th, 12th, 13th, 14th, 17th, 18th, 19th, 26th to 30th.

*Missouri valley.*—1st, 5th, 12th, 13th, 14th, 17th to 22d, 25th, 26th, 28th to 30th.

*Northern slope.*—13th, 17th, 26th, 28th.

*Middle slope.*—2d, 3d, 5th, 6th, 11th to 14th, 17th to 20th, 25th to 30th.

*Southern slope.*—4th, 13th, 18th, 27th to 30th.

*Southern plateau.*—4th, 10th, 11th, 16th, 27th, 29th.

*Middle plateau.*—Utah: Salt Lake City, 11th, 16th; Nephi, 11th, 30th;

*Northern plateau.*—10th, 21st, 22d, 25th, 29th.

*North Pacific coast region.*—4th, 5th, 9th, 10th, 21st, 27th.

*California.*—Los Angeles: 3d; Sacramento and Hydesville, 9th, Princeton, 8th, 9th, 28th; San Francisco, 24th; San Diego, 27th; Benicia Barracks, 28th.

During a thunder storm on the afternoon of the 16th, at Portland, Maine, a violent electrical explosion occurred. Numerous windows were broken by the concussion, and several persons were stunned. Considerable damage was done to the telephone exchange and telegraph office in this city.

#### OPTICAL PHENOMENA.

##### SOLAR HALOS.

Solar halos have been observed in the various districts on the following dates:

*New England.*—2d to 5th, 9th, 12th, 14th, 15th.

*Middle Atlantic states.*—1st, 5th, 6th, 7th, 12th, 18th, 20th, 25th, 28th.

*South Atlantic states.*—1st to 4th, 14th, 16th, 18th, 21st, 23th.

*Florida peninsula.*—Archer, 15th.

*Eastern Gulf states.*—Pensacola, Florida, 1st.

*Western Gulf states.*—Fort Smith, Arkansas, 5th; Lead Hill, Arkansas, 1st, 3d, 4th, 6th, 13th, 17th, 25th, 30th.

*Tennessee.*—1st, 5th, 7th, 11th, 17th, 20th, 30th.

*Ohio valley.*—1st, 3d to 6th, 8th, 11th, 19th, 28th, 29th, 30th.

*Lower lake region.*—North Volney, New York, 13th; Toledo, Ohio, 18th, 30th.

*Upper lake region.*—2d, 6th, 12th, 13th, 17th, 18th, 21st, 22d, 25th, 26th, 29th, 30th.

*Extreme northwest.*—Fort Buford, Dakota, 10th, 16th.

*Upper Mississippi valley.*—5th, 11th, 15th, 17th, 21st, 22d, 26th, 27th, 29th, 30th.

*Missouri valley.*—Vermilion, Dakota, 16th, 20th.

*Northern slope.*—Genoa, Nebraska, 4th, 5th, 16th.

*Middle slope.*—Independence, Kansas, 24th.

*Southern plateau.*—El Paso, Texas, 26th, 27th; San Carlos, Arizona, 26th.

*Middle plateau.*—1st, 2d, 4th, 5th, 6th, 8th, 11th, 12th, 20th, 22d.

*Northern plateau.*—Boisé City, Idaho, 19th, 26th; Dayton, Washington Territory, 12th.

*North Pacific coast region.*—Oregon: Roseburg, 6th, 7th, 17th; Albany, 7th, 19th; East Portland, 19th.

*Middle Pacific coast region.*—1st to 9th, 15th, 20th, 21st, 22d, 24th, 27th.

#### LUNAR HALOS.

*New England.*—5th, 8th, 10th, 11th, 15th.

*Middle Atlantic states.*—1st, 3d, 5th, 7th, 13th, 28th.

*South Atlantic states.*—1st, 3d to 6th, 30th.

*Florida peninsula.*—1st, 2d, 3d.

*Eastern Gulf states.*—1st to 4th, 10th.

*Western Gulf states.*—1st, 3d, 4th, 9th, 29th.

*Tennessee.*—3d, 6th, 7th, 9th, 30th.

*Ohio valley.*—6th, 10th, 17th, 28th, 29th, 30th.

*Lower lake region.*—1st, 2d, 3d, 5th, 8th, 30th.

*Upper lake region.*—2d, 4th to 7th, 11th, 12th, 14th, 28th, 30th.

*Extreme northwest.*—Fort Totten, Dakota, 5th; Fort Buford, Dakota, 10th.

*Upper Mississippi valley.*—3d, 6th, 27th to 30th.

*Missouri valley.*—Fort Bennett, Dakota, 8th.

*Northern slope.*—Fort Shaw, Montana, 1st; Fort Custer, Montana, 6th; Fort Meade, Dakota, 26th.

*Middle slope.*—3d, 7th, 8th, 9th.

*Southern slope.*—Fort Elliott, Texas, 4th; Fort Stockton, Texas, 6th.

*Southern plateau.*—1st, 3d, 6th, 8th.

*Middle plateau.*—Nephi, Utah, 1st, 8th; Carson City, Nevada, 1st, 6th; Salt Lake City, Utah, 1st, 9th, 30th; Fort Lewis, Colorado, 7th, 8th.

*Northern plateau.*—Dayton, Washington Territory, 4th; Spokane Falls, Washington Territory, 5th.

*North Pacific coast region.*—2d, 3d, 5th, 7th.

*Middle Pacific coast region.*—4th, 5th, 6th, 8th.

*South Pacific coast region.*—1st, 4th, 5th.

#### MIRAGE.

Galveston, Texas.—During the afternoon of the 22d, the mainland seemed much nearer than usual, and all elevated and distant objects were seen with great distinctness. A similar phenomenon was also observed on the 23d.

Milwaukee, Wisconsin.—From 2 p. m., of the 24th, until after sunset, Whitefish bay, six miles distant and ordinarily hidden from view, was plainly seen.

Mirages were also observed at the following places:

Webster, Dakota, 16th, 19th, 20th, 21st, 22d, 23d, 24th.

Pretty Prairie, Kansas, 18th, 10th.

Manistique, Michigan, 22d, 23d.

Duluth, Minnesota, 28th.

Red Willow, Nebraska, 17th.

Indianola, Texas, 22d, 24th.