

*Texas.*—Palestine, 19th; Galveston, 21st; Fort Concho, 2d.  
*Wisconsin.*—Manitowoc, 12th.

It is probable that some of the above reports are incorrect, and should have been recorded as sleet instead of hail.

SNOW.

The dates on which snow is reported to have fallen in the various districts are as follows:—

*New England states.*—1st to 11th, 13th to 22d, 24th to 31st.  
*Middle Atlantic states.*—1st, 2d, 4th to 14th, 16th, 17th, 19th, 20th, 21st, 23d, 25th to 30th.

*South Atlantic states.*—9th, 10th, 11th, 14th.

*Eastern Gulf.*—8th, 9th, 11th.

*Western Gulf.*—1st, 8th, 12th, 19th, 20th.

*Ohio valley.*—1st, 2d, 4th, 5th, 6th, 8th to 17th, 20th to 25th, 29th, 30th, 31st.

*Tennessee.*—1st, 2d, 8th to 11th, 14th, 20th, 21st.

*Lower lakes.*—1st to 26th, 28th to 31st.

*Upper lakes.*—1st to 31st.

*Extreme northwest.*—2d, 4th to 7th, 9th to 13th; 17th, 18th, 19th, 21st to 27th, 29th, 30th, 31st.

*Upper Mississippi valley.*—1st, 2d, 4th to 13th, 15th to 27th, 29th, 30th, 31st.

*Missouri valley.*—3d to 10th, 12th to 26th, 28th to 31st.

*Northern slope.*—1st to 7th, 10th, 12th, 14th to 22d, 24th, 25th, 27th to 31st.

*Middle slope.*—3d, 4th, 5th, 7th, 14th, 15th, 16th, 18th, 19th, 20th, 26th, 30th, 31st.

*Southern slope.*—8th, 9th, 19th, 20th.

*Southern plateau.*—3d, 4th, 5th, 8th, 14th, 15th, 16th, 19th, 20th.

*Middle plateau.*—1st, 3d, 4th, 14th to 18th, 21st, 24th, 25th, 26th, 29th, 30th.

*Northern plateau.*—2d, 3d, 4th, 6th, 7th, 12th to 17th, 20th, 21st, 24th, 25th, 27th, 29th, 30th, 31st.

Snow also fell in the following states and territories, not included in the districts named above:—

*California.*—Fort Bidwell, 3d to 6th, 24th to 27th. San Francisco, 1st, Los Angeles, 2d; snow in mountains during the morning.

*Oregon.*—Fort Klamath, 3d, 4th, 14th, 15th, 16th, 23d to 26th.

*Washington Territory.*—Fort Towusend, 4th, 14th, 15th, 19th, 22d.

The following are reports of unusually severe snow-storms, which have occurred during the month:—

Newport, Rhode Island, 10th.—Snow-drifts are from two to ten feet deep; estimated to be about one foot deep on the level; trains on the Old Colony railroad were delayed on account of snow-drifts.

Dubuque, Iowa, 9th.—Very heavy snow-storms; all incoming trains delayed from one to three hours by snow-drifts. 16th, railroad travel still impeded by snow-drifts; also on the 19th, and 20th. On the 30th, no trains arrived from the west; snow blockade on the western division of the Illinois Central railway.

Saint Paul, Minnesota, 10th.—Snow badly drifted, causing delay of trains on all the railroads centring here. 13th and 14th, trains again delayed on account of snow blockades. 19th, railroads obstructed by snow blockades and trains abandoned on the Northern Pacific, the Saint Paul, Minneapolis and Manitoba, and the Sioux City and Saint Paul railroads; all other trains arrive from two to six hours late. 20th, the snow blockades continue on all roads running northwest and south, but trains arrive on time from eastern points. 21st, trains on time from eastern points; trains on the roads running north and south are from two to four hours late. Snow blockades continued on the 22d, 23d, and 24th. 25th, road snow unobstructed; trains arrive and depart on time. 31st, railroads again blockaded by snow-storm of the 30th.

Huron, Dakota, 12th.—Trains are blockaded east of this place by snow-drifts. 13th, very heavy snow-storm in Minnesota, blockading trains. Snow blockades interrupted railroad travel from the 19th to the close of the month.

Billings, Montana, 22d.—Snow is from one to one and a half feet deep on the level, and from ten to thirty feet deep in ravines. Cresco, Iowa, 13th.—Snow badly drifted; railroad travel suspended. The railroads were also obstructed by snow-drifts on the 20th and 31st.

LARGEST MONTHLY SNOWFALLS.

[Expressed in inches.]

The following are the largest monthly snowfalls reported from the various states and territories during the month:—

*Arizona.*—Fort Apache, 5.25.

*California.*—Alta, 11; Brentwood, 10; Summit, 10; Cisco, 9; Byron, 8; Lathrop, 8; Antioch, 7; Martinez, 6; Modesto, 6; Tracy, 5; Fort Bidwell, 4.75.

*Colorado.*—Fort Lyon, 11; Fort Collins, 10; Fort Garland, 9.

*Connecticut.*—New Haven, 11; Southington, 8.25; New London, about 6.

*Dakota.*—Fort Lincoln, 11; Yankton, 10.50; Fort Totten, 9.25; Fort Hall, 7; Morrilton, 6; Wicklow, 5.50; Fort Ellis, 3.

*District of Columbia.*—West Washington, 11.50.

*Idaho.*—Eagle Rock, 20.75.

*Illinois.*—Rockford, 19.50; Riley, 18.75; Elmira, 18; Chicago, 16; Springfield, 11; Champaign, 10.75; Charleston, 9.75; Bunker Hill, 6; Mattoon, 6.

*Indiana.*—Logansport, 16.25; Wabash, 11.50; Lafayette, 10; Greensburg, 9; Monticello, 8.75; Indianapolis, about 8; Fort Wayne, 5.75; Rising Sun, 5.

*Iowa.*—Des Moines, 23; Logan, 23; Ames, 21; Humboldt, 16.50; Keokuk, 16.50; Dubuque, 16; Muscatine, 16; Indianola, 15.75; Clinton, 14; Independence, 14; Cresco, 13; Cedar Rapids, 10.75; Monticello, 10.75; Davenport, 10.50; Guttenburg, 10.25.

*Kansas.*—Leavenworth, 7.50; Salina, 7; Lawrence, 5.50; Manhattan, 4.50; Fort Scott, 4.25.

*Maine.*—Dexter, 21.50; Eastport, 19.50; Cornish, 18; Orono, 15; Gardiner, 14.

*Maryland.*—Cumberland, 15; Fallston, 15; Sandy Springs, 11.75; Emmittsburg, 11.25; Baltimore, 5.50.

*Massachusetts.*—Somerset, 19.25; Fort Warren, 19; Provincetown, 17.50; Fall River, 16; Worcester, 14.25; Princeton, 11.25; Charlestown, 9.75; Boston, 9.50; Westborough, 9.50; Milton, 9; Mendon, 7.

*Michigan.*—Mackinac City, 50; East Tawas, 47; Northport, 40.50; Traverse City, 39; Hastings, 33; Harrisonville, 28; Marquette, 23.50; Alpena, 22; Ionia, 20.50; Grand Haven, about 20; Reed City, 16.75; Kalamazoo, 16; Escanaba, 13; Litchfield, 13; Port Huron, 13; Detroit, 12; Hillsdale, 11.50; Lansing, 11.50; Marshall, 11; Thornville, 9; Cold Water, 5.50.

*Minnesota.*—Minneapolis, 22.25; Moorhead, 12; Northfield, 10.75; Saint Paul, 6.50.

*Missouri.*—Bedford, 11.25; Curryville, 8.25; Corning, 7.25; Pierce City, 7; Springfield, 5.25.

*Montana.*—Fort Assiniboine, 26.75; Fort Missoula, 13.50; Cartersville, 11.25; Fort Shaw, 9; Fort Benton, 7.50; Billings, 6.25; Helena, 5.75; Fort Shaw, 5.

*Nebraska.*—Nebraska City, 18.25; De Soto, 14.50; Genoa, 13; North Platte, 12; Utica, 11.25; Omaha, 10; Lincoln, 9; Fort Niobrara, 6.75.

*Nevada.*—Fort McDermitt, 52.50; Truckee, 10.50; Otego, 10; Palisade, 10; Carlin, 6; Reno, 5; Wells, 5.

*New Hampshire.*—Mount Washington, 41.50; Grafton, 24; Antrim, 13.50; New Market, 12.50.

*New Jersey.*—Cape May, 17.50; Bordentown, 14.50; South Orange, 13.50; Atlantic City, 13; Little Egg Harbor, 13; Barnegat, 7; Sandy Hook, 6.

*New Mexico.*—Silver City, 14; Sante Fé, 4.25.

*New York.*—Palermo, 33.75; North Volney, 30; Vineland, 20.75; Port Jervis, 19; White Plains, 18; Albany about 17; Johnstown, 16.75; Flushing, 16.50; Palermo, 15.50; Freehold, 13.75; Moorestown, 13.75; Ardenia, 13; Cooperstown, 12.25; Penn Yan, 11.25; Mountainsville, 10.75; Friendship, 9.25; Oswego, 9.25; Factoryville, 8.50; Ithaca, 8.50; New York City, 8.25; Buffalo, 6.50; Rochester, 5.25.

*North Carolina.*—Murphy, 9; Highland, 8; Ore Knob, 7.50; Weldon, 5; Chapel Hill, 4.50.

*Ohio.*—New Athens, 16.25; North Lewisburg, 16; Columbus, about 13; College Hill, 12; Canal Dover, 10; Marion, 7.50; Ruggles, 7; Toledo, 6.50; Cleveland, 6; Westerville, 5; Bethel, 4.

*Oregon.*—Eola, 4.50.

*Pennsylvania.*—Grampian Hills, 25; Wellsboro, 21.75; Erie, 15.50; Germantown, 15.50; Dyberry, 14; Fallsington, 14; Philadelphia, 13.50; Catawissa, 12.75; Williamsport, 12.50; Chambersburg, 11.75; Pittsburg, 10; West Chester, 10.

*Rhode Island.*—Newport, 12.

*Tennessee.*—Knoxville, 6; Chattanooga, 3.50; Austin, 3.25.

*Utah.*—Corinne, 10; Salt Lake City, 10; Ogden, 7; Promontory, 5.

*Vermont.*—Strafford, 36; Lunenburg, 20.50; Newport, 14; Charlotte, 8.

*Virginia.*—Johnsontown, 13; Lynchburg, 9.25; Variety Mills, 9.25; Accotink, 9.25; Norfolk, 8.50.

*West Virginia.*—Helvetia, 21; Morgantown, about 17.

*Wisconsin.*—Neillsville, 32.50; Embarrass, 28.50; Franklin, 28; Manitowoc, 24.25; Milwaukee, 16.50; Ripon, 16.50; Beloit, 15; La Crosse, 13.50; Madison, about 10.

*Wyoming.*—Cheyenne, 8.75.

#### DEPTH OF UNMELTED SNOW ON GROUND AT END OF MONTH.

[Expressed in inches.]

*California.*—Cape Mendocino, trace.

*Colorado.*—Pike's Peak, 4; West Las Animas, 1.25.

*Connecticut.*—Southington, 2; New London, trace.

*Dakota.*—Fort Stevenson, 10; Wicklow, 4.30; Bismarck, 4; Huron, 2; Morrilton, 2; Alexandria, 1.80; Fort Bennett, trace.

*Idaho.*—Eagle Rock, 7.

*Illinois.*—Riley, 18; Morrison, 10; Peoria, 10; Champaign, trace; Chicago, trace; Springfield, trace.

*Indiana.*—Logansport, 3.35; Monticello, 1; Lafayette, 0.50; Indianapolis, trace; Wabash, trace.

*Iowa.*—Independence, from 6 to 10; Humboldt, 20.6; Ames, 20; Cresco, 18; Des Moines, 14; Indianola, 14; Monticello, 11; Guttenburg, 10; Muscatine, 8.50; Cedar Rapids, about 8; Dubuque, 6; Clinton, 5; Des Moines, 3; Keokuk, 2; Davenport, 1.

*Kansas.*—Pretty Prairie, 2.

*Maine.*—Gardiner, 19; Orono, 14; Eastport, 11; Portland, 4.

*Maryland.*—Emmitsburg, about 3; Baltimore, trace; Sandy Springs, trace.

*Massachusetts.*—Mendon, 3; Westborough, 3; Charlestown, 1; Somerset, trace.

*Michigan.*—Northport, 53; Traverse City, 30; Hastings, 28; Marquette, 28; Mackinac City, 18; Grand Haven, 8.50; Alpena, 6; Escanaba, 6; Lansing, 5; Thornville, 5; Hillsdale, 4; Litchfield, 3; Port Huron, trace.

*Minnesota.*—Saint Paul, 19; Moorhead, 16; Duluth, 14; Saint Vincent, 7.

*Missouri.*—Bedford, 1.

*Montana.*—Fort Assinniboine, 12; Fort Keogh, 10; Billings, 9; Helena, 6; Fort Missoula, 4; Fort Shaw, 2; Fort Benton, 1.50.

*Nebraska.*—North Platte, 6; De Soto, 5; Genoa, 3; Lincoln, 3; Omaha, trace; Utica, trace.

*New Hampshire.*—Mount Washington, 24; Grafton, 23; New Market, 4.50.

*New Jersey.*—Atlantic City, trace; Bordentown, trace; Freehold, trace; Paterson, trace.

*New Mexico.*—Santa Fé, trace to 6.

*New York.*—Palermo, 25; Oswego, 11; Cooperstown, 8; Factoryville, 3; Penn Yan, 3; Buffalo, 2; Rochester, 2; Albany, 1; Flushing, 1.

*Ohio.*—Canal Dover, trace to 3; New Athens, 1.50; Bethel, 0.50; Cleveland, 0.50; Toledo, 0.50; North Lewisburg, trace; Sandusky, trace.

*Oregon.*—Umatilla, 7.

*Pennsylvania.*—Grampian Hills, 14; Wellsborough, 14; Dyberry, 10; Erie, 6; Chambersburg, 5.50; State College, 4; Williamsport, 4; Catawissa, 3; West Chester, 2.

*Vermont.*—Strafford, 36; Woodstock, 27.

*Washington Territory.*—Olympia, 1.50.

*West Virginia.*—Helvetia, 3.

*Wisconsin.*—Embarrass, 42; Neillsville, 28; Franklin, 24; Ripon, 17; Beloit, 12; La Crosse, 12; Madison, 7; Milwaukee, 4.

*Wyoming.*—Cheyenne, 24.

The figures given above are as reported by the observers.

#### SNOW FROM A CLOUDLESS SKY.

Burlington, Vermont, 5th, 6th, 8th, 9th. Springfield, Illinois, 8th, light snow fell during the night, and continued until 7.15 a. m. The clouds disappeared at 6.20 a. m., leaving the sky with a hazy appearance from which snow continued to fall. Wicklow, Dakota, 28th, snow fell from a cloudless sky from 8.15 to 8.40 p. m.

#### SLEET.

*Alabama.*—Green Spring, 21st.

*Arizona.*—Fort Verde, 19th.

*Arkansas.*—Fort Smith, 15th, 19th; Little Rock, 15th, 20th.

*Connecticut.*—New Haven, 17th.

*Georgia.*—Quitman, 22d.

*Illinois.*—Cairo, 19th, 20th; Champaign, 20th; Chicago, 12th, 13th; Springfield, 16th, 20th.

*Indiana.*—Indianapolis, 4th, 5th, 12th; Laconia, 4th; Logansport, 13th; New Harmony, 4th; Vevay, 4th, 13th, 25th.

*Iowa.*—Dubuque, 26th.

*Kansas.*—Fort Scott, 3d, 4th; Yates Centre, 16th.

*Kentucky.*—Louisville, 4th, 12th.

*Louisiana.*—Shreveport, 20th.

*Maine.*—Cornish, 20th; Eastport, 7th.

*Michigan.*—Detroit, 1st; Grand Haven, 26th.

*Missouri.*—Springfield, 20th.

*Montana.*—Fort Keogh, 25th.

*New York.*—Albany, 27th; Fort Columbus, 14th, 20th; New York City, 7th; Plattsburg Barracks, 21st.

*North Carolina.*—Charlotte, 9th; Weldon, 16th.

*Ohio.*—Bethel, 13th; Cincinnati, 4th, 8th; Cleveland, 19th, 26th; College Hill, 5th; Columbus, 8th, 28th; Portsmouth, 4th; Sandusky, 12th, 13th, 27th; Toledo, 12th, 13th.

*Oregon.*—Umatilla, 23d.

*Pennsylvania.*—Chambersburg, 13th, 19th; Philadelphia, 6th; Pittsburg, 13; West Chester, 6th; Williamsport, 17th.

*Rhode Island.*—Newport, 17th; Point Judith, 6th, 7th.

*Tennessee.*—Chattanooga, 1st; Nashville, 3d, 10th, 13th, 15th.

*Texas.*—Palestine, sleet fell from midnight of the 19th to 6.55 a. m. of 20th, covering the ground with ice to a thickness of four inches. Sleet also fell on the 1st; Brownsville, 21st, 22d; Fredericksburg, 2d; Galveston, 20th; New Ulm, 19th; San Antonio, 19th.

*Vermont.*—Burlington, 20th, 21st.

*Virginia.*—Chincoteague, 26th; Norfolk, 4th.

*West Virginia.*—Morgantown, 8th.

*Wisconsin.*—Madison, 26th; Milwaukee, 26th.

#### WINDS.

The most frequent directions of the wind during the month of January, 1883, for the Signal Service stations, are shown on chart iii., by arrows flying with the wind. In the lake region, they are from the west and southwest; in the extreme northwest, the upper Mississippi and Missouri valleys, they are from the northwest; in the southern states, they are generally from the north and northwest; along the Atlantic coast, they are from northwest to northeast; they are southerly in the north Pacific coast region, and generally from north and northwest in California.

#### TOTAL MOVEMENTS OF THE AIR.

[In miles.]

The following are the largest total movements at the Signal