

a gale on November 30th; on December 1st, the wind suddenly chopped to NNW. with heavy cross-sea, during which she sprung a leak and foundered on the 2nd, 350 miles to the southwest of Fayal, having on board about 225 persons. Steamer *Columbo* in 32° N. and 29° to 39° W. had a continuation of westerly gales from the 1st to the 5th. North of Azores northerly winds prevailed between 10° and 20° W.; easterly thence to 40° W.; southerly to 50° W., and northwesterly thence to the coast of the United States, where a second area of high pressure existed. 2nd and 3rd, the low area south of the Azores moved to the Bay of Biscay, accompanied by very heavy seas, and producing severe easterly gales and heavy snows over the British Isles; the high area north of the Azores and the low area north of Newfoundland disappeared, while the high area on the American coast moved northeastward, and on the morning of the 4th extended from the banks of Newfoundland to 35° W; on the 3rd heavy easterly gales and high seas prevailed near the Bermudas. 5th and 6th, the low area moved rapidly eastward from the Bay of Biscay to the Black Sea, producing a slight rise of temperature to the south and east of its centre; with this exception, the cold period, which set in over western Europe during the first week of December, continued almost uninterrupted throughout the entire month. During the 5th, low area No. II, Chart I, *December Review*, passed eastward over Newfoundland and on the 6th was central about 55° N. 35° W., moving northeastward. 7th, low areas over mid-ocean and Canada; high areas over the east Atlantic and the Banks of Newfoundland; southerly to westerly gales in 55° N. 20° W.; northerly in 40° W. and southerly south of Nova Scotia. 8th, high area over the east Atlantic, extending over Europe, with very low temperatures; low area approached the coast of Norway inducing a temporary rise in temperature over northern Europe; southeast "hurricane" in 35° N. 23° W., and southeasterly winds thence northward to 50° N., along the western margin of high area; low area over Newfoundland. 9th, centre of high area was transferred to western Europe, over which region extremely low temperatures were recorded. At Paris, at 8 a. m. the thermometer registered -23.9° C. or -11° Fahr. Some hours earlier a temperature of -28° C. or -18.4° Fahr. was recorded on the surface of the snow. These are probably the lowest temperature readings ever recorded in this vicinity; during the winters of 1788-9, 1794-5 and 1871-2, -21.5° -23.5° and -21.3°, respectively, were recorded, these being the lowest readings since 1700. In the British Isles the mean temperature for the week ending December 8th of seven stations in the Midland counties, when compared with the mean of the same week during thirteen previous years, shows a deficit of 19° Fahr.; minimum readings ranging from -11° Fahr. (-23.9° C.) to -2° (-18.9° C.) were registered at various places from the 2nd to the 7th. On the 9th a low area existed in the vicinity of the Azores; ship *Peruvian* was dismasted in a southeast hurricane and abandoned in about 43° N. 27° W.; high area over the western Atlantic. 10th and 11th, low area over mid-ocean, attended by southerly gales from 15° to 25° W. and northerly gales about 40° W.; high area over western Atlantic. 12th, southerly winds and rising temperature from British Isles to 30° W., northerly gales in 45° W.; a low area passed eastward north of Newfoundland. 13th, southerly winds and rain over the eastern Atlantic; high area over western Atlantic. 14th and 15th, high area moved eastward over the western Atlantic, followed during the latter day, by low area No. VIII, chart I, *December Review*. 16th to 20th, low area moved east-north-eastward from Newfoundland; southerly winds prevailed from the British Isles to 30° W, but thence westward westerly gales and high seas, accompanied from 17th to 20th by snow or hail squalls. 21st, the low area moved northeastward off the Irish and Scotch Coasts; steamer "*Hibernian*" at noon in 54 N. 18 W., had a west by north wind, force 7, barometer 29.68. From this day to the end of the month low pressures generally prevailed to the north of the 55th parallel, and during this period at least three distinct low areas can be traced from Newfoundland eastward. Severe westerly gales continued to prevail almost without intermission, across the Atlantic from Ireland to Newfoundland and extremely cold weather, with severe snow and "hail" squalls were experienced from 25° W. to the Banks of Newfoundland, while a decided rise in temperature took place over northwestern Europe. On the morning of the 21st a low area passed rapidly eastward over Newfoundland which was encountered by the "*Hibernian*" on the 22nd in 54 N. 23 W., lowest barometer 29.63 or 752.6, wind WSW. force 9. On the evening of the 23rd another low area passed over Newfoundland, which was encountered by the *Hibernia* on the 25th in 52° N., 33° W., and by the *Leipsig* in 50° N., 20° W., between 6 and 9 p. m. During the 27th it passed to the northward of the British Isles accompanied by very severe gales thence to the coast of Norway. On the 25th another low area passed eastward over Newfoundland; was experienced by the *Hibernian* on the 26th, in 51° N., 37° W., lowest barometer, 28.85 or 732.7, violent WSW. gale, (force 12,) with terrific squalls and high seas; by the *Leipsig*, from 8 to 11 p. m. in about 49½° N., 23° W.; barometer, 29.60 or 751.8, remaining low all night and morning of the 27th; and by the *Rossend Castle* in 57° N. 19° W. On the 28th it passed rapidly eastward over the British Isles accompanied by hurricane winds; at 7 p. m. the "Tay-bridge disaster" occurred. 9th, high pressures prevailed over the Atlantic, with continued cold westerly gales and very high seas; low area, with high temperatures over northern Europe, while the high area over that continent moved southward to the Mediterranean accompanied by low temperatures. During the latter part of the day the pressure gave way over the western Atlantic and another low area covered Newfoundland on the 30th, which by the 31st had moved eastward to 35° W.

TEMPERATURE OF THE AIR.

The general distribution of the temperature of the air is shown by isothermal lines or figures upon chart No. II. On the right side of same chart is a table giving the average temperature, by districts, of

January for several years and for the present month. As might be expected from the abnormal distribution of pressure and consequent preponderance of southerly winds, it is found that the temperature for all districts, except those on the Pacific coast and thence to Utah, is abnormally high. For New England and the Middle States it is about 9° above normal, and for the Florida peninsula about 5°, but for all other districts east of the Rocky Mountains the excess ranges from 10° to 15.5°; the combined means of Cheyenne and Virginia City give an excess of 6°. In the valley of the Snake and Columbia rivers the excess is nearly 12° at Boise, 10° at Umatilla and 3° at Portland, Oregon. In California, and especially in the Sacramento valley, the temperature has been decidedly low.

Maximum Temperatures.—*Maine*: 54° at *Surry, 52° at Portland and 48° at Eastport. *New Hampshire*: 54° at *Contoocookville and 40° on Mt. Washington. *Vermont*: 48° at *Charlotte and *Lunenburg and 46° at Burlington. *Massachusetts*: 60° at Thatcher's Island, *Somerset and *Fall River and 56° at Springfield. *Rhode Island*: 61° at Newport. *Connecticut*: 65° at *Mystic and New London, and 59° at *Southington. *New York*: 66° at *Brookhaven, 64° at New York City, 57° at Buffalo, 53° at Oswego, 46° at Albany and 43° at *Plattsburg Barracks. *Pennsylvania*: 67° at Pittsburg, 63° at Philadelphia, 60° at *Catawissa and 51° at *Dyberry. *Delaware*: 64° at *Dover. *Maryland*: 68° at *Emmitsburg, 65° at Baltimore and 64° at *Cumberland. *District of Columbia*: 66° at Washington. *Virginia*: 75° at *Snowville, 73° at *Wytheville and 66° at Norfolk. *West Virginia*: 70° at Morgantown and 64° at *Helvetia. *North Carolina*: 80° at *Statesville, 70° at *Weldon and Charlotte and 37° at Cape Lookout. *South Carolina*: 77° at Charleston and 73° at *Aiken. *Georgia*: 87° at *Forsyth, 75° at Savannah and 71° at Atlanta. *Florida*: 86° at *Gulf Hammock, 77° at Jacksonville, 80° at Punta Rassa, 83° at Key West and 73° at Pensacola. *Alabama*: 74° at *Green Springs and Mobile and 75° at Montgomery. *Mississippi*: 74° at *Fayette and 77° at *Brookhaven and Vicksburg. *Louisiana*: 82° at *Okalooska and *Lake Charles and 75° at New Orleans. *Texas*: 92° at Decatur, 86° at Rio Grande, 81° at Fort Elliott, 79° at Corsicana and 75° at Galveston and Mason. *Ohio*: 67° at Cincinnati and *Ruggles, 64° at Columbus and 62° at Toledo. *Kentucky*: 70° at Louisville and 69° at Bowling Green. *Tennessee*: 78° at Austin and 72° at Ashwood, McMinnville, Nashville and Knoxville. *Arkansas*: 78° at Little Rock and 76° at *Mt. Ida. *Michigan*: 63° at *Thornville, 62° at *Lansing and *Kalamazoo, 57° at Grand Haven and Detroit, 52° at Alpena and 50° at Northport. *Indiana*: 74° at *Laconia, 67° at *New Harmony and 66° at Indianapolis. *Illinois*: 74° at *Anna, 70° at Cairo, 64° at Springfield and 61° at Chicago. *Missouri*: 72° at St. Louis, 67° at *Ashley and *Kansas City and 62° at *Corning. *Kansas*: 76° at *Fort Wallace, 74° at *Independence, 64° at Leavenworth and 61° at *Manhattan. *Wisconsin*: 58° at Madison, 53° at La Crosse, 44° at *Bloomfield and 42° at *Ashland. *Iowa*: 68° at *Vail, 63° at Des Moines and Keokuk, 62° at *Glenwood, and 55° at Dubuque. *Nebraska*: 76° at *Austin, 70° at North Platte and 62° at Omaha. *Indian Territory*: 75° at Fort Sill and 72° at Fort Gibson. *Minnesota*: 48° at St. Paul and 40° at Duluth. *Dakota*: 70° at Morrilton, 67° at Yankton, 55° at Deadwood, 49° at Bismarck and 40° at Pembina. *Colorado*: 70° at *Fort Lyon, 63° at Denver, 51° at *Hermosa and 24° on Pikes Peak. *New Mexico*: 73° at La Mesilla, 67° at Socorro and 55° at Santa Fé. *Wyoming*: 63° at Cheyenne and 47° at Fort Fred. Steele. *Utah*: 47° at *Coalville and 45° at Salt Lake city. *Nevada*: 54° at Winnemucca. *Arizona*: 78° at Tucson, 76° at Yuma and 61° at Prescott. *Idaho*: 64° at Fort Hall and 57° at Boise City. *Montana*: 47° at Virginia City. *California*: 76° at Los Angeles, 71° at Red Bluff, 70° at Visalia and *Salinas City, 61° at Sacramento and 60° at San Francisco. *Oregon*: 63° at Umatilla, 57° at Portland and 56° at Roseburg.

Those marked with * are reported by Voluntary Observers or U. S. Army Post Surgeons.

Minimum Temperatures.—*Maine*: —15° at *Orono and 0° at Eastport. *New Hampshire*: —12° on Mt. Washington and —10° at *Dunbarton. *Vermont*: —12° at *Newport and 0° at Burlington. *Massachusetts*: —10° at *Billerica and 8° at Boston and Springfield. *Rhode Island*: 15° at Newport. *Connecticut*: 0.7° at *Southington and 10° at New Haven. *New York*: —6° at *Madison Barracks, —2° at Sidney Plains and *Plattsburg Barracks, 1° at Albany, 16° at Buffalo and 17° at New York City. *Pennsylvania*: —3° at *Dyberry, 3° at *Catawissa, 19° at Philadelphia and 20° at Pittsburg. *Delaware*: 20° at *Dover. *Maryland*: 3° at *Woodstock, 12° at *Cumberland, and 17° at Baltimore. *District of Columbia*: 14° at Washington. *Virginia*: 13° at *Mt. Solon, 23° at Lynchburg, 29° at *Walnut Grove and 31° at Cape Henry and Norfolk. *West Virginia*: 12° at Morgantown and 18° at *Helvetia. *North Carolina*: 15° at *Highlands, 25° at *Fayetteville and Wilmington, 26° at *Weldon, and 34° at Cape Lookout. *South Carolina*: 27° at *Aiken and 33° at Charleston. *Georgia*: 30° at Atlanta and *Gainesville, and 34° at Savannah and *Forsyth. *Florida*: 36° at *Gulf Hammock, 40° at Pensacola and *Houston, 45° at Jacksonville and 65° at Key West. *Alabama*: 30° at *Green Springs and 39° at Mobile. *Mississippi*: 32° at *Brookhaven and *Fayette, and 35° at Vicksburg. *Louisiana*: 28° at *Okalooska, 33° at Shreveport and 42° at New Orleans. *Texas*: 5° at Fort Elliott, 21° at Pilot Point, 28° at Mason, 32° at Denison, 38° at Rio Grande and 47° at Galveston. *Ohio*: 6° at *Westerville and *Urbana, 15° at Columbus, 18° at Cleveland and 25° at Cincinnati. *Kentucky*: 28° at Louisville and *Bowling Green. *Tennessee*: 25° at Knoxville and McMinnville, 26° at *Ashwood and 29° at Nashville, and Chattanooga. *Arkansas*: 20° at *Mt. Ida and 32° at Little Rock. *Michigan*: —2° at Marquette, 5° at Alpena, 9° at *Lansing and Kalamazoo, 12° Grand Haven, 13° at Northport, 16° at Port Huron and 19° at Detroit. *Indiana*: 15° at *Spiceland, 18° at Fort Wayne, 20° at Indianapolis and 26° at *New Harmony. *Illinois*: 10° at *Riley, *Belvidere and *Sterling, 20° at Chicago and 30° at Cairo. *Missouri*: 14° at *Corning, 18° at Kansas City and 23° at St. Louis. *Kansas*: —3° at *Fort Wallace, 15° at *Holton, Manhattan, *Cedar

Vale and *Yates Center, and 20° Leavenworth. *Wisconsin*: —12° at *Ashland and *Neillsville, —6° at *La Crosse, and 6° at Madison. *Iowa*: —6° at *Cresco, —3° at *Ft. Dodge, 6° at *Glenwood, 10° at Des Moines and Dubuque, and 21° at Keokuk. *Nebraska*: —19° at *Ft. Sidney, —2° at *Genoa and North Platte, and 5° at Omaha. *Indian Territory*: 23° at Ft. Sill and 26° at Ft. Gibson. *Minnesota*: —19° at Duluth and —12° at St. Paul. *Dakota*: —35° at Ft. Buford, —32° at Pembina, —21° at Bismarck, —7° at Deadwood, —5° at *Morrison and —2° at Yankton. *Colorado*: —17° at Ft. Garland, —15° on Pike's Peak, —7° at *Ft. Lyon and —5° at Denver and *Hermosa. *New Mexico*: —2° at Santa Fé, 7° at Silver City and 20° La Mesilla. *Wyoming*: —25° at *Ft. Fred Steele and —11° at Cheyenne. *Utah*: —16° at *Coalville and 2° at Salt Lake City. *Nevada*: 0° at Winnemucca. *Arizona*: —17° at Prescott, 8° at Ft. Verde, and 30° at Yuma. *Idaho*: —11° at *Ft. Hall and 13° at Boise City. *Montana*: —18° at Virginia City. *California*: 25° at Sacramento and *Salinas City, 26° at Red Bluff, 27° at Visalia and *Princeton, 30° at Los Angeles and 37° at San Francisco. *Oregon*: 18° at Umatilla, 25° at Roseburg and 28° at Portland.

Those marked with a star (*) are reported by Voluntary Observers or U. S. Army Post Surgeons.

Ranges of Temperature at Signal Service Stations.—The monthly ranges will appear from an examination of the maxima and minima just given. The greatest daily ranges vary in New England from 25° at Wood's Holl to 36° at Eastport and 40° at New London and Boston; Middle Atlantic States, 20° at Barnegat to 27° at Washington, Baltimore and Sandy Hook, and 36° at Albany; South Atlantic States, 22° at Savannah to 26° at Jacksonville, and 31° at Wilmington and Augusta; Eastern Gulf States, 13° at Key West and 18° at New Orleans and Cedar Keys to 31° at Montgomery; Western Gulf States, 16° at Galveston to 31° at Vicksburg and 32° at Corsicana; Ohio valley and Tennessee, 22° at Columbus to 25° at Memphis, 30° at Knoxville, 33° at Pittsburg and 36° at Morgantown; Lower Lake region, 23° at Detroit to 31° at Oswego and 34° at Rochester; Upper Lake region, 24° at Grand Haven to 29° at Madison, 33° at Alpena, 38° at Marquette and 48° at Duluth; Upper Mississippi valley, 28° at Dubuque to 31° at St. Louis, 37° at St. Paul and 40° at LaCrosse; Missouri valley, 35° at Leavenworth to 39° at Yankton, 52° at Bismarck and 62° at Pembina; Texas, 31° at San Antonio and Denison to 40° at Rio Grande, 50° at Uvalde, 51° at Fort Elliott and 55° at Decatur; Eastern Rocky Mountain slope, 32° at Fort Gibson and Fort Sill to 36° at Deadwood and 44° at Dodge City and North Platte; Rocky Mountains, 25° on Pike's Peak to 32° at Virginia City, 34° at Cheyenne and 42° at Denver; Northern and Middle Plateau districts, 23° at Boise City to 25° at Salt Lake City and 33° at Winnemucca; California, 15° at San Francisco to 22° at Sacramento, 31° at Los Angeles, 33° at Red Bluff and 36° at Visalia.

Frost was reported very generally from all States and Territories north of the 35th parallel. In Florida, on the 19th, but causing no injury to vegetation; Gulf States, 14th, 19th, 21st to 27th; interior of Texas, 13th, 14th, 22nd, 23rd, 24th, 25th, 26th, 31st; New Mexico, 1st, 5th, 11th, 12th, 13th, 20th, 22nd, 23rd, 26th, 27th, 30th, 31st; Arizona, 2nd, 3rd, 4th, 5th, 6th, 9th, 12th, 13th to 20th, 22nd to 31st; California, 1st, 2nd, 7th, 9th, 11th, 12th, 13th, 14th, 15th, 16th, 19th, 20th, 21st, 26th to 31st; at Salinas, Cal., frost was reported as frequent and severe; at Los Angeles, on the 31st, it injured tender vegetation, but fruit trees not seriously.

Ice formed generally throughout the northern sections of the country as will be seen by reference to the chapter on navigation. In the South Atlantic States on the 13th, 14th, 25th, 26th; Mississippi, 14th, 23rd, 24th, 25th, 26th, 27th; California, 10th, 11th, 12th, 13th, 28th, 29th, 30th, 31st.

Ground Frozen.—Litchfield, Pa., 30th, ground frozen to a depth of 4 inches; Bloomfield, Wis., ground frozen only at intervals throughout the month; Fall River, Mass., frost in ground during first half of month.

PRECIPITATION.

The general distribution of the rain-fall, including melted snow, is illustrated upon chart No. III, as accurately as possible from about 500 reports. In the left-hand corner is a table of average rain-falls, by districts. This table shows the rain-fall for the present January to have been below the average in the Atlantic and Gulf States, Tennessee, (eastern part,) Lower Lake region, Upper Missouri valley and California; the largest deficiencies occurring in the East Gulf States and California. In the other districts, namely, the Upper Lake region, the Ohio, Upper Mississippi and Lower Missouri valleys, and on the coast of Oregon there is an excess, which is most marked in the last named section.

Special Heavy Rains.—1st and 2nd, Eugene City, Or., 4.20 inches. 1st to 3rd, Brackettsville, Tex., 5.00 in. 2nd, Louisville, Ill., 2.00 in. in five hours; Concho, Tex., 3.60 in. 2nd and 3rd, Lyndon, Ill., 2.62 in. 3rd, Riley, Ill., 2.97 in.; Austin, Tex., 2.00 in.; Castroville, Tex., 2.08 in.; San Antonio, Tex., 2.20 in.; Boerne, Tex., 2.53 in. 3rd and 4th, Marengo, Ill., 3.02 in.; New Ulm, Tex., 4.75 in.; Indianola, 4.08 in. 4th, Fort Wayne, Ind., 3.00 in. 5th, Memphis, 2.92 in. 5th and 6th, New Corydon, Ind., 2.49 in.; St. Meinrad, Ind., 3.35 in.; Portland, Or., 3.34 in. 5th to 7th, Eugene City, Or., 4.55 in. 8th and 9th, Princeton, Cal., 2.80 in. 20th to 22nd, Wellsboro', Pa., 4.50 in.; White Plains, N. Y., 3.10 in. 22nd, Auburn, N. H., 3.04 in. 25th and 26th, Quitman, Ga., 3.90 in.; Thomasville, Ga., 3.67 in. 26th, Wilmington, N. C., 2.55 in. 26th and 27th, Smithville, N. C., 3.63 in. 27th, Wellsboro', Pa., 2.40 in. 27th and 28th, Auburn, N. H., 6.00 in. White Plains, N. Y., 2.70. 29th, Pike's Peak, 27th to 29th, 3.64 in.

Largest Monthly Rain-falls including melted snow.—Olympia, Wash. Ty., 19.69 inches; Auburn, N. H., 14.16; Portland, Or., 12.27; Roseburg, Or., 9.37; Wellsboro, Pa., 8.71; College Hill, Ohio, 8.28; New