

out of 82 that maintain continuous thermograph records.

The *distribution of the observed monthly mean* temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart IV; the lines are drawn over the Rocky Mountain Plateau region, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: In the United States, Key West, 67.6; Jupiter, 62.6; Tampa, 57.6; San Diego, 55.8; Yuma, 55.2; in Canada, Esquimaux, 38.4; Yarmouth, 25.2; Kamloops, 26.4. The *lowest* were: In the United States, Moorhead, 2.0; Bismarck, 5.8; Duluth, 9.4; in Canada, Winnipeg, -3.0; Minnedosa, -2.4.

As compared with the normal for January the mean temperature for the current month was in excess throughout the Canadian Provinces and the northern portion of the United States. It was deficient in central California, the Middle and South Atlantic and Gulf States. The greatest excesses were: In the United States, Havre, 8.1; Spokane, 7.9; North Platte, 7.8; in Canada, Swift Current, 10.6; Minnedosa, 9.1; Qu'Appelle, 9.0. The largest deficits were: United States, Amarillo, 5.9; Columbia, S. C., and Jupiter, Fla., 4.4; Chattanooga, 4.1; Canada, none.

Considered by districts the mean temperatures of the current month show departures from the normal as given in Table I. The greatest positive departures were: North Dakota, 3.5; northern Slope, 3.9; middle Plateau, 3.0; northern Plateau, 4.2. The greatest negative departures were: South Atlantic, 3.3; Florida Peninsula, 2.9; southern Slope, 3.2.

The *years of highest and lowest mean temperatures* for January are shown in Table I of the REVIEW for January, 1894. The mean temperature for the current month was the highest on record only at Seattle: 39.1. The mean temperature was the lowest on record only at Amarillo, 27.6.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 80, Jupiter (21st); 79, Key West (21st) and Los Angeles (22d); 78, Tampa and Palestine (1st); 76, Jacksonville (4th); Mobile (17th), Corpus Christi (2d), and San Antonio (1st). The lowest maxima were: 37, Moorhead (1st); 38, Williston (21st); 41, Huron and Idaho Falls (21st). The highest minima were: 51, Key West (29th); 40, San Francisco (11th) and San Diego (2d); 39, Yuma (16th) and Point Reyes Light (13th). The lowest minima were: -38, Havre (24th); -32, Williston (frequently); -30, Bismarck (24th); -29, Duluth (24th); -28, Moorhead (24th).

The *limits of minimum temperatures*, 32° and 40°, are shown by lines on Chart No. V.

The *years of highest maximum and lowest minimum temperatures* for January are given in the last four columns of Table I of the REVIEW for 1896. During the current month the maximum temperatures were equal to or exceeded the highest on record at: Dubuque and Davenport, 63; Miles City, 54; Green Bay, 51; St. Paul, 49; Sault Ste. Marie, 44. The minimum temperatures were equal to or exceeded the lowest on record at: Chicago, -20; Toledo, Detroit, and Pueblo, -16; Columbia, S. C., 10; Tampa, 29; Jupiter, 34.

The *greatest daily range of temperature and the data for computing the extreme and mean monthly ranges* are given for each of the regular Weather Bureau stations in Table I. The largest values of the greatest daily ranges were: Dodge City, 55; Helena, 54; Cheyenne, 51; Northfield, 50; Denver, 48; Pueblo, 47; Lander, 45. The smallest values were: Astoria, 14; Tatoosh Island and San Francisco, 15; Seattle and Key West, 16; Point Reyes Light and Pysht, 17; Port Angeles and Fort Canby, 18.

Among the *extreme monthly ranges* the largest were: Havre, 91; Dubuque, 86; Rapid City, 84; Miles City, Pueblo, Davenport, and Keokuk, 82; La Crosse, 80. The smallest values were: Tatoosh Island and San Francisco, 20; Point Reyes Light, 24; Sacramento, 26; Eureka and Key West, 28; Astoria, 29.

*Accumulated monthly departures from normal temperatures* for the period January 1 to 31, in regions where the temperature was deficient, the average deficit was as follows: Middle Atlantic, 1.8; south Atlantic, 3.3; Florida Peninsula, 2.9; east Gulf, 2.6; west Gulf, 0.3; Ohio Valley and Tennessee, 1.7; lower Lake, 0.8; southern Slope, 3.2.

In regions where the temperature was in excess, the average excess was as follows: New England, 0.5; upper Lake, 2.5; North Dakota, 3.5; upper Mississippi, 1.0; Missouri Valley, 2.1; northern Slope, 3.9; middle Slope, 2.6; southern Plateau, 0.3; middle Plateau, 3.0; northern Plateau, 4.2; north Pacific, 1.9; middle Pacific, 0.2; south Pacific, 1.3.

MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by the weight of the vapor coexisting with the air contained in a cubic foot of space, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-point for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, is given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer. The mean wet-bulb temperature is now published in Table I; it is always intermediate, and generally about half way between the temperature of the air and of the dew-point. The quantity of water evaporated from the muslin surface may be considered as depending essentially upon the wet-bulb temperature, the dew-point, and the wind.

The *relative humidity*, or the ratio between the moisture that is present in the air and the moisture that it would contain if saturated at its observed temperature is given in Table I as deduced from the 8 a. m. and 8 p. m. observations. The general average for a whole day or any other interval would properly be obtained from the data given by an evaporimeter, but may also be obtained, approximately, from frequent observations of the relative humidity.

PRECIPITATION.

(In inches and hundredths.)

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The total precipitation for the current month exceeded 10 inches over a narrow region on the coast of Washington and Oregon and over small regions in Arkansas and Louisiana. The larger values for regular stations were: Tatoosh Island, 12.20; Astoria, 9.84; Fort Canby, 9.58; Little Rock, 8.51; Grand Haven, 7.99; San Luis Obispo, 5.22; Jupiter, 5.20. Canada: St. Johns, N. F., 11.40.

Details as to *excessive precipitation* for January are given in Tables XI and XII.

The *years of greatest and least precipitation* for January are given in the REVIEW for January, 1890. The precipitation for the current month was the greatest on record at: Little Rock, 8.51; Grand Haven, 7.99; Columbia, Mo., 6.87; Springfield, Mo., 6.47; Springfield, Ill., 5.91; Keokuk, 4.90; Chicago, 4.53; Phoenix, 3.67; Huron, 2.87; Yuma, 2.83; Kansas City, 2.66; Amarillo, 2.26; Pierre and Minneapolis, 1.66; Moorhead, 1.56; Sioux City, 1.41. It was the least on record at: Idaho Falls, 0.67; Cape Henry, 0.92; Kitty Hawk, 1.35;

Tampa, 1.42; Columbus, Ohio, 1.54; Roseburg, 1.66; Port Angeles, 1.97; Eureka, 3.04.

The *diurnal variation*, as shown by tables of hourly means of the total precipitation, deduced from self-registering gauges kept at the regular stations of the Weather Bureau, is not now tabulated.

The *current departures* from the normal precipitation are given in Table I, which shows that precipitation was in excess in southern California, Arizona, New Mexico, northern Texas, the Missouri and Mississippi valleys, and Lake Region. It was deficient in northern California, Washington, Oregon, and the northern Plateau Region, and also in the east Gulf and Atlantic States. The larger excesses were: Grand Haven, 5.3; Columbia, Mo., 5.0; Hannibal, 4.9. The larger deficits were: Eureka, 5.4; Roseburg, 4.5; Portland, Oreg., Pensacola, and Hatteras, 3.9; Kittyhawk, 3.8.

The *average departure* for each district is given in Table I. By dividing each current precipitation by its respective normal the following corresponding percentages are obtained (precipitation is in excess when the percentage of the normal exceeds 100):

Above the normal: West Gulf, 131; upper Lake, 173; North Dakota, 138; upper Mississippi, 207; Missouri Valley, 259; middle Slope, 111; southern Slope (Abilene), 230; southern Plateau, 378; south Pacific, 138.

Normal: Lower Lake, 100.

Below the normal: New England, 90; middle Atlantic, 54; south Atlantic, 46; Florida Peninsula, 81; east Gulf, 65; Ohio Valley and Tennessee, 65; northern Slope, 72; middle Plateau, 65; northern Plateau, 54; north Pacific, 76; middle Pacific, 53.

The *total accumulated monthly departures* from normal precipitation since the beginning of the current year furnishes the following, in inches: *Excesses*: West Gulf, 1.10; upper Lake, 1.50; North Dakota, 0.30; upper Mississippi, 1.80; Missouri Valley, 1.70; middle Slope, 0.10; southern Slope, 1.00; southern Plateau, 1.50; southern Pacific, 0.80. *Normal*: Lower Lake, 0.00. *Deficits*: New England, 0.40; middle Atlantic, 1.70; south Atlantic, 2.30; Florida Peninsula, 0.80; east Gulf, 1.80; Ohio Valley and Tennessee, 1.50; northern Slope, 0.20; middle Plateau, 0.60; northern Plateau, 1.00; north Pacific, 2.10; middle Pacific, 2.60.

#### SNOWFALL.

The *total monthly snowfall* at each station is given in Tables I and II; its geographical distribution is shown on Chart V. This chart also shows the isotherms of minimum 32° and of minimum 40° for the air within the ordinary thermometer shelter. The former isotherm is an approximate limit to possible snow, while the latter is an approximate southern limit to the regions that report frost in exposed localities.

*Snowfalls* of from 10 to 45 inches are reported from the higher stations in the Sierra Nevada; from 15 to 78 inches at the higher stations of the Rocky Mountains; 15 to 33 in the eastern half of South Dakota; 5 to 43 in Michigan Lower Peninsula; and 5 to 49 in the Upper Peninsula; 9 to 32 on the south shore of Lake Erie, and 9 to 60 south shore of Lake Ontario. In general the snowfall has been abundant throughout the United States and Canada. St. Johns, N. F., reports 74 inches.

The *depth of snow on the ground* at the end of the month is given in detail in Table II, and for the winter months is also shown on Chart VI; it is also shown on the weekly charts of the Climate and Crop Service, published by the Weather Bureau during December to March, inclusive.

In general at the close of the month there was about 15 inches of snow on the ground in the interior of New England, New York; 10 to 30 inches in the eastern portion of North and South Dakota; 5 inches in Pennsylvania, northern Ohio, Indiana, and Illinois; 10 to 20 inches on the east shore of

Lake Michigan; from 2 to 20 inches are reported over the Rocky Mountain Plateau Region and the Sierra Nevada. The maximum is 68 inches near Lake Tahoe.

#### ICE.

The *thickness of ice* in the rivers and harbors is shown in detail in the bulletins published every Monday by the Weather Bureau, and is also given in some detail in the chapter on "River and Flood Service." The more prominent characteristic data for the first Monday of January and the close of the month, viz, Monday, February 1, are as follows: Iowa, Sioux City, 8.0 and 19.0, respectively; Maine, Bangor, 14.0 and 16.5; Eastport, 11.0 and 18.0, Gardiner, 9.6 and 14.6, Lewiston, 11.0 and 20.0; Massachusetts, Concord, 7.0 and 14.0; Minnesota, Duluth, 19.0 and 24.0, Moorhead, 20.0 and 28.0, St. Paul, 11.0 and 23.0; Nebraska, Valentine, 16.0 and 21.0; North Dakota, Bismarck, 18.0 and 33.0; South Dakota, Pierre, 16.0 and 20.0, Yankton, 11.0 and 20.0; Vermont, Brattleboro, 4.5 and 12.5; Wisconsin, Green Bay, 1.0 and 10.5, La Crosse, 2.0 and 13.0.

At the close of the month the Mississippi and tributaries were frozen up as far south as Quincy on the Mississippi, Louisville on the Ohio, and Hermann on the Missouri, there is, therefore, more ice in the rivers than on the corresponding dates of 1896.

#### ICE AND SNOW IN CANADA.

*Snow*.—On the January Weather Map of the Canadian Service, the Director, Prof. R. F. Stupart, says:

In many portions of British Columbia there was no snow on the level ground at the end of the month, and from what can be gathered the amount of snow on the mountains is not as great as usual. In Alberta, Assiniboia, Saskatchewan, and Manitoba, the precipitation was a little above the average in some localities and a little below in others; in southern Alberta and southwestern Assiniboia the amount of snow on the ground at the end of the month is only from 1 to 3 inches, but elsewhere it is considerable, as Edmonton reports 16 inches, Prince Albert and Winnipeg, 18, and Minnedosa, 30. The snow on ground in Ontario and Quebec is generally not up to the average; special stations reported as follows: Owen Sound, 42; Southampton, 48; Father Point, 22; Anticosti, 34; Chatham, 17; Yarmouth, 19; Sydney, 18; and Charlottetown, 9 inches.

*Ice*.—The thickness of ice is reported as follows: Assiniboia: Regina and Medicine Hat, 30. Ontario, Port Arthur, 30; Parry Sound, 10; Port Stanley, 8; Kingston, 15; Midland, Bobcaygeon, and Gravenhurst, 14; Sarnia, 10; Barrie, 10; Owen Sound, 12; Sparrow Lake, 13; Wiarton, 8 inches. Maritime Provinces: St. Andrews, 20 inches; Shippigan, 22; Port Hastings, 16; Georgetown, 11.

#### SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 26. Arkansas, 12, 13, 19, 20, 24, 25, 26, 31. California, 14, 15. Colorado, 12. Connecticut, 17. District of Columbia, 4, 17, 20, 21. Georgia, 13, 20, 24 to 27. Idaho, 24, 29. Illinois, 3, 13, 16, 20. Indiana, 4, 13 to 17, 19, 20. Indian Territory, 3, 19. Iowa, 2, 3, 4, 12, 13, 14, 16. Kentucky, 8, 13, 20, 21, 24, 27. Louisiana, 1, 3, 19, 25, 26, 27, 30, 31. Maine, 17, 18. Maryland, 5, 14, 15, 17, 20, 28 to 31. Massachusetts, 11, 17, 18 to 21. Michigan, 1, 2, 3, 9, 10, 16, 17, 20. Minnesota, 2, 3, 16. Mississippi, 19, 25, 26. Missouri, 1 to 4, 12, 13, 15, 16, 17, 20, 23, 24, 25, 27. Montana, 21, 22. Nebraska, 1, 2, 12, 13, 16, 20, 21. Nevada, 10, 13, 24, 25, 29. New Hampshire, 2, 17, 21, 25, 28. New Jersey, 13, 15, 17, 18, 20. New Mexico, 11, 18, 26, 28. New York, 4, 5, 10, 17, 18, 20, 21, 24. North Carolina, 13, 14, 20, 21, 27, 28. North Dakota, 1, 21. Ohio, 2, 4, 13, 14, 15, 17, 18, 20. Oklahoma, 2, 8. Oregon, 17, 24, 27, 28, 31. Pennsylvania, 17, 18, 20, 21, 24. South Carolina, 13, 26, 27, 28. South Dakota, 1, 12, 16, 21. Tennessee, 5, 12, 13, 14, 20, 24, 28. Texas, 2

3, 14, 16, 18, 19, 20, 24 to 31. Utah, 13, 15, 25. Vermont, 5, 17, 21. Virginia, 13, 14, 17, 20, 27, 28. Washington, 4, 11, 24, 25, 28, 29. West Virginia, 13, 14, 15, 17, 20, 21. Wisconsin, 2, 3, 16, 17, 20.

HAIL.

The following are the dates on which hail fell in the respective States:

Arkansas, 2. California, 13, 14, 29, 30. Illinois, 17. Indiana, 17. Mississippi, 19. Missouri, 2. Texas, 30.

WIND.

The prevailing winds for January, 1897, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

HIGH WINDS.

Maximum wind velocities are given in Table I, which also gives the altitude of the Weather Bureau anemometers above the ground. Maxima of 50 miles or more per hour were reported during this month at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex.	2	54	n.	Havre, Mont.	21	50	ne.
Block Island, R. I.	21	51	se.	Huron, S. Dak.	3	50	nw.
Do.	23	53	nw.	Do.	4	51	nw.
Buffalo, N. Y.	17	59	w.	Indianapolis, Ind.	17	57	sw.
Do.	16	55	w.	Nashville, Tenn.	3	53	s.
Do.	22	55	w.	New York, N. Y.	18	60	nw.
Do.	23	55	w.	Do.	28	53	nw.
Do.	25	55	w.	Do.	28	53	w.
Do.	26	55	w.	Tatoosh Island, Wash.	24	55	e.
Chicago, Ill.	4	51	w.	Do.	35	60	e.
Do.	17	63	w.	Toledo, Ohio.	17	50	sw.
Cleveland, Ohio.	23	51	e.	Williston, N. Dak.	21	55	n.
Eastport, Me.	28	56	se.	Woods Hole, Mass.	21	50	sw.
Fort Canby, Wash.	18	52	se.	Do.	26	56	w.
Do.	26	54	e.	Do.	28	54	ne.

The resultant winds, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table VIII. These latter resultants are also shown graphically on Chart IV, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends upon the absorption by the atmosphere, and varies largely with the distribution of cloudiness. The sunshine is now recorded automatically at 22 regular stations of the Weather Bureau by its photographic, and at 35 by its thermal effects. At one of these stations records are kept by both methods. The photographic record sheets show the apparent solar time, but the thermometric records show seventy-fifth meridian time; for convenience the results are all given in Table X for each hour of local mean time. In order to complete the record of the duration of cloudiness these registers are supplemented by special personal observations of the state of the sky near the sun in the hours after sunrise and before sunset, and the cloudiness for these hours has been added as a correction to the instrumental records, whence results a complete record of the duration of sunshine from sunrise to sunset.

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table X.

Difference between instrumental and personal observations of sunshine.

Stations.	Apparatus.	Total possible duration for the whole month.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
				Photographic.	Difference.	Thermometric.	Difference.
Tampa, Fla.	T.	329.7	53	55	+ 2	55	+ 2
Galveston, Tex.	P.	326.8	36	36	— 3	36	— 3
New Orleans, La.	T.	324.9	30	32	+ 2	32	+ 2
Savannah, Ga.	P.	320.5	48	48	— 5	48	— 5
Vicksburg, Miss.	T.	320.5	55	56	+ 1	56	+ 1
Charleston, S. C.	T.	318.5	51	54	+ 3	54	+ 3
Phoenix, Ariz.	P.	318.5	67	68	+ 6	68	+ 6
San Diego, Cal.	P.	318.5	58	58	+ 9	58	+ 9
Atlanta, Ga.	T.	316.2	48	44	— 4	44	— 4
Los Angeles, Cal.	P.	316.2	58	66	+ 8	66	+ 8
Wilmington, N. C.	T.	316.2	56	60	+ 4	60	+ 4
Chattanooga, Tenn.	T.	314.6	41	42	+ 1	42	+ 1
Little Rock, Ark.	T.	314.6	41	41	— 12	41	— 12
Nashville, Tenn.	P.	311.8	49	55	+ 6	55	+ 6
Raleigh, N. C.	T.	311.8	47	55	+ 8	55	+ 8
Santa Fe, N. Mex.	P.	311.8	65	65	+ 9	65	+ 9
Fresno, Cal.	T.	309.0	23	19	— 3	19	— 3
Dodge City, Kans.	P.	306.5	61	68	+ 7	68	+ 7
Louisville, Ky.	T.	306.5	37	45	+ 8	45	+ 8
San Francisco, Cal.	T.	306.5	40	53	+ 13	53	+ 13
Atlantic City, N. J.	P.	303.8	48	54	+ 6	54	+ 6
Baltimore, Md.	T.	303.8	45	38	— 7	38	— 7
Cincinnati, Ohio.	T.	303.8	37	38	+ 1	38	+ 1
Kansas City, Mo.	P.	303.8	49	53	+ 4	53	+ 4
St. Louis, Mo.	T.	303.8	43	56	+ 13	56	+ 13
Washington, D. C.	P.	303.8	50	54	+ 4	54	+ 4
Columbus, Ohio.	T.	301.1	54	65	+ 11	65	+ 11
Denver, Colo.	P.	301.1	37	56	+ 19	56	+ 19
Indianapolis, Ind.	T.	301.1	44	54	+ 10	54	+ 10
Philadelphia, Pa.	T.	296.4	46	62	+ 16	62	+ 16
Cheyenne, Wyo.	P.	296.4	34	33	— 1	33	— 1
Eureka, Cal.	P.	296.4	45	54	+ 9	54	+ 9
New York, N. Y.	T.	296.4	48	53	+ 4	53	+ 4
Omaha, Neb.	P.	296.4	26	20	— 6	20	— 6
Pittsburg, Pa.	T.	296.4	25	44	+ 19	44	+ 19
Salt Lake City, Utah.	P.	296.4	25	25	— 1	25	— 1
Binghamton, N. Y.	T.	295.5	39	46	+ 7	46	+ 7
Boston, Mass.	T.	295.5	37	38	+ 1	38	+ 1
Chicago, Ill.	T.	295.5	37	38	+ 1	38	+ 1
Cleveland, Ohio.	T.	295.5	18	19	+ 1	19	+ 1
Des Moines, Iowa.	T.	295.5	53	54	+ 1	54	+ 1
Detroit, Mich.	T.	295.5	27	34	+ 7	34	+ 7
Dubuque, Iowa.	T.	295.5	39	35	— 4	35	— 4
Albany, N. Y.	T.	292.7	30	37	+ 7	37	+ 7
Buffalo, N. Y.	T.	292.7	21	23	+ 2	23	+ 2
Rochester, N. Y.	T.	292.7	24	30	+ 6	30	+ 6
Northfield, Vt.	P.	292.7	33	39	+ 6	39	+ 6
Portland, Me.	T.	292.7	49	56	+ 7	56	+ 7
Eastport, Me.	P.	292.7	35	50	+ 15	50	+ 15
Minneapolis, Minn.	T.	292.7	38	39	— 1	39	— 1
St. Paul, Minn.	P.	292.7	38	38	0	38	0
Portland, Ore.	T.	292.7	29	24	— 5	24	— 5
Bismarck, N. Dak.	P.	279.9	35	43	+ 7	43	+ 7
Helena, Mont.	P.	279.9	41	41	0	41	0
Seattle, Wash.	T.	276.2	25	30	+ 5	30	+ 5
Spokane, Wash.	P.	276.2	20	9	— 11	9	— 11

\* Instrumental record is for 23 days, for which the total possible is 214.5.  
† No personal record is kept at Minneapolis.

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the durations of effective sunshine whence the duration relative to possible sunshine is derived; the observers' personal estimates give the percentage of area of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental records of percentages of durations of sunshine are almost always larger than the observers' personal estimates of percentages of area of clear sky; the average excess for January, 1897, is 5 per