United States Weather Bureau in Utah

A GLANCE at the accompanying pictures will give a fine idea to the readers of the appliances of a weather bureau office.

The outside view shows the tower on which are exposed the wind vane, anemometer cups, and sunshine recorder. The wind vane is readily distinguishable, but the anemometer cup (or device for measuring the wind's velocity) is somewhat obscured, as is also the sunshine recorder, but these will be explained later. In the foreground is shown the standard shelter in which the thermometers are exposed.

In figure 2 is exhibited a standard weather bureau instrument stand. To the right on this stand is the triple register, so-called as it has three pens writing on the drum. The drum is made to revolve by a power clock which turns the drum once around every six hours or four times a day. The pens which write on this drum are connected electrically with the following apparatus on the roof: The windvane, the anemometer (or wind measurer), the sunshine recorder, and the rain gage.

The apparatus is so arranged that every minute of time a record is made on the revolving drum of the direction of the wind, the sunshine if any, and also every time a hundredth of an inch of rain falls and a mile of wind passes Salt Lake City, a suitable record is made on the drum. The pipe in the center of the tower carries the cable which transmits the electrical impulse from the instruments on the roof to the pens of the recording apparatus.

WIND MEASURING DEVICE.

The anemometer (or wind measuring device) is shown in figure 3. It sits on the floor and at the extreme left-hand end of the figure. The revolving cups are so geared up with clockwork that every time the cups revolve 500 times a contact is made and the pen makes suitable record on the revolving drum, described above.

The sunshine recorder is shown in figure 2, and is standing to the right on a drawer pulled out. This recorder consists of a blackened bulb which contains an air chamber with mercury at the bottom of the air chamber. When the sun rises the black bulb absorbs the heat rays, the air expands and forces the mercury past two contacts, and as long as the contact is maintained a sunshine record is made on the revolving drum, but when the sun goes under a cloud or sets in the west, then the black bulb cools, the air contracts and the mercury falls away from the contact and no record is made.

The instrument shelter in the foreground of figure 1 is a standard one. It is painted white so that the rays from the sun will be reflected and thus the shelter will not become unduly heated. It is also made with latticed sides so that the air may pass through freely. When thermometers are exposed in a shelter of this pattern, they are then capable of registering only shade temperatures or the real temperatures of the air which for meteorological purposes are most desired.

MEASURING HUMIDITY.

This shelter contains four thermometers, a maximum, a minimum and a wet and dry bulb. The maximum thermometer, of course, registers the highest temperature, and the minimum thermometer registers the lowest temperature. The wet and dry bulb thermometers are so called because the wet bulb has a cloth wrapped around its bulb. When an observation is taken, the cloth is wetted, then both thermometers are whirled, and as the water evaporates from the wet bulb thermometer, that instrument cools and its temperature will be lower than the dry bulb. The difference between these two readings is a measure of the humidity of the atmosphere. If you will turn to figure 3, you will see the wet and dry bulb thermometers on a stand to the right of the cut. These thermometers are so arranged that they may be rapidly whirled by turning the crank.

RECORDING BAROMETER.

The instrument room of the Salt Lake weather bureau office is shown partially by figure 2. Hanging on the wall in the background are two barometers by which the pressure of the air may be accurately measured. At the end of the stand and to the right is the triple register already described. In the center of the stand is a barograph. This instrument is really a writing barometer; that is, it makes a trace following the varying pressure of the atmosphere. This instrument is most valuable of any for the use of private individuals forecasting the weather. As the trace goes down, then warmer weather accompanied by rain or snow will follow, but should the trace rise then cool and fair weather will follow.

The two instruments in the foreground of figure 2 are sunshine recorders. The one to the right is the one used at Salt Lake City and records the amount of sunshine electrically. The one to the right is a photographic sunshine recorder, and is used for instruction purposes only. The two thermometers shown to the left of figure 2, and mounted horizontally, are a set of maximum and minimum thermometers, and are so exposed in the thermometer shelter on the roof of the Boston building.

ELECTRIC RAIN MEASURE.

Figure 3 shows a collection of instruments. The most interesting one is the recording rain gage, shown in the center of the cut. The upper part is the receiver and leads the rain by means of a funnel into a little tipping bucket This bucket is so made that when one one-hundredth of an inch of rain falls on the ground then the bucket tips, an electrical contact is made sending an electrical impulse to the triple register above described. By the means of this instrument the rain fall is measured electrically. One can then know the beginning and ending of each rain and also the rate at which it fell.

To the left of the tipping bucket rain gage is an ordinary eight-inch gage which is just as accurate as the one just described, but it does not register the rain fall. The rain is collected by the receiver at the top and then led by means of a funnel into a tube which is inside of the gage in actual practise, but in the cut is shown just left of the gage. This tube is exactly one-tenth the area of the receiver in cross-section, so that when one inch of rain falls on the ground then it will rise 10 inches in the tube. This magnifies the amount and furnishes a means by which the rainfall may be measured to one one-hundredth of an inch.

The description of these instruments is necessarily brief. But those of the public who are interested are cordially invited to the weather bureau office to inspect the instruments and the methods of forecasting, that they may get a more minute explanation.

WEATHER IN UTAH.

During the past year important changes have taken place in the organization of the weather bureau which affect the intermountain country considerably.

The Great Basin country has been made a climatological district with the center of the district at Salt Lake City. All the weather data of this region will be published in one publication, and it is expected that the information contained therein will be of great importance to all interests in this region, but principally the farmer, the irrigating and water power engineers.

The offices of the local weather bureau have been moved from the Dooly block to the Boston building.

WEATHER FOR THE PAST YEAR.

January—This month was very unusual in that the mean temperature for the state was about five degrees above the normal and the highest ever recorded. The precipitation was also unusual being 2.88 inches which was 1.58 inches above the normal. The highest local monthly mean temperature was 46.2 degrees at St. George, and the lowest was 10.2 degrees at Fort Duchesne. The greatest monthly amount of precipitation was 18.33 inches at Scofield, and the least was 0.05 inch at Green River.

February—The temperature of February exhibited no such marked variation from the normal as did that of January. The mean for the state was 29.5 degrees which was 0.9 degrees below the normal. The highest local mean temperature was 41.8 degrees at the experiment farm, and the lowest was 10.9 degrees at Fort Duchesne. The average precipitaiton was 2.15 inches, which was 0.99 inch above the normal. The greatest monthly amount was 10.35 inches at Park City, and the lowest was 0.23 inch at Green River. The greatest amount in any 24 consecutive hours was 3.64 inches at Park City on the 7th.

March.—The mean monthly temperature for this month was 37.4 degrees which was 1.2 degrees below the normal. The highest local mean monthly temperature was 50.3 degrees at St. George, and the lowest was 21.2 degrees at Scofield. The precipitation was mostly in the form of moist snow and averaged for the state 1.16 inches which was 0.28 inch below the normal. The greatest amount in 24 hours was 1.24 inches at Huntsville on the 27th. The greatest monthly amount was 3.53 inches at Henefer, and the least was nothing at Green River.

April—Generally cold weather prevailed during this month accompanied by considerable cloudiness. The temperature for the state as a whole was 44.7 degrees which was 3.5 degrees below normal. The highest monthly mean at any station was 58.8 degrees at St. George, and the lowest was 31.9 degrees as Scofield. The average precipitation for the state was 1.13 inches which was 0.22 inch below the normal. The greatest amount at any station was 7.49 inches at Scofield, and the least was nothing at Kelton and Loa. The greatest amount in 24 hours was 2.48 inches at Scofield on the 30th.

May—May was a cool, dry, and windy month. The temperature averaged 52.6 degrees which was 3.2 degrees below the normal. The highest temperature was 92 degrees at St. George, and the lowest 10 degrees at Loa. The precipitation averaged 1.02 inches which was 0.38 inches below the normal. The greatest local monthly amount was 3.34 inches at Scofield and the least was nothing at several stations. The greatest amount in 24 hours was 1.36 inches at Ogden on the 16th.

June—This month was unusually warm, the temperature averaging for the state 66.2 degrees which was 1.3 degrees above the normal. The highest local mean was 79.4 degrees at Springdale, and the lowest was 52.0 degrees at Scofield. The average precipitation for the month was 0.14 inch which was 0.36 inch below the normal. The greatest monthly amount was 0.79 inch at Government creek. At a number of stations no rain whatever was recorded. The greatest 24-hour amount was 0.65 inch at Emery on the 7th.

July—The mean temperature averaged only slightly below the normal. The highest temperature was 105 degrees at Lucin, and the lowest was 30 degrees at the same place on the 28th. The precipitation was well distributed and averaged much above the normal.

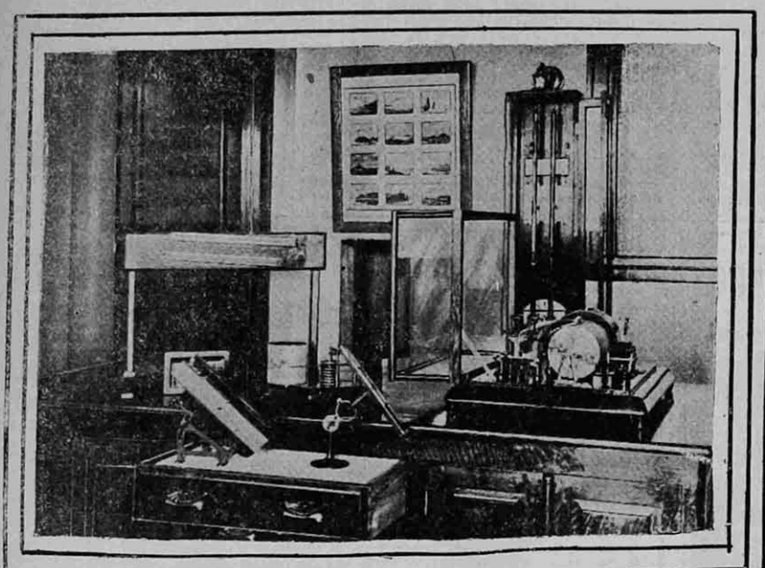
August—The temperature was higher than usual in the greater portion of the state. The precipitation was unusually heavy being more than twice the normal amount. Damages by floods were widespread; bridges were washed away, roads were gutted and fields devastated.

September—This month was comparatively cool and wet. The rains which caused so much damage during the last few days in August persisted for a few days in September, and during the last few days in September the first snow of the season was observed on the mountain peaks.

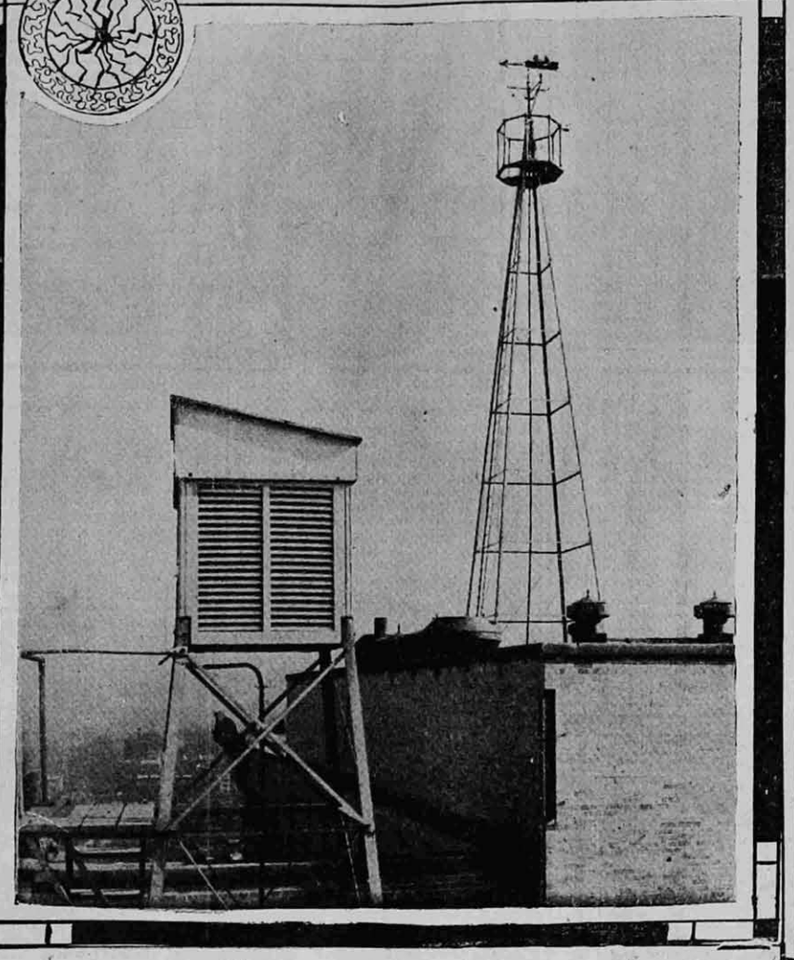
October—The temperature during this month was somewhat higher than usual, and averaged about 52 degrees. The precipitation was slightly below normal. The weather was unusually mild and pleasant, and very beneficial to all interests. Sunshine was abundant and the proportion of clear days was large.

November—This month bids fair to be somewhat cooler than usual, with light precipitation. General snow flurries occurred on the 14th through the state.

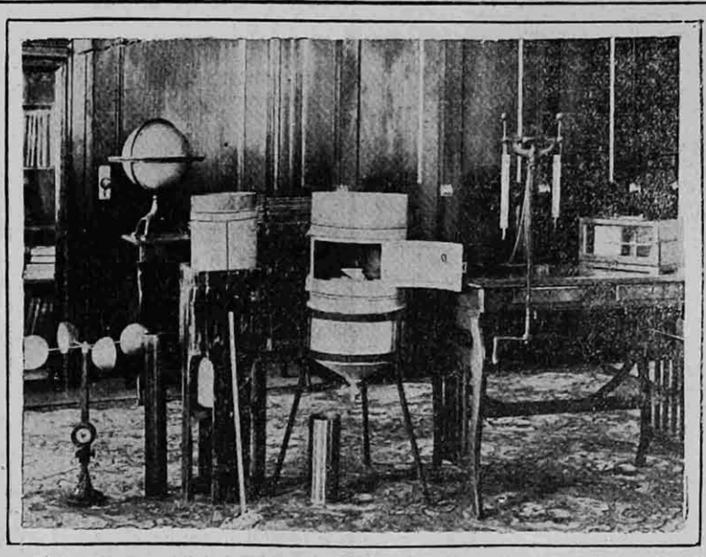
ALFRED H. THIESSEN,
Section Director and Division Editor.



Recording Apparatus



Wind Vane, Anemometer Cups and Sunshine Recorder.



Standard Weather Bureau Instruments.

UTAH STATE WEATHER SUMMARY.

STATIONS.	TEMPERATURE—(Degrees, Fahr). Mean Annual	Mean Maximum.	Mean Minimum.	Absolute Maximum.	DATE	Absolute Minimum.	DATE	Average Number of Days With—Maximum above 90.	Minimum below 32
Snowville	46	60	31	102	July, 1901	—22	Feb., 1903	17	182
Logan	47	59	38	100	July, 1901	—19	Feb., 1899	12	156
Salt Lake	52	62	41	102	July, 1889	—20	Jan., 1883	26	107
Provo	49	66	35	104	July, 1901	—18	Feb., 1903	47	143
Vernal	46	62	33	100	July, 1901	—25	Feb., 1903	31	163
Levan	47	62	33	101	July, 1901	—23	Feb., 1899	25	165
Fillmore	51	69	35	112	July, 1901	—17	Feb., 1899	81	156
Loa	42	61	21	110	July, 1901	—35	Feb., 1902	17	261
Moab	54	71	83	107	June, 1899	— 9	Feb., 1903	79	139
Modena	49	68	33	98	July, 1901	—18	Jan., 1902	28	178
Hite	60	75	45	115	July, 1901	7	Dec., 1901	107	102
St. George	59	77	37	114	June, 1900	— 1	Jan., 1901	113	146

STATIONS.	FROST. Average Date of First Killing in Autumn.	Average Date of Last in Spring.	Date of Earliest Killing in Autumn.	Date of Latest in Spring.	PRECIPITATION (In inches). Annual.	Spring	Summer	Autumn	Winter.
Snowville	Sept. 26	June 18	Sept. 7	July 8	10.6	3.8	1.2	2.5	3.1
Logan	Oct. 2	May 11	Sept. 4	June 6	14.1	5.8	1.5	3.4	3.4
Salt Lake	Oct. 18	April 23	Sept. 22	June 18	15.8	5.9	2.0	3.8	4.1
Provo	Sept. 21	May 13	Sept. 9	June 2	10.9	3.9	0.9	2.2	3.9
Vernal	Oct. 3	May 4	Sept. 15	May 21	8.4	2.4	1.6	2.7	1.7
Levan	Sept. 30	May 20	Sept. 12	Nov. 1	15.2	5.3	1.9	3.4	4.6
Fillmore	Sept. 20	May 16	Aug. 23	June 14	14.5	5.1	2.0	2.7	3.7
Loa	Aug. 13	June 2			6.6	1.4	2.5	1.4	1.3
Moab	Oct. 2	April 22	Sept. 13	May 4	7.5	1.8	1.8	2.8	2.0
Modena			Sept. 12	May 24	7.1	1.4	1.9	1.8	2.0
Hite					2.3	0.4	0.4	0.9	0.6
St. George	Oct. 7	May 3	Sept. 25	May 24	6.6	1.3	1.3	1.2	2.8

SALT LAKE CITY WEATHER RECORDS.

Weather Bureau Station Opened March 19, 1874.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
TEMPERATURE (Degrees Fahr.)													
Highest	57	68	77	84	93	101	102	101	63	86	74	61	102.
Date	12, 1905	1879	30	27	31	28	20	6	6	6	6	1, 1874	July 20, 1889.
	25, 1905	1879	1879	1889	1887	1900	1889	1875	1875	1889	1898	11, 1906	—30.
Lowest	—20	—13	0	18	25	33	43	44	26	22	—2	10	Jan. 20, 1883.
Date	20	13	1	1	2	3	3	31 1880	22	26	29	25	
	1883	1884	1890	1896	1899	1898	1902	31 1908	1895	1878	1896	1879	51.8.
Normal	28.8	32.9	41.4	50.1	58.3	68.3	76.2	75.5	65.1	52.2	40.4	32.1	
PRECIPITATION—(Inches).													
Normal	1.35	1.38	2.00	2.26	1.95	0.77	0.54	0.78	0.85	1.40	1.42	1.33	16.03.
Greatest	3.07	3.81	4.66	4.43	5.76	2.57	2.42	2.28	3.15	3.85	5.81	4.37	
Date	1890	1897	1891	1886	1908	1885	1874	1906	1878	1889	1875	1889	23.64.
Least	0.29	0.38	0.33	0.73	0.06	0.01	Trace	0.02	Trace	0.24	0.00	0.11	1876.
		1877				1880	1885			1895			
Date	1880	1898	1900	1895	1886	1889	1892	1895	1890	1905	1904	1878	10.94.
									1899				1880.

TO CHANGE THE DEADLY HOUSEFLY'S NAME

The name "typhoid fly" is here proposed as a substitute for the name "housefly," now in general use. People have altogether too long considered the housefly as a harmless creature, or, at the most, simply a nuisance. While scientific researches have shown that it is a most dangerous creature from the standpoint of disease, and while popular opinion is rapidly being educated to the same point, the retention of the name housefly is considered inadvisable as perpetuating in some degree the old ideas. Strictly speaking, the term "typhoid fly" is open to some objection, as conveying the erroneous idea that this fly is solely responsible for the spread of typhoid, but considering that the creature is dangerous from every point of view, and that it is an important element in the spread of typhoid, it seems advisable to give it a name which is almost wholly justified and which conveys in itself the idea of serious disease. For the end in view "typhoid fly" is considered the best name.

The true connection of the so-called housefly with typhoid fever and the true scientific evidence regarding its role as a carrier of that disease have only recently been worked out. Celli in 1888 fed flies with pure cultures of the typhoid bacillus and examined their contents microscopically and culturally. Inoculations of animals were also made, proving that the bacilli which passed through flies were virulent.

The importance of the typhoid fly as a carrier of the disease in army camps, as shown in the Spanish war and in the Boer war and in the camps of great armies of laborers engaged in gigantic enterprises like the digging of the Panama canal, is obvious, but even under city conditions the influence of this fly in the spread of this disease has been greatly underestimated. It is not claimed that under city conditions the housefly becomes by this argument a prime factor in the transfer of the disease, but it must obviously take a much higher relative rank among typhoid conveyers than it has heretofore assumed. Perhaps even under city conditions it must assume third rank—next to water and milk.

—Chief of the Bureau of Entomology, U. S. Dept. of Agriculture.