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METEOROLOGICAL OBSERVATIONS. 21

Meteorological Observations.

(Made at San Francisco, from Nov., 1850, to Jan., 1881, by Henry Gibbons, Sen., M. D.)

In the following tables the reader will find, in a condensed form, the result of thirty years' diligent observation of the climate of San Francisco, with more particular reference to rain.

Rain has fallen in every month of the year. In July it has rained only in two years; August has furnished rain in five years; June in eight years; September in fourteen years; October in twenty-one years. No account is made of a mere sprinkle, nor of the deposit of summer mist. The greatest quantity of mist which ever falls in twenty-four hours is about three-hundredths of an inch. But this quantity is very rare. Near the ocean the mist is much more copious.

The driest season was 1850-51, which gave only seven inches. Next to that was 1863-64, with eight and one-half inches. The winter of 1867-68 gave the most rain—forty inches. The average is very nearly twenty-two inches.

The earliest setting in of the rainy season was October 8th; the latest, January 12th. An early beginning and an abundant supply are apt to go together, but there is no rule in this respect—the latest beginnings have been followed by an average supply.

The average date of the beginning of the rainy season is November 28th; of the termination, April 10th. March is as certain to bring rain in liberal amount as any other month. In one year out of every three there is no rain of importance after March. The last showers of the season come, with remarkable uniformity, about the third week of May.

The middle of January is the average dividing point of the rainy season. The mean quantity before January 1st is about equal to the mean quantity after January 31st.

December gives the greatest average quantity; January is not far behind; February, March and November come next, and are nearly alike; then April, May and October, in the order named. The mean annual supply for thirty years is 22 inches.

The greatest amount of rain in any one month was in January, 1862, when there fell the enormous quantity of eighteen inches.

The most extraordinary summer rain was in June, 1875, when 1.11 inches fell during a southerly storm which lasted several days. That this was an anomaly is made apparent by the fact that in the three summer months during thirty years the whole quantity of rain, collectively, deducting this, was less than two inches.

It is worthy of note that in the driest seasons there has been an abundant supply for agricultural purposes, had it been distributed evenly. Three inches in December, with one inch in each of the four following months, would produce full crops.

The rain table of San Francisco may be made the basis for estimating the fall in other parts of the State. The mountains of the north have from two to three times as much, and the southern section of the State half as much, or even much less in some localities. The valley of the Sacramento has nearly the same quantity as San Francisco; that of the San Joaquin only half as much in the northern section, and still less in the southern.

By reference to the tables showing the extremes of heat and cold, it appears that the coldest weather was in January, 1854, when the mercury fell to 25°. At that time the mud in the streets was frozen solid, and the shallow ponds were covered with ice strong enough for boys to skate on. But such weather is extremely rare, though since that time the ground has been frozen several times so as not to thaw fully in the shade for several days. The coldest noonday embraced in the record was 37°. Often the entire winter passes by without bringing the thermometer so low as the freezing point. In 1853, it fell at no time below 40°.

The extreme of heat was on the 10th and 11th of September, 1852, when the thermometer reached 97° and 98° on the two days, respectively. This, however, was entirely exceptional, and might not occur again in half a century; the air was dry as a sirocco, and caused the woodwork of houses to crackle audibly, and the plaster to break on the wooden walls.

With the exception just noted, the hottest day was June 11th, 1877—94°. Next came July 6th, 1867, and June 12th, 1876—93°. The temperature reached 91° on six days, viz: once in October, 1864, once in September, 1865, once in June, 1872, once in June, 1877, and twice in September, 1877. In July, 1865, it was 90°. It appears, therefore, that there were but twelve days in thirty years, when the temperature reached 90°.

The table of mean temperature shows that our summer does not come till the summer months have passed by. September is the warmest month in the year, and October next; then comes August; July, hottest month elsewhere is the fourth here, or links with June; next come April and May; then March and November; then February, and, finally, January and December, which are the only winter months, if indeed we have any weather that deserves the name of winter.

Twice the ground has been covered with snow. On the twenty-ninth of December, 1856, it snowed very fast for several hours, and two or three inches gathered, but it melted before night. On the twelfth of January, 1868, it snowed fast before day, so that two inches collected. But it disappeared before sunrise, so that few persons enjoyed the spectacle.

The extraordinary evenness of the climate depends on the adjacent ocean, the water of which, flowing in a current from the north, is always at a temperature of about 54°, summer and winter. The sea-breeze of summer, which chills the air at noonday, leaves no place for hot nights. There is not, on an average, one night in the year when it is warm enough to sit out of doors at midnight with comfort.

TABLE I.

MONTH.	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
August			.1			.1		.1		.2															
Sept.			.1		.1		.2	.1	.2		.1	.1	.1	.1		.1		.3			.6				
October	.5	.9	3.4		.9			.1	.1		.6	.2	2.3		.1	.1	.6	2.7	.2	2.9	.7	1.1	.7	.1	
Nov.	2.9	3.0	.5	5.4	.2	3.8	.1	2.5	7.6	3.1	2.7	3.1	1.2	1.2	.5	2.3	2.9	1.2	5.4	7.1	.3	1.5	.7	4.9	.4
Dec'b'r	4.0	4.2	4.8	1.5	4.8	6.1	2.7	1.7	6.9	.6	13.1	12.1	4.3	4.6	3.0	13.4	7.8	9.6	.3	3.4		2.8	.9	4.9	12.5

MONTH.	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881
January	2.1	4.4	1.0	1.1	1.2	18.1	3.3	1.3	3.9	11.0	6.6	9.6	6.4	3.8	2.3	6.5	2.3	5.3	7.1	7.0	3.9	12.0	3.5	2.4	8.9
Feb.	8.6	1.3	5.2	1.4	2.8	6.1	3.3		.8	1.5	6.2	6.2	4.0	4.5	3.6	7.9	3.4	2.5	.1	4.2	1.0	12.7	4.4	2.1	4.8
March	1.6	3.9	2.5	3.1	3.4	1.7	2.4	1.4	.6	2.6	2.2	6.4	3.2	1.8	1.2	1.6	.7	3.6	1.2	4.7	1.0	4.6	8.4	2.2	
April		1.1	.3	1.7	3.	1.1	2.9	.9	.7	.1	1.1	2.2	2.1	1.5	2.1	1.2	.4	.9	.1	1.1	.2	1.0	2.0	10.5	
May	.1	.1	2.0	2.6	.7	.9	.4	.5	.4	1.8	.1		.1	.4	.3		.4	.2	.2	.1	.2		1.2		
June	.1	.1			2.	.2			.2	.1		.2				1.1				.1					
July				.3							.2														
Totals	20.0	19.0	19.8	17.1	14.6	38.0	15.2	8.5	21.3	21.2	32.0	40.5	21.6	20.2	13.1	33.1	17.7	24.1	18.2	28.2	9.7	35.6	21.6	2.77	