

TEMPERATURE AND WEATHER SUMMARIES FOR A PERIOD OF FIFTY-TWO YEARS.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Temperature, Degrees Fahr.													
Highest monthly mean and year.....	57.8 1900	58.5 1886	60.0 1901	63.8 1861	65.7 1861	69.1 1857-67	73.2 1852	75.1 1864	73.6 1852	68.8 1853	64.6 1900	63.3 1867	63.8 1867
Lowest monthly mean and year.....	49.5 1895	50.5 1894	52.1 1880	56 1872	57.7 1859	61.4 1894-99	63.4 1880	65.8 1880	63.1 1880	59.7 1886	56 1886	50 1856	58.4 1894
Absolute maximum and date.....	81 4, 1902	85 12, 1889	99 27, 1879	93 12, 1880	98 25, 1896	94 10, 1877	88 25, 1891	92 15, 1884	101 22, 1883	96 21, 1901	91 4, 1890	82 6, 1874	101 9-22-1883
Absolute minimum and date.....	32 *31, 1880	34 10-11-94	38 6, 1880	39 7, 1875	39 7, 1875	50 13, 1894	54 16, 1894	54 20, 1879	50 18, 1882	44 30, 1878	38 24, 1895	32 25, 1879	32 1-31-1880
Greatest daily range.....	35	37	43	40	36	35	22	28	35	37	34	40	43
Mean daily range.....	16.9	13.7	14.2	14.2	12.2	12.1	11.6	11.4	13	14.1	17.7	16.2	13.9
Mean variability.....	2.4	2.1	2.3	2.2	1.6	1.6	1.7	1.7	2	1.8	2.3	1.9	2
Mean of three consecutive warmest days.....	65.7	69.2	71.3	74.3	72.1	75.8	78	81.1	82.9	79	75.6	75.6	82.9
Mean of three consecutive coldest days.....	40.2	41.9	44.3	50.5	52.6	55.4	59.5	60.8	57	49.8	44.9	42.8	40.2
Weather													
Average number of clear days.....	17	14	11	13	9	8	14	12	16	18	19	17	178
Average number of partly cloudy days.....	7	9	10	10	11	13	11	15	11	10	9	10	116
Average number of cloudy days.....	7	5	10	7	11	9	6	4	3	3	2	4	71
Average number of rainy days.....	6	8	7	4	3	1	0	0	0	2	3	5	39

* Also 21st, 1883; 7th, 1894.

peculiar charm of California's equability—an equability that is most remarkable. In San Diego, from 1875 to 1901—a total of 9,861 days, there were 9,545 days on which the temperature did not rise above 80° nor fall below 40° F.

Newcomers are often bewildered by the many varieties of climate, and make statements to far-away friends that add chaos to confusion in the minds of Eastern people. One traveller reports California all sunshine and flowers, another all fog and cold. Some complain of the dry desert winds with their exciting electrical conditions, while others dwell upon the excessive humidity; when the probable truth is that the critic has not selected the proper environment and has passed by what he is seeking, which is no doubt within a few short miles of the spot where he may happen to be.

There is little seasonal change in the extreme southern part of the State. I am accustomed to say to inquirers that our winters resemble September and October in the middle Atlantic States and that our summers are like April and May in the same region. The dividing line between summer and winter is more imaginary than real.

The greatest change in the temperature occurs at night, being more marked in the interior than on the coast. I wish to call particular attention to the apparent difference between sunshine and shade and midday and midnight. This change is more a subjective sensation than a reality and is true of all semitropical localities. It is less marked in California than in Italy, but it always appeals strongly to the newcomer, who is surprised at the immediate sense of chill which he experiences when he enters the shade from the direct rays of the sun. As the night advances the temperature decreases, and while this change may not cause the mercury to fall many degrees, still it is very noticeable to the individual. This is less marked on the coast in summer and more so at all seasons of the year in the interior. The days are characterized by a constant sea breeze which blows with astonishing regularity; it is rarely too warm for comfort, as is often the case at Cape May, Atlantic City, Long Branch, or other popular Atlantic coast resorts. Several times during the year the so-called desert spells occur. This is when the land breeze or wind from the desert, many miles in the interior, gains ascendancy over the prevailing western or ocean breeze. During this time the thermometer is apt to show a very high registration. Under these conditions I have seen it at San Diego register 98° F., but for only a few hours. These hot winds may last two or

three days. The nights at this time are always cool and pleasant. These are the only evenings on the coast upon which one may sit out of doors with comfort and without chill.

Rainfall.—Each rainy season has its own peculiarities. It may be one of constantly recurring rains, or the rains may be light, interspersed with long periods of almost constant sunshine. Hence the records do not help us much to predict for future rain probabilities. It is not altogether unusual to have a very deficient rainfall. Thus, for example, San Diego, with a normal rainfall of about ten inches, has had in the last fifty-two years a minimum of 3.02 and a maximum of 27.59 inches.

Fog.—The coast fog, about which so much has been written, is most frequent during the months of April, May, and June. The fog appears about nightfall and disappears after sunrise; by nine o'clock the coast is usually free from fog. Some days during the months mentioned are foggy until half-past twelve or one o'clock. The records show that Coronado and San Diego have nearly three hundred days a year that are recorded as clear. The East has its cloudy weather in the winter; we have ours in the summer. Again, the maximum sunshine in Southern California is in the winter time, in the East during the summer.

MONTHLY RELATIVE HUMIDITY (PER CENT.) FOR A PERIOD OF THIRTY-ONE YEARS. RECORD BEGAN JANUARY 1ST, 1871.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
A.M.....	72.9	77.6	81.2	82.2	82.5	84.3	85.9	85.4	84.7	81.3	72.4	75.0
P.M.....	73.0	73.5	73.9	73.4	74.8	75.9	76.4	76.4	78.0	76.2	72.8	72.9
Average.....	73.4	75.6	77.6	77.8	78.6	80.5	81.2	80.9	81.4	78.8	72.6	72.9

Humidity.—Carpenter, the weather observer at San Diego, very aptly remarks that the oft-repeated statement, "driest marine climate," as applied to San Diego, is not sufficiently explained. Why is our humidity so much less than that of Seattle or Santa Barbara, for example? We find the explanation in these two circumstances; distance from the average storm track and nearness to the desert. Our humidity is as constant as our temperature, and plays a very important part in the excellence of the climate. So long as the temperature is

between 55° and 65° F. (and that is about half the time), the humidity is always seventy per cent. Whenever the temperature increases, the amount of moisture naturally decreases, for the capacity of the air for holding the vapor is correspondingly decreased. Strange as it may seem, this is also true of the other extreme in temperature in this desert-sea climate; the winter cold is a dry cold, just as the summer heat is a dry heat.

A general knowledge of the climate of Southern California is obtained, says Solly, if we remember that the coast is cool and moist and the interior hot and dry; "it should be thoroughly understood by the Eastern visitor, in his search for health, that if he seeks more days of sunshine and opportunities for outdoor life, with a more equable temperature and an average humidity a little greater than that of New York or Boston, he can find what he wants at Santa Barbara or San Diego" (or Coronado). The same writer adds that to those to whom the presence of dry air is not important, California offers many attractions from Monterey to Coronado, and he concludes that it can be said that the coast climate is delightful, equable, and healthful.

Wind.—The wind movement is moderate, the yearly average is about 5.6 miles an hour. During the day the wind blows from nearly every point of the compass. The coast clearly shows the phenomenon of land and sea breezes, for the air, warmed by the earth, rises and creates a draught from the cooler sea, so that by about nine o'clock the breeze commences and increases until about 2 P.M., at which hour it blows at about the average rate of twelve miles an hour. At or about sunset this westerly wind dies down, the land cools, and a current of air starts toward the warmer sea. *William A. Edwards.*

SAN DIEGO DE LOS BAÑOS.—The best-known and most-employed mineral springs of those abounding in Cuba are the springs situated in the town called San Diego de los Baños, in Pinar del Rio. This town is situated about ninety miles from the city of Havana and may be reached by railroad as far as Paso Real and thence by stages or carriages. This part of Cuba is not only one of the most picturesque on the island, but it is also the best known, for San Diego is surrounded by those tobacco estates which have made the name of Cuba so well known wherever the luxury of a good cigar is appreciated.

These springs have been known for over a century, tradition attributing their original discovery to an old negro, a runaway slave, who is said to have been cured of leprosy by bathing in these waters. During the last thirty years these springs have not enjoyed the vogue that they formerly had, but this has been due to the difficulties of transportation and to the disturbed political condition of the country. However, now that the island is at peace, there is no doubt that the springs of San Diego will develop with the rest of the country.

The population of San Diego during the closed season is about 1,500, and this increases to five times that number during the bathing period, which begins in the latter part of January and includes February and March. The temperature the year round fluctuates between 80° and 87° F. The River San Diego during the rainy season becomes a raging torrent, and in 1899 it swept away all the buildings connected with the bathing establishment.

Only three of the springs have thus far been utilized. One of these issues from the river-bed itself, the others are situated on the shore; the waters of the first have been isolated from the general body of the stream by means of dams and retaining walls.

The establishment at San Diego consists of three pools or tanks and twelve tubs with their corresponding buildings, such as dressing and waiting rooms for all the departments.

The Templado Spring.—This bath has, for women, a department measuring 8 metres long by 7 wide; it is lined with vitrified tiles and is furnished with a wooden floor. The tank on the men's side is larger and more comfortable; the pool has a depth of more than three feet and its temperature is constantly at 34° C. This is the large-

est and most important of the springs; it yields 860,000 litres in the twenty-four hours.

The next most important spring, from the point of view of the volume it yields and the curative properties of its water, is the *Tigre*. This pool is 8 metres in diameter, enclosed on all sides, thus allowing a concentration over the water of vapor and sulphurous acid gas. This has led people to believe that it is the stronger of the two baths, but experiments have proved that the two springs are really one and that the *Tigre* and the *Templado* are merely different outlets of the same spring. Years ago this pool was reserved for colored people.

The third spring, called the *Paila*, is certainly the most picturesque. The water issuing from the bed of the river itself reaches it after an admixture of fresh water from the river and the water from about thirty smaller springs. All these waters together collect into a pool about two hundred feet wide and in some places sixteen feet deep, thus allowing the bathers who are so inclined to add the exercise of swimming to the other attractions. From the above it can easily be understood that the temperature and strength of the water of this pool are subject to constant changes. In connection with this pool there is a dressing and waiting room 20 metres long by 6 metres wide, from which steps lead down to the baths.

The *chemical analysis* of these waters was made twenty-eight years ago by the brothers Aenlle. Since that time, however, there have been several earthquakes of more or less severity and the composition of the waters may have varied to a slight extent.

According to the analysis above mentioned one litre of the *Templado* or *Tigre* has the following composition: Hydrosulphuric acid, 0.152; sulphate of lime, 0.136; sulphide of calcium, 0.838; chloride of sodium, 0.032; bicarbonate of magnesium, 0.080; alumina, 0.006. Total solids 1.244 gram. Carbonic acid gas is present in slight amount.

Silicic acid, carbonate of iron, nitrogen, oxygen, or organic matter, undetermined.

Density, 1.014.

The color of this water is bluish at the spring and in the bath, outside it is colorless and as clear as drinking-water. The odor is characteristic of hydrosulphuric acid. The taste is sulphurous and the temperature is 34° C. (93.2° F.).

The *Templado* spring yields 860,000 litres of water in the twenty-four hours, while the *Tigre* yields 240,000 during the same time.

The analysis of the *Paila* spring gives the following result per litre: Sulphide of calcium, 0.218; sulphate of lime, 0.850; sodium chloride, 0.022; bicarbonate of magnesium, 0.120; alumina, 10.012. Total solids, 1.222 gm. Carbonic acid gas is present in a small amount.

Undetermined quantities: Sulphurous acid, silica, carbonate of iron, nitrogen, and organic matter.

The temperature of this spring varies from 22° to 25° C. According to Dr. Cabarron, medical director of the establishment, the physiological effects of these waters are as follows: "They stimulate or deaden the appetite according to individual idiosyncrasy, and act as a stimulant on the circulatory and nervous systems. The rapidity of the pulse is increased. They may cause headache, insomnia, and a general stimulating of the capillary circulation. Sometimes tachycardia of a transient nature is observed.

"On the respiratory apparatus the effect of the water is frequently at first to cause coryza, pharyngitis, and bronchitis, which rapidly subside. Upon the kidneys it seems to act as a stimulant, causing increased secretion of urine and a noticeably greater elimination of uric acid. It also stimulates the sexual organs. Like all waters of this nature it also stimulates the functions of the skin."

According to the same authority the use of these waters is beneficial in such diatheses as the herpetic, rheumatic, and scrofulous, especially so in the first two, in which the effect seems to be immediate. It is also of service in syphilitic affections.

By far the largest number of patients who visit San Diego are sufferers from rheumatism, and extraordinary results in the treatment of this disease are said to be obtained by the use of these warm baths. They are of great benefit in all the visceral manifestations of the disease, in endocarditis, pericarditis, cerebral rheumatism, sciatica, neuritis, chorea, etc.

N. J. Ponce de Léon.

SAN FRANCISCO, CALIFORNIA.—The metropolis of the Pacific coast is situated upon the northern end of a peninsula, in latitude 37° 47' N. and longitude 122° 23' W. On the west, north, and east the city is surrounded by water. The Pacific Ocean washes the extreme western side of the city, a fine ocean driveway extending from the Cliff House to the overflow basin of Lake Merced. The Golden Gate (the name was applied by General Fremont while looking westward from what is now Oakland) is a water passage about a mile wide, connecting the Pacific Ocean and the Bay of San Francisco. The harbor is generally conceded to be one of the beautiful harbors of the world. The bay extends twenty-five miles north and forty miles south of the city. There are numerous islands in the bay, and on some of these, as, for example, Belvedere, business men of San Francisco have elaborate summer homes. The coves and lagoons are favorite anchorages for house boats or arks.

The city of San Francisco has many hills, among the more prominent of which are Telegraph Hill, Russian Hill, Nob Hill, and Rincon Hill. In 1850 the city was nothing more than sand dunes and sand hills; and even at the present time in the extreme western end of the city these shifting sand stretches can still be seen. The climate is peculiar; the reasons for which are to follow. The winds are somewhat too rigorous for invalids, but for healthy people they are very stimulating. Overcoats and heavy wraps are worn in midsummer as well as in winter. Indeed heavy underclothing can be comfortably worn every day in the year.

age velocity of twenty miles per hour. From May until September little if any rain falls, and no matter how overcast or threatening the morning may seem, within a few hours, generally before ten o'clock, there is bright sunshine. Great banks of low fog roll in through the Golden Gate on summer afternoons. There is probably no other part of the Pacific coast where such a strange mixture of marine and continental climates can be found. The topography is so remarkable that marked climatic contrasts occur within short distances. Thus at any of the ferries one may see sealskin coats and white duck garments together, because the traveller needs warm garments crossing the bay and in the city; while at Sausalito, San Rafael, San Mateo, or any of the suburbs, summer clothing is necessary. It must be remembered that the great Sacramento-San Joaquin Valley, a basin five hundred miles in a north-and-south direction and fifty miles wide, lies due east of San Francisco, and that on summer afternoons there is often a difference of 55° F. in temperature in a distance of fifty miles.

Owing to the proximity of the Pacific the temperature in San Francisco is very equable. A native of San Francisco cannot say off-hand which is the warmest and which the coldest month of the year; because the range is very small. The mean annual temperature determined from the records of thirty-two years is 56.1° F. May and November have practically the same temperature. The mean temperature for July is 58.7° and for December 51.5° F. The highest temperature ever recorded was 100° and the lowest 29° F. Abnormally warm and cold periods last as a rule about three days. The mean for the three consecutive warmest days at San Francisco has never exceeded 76.3°; and of the three consecutive coldest days the mean temperature was not below 40.7°. The mean daily range of temperature is 12°.

The sunshine is less in San Francisco than at localities a few miles away, which is due to the prevalence of fog. The city is considered a very healthy one because it is washed by water and well ventilated by the strong winds.

CLIMATE OF SAN FRANCISCO, CAL. LATITUDE, 37° 47'; LONGITUDE, 122° 23' W. PERIOD OF OBSERVATION THIRTEEN YEARS, 1891-1902.

Furnished by permission of Chief of Weather Bureau, Prof. Willis L. Moore.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Temperature, Degrees Fahr.—													
Average or normal.....	50.1°	52.2°	53.7°	54.9°	56.7°	58.7°	58.7°	59.8°	60.8°	59.9°	56.4°	51.5°	56.1°
Average daily range.....	10.0	11.0	11.5	13.0	14.0	14.0	13.0	11.0	13.0	13.0	11.0	10.0	12.0
Mean of warmest.....	59.2	62.5	62.7	65.1	64.8	68.5	66.2	69.3	71.3	69.0	67.2	57.7	
Mean of coldest.....	41.7	43.5	43.9	45.6	46.9	49.2	49.3	50.9	51.3	51.2	47.7	43.8	
Highest or maximum.....	78.0	75.0	80.0	87.0	91.0	100.0	90.0	92.0	94.0	94.0	83.0	72.0	100.0
Lowest or minimum.....	36.0	34.0	33.0	40.0	43.0	47.0	47.0	47.0	47.0	47.0	38.0	37.0	*33.0
Humidity—													
Average relative.....	79%	78%	78%	78%	79%	80%	84%	86%	83%	80%	76%	80%	80%
Precipitation—													
Average in inches.....	4.85	3.54	3.14	1.81	.72	.14	.02	.02	.23	1.05	2.75	4.80	+22.74
Wind—													
Prevailing direction.....	N.	W.	W.	W.	W.	S. W.	S. W.	S. W.	W.	W.	W.	N.	W.
Average hourly velocity in miles.....	7.0	7.6	8.8	10.4	11.3	13.0	13.1	12.3	10.1	7.8	6.6	7.0	8.7
Weather—													
Average number of clear days.....	11	12	14	15	12	21	18	15	15	17	12	12	
Average number of fair days.....	10	8	11	8	12	7	10	14	11	8	8	8	
Average number of clear and fair days.....	21	20	25	23	24	28	28	29	26	25	20	20	

* The lowest official temperature recorded in San Francisco was 29° on January 15th, 1888, preceding above record.
+ The rainfall has been recorded with great detail for fifty-three years.

The climate is a moist one, the mean relative humidity exceeding eighty per cent. During the morning hours, especially in summer, the sidewalks look as if a light shower had prevailed, but in reality the dampness is due to condensation of fog. The prevailing direction of the wind is from the northwest, and on summer afternoons the wind blows with great regularity. Between the hours of 1 and 7 P.M. the wind is from the west, with an aver-

It is worth noting that children escape the disorders incident to hot weather in Eastern cities. Women and children have as a rule ruddy complexions, bright eyes, and a good carriage. Natives of San Francisco are in general large and well-formed. The climate is, however, too moist for those affected with renal, rheumatic, and pulmonary troubles. The summer climate is bracing and acts as a tonic in cases requiring such treatment.

The residents of San Francisco go inland during May, June, and July to get warm; while strangely enough country people come to the city to get cool at this time.

The city is supplied with water by the Spring Valley Water Company, and notwithstanding the long period of dry weather each year there has never been any water famine. Nor has there ever been any epidemic traceable to the character of water supplied. The temperature is a little too cool for ocean bathing, but there are large bath-houses at the beach and in the city where salt-water bathing can be had every day in the year. Many of the clubs have large swimming tanks for the use of members.

The average rainfall is about 23 inches, and this falls chiefly from November to March. In the past fifty years there was one January when rain fell on twenty-four days; the average number of rainy days in a midwinter (or so-called rainy season) month is about ten. Physicians sending patients to the Pacific coast should remember that marked differences in temperature, humidity, air movement, and sunshine occur within short distances. Near the Bay of San Francisco this peculiarity of climate is particularly noticeable. Within one hour's ride by boat or rail, from San Francisco, there is often a difference of twenty degrees in temperature at the same moment of time and equally great differences in other climatic features.

San Rafael offers a pleasant shelter from the winds of the coast, while the cities of the Santa Clara valley have just enough of the sea breeze to be delightful summer abodes. Or one can, by going to Mount Tamalpais (elevation 2,500 feet), rise entirely above the fog belt and bask in sunshine with temperatures ranging from 80° to 90° F., while at sea level, under the fog, the temperatures are from 55° to 60° F.

Alexander McAdie.

SANICLE. See *Umbellifera*.

SANITARY INSPECTION. See *House Sanitation*.

SANOFORM, di-iodo-methyl salicylate, C₆H₃I₂OH·COOCH₃, prepared by the action of iodine on oil of wintergreen, forms a colorless, odorless, and tasteless crystalline powder. It is insoluble in water or glycerin, and soluble in ether, chloroform, benzol, carbon disulphide, and petrolatum, and in ten parts of hot alcohol and two hundred parts of cold alcohol. Langaard states that it is non-toxic, has no harmful effect on the skin, and is not decomposed by exposure to air, light, or a heat of 200° C. (392° F.). It contains 62.7 per cent. of iodine, and is a substitute for iodoform. Its stability makes it suitable for antiseptic dressings, as they can be sterilized by heat. It is very absorbent, quickly drying up a wound, but forming with the secretions a pellicle which may retain the subsequent secretions and must therefore be soon removed. It is employed in the form of a dusting-powder, ten-per-cent. ointment, or collodion. Radziejewski and Jacobsohn recommend it in ophthalmic surgery.

W. A. Bostedo.

SAN REMO, ITALY.—This is an Italian town of about 18,000 inhabitants, seven and a half miles east of Bordighera and eighty-four miles west from Genoa. Express trains from Paris run direct to San Remo via Marseilles in about twenty-four hours. It is one of the most frequented resorts of the Italian Riviera, and lies upon a small bay formed by Capo Verde and Capo Nero. In the rear are a series of hills and mountain ranges, affording protection from the winds of the north and conducting to the warmth and equability of the climate.

The original town is old and quaint, with narrow, steep streets and picturesque architecture. To the east and west is the new town, where are situated the hotels and villas for the winter residents. The English and Americans frequent the west end, and the Germans the east; it was here that the late Emperor Frederick III. of Germany spent the last winter of his life at the Villa Zirio.

In both the east and the west portions of the town are attractive and extensive promenades along the water, shaded by palms, eucalyptus, and pepper trees, that to the west called the Corso dell' Imperatrice, and that to the east the Corso Federico. These promenades afford



FIG. 4142.—Shore Drive and Promenade at San Remo.

about the only level walks, for, immediately on leaving the sea, the ascent of the hills begins, so that an invalid is restricted to a limited space about the seaside, unless he rides or is strong enough to walk up hill.

The vegetation is varied and luxuriant and of a tropical and semitropical nature—here flourish the olive, lemon, fig, and a great variety of flowers and plants. One is especially impressed with the beauty and abundance of the roses and geraniums. The excursions among the hills and valleys are many and varied and through most attractive scenery, with olive, lemon, and orange groves and a profusion of flowers and plants on every hand. The drinking-water is excellent, and the natural drainage must, from the situation of the town, be good. There are also well-built drains running from the new town into the sea or to the mouth of the mountain torrents which flow through the narrow valleys to the sea. The soil is of clay, which renders it somewhat damp after a severe rain. The accommodations are abundant and good, although, as at most of the other Riviera resorts, they are somewhat expensive. There are competent physicians and all the other requirements of a first-class health resort.

The so-called winter season extends from November to April. The chief characteristics of the climate during this winter season are mildness, dryness, and sunshine, with a brilliant blue sky and sea. There is more or less wind, as throughout all the Riviera, and it is sometimes cold. The hills and mountains afford protection from the north wind, but the east and the southeast winds prevail. Occasionally the northeast wind blows in winter, as does also the Mistral. Dr. Hassall ("San Remo, Climatically and Medically Considered," London, 1883) concludes his discussion of the winds by saying that "San Remo, and indeed the whole of the western Riviera, must be regarded as windy. The winds, doubtless on some occasions, interfere with the comfort and movements of some invalids, and they constitute a drawback of what is