

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, C₆H₄I₂OH.COCH₃, 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

otherwise an excellent climate; but," he wisely adds, "one must remember that the winds play a very important part, particularly in warm climates, in purifying the air, and exert also for the most part tonic effects on the system."

CLIMATE OF SAN REMO. LATITUDE, 43° 48', FOR THE SEASON, NOVEMBER TO APRIL INCLUSIVE, FOR VARYING PERIODS.

	No- vember.	De- cember.	Janu- ary.	Feb- ruary.	March.	April.	Season.
Temperature, Degrees Fahr.—							
Average or normal . . .	53.54°	49.25°	47.23°	50.19°	52.0°	67.0°	51.55°
Average daily range . . .	10.7	10.4	10.0	7.8	12.1	12.2	11.1
Mean of warmest	61.4	55.5	53.0	56.8	60.5	64.6	58.6
Mean of coldest	50.7	45.1	43.0	49.0	48.4	52.2	47.5
Highest or maximum . . .	66.4	61.9	58.9	62.3	67.1	71.3	
Lowest or minimum	44.2	43.0	36.4	37.0	41.4	45.6	
Humidity—							
Average relative	73.4%	66.4%	68.7%	68.8%	70.1%	69.8%	69.6%
Wind—							
Prevailing direction . . .	N. E.	N. E.	N. W.	N. E.	N. E.	W.	N. E.
Strong winds (average number days on which they prevailed)	2.7	1.7	3.7	5.7	3.0	7.0	21.7
Moderate winds (average number days on which they prevailed)	3.3	4.0	3.7	5.7	10.0	11.3	38.0
Precipitation—							
Average in inches	5.29	1.13	2.68	1.81	1.18	2.13	14.5
Sunshine—							
Days of sunshine	24.3	28.3	27.3	25.6	29.6	29.0	164.0
Mean daily sunshine	7 45 6	6 46	6 26	8 11	8 50	9 12	7 58

The accompanying meteorological table, compiled from data given by Hassall, will convey a fairly accurate idea of the various climatic data for the winter season. It

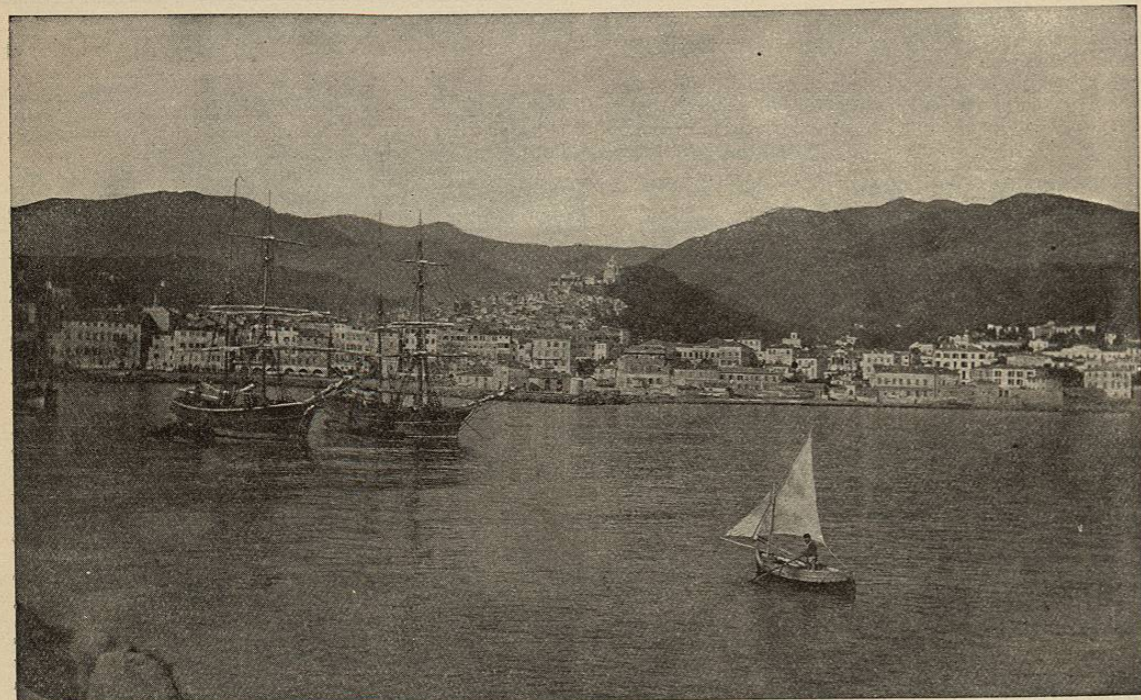


FIG. 4143.—San Remo as Seen from the Mediterranean.

will be seen that the average temperature is a high one, and varies but little from month to month, except in April, when it is appreciably higher. The average daily range is moderate, but in the shade and in the early morning and shortly after sunset the air by contrast is

cold, and invalids must avoid either suddenly going from the sunshine into the shade or being out after sunset.

The relative humidity is the least—66.7 per cent.—at 3 P.M. The mean number of days on which rain falls is 30, and the mean rainfall 14.05 inches for the whole season. The days on which the sun shines are on an average 164 out of a possible 181, and the mean duration of the sunshine is 7 hours and 56 minutes. To the inhabitant of northern Europe or the northeastern portion of the United States such an amount of sunshine can hardly be appreciated until experienced. There are many winter resorts, however, in America which afford an equal or greater amount of sunshine, accompanied with a mild temperature. Such are found in Southern California, Arizona, New Mexico, Texas, and in various portions of the pine belt of the South.

The general effect of such a climate as that represented by San Remo is thus portrayed by Dr. Hassall (*loc. cit.*): "Owing to the mildness of the climate," he says, "there is less wear and tear and less strain. The several functions are performed in a more moderate and uniform manner. There being less expenditure of power and less waste, a smaller quantity of food is required, and the stomach has less work to do. The circulation, in particular the heart and its vessels, is exempt from the strains entailed by extremes of heat and cold, and which in themselves are often injurious and not unattended with danger." The action of the sun on the human body is very complex; the effects are not confined to the warmth derived from its calorific rays; the luminous and chemical rays all exert powerful effects. The sun acts as a stimulant to most of the bodily functions—to elimination, secretion, and absorption; it determines many chemical changes, and promotes sanguification and the coloration or bronzing of the skin."

With regard to the class of invalids likely to be more

or less benefited by this climate, the following may be mentioned: those suffering from pulmonary tuberculosis in its inception or not far advanced, unaccompanied with fever; certain more advanced but very chronic cases, especially in persons past middle life, in regard to whom

the only hope is to prolong and make life comfortable; those suffering from chronic bronchitis, chronic laryngitis, emphysema, and asthma; cases of diabetes and Bright's disease; persons suffering from rheumatism and scrofula; the feeble and aged; convalescents from acute diseases or from an operation, and all that great army of persons who find existence in the cold changeable climate of the North a constant struggle. The plethoric and those who have a tendency to cerebral hyperemia, those with atheromatous arteries, and those suffering from functional nervous disorders, such as neuralgia, insomnia, or hysteria, should not come here.

San Remo can now be easily and comfortably reached from America by steamer direct to Genoa from New York or Boston. Here, as in all health resorts, the selection of a residence and the manner of life to be pursued can be satisfactorily determined only by consulting a local physician, which should always be the first thing to be done by the invalid on arrival at any health resort.

Edward O. Otis.

SANTA BARBARA, CALIFORNIA.—Santa Barbara, a well-known health and pleasure resort of Southern California, a town of about 8,000 inhabitants, founded in 1782 by Franciscan friars from Mexico, under Father Junipera Serra, is situated in north latitude 34° 24' 30.7", and west longitude 119° 41' 22", on the shores of the Santa Barbara Channel, which body of water is separated from the main Pacific Ocean by the channel islands, Anacapa, Santa Cruz, Santa Rosa, and San Miguel, the average distance of these islands from the mainland being 30 miles. Santa Barbara is 110 miles northwest of Los Angeles and 373 miles southeast of San Francisco, from which points it is reached by the Southern Pacific Railroad and by the Pacific Coast line steamers. The time by rail from Los Angeles is about three and one-half hours, and from San Francisco about eleven hours by express. Santa Barbara lies at the foot of the Santa Ynez Mountains, which rise, on the north of the city, to an altitude of from 3,000 to 4,000 feet, upon an inclined plane having an area of about 3,000 acres and a maximum altitude of 200 feet. The inclined plane slopes in a southerly and westerly direction to the sea, at the rate of about 100 feet to the mile, thus insuring good drainage to the town. This inclined plane is bounded by the foothills of the Santa Ynez Mountains on the north, and on the south and southwest by a so-called "mesa," or table-land, about 400 feet high, which intervenes between the city and the channel, and on the southeast by the channel itself. The soil upon which the city rests is composed chiefly of clayey loam, and is generally very dry, owing to the difficulty with which rains penetrate beneath its surface.

Santa Barbara is noted for the elegance and refinement of its social life, whose leaders have migrated from older social centres, and is annually visited by thousands of travellers from all parts of the world. The facilities for amusement and recreation at Santa Barbara are numerous, embracing horseback riding over broad lowland roads, by the sea, or on mountain trails, pedestrian tours among the mountains, driving, polo, golf and tennis, for the cultivation of which sports special clubs exist. There are two city clubs and a country club, which generously extend many courtesies to visitors. The country club-house is delightfully situated by the sea in Montecito, a suburb of Santa Barbara, about three miles from the centre of the city.

There are numerous hotels and boarding-houses in Santa Barbara, offering accommodations commensurate with the means of all comers. The Hotel Potter, of immense proportions and fully equipped with every comfort and luxury, has been recently erected (1902) near the shore; and the Arlington, situated about a mile from the water front, affords suitable accommodations for those who do not wish to live in close proximity to the sea. There are numerous cottages and houses, furnished and unfurnished, which may be rented by those who desire to have private establishments of their own. A new bathhouse,

located on the shore, at the Plaza del Mar, affords good facilities for bathing in both hot and cold sea water all the year round, and has dressing-rooms for those bathers who prefer a plunge into the sea. During the summer the temperature of the sea water varies from 68° to 74° F., and it is rarely below 60° F. in the winter months.

The Cottage Hospital, an institution for the treatment of all classes of medical and surgical cases, is situated at Oak Park, a quiet western suburb of the town. It is supported by voluntary contributions and has a training-school for nurses. The superintendent is a physician, but there is no regularly established corps of attendants, each patient being at liberty to be treated by his own physician. A well-known private sanitarium, Miradero, crowns the heights beyond the western end of the city, and is fully equipped with all modern appointments for the entertainment and the treatment of invalids and convalescents. The city is lighted by gas and electricity, and an electric street railway gives easy access to all parts of the town. Santa Barbara has three daily papers, a free public library, churches of the leading denominations, a chamber of commerce, and a good system of free schools, besides separate private schools for boys and girls and a manual training-school. The water supply of Santa Barbara is derived from the creeks in the mountain cañons and from artesian wells. The climate of Santa Barbara is characterized by remarkable mildness, notable uniformity of temperature, abundant sunshine, low relative humidity, and low average velocity of the wind, advantages which it owes to its low latitude, and its sheltered position, to the topography of the surrounding country and to the proximity of the sea. There is no governmental station at Santa Barbara for the study of climatic conditions, but competent and careful meteorologists have recorded their observations for the last thirty-two years, and the accompanying table embodies their results:

AVERAGES OF TEMPERATURE (DEGREES FAHR.) RAINFALL, RELATIVE HUMIDITY AND WIND MOVEMENT AT SANTA BARBARA, CAL., DURING THE PAST TWENTY-FIVE YEARS (ENDING 1902).

Month.	Average of highest temperature.	Average of lowest temperature.	Mean temperature.	Relative humidity. Per cent.	Average rainfall.	Average hourly amount of wind.
January	74.8	37.1	53.5	67	3.73	3.5
February	78.2	36.1	54.8	69	3.21	4.0
March	79.8	38.3	55.7	70	2.28	4.5
April	82.0	40.8	58.0	71	1.18	4.6
May	82.2	44.5	59.3	73	.36	4.5
June	85.4	47.9	62.5	74	.10	5.0
July	86.7	52.3	65.2	76	.02	4.2
August	87.0	53.5	66.7	75	.00	4.0
September	88.2	50.5	66.0	75	.22	3.6
October	87.9	47.3	62.6	72	.73	3.5
November	84.0	43.2	60.0	66	1.54	3.1
December	77.1	38.6	55.7	65	3.63	3.5
Means	82.7	44.1	60.0	71	17.00	4.0

This table is borrowed from an article by C. M. Gidney, Esq., secretary of the Santa Barbara Chamber of Commerce, in the *Santa Barbara Daily Press*, June 15th, 1902; it was compiled by him chiefly from the published statistics of Dr. C. M. Richter, of San Francisco, and of Hugh D. Vail, Esq., of Santa Barbara. The summer days at Santa Barbara are warm but very rarely uncomfortably hot, and the nights are so cool that blankets are regularly required for the sleeper's protection in the early morning hours. High fogs prevail throughout the summer months, making their appearance at nightfall or sometimes much later, and clearing away between eight and twelve o'clock in the morning. From November to May fogs are very rare. The most disadvantageous feature of the summer climate is the dust, which is abundant, owing to the absence of rain from April to October or November. The dust is combated by sprinkling with fresh or salt water, and recently by sprinkling with crude oil, which is very effective. The winter days at Santa

Barbara are generally clear, calm, sunny, and moderately warm. There is no snow except rarely on the mountain-tops, and no frost severe enough to destroy lemons, roses, violets, or heliotrope. Rain falls, at intervals of days or weeks, from November until April, but the rainy season is really such in name only. In the writer's residence at Santa Barbara, which has extended over a period of seven years, he has not seen a single winter during which an invalid would have been confined to the house more than ten days by rain. If we add to this sum the number of winter or spring days rendered too inclement by high winds and dust, we may safely assert that the health-seeker could advantageously remain out-of-doors during the daylight hours on all but fifteen or twenty days of the entire year. Many people sleep out-of-doors at Santa Barbara all the year round. The average number of absolutely clear and sunny days may be computed at about 250, the fair days at 50, the cloudy ones at 50, and the rainy days at 15. The foothill region of Santa Barbara, north of the town, Mission Cañon, one of the gorges between the Santa Ynez Mountains, and Montecito, an eastern suburb, offer essentially the same favorable climatic conditions presented by Santa Barbara proper, with even purer air, lower humidity, higher temperature, less violent winds and more abundant sunshine.

Renal diseases, cardiac affections, and neurasthenia are all favorably affected by the climate of Santa Barbara, while convalescents after acute diseases, old people, and little children thrive under the influence of its balmy air and genial sun.

Asthmatic patients do not do well at Santa Barbara, in the writer's experience, unless it be in the foothill region or on the heights of Montecito. Patients with bronchitis or with pulmonary tuberculosis do fairly well in the win-



FIG. 4144.—Avalon in the Island of Santa Catalina, California.

ter, but are unfavorably affected by the dust and fogs of summer. Some cases of tuberculosis have been cured at Santa Barbara under the writer's observation, but the majority do better farther from the coast and at an elevation greater than that of Santa Barbara.

William H. Flint.

SANTA BARBARA HOT SPRINGS.—Santa Barbara County, California.

POST-OFFICE.—Santa Barbara. Hotel and cottages. These famous hot sulphur and soda springs are situated in the beautiful Santa Ynez Mountains, six and a half miles northeast of Santa Barbara city. The location is 1,450 feet above the sea-level, and unites many advantages of climate and scenery. The resort suffered from unwarranted neglect for a time. The springs are twenty-two in number, and range in temperature from 99° to 122° F. Analyses have been made by Oscar Loew and Winslow Anderson. We present Anderson's analysis as more recent and more complete than that of Loew: One United States gallon contains: Sodium chloride, gr. 1.74; sodium carbonate, gr. 2.17; sodium sulphate, gr. 14.92; magnesium sulphate, gr. 7.75; calcium sulphate, gr. 6.03; aluminum sulphate, gr. 2.90; arsenic, silica, sulphuric acid, and organic matter, very small amounts. Total solids, 36.69 grains. Gases: Free carbonic acid gas, 19.14 cubic inches; sulphureted hydrogen, 9.16 cubic inches.

Loew's analysis shows a slightly greater proportion of solid ingredients. It will be observed that the waters resemble those of the Arkansas Hot Springs. They have been found useful in the treatment of rheumatism, gout, and other joint affections, Bright's disease, and bladder irritation. Excellent results have been observed from the use of the baths in syphilitic and scrofulous contaminations, glandular enlargements, and chronic skin diseases.

James K. Crook.

SANTA CATALINA ISLAND, CAL.—This very attractive insular resort, with a delightful climate both winter and summer, lies off the coast of Southern Cali-

fornia about twenty-five miles distant. It is reached in three hours and a half from Los Angeles by railroad to San Pedro Harbor, and from thence by steamer. The island is twenty-three miles long, and with an average width of four miles in the southern part and two miles in the northern. It is mountainous in character, rising to

the height of three thousand feet, with deep valleys or gorges, and a great transverse depression running partly through it and forming a bay or anchorage on either side. The shores are bold, high cliffs, broken here and there by tiny bays or coves, with a sandy beach. Upon one of these coves, on the eastern side (called Avalon Bay), is situated the little town of Avalon, the only settlement on the island and the chief place of resort. Here are a number of good hotels, many boarding-houses, and, in the summer, tent villages with macadamized streets and rows of shade trees, where furnished tents can be rented—a popular mode of living at this season. There are also opportunities for camping in the many recesses of the island.

The climate exhibits the essential characteristics of that of the shore opposite, modified somewhat by local conditions: the rains here are said to be less frequent than on the mainland, the sea breeze is not so strong, and there is not so much fog. "They (the channel islands, of which Catalina is the principal one) are bathed in sunshine when the mainland opposite is enveloped in fog." The reader is referred to the article upon *Los Angeles* and the meteorological table therein contained for climatic details applicable in the main to the climate of Santa Catalina. The average July temperature at Santa Catalina is 65° F. In August the highest mean temperature observed at six in the morning was 72°; the highest at noon, 78°; the lowest, 69° F. The water temperature at noon, 76° F. The average relative humidity is 67 per cent. It is never uncomfortably warm in summer or too cool in winter. For both seasons it appears to be an admirable climate.

For a summer resort it is very popular and very much visited, and in the height of the season there are often five or six thousand people on the island; indeed, one of the objections to this resort for an invalid is the crowd of summer excursionists. As a genuine health resort it would appear to be more suitable and in many ways more attractive in the winter, for it is then "that the true beauties of this isle of summer are seen. The rains, which, curiously enough, are less than on the mainland, change the brown hills to a vivid green, and we have an emerald in an azure setting. Myriads of flowers spring up, and the face of the island is changed as if by magic. . . . In February and through the winter months Catalina is still an island of summer" (C. F. Holden, in *California Magazine*, December, 1892, quoted by Solly).

The outdoor attractions are many and varied. There are golf links in the Grand Canyon; various excursions among the mountains and valleys; a stage road across the island winding along the mountainside, affording delightful views of sea and land; boating, fishing, and bathing. The fishing is a feature of the place, and here are caught the large black sea bass, the leaping tuna, the yellowtail, and the barracuda. The water is so transparent that the bottom can be clearly seen at a depth of from fifty to one hundred feet, and for this purpose glass bottom boats are much in use, from which the most varied and fascinating sea vegetation, as well as a variety of fish life, can be seen. There is also wild-goat shooting from horseback in the fastnesses of the mountains.

Altogether, a region affording so many attractions of climate, scenery, water and land sport as that of Santa Catalina can hardly be imagined. Moreover, it has the great advantage of being an all-the-year-around resort. The sanitary regulations are said to be excellent, being under the supervision of a resident physician and health officer. Especial attention is paid to the sanitary condition and cleanliness of the tent villages. The bathing and swimming in the bay of Avalon are very delightful, both on account of the temperature of the water and on account of the absence of wind and surf.

Edward O. Otis.

SANTA ROSA WHITE SULPHUR SPRINGS.—Sonoma County, California. These springs are pleasantly situated about two miles from the town of Santa Rosa. The surrounding country is delightful in character and the climate very genial. There are good accommodations

for visitors, and the resort is prosperous and thriving. The springs are mostly sulphureted and cold, having temperatures ranging from 59° to 62° F. The principal spring was found by Anderson to have the following composition: One United States gallon contains (solids): Sodium chloride, gr. 5.72; sodium carbonate, gr. 2.19; sodium sulphate, gr. 6.90; magnesium sulphate, gr. 9.07; and very small amounts of potassium carbonate, magnesium carbonate, calcium carbonate, calcium sulphate, ferrous carbonate, alumina, borates, silica, and organic matter. Total solids, 28.75 grains. Gases: Free carbonic acid gas, 4.16 cubic inches; free sulphureted hydrogen, 6.47 cubic inches. The action of this water is slightly aperient and diuretic. It is useful in congestion of the liver due to malarial poisoning, and in rheumatism, kidney and bladder troubles, and skin diseases. Excellent bathing facilities have recently been provided, the water being artificially heated.

James K. Crook.

SANTA YSABEL SULPHUR SPRINGS.—San Luis Obispo County, California. Hotel and cottages.

These valuable springs are located two and a half miles southeast of Paso Robles, on the line of the Southern Pacific Railroad, by which they may be reached. The location is a very delightful one, being in a small canyon about one mile east of the Salinas River. It is surrounded on all sides by the rolling hills covered with groves of gigantic oaks, towering pines, and clustering manzanitas. The atmosphere is sweet and balmy, and ranges from about 60° to 75° F. all the year round. The elevation is one thousand feet above the sea level, and the distance from the coast is about thirty miles. The soil of the neighboring land is exceedingly fertile, producing almost every known variety of fruit, as ascertained from the United States Experiment Station close by. The main warm sulphur spring flows twenty thousand gallons per hour. The waters are clear and sparkling, lightly sulphureted and freely carbonated. The waters are tonic, antacid, diuretic, aperient, and sedative.

The cold springs, being less densely impregnated with mineral ingredients, possess these qualities in a lighter degree than the warm. The waters have been found highly useful in a wide range of affections, embracing disorders of the liver, stomach, and bowels, catarrhal affections of the kidneys, chronic rheumatism, glandular indurations, obstinate syphilitic infection, and chronic cutaneous diseases. There are other valuable springs on the property, including a warm sulphur mud spring. This hot sulphurous mud is excellently adapted for bathing purposes. Extensive improvements are under way at this resort. Good roads and building sites have been laid out, and a depot landing selected. A small mountain lake is in course of construction; it will be from eight hundred to one thousand feet long by several hundred feet broad. On its waters will be several pleasure boats. About one hundred feet above the lake, on a pleasant plateau commanding magnificent views of the Salinas Valley, a spacious modern hotel and a number of cozy cottages will be reared. Thorough bathing facilities will also be provided. With its natural advantages of climate, soil, and surroundings, Santa Ysabel resort promises to be one of the pleasantest inland watering-places in that section of the country. It will be under the patronage of the Presbyterian denomination.

James K. Crook.

SANTONICA.—See *Wormseed*.

SANTONIN.—(*Santoninum*, U. S. P.; Br.; P. G.— $C_{12}H_{14}O_5=245.43$). A neutral principle obtained from santonica.

The source of this substance is described under *Wormseed, Levant*. It is extracted as a compound of lime by boiling in water or macerating in dilute alcohol to which lime is added. The calcium is then separated from the santonin by the addition of acetic or hydrochloric acid to the solution, and the santonin is purified by appropriate processes. Although now rarely inten-