

title *Linimentum Calcis*, Lime Liniment, often called *Carron oil*, from the Carron Iron Works, in Scotland, where the liniment acquired great reputation for the treatment of burns among the workmen. The preparation is simply an admixture, in equal parts, of lime water and linseed oil, whereby a lime soap is formed, which being insoluble makes an emulsion with the considerable excess of the oil prescribed by the formula. The oil, however, readily separates from the aqueous portion, and hence the preparation should be well shaken each time before use. Lime liniment combines the protection of a fixed oil with the alkaline and soothing properties of lime, and makes an excellent dressing for painful affections of the skin, such as burns, both allaying pain and promoting healing. It is applied clear.

Calcium Carbonate: CaCO_3 .—Calcium carbonate is represented in the United States Pharmacopœia by two preparations. *Creta Præparata*, Prepared Chalk, is the native article freed from most of its impurities by elutriation; and *Calcii Carbonas Præcipitatus*, Precipitated Calcium Carbonate, is the carbonate obtained as precipitated from a solution of calcium chloride by reaction with sodium carbonate. Prepared chalk is in the form of powder, or of little conical pellets, and the precipitated carbonate is always in the condition of a very fine soft powder. Both preparations are permanent in air, odorless and tasteless, and insoluble in water or alcohol, although soluble, with effervescence, in hydrochloric, nitric, or acetic acid.

Calcium carbonate closely resembles slaked lime in its properties, but, being a salt, is less strongly alkaline, and being wholly insoluble in neutral fluids of aqueous basis, is, locally, absolutely bland. It is medicinally applicable, in a general way, for the same purposes as lime water, and, in addition, because it is a bland, soft, and alkaline absorbent powder, it makes an excellent "dusting powder" to apply as a dressing to skin affections in which the cutaneous surface is moist and tender. Internally the carbonate is available as an antidote to acid poisoning, especially if the acid be sulphuric or oxalic, and is of use to correct idiopathic acidity of the *prima via*, and to allay nausea and check diarrhœa. Being perfectly innocent, either of the forms of the salt may be given freely. For ordinary use in digestive derangements the single dose ranges from 0.65 to 3.00 gm. (gr. x. to xlv.). The medicine may be given as a powder, but administration in mixture is more common. The following pharmaceutical preparations are official in the United States Pharmacopœia: *Pulvis Creta Compositus*, Compound Chalk Powder. This consists of three parts of prepared chalk, two of powdered acacia, and five of powdered sugar, mixed. This powder is probably official as the basis for making the next named preparation, but yet is itself a convenient chalk powder for direct prescription. *Mistura Creta*, Chalk Mixture. This is compounded of two parts of the foregoing compound chalk powder and four parts each of water and cinnamon water. The sugar and acacia of the compound chalk powder dissolve and the slightly viscid solution resulting is capable, when shaken, of holding the chalk in suspension. The preparation should be freshly made for use, and should be shaken each time before dispensing a dose. It makes a very convenient basis for diarrhœa mixtures, especially in cases of diarrhœa with acidity. It may be given in tablespoonful doses. *Trochisci Creta*, Troches of Chalk. Each troche contains 0.25 gm. (about gr. iv.) of prepared chalk with a flavoring of nutmeg.

Normal Calcium (Ortho-) Phosphate: $\text{Ca}_3(\text{PO}_4)_2$.—This is the phosphate commonly called, for distinction, *bone phosphate*. It is official under the title *Calcii Phosphas Præcipitatus*, Precipitated Calcium Phosphate, and is made by dissolving the phosphate of bone ash by means of hydrochloric acid, and then precipitating it from the solution by the addition of water of ammonia. Such precipitate, washed and dried, presents itself as "a light, white, amorphous powder, odorless and tasteless, and permanent in the air. Almost insoluble in cold water; partly decomposed by boiling water, which dissolves out an acid salt; almost insoluble in acetic acid, except when

freshly precipitated; easily soluble in hydrochloric or nitric acid; insoluble in alcohol" (U. S. P.). When freshly precipitated and still moist this phosphate also dissolves wholly in lactic acid.

Calcium phosphate is an important normal ingredient of the animal body, being the calcareous element of the bones and teeth. The use of the salt in medicine has been its internal administration in conditions of disease where there appears to be a deficiency of the substance in the proper tissues, either from assumed lack of supply or from want of power of assimilation. Such conditions are illustrated by rickets, mollities ossium, caries of the teeth, and possibly by scrofula and phthisis. But, as often happens in medication based on purely chemical considerations, the clinical results frequently fall short of the expectation, so much so that many practitioners put but little faith in the present remedy. Very likely the lack of effect of calcium phosphate is principally due to the difficulty of determining the absorption of the salt, partly because of the salt's entire insolubility in other than acid menstrua, and partly because of its low diffusion power. But inasmuch as the phosphate is wholly innocent, locally and constitutionally, it may with propriety be tried in cases in which it seems indicated theoretically. From 0.65 to 2.00 gm. (gr. x. to xxx.) may be given three times a day, larger doses probably being useless through lack of absorption. A convenient form of the medicine is the official preparation of the United States Pharmacopœia, entitled *Syrupus Calcii Lactophosphatis*, Syrup of Calcium Lactophosphate. Precipitated calcium carbonate is dissolved in dilute lactic acid, and to this solution phosphoric acid is added. After certain necessary trituration, the solution of the lactophosphate is filtered, sweetened, and flavored with orange-flower water, and then brought to standard strength by the addition of water. Twenty-five parts, by weight, of calcium carbonate is used to make one thousand measures of the syrup. Should a gelatinous precipitate tend to form upon keeping, a fluidrachm of hydrochloric acid may be added to each pint of the syrup. The preparation may be given in doses of from two to four teaspoonfuls, representing from 0.20 to 0.40 gm. (gr. iij. to vi.) of phosphate.

Calcium Sulphate: $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.—This salt is used in medical art only in the making of plaster-of-Paris dressings. Calcium sulphate occurs native in several conditions, the commonest being the salt combined with two molecules of water constituting the substance *gypsum*. The valuable property of gypsum is that when dehydrated and treated with water it recombines with the latter, and in such combining sets in a hard, dry mass. Gypsum is dehydrated by heat, which should not exceed 120°C .; for if carried too high (above 204°C .) the gypsum—called then technically *dead-burnt*—recombines with water but slowly and the product does not solidify. As properly dehydrated and pulverized the product is a white powder, without odor or taste, called *burnt gypsum* or *plaster-of-Paris*. Plaster-of-Paris is official in the United States Pharmacopœia under the title *Calcii Sulphas Exsiccatus*, Dried Calcium Sulphate. Mixed with two parts of water, plaster-of-Paris makes a soft, creamy paste, which in the course of from fifteen to twenty minutes gradually stiffens, until at last it sets into a perfectly hard and dry mass. During the setting a moderate degree of heat is evolved (not beyond the range perfectly bearable by the human skin), and the mass very slightly expands. Applied, therefore, as a casing to a limb, the dressing may be perfectly fitted without fear of shrinkage upon setting. After setting, the plaster-of-Paris neither softens nor dissolves by treatment with water, the solubility of calcium sulphate in water being only about one part in five hundred. For use in surgery the plaster-of-Paris paste may be applied by smearing it upon the bandaged limb so as to form a casing, but a far better way is to impregnate a flannel bandage thoroughly with the dry plaster, roll it loosely, and when the dressing is to be fitted dip the roller into a vessel of water until bubbles cease to be evolved and then apply in the

usual manner, but without reverses. Before so applying, however, the skin should be protected by a plain bandage, or, where appropriate, by a thread glove or a stocking.

Plaster-of-Paris should be kept in well-closed vessels, else, attracting moisture from the atmosphere, it will become partially hydrated. *Eduard Curtis.*

CALCULI. See *Concretions*.

CALCULI, CUTANEOUS. See *Milium*.

CALEDONIA SPRINGS.—**POST-OFFICE.**—Caledonia Springs, Ontario, Canada. Hotel, the Grand Hotel.

ACCESS.—From Montreal and Ottawa by Canadian Pacific Railway, or by the Ottawa Navigation Company steamers.

Analysis, by Sterry Hunt. In one thousand parts:

Solids.	Gas Spring.	Saline Spring.	White Sulphur Spring.	Duncan or Intermittent Spring.
Chloride of sodium	6.9675	6.4409	3.5430	12.2500
Chloride of potassium.....	.0909	.0296	.0230	.0905
Chloride of calcium .....	.....	.....	.....	.2870
Chloride of magnesium .....	.....	.....	.....	1.0338
Bromide of sodium.....	.2150	.0169	.0100	.....
Bromide of magnesium.....	.....	.....	.....	.0238
Iodide of sodium.....	.0005	.0014	.....	.....
Iodide of magnesium.....	.....	.....	.....	.0021
Sulphate of soda.....	.0053	.0048	.0183	.....
Carbonate of soda.....	.0485	.1762	.4538	.....
Carbonate of lime.....	.1480	.1175	.2100	.1264
Carbonate of magnesium.....	.5262	.5172	.2940	.8672
Carbonate of iron.....	Trace.	Trace.	Trace.	Trace.
Alumina.....	.0044	.....	.0026	.....
Silica.....	.0310	.0425	.0840	.0225
	7.9773	7.3470	4.6407	14.6433

These springs are carbonated saline, mildly charged with carbonic acid gas. There escapes with the water of the Gas Spring a large amount of carbureted hydrogen gas. The water of the White Sulphur Spring contains sulphureted hydrogen equal to about one cubic inch per gallon. The springs are situated on a level



FIG. 1072.—Bay of San Diego, Southern California.

plateau which extends for many miles in all directions, the country being open and well cultivated. The Grand Hotel is commodious and comfortable. The management is excellent. All modern methods for utilizing the waters are at hand, and a physician resides at the hotel during the season. There are also a number of boarding-houses and cottages on the grounds, all of which are under the control of the company. The hotels are open from June to October.

The Caledonia Springs are the best known of Canadian mineral springs, and are resorted to by large numbers from Canada and the United States, particularly from the South. In addition to the water consumed at the springs large quantities are bottled and sent to all parts of Canada and the United States. *Beaumont Small.*

CALENDULA. MARIGOLD.—"The florets of *Calendula officinalis* L. (fam. *Compositæ*)" (U. S. P.). These florets are strap-shaped, nearly half an inch long, three-toothed, hairy upon the tube, of a bright yellow color, pistillate, with a two-branched style. The odor is characteristic, the taste aromatic and bitterish. They contain a little volatile oil and an amaroid, with resin and an abundance of the bright yellow coloring matter, *Calendulin*, which is inactive. The drug possesses very slight aromatic-bitter properties, but is chiefly used for coloring purposes. It is now much less used than formerly, and will doubtless be omitted from the next edition of the Pharmacopœia. The dose is 1 to 2 gm. (gr. xv. to xxx.).

The herb possesses similar properties, but is even weaker and contains much more mucilage. It has been used similarly, as well as for making poultices. Through an error, this, instead of the florets, was incorporated in the preceding edition of the Pharmacopœia. *Henry H. Rusby.*

CALIFORNIA, SOUTHERN.—In this article only a brief and general account of the climate of Southern California will be given, as the principal resorts and sections will receive especial mention under their respective heads, in regular alphabetical order.

Southern California is an irregular area of territory, equal in extent to England and Wales, lying between latitude $35^\circ 40'$ and $32^\circ 30'$, with a coast line of 330 miles. It is bounded on the north by the Tehachapi Mountains, which are spurs of the coast ranges and Sierra Nevada; on the east by the Colorado River; on the south by the Mexican frontier; and on the west and southwest by the Pacific Ocean. In the western portion is the southern coast range, forming the eastern boundary of the *coast plain*, which contains numerous beautiful valleys, such as the Santa Clara and Santa Buena Ventura. This coast plain extends for 150 miles, and is from 15 to 25 miles in depth. Between the coast range and the Sierra Madre and San Bernardino ranges lies the *interior plain*, 200 miles in length and from 15 to 30 miles in depth. Here is the great San Gabriel Valley, which has been called the Lombardy of America, and numerous lesser valleys. "Between the coast plain and the long interior valley,

the coast range of mountains is broken, and, opposite the Los Angeles plains, entirely disappears for a space. The whole country becomes thus a great open coast-land facing the south, and with the high Sierra for a background."* North and east of the Sierra, or inland range, lie the Mojave and Colorado deserts. It is with the resorts on or near the coast, or with those in the interior plain, that we have especially to deal as climatic stations, such as Santa Barbara, San Diego, Coronado Beach, on the coast; or, farther inland, Riverside, Redlands, San Bernardino, and others. The soil is composed largely of disintegrated granite, which is sandy and porous, and in many localities there are also large patches of adobe or red clay.

* "California of the South," by Walter Lindley and J. P. Widney, 1888.

Climatic Data.	SAN DIEGO, LATITUDE, 32° 43'; LONGITUDE, 117° 10'.						SANTA BARBARA, LATITUDE, 34° 28'; LONGITUDE, 119° 41'.						LOS ANGELES, LATITUDE, 34° 3'; LONGITUDE, 118° 5'.					
	Jan.	April.	July.	Nov.	Winter	Year.	Jan.	April.	July.	Nov.	Winter	Year.	Jan.	April.	July.	Nov.	Winter	Year.
Temperature—																		
Average or normal	53.6°	57.7°	67.1°	58.2°	54.5°	60.4°	51.2°	60.5°	66.8°	56.0°	54.01°	60.7°	54.1°	58.0°	71.1°	62.0°	53.5°	62.0°
Average daily range	17.3	14.1	11.6	18.1	16	14.3	18	19	25	....	19.1	20.1	20.2	23.1	24.5	....	....	....
Mean of warmest	61.8	65.3	73.5	66.8	....	....	57.8	65	69.2	62.3	....	....	62.9	69.2	82	70.7	....	....
Mean of coldest	44.5	51.2	61.9	48.7	....	....	42.8	52	69.7	53	....	....	42.8	49	58.9	46.2	....	....
Highest or maximum	78	87	86	85	....	....	83	85	89	82	....	....	82	94	98.1	86	....	....
Lowest or minimum	32	39	54	33	....	....	38	11	44	40	....	....	30	39	51.2	34.2	....	....
Humidity—																		
Mean relative	71.2%	72.4%	76.4%	66.4%	70.9%	72.9%	71%	67%	72%	64%	....	73%	62.9%	70.1%	69.4%	57.3%	63.6%	66.6%
Precipitation—																		
Average in inches	1.85	0.68	0.02	0.70	6.04	9.49	3.7	1.4	....	1.6	11.77	17.6	3.9	1.3	....	.95	8.65	18
Wind—																		
Prevailing direction	N. E.	W.	W.	N. W.	N. E.	W.	....	....	....	....	....	W.	N. E.	W.	W.	N. E.	N. E.	W.
Average hourly velocity in miles	5.1	6.6	6.3	5.1	5.4	5.9	4.3	5.3	5.1	3	....	4.6	5.5	5.4	4.9	4.9	5.4	5.1
Weather—																		
Average number of clear days	11.3	10.2	8.2	13.5	33.5	122.7	24	16	27	13	....	231	17.5	10.2	10.4	18.8	....	171.3
Average number of fair days	11.2	11.9	16.1	10	33.7	155.1	1	6	3	9	....	63	8.5	12.5	19.7	9.3	26.6	144.8
Average number of clear and fair days	22.5	22.1	24.3	23.5	67.2	277.8	25	22	30	22	....	294	26	22.7	30.1	28.1	44.5	316.1

The main features of the climate of Southern California are warmth, equability, a large amount of sunshine and a small amount of annual rainfall. "Taken as a whole," says Professor Hilgard, "Southern California corresponds in its climatic features and adaptation to the Mediterranean region of Europe and Africa; a grand Riviera with a partial background of the desert as well, where the date palm and ostrich find a congenial home, and alluvial plains equalling in riches the famed delta of the Nile."

"Warm winters, comfortably cool summers, very low rainfall, and rainfall so distributed as to divide the year into a dry and a so-called rainy season, almost unparalleled preponderance of cloudless weather, and (in consequence of the low latitude) a long duration of the daily sunshine in winter—all these are characteristic of every portion of Southern California. In comparative humidity of the atmosphere lies the chief difference between its coast stations and those lying at a greater or less distance from its coast line" (Huntington Richards).

"The warmth and equability of this climate depends," says Dr. C. F. Williams,* "upon three factors: its southern latitude, its protection by the various mountain ranges from cold, northerly or easterly winds, and the influence of the Pacific, and especially the warm Kuro Siwo, or Black Japan current, which washes the shores of the Western States."

There exists a certain misapprehension regarding the matter of dryness of this climate. For example, as good an authority as Lindsay refers to it as "intensely dry." Williams calls it a "dry, warm climate," and Remodino remarks that "every term in the meteorological vocabulary relative to moisture and dryness has been conscientiously applied to the region." The fact is, that the coast districts, like all other coast resorts, exhibit the features of a marine climate, one of which is a large amount of moisture, and upon this fact, as we know, depend the coolness and equability characteristic of such a climate.

If one would find real dryness he must, as Solly says, seek it beyond the mountains in the desert country. If, however, "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 desires at Santa Barbara or San Diego." Even as far inland as Riverside, more than 50 miles from the coast, the humidity is appreciably greater than at Aiken, for example, and very considerably greater than at most of the Colorado, New Mexico, and Arizona resorts. Still further, one must bear in mind the fact, as Solly says, "that, in spite of the great amount of sunshine during the day in California, the foggy and damp nights and mornings

* "Aero-Therapeutics," 1894.

take up a great part of the twenty-four hours." This authority notes the following observation made by himself at Redlands: "On one occasion when at 4:30 P.M. the relative humidity, as indicated by the hygrometer, was fifty-five per cent., at 6 P.M. it had increased to eighty per cent." "The difference between noonday and midnight temperature," says Kate Sanborn,* "between sun and shade, is something to be learned and guarded against."

RIVERSIDE, 60 MILES FROM THE COAST, 850 FEET ABOVE SEA LEVEL.

	Jan.	April.	July.	Nov.	Year.
Mean monthly temp.	53.1°	61.2°	77.0°	62.2°	62.0°
Maximum temp.	78.2	89.2	101.2	89.2	....
Minimum temp.	32.7	39.2	60.5	39.5	....
Relative humidity	67% ¹	56% ²	63% ³	76% ⁴	67%
Precipitation—					
Average in inches	3.27	1.43	....	1.35	10
Wind—					
Prevailing direction	....	....	S. W.	....	W.
Weather—					
Average number of clear days	16	20	29	15	(1890) 208
Average number of fair days	....	....	....	....	165
Average number of cloudy days	14	9	1	10	52

From July, 1885, to July, 1886, there were 280 absolutely clear days, and 38 days of rain or showers.

¹ For the spring of 1888. ² Summer of 1888. ³ Autumn of 1888. ⁴ Winter of 1888.

The accompanying tables of climatic data of San Diego, Santa Barbara, Los Angeles, and Riverside exhibit, so far as such statistics can, some of the principal climatic features of this region. As there is no government weather station either at Santa Barbara or at Riverside, the figures for these places must be considered as only approximately correct. A general similarity will be noted in the climates of all these places. As one goes inland the relative humidity is seen to lessen. The number of fair and clear days is very large, the precipitation very small, the prevailing winds are from the west, and there is no great wind velocity. At Riverside, a distance of 50 miles or more from the coast, the maximum temperature, especially in summer, is seen to increase. A peculiarity of this climate, not indicated in climatic charts, is the great difference between the character of the atmosphere during the day and during the night. At night the humidity is greatly increased, an example of which has already been noted in the case of Redlands. This increase of moisture by night renders the air chilly

* "A Truthful Woman in Southern California," 1895.

and raw, and in many cases would prevent the free admission of night air into the sleeping-rooms. Even during the day this chilliness is experienced in passing from the sunshine into the shade, and when the wind blows.

Another peculiarity is the frequent night fog, present not only on the coast, but extending many miles up the valleys. These fogs, which are most prevalent during the spring and summer, appear about nightfall and disappear during the early forenoon. Occasionally they persist during a part or the whole of the day. The annual mean average number of foggy nights at Los Angeles, for thirteen years, was 57. In 1891 there were 22 fogs in San Diego, 12 in 1893, and 26 in 1894. At Santa Barbara there were 73 fogs in 1894.

The rainfall, which is small in any event, except on the highest summits, occurs in the winter, which is the rainy season. This rainy season, however, varies very greatly from year to year. Sometimes the rain is delayed for weeks, and then it may rain continuously for days. One cannot predict from the annual average precipitation what the rainfall will be for any single year. For instance, Los Angeles has a normal precipitation of 18 inches, but in 1881 it was 5.6 inches, and in 1884, 40.5 inches. The normal of San Diego is 10 inches, but it has had a minimum of 3.71 inches and a maximum of 25.97 inches. The heaviest rainfall occurs in the months of December, January, and February. Even January, however, may be a very dry month. In the desert regions there is almost no rain. Thus, for instance, at Indio the annual average for nine years was 2.32 inches. It is to be remembered, as Solly points out, that even in the rainy season the monthly rainfall is not usually more than the normal monthly rainfall for Eastern cities, and there are longer periods of fine weather. "The welcome rains," he continues, "bring a vivid green to the brown valleys and hills, and the beautiful procession of flowers," which continues from December to May, enraptures Eastern visitors."

Regarding the winds there is one point which the tables do not show, and which, as Widney says, most impresses the observer in his study of this meteorological factor, and that is, their regularity. One can be assured that at certain seasons of the year the wind will blow from a certain quarter, and rise at a certain time each day. Further, he knows that if the wind blows from a certain quarter, certain climatic conditions will follow: if it blows from one direction a moist atmosphere and rain will result; if from another, a dry atmosphere, cold in winter, hot in summer; if from still another, there results clear, cool weather with moderate moisture.

Much has been written about the great variety of climate to be found in Southern California. For instance, Dr. Edwards writes* thus: "Within a few hours from any given point one may obtain the climate to his liking." Such sweeping statements are manifestly misleading, for where in any inhabitable locality in Southern California can be found the cool, dry air furnished in the elevated plains of Arizona, New Mexico, or Colorado, at such resorts as Tucson, Santa Fé, and Colorado Springs?

In addition to the favorable climatic conditions of this marvellous section of country, there is the fascinating charm of beautiful and diversified scenery—sea coast and mountain—with varied and luxuriant vegetation.

A great variety of fruits of both tropical and temperate regions are produced here: oranges, lemons, grapes, figs, olives, guavas, pineapples, pears, peaches, and strawberries all the year round. Riverside has its famous Magnolia Avenue and orange groves; Sierra Madre its vineyards; Santa Monica its ostrich farm; and San Diego its beautiful Coronado Beach, which Charles Dudley Warner calls, in "Our Italy," "An unique corner of the earth." The temperature of the sea water is 60° F. or more throughout the year, so that one can enjoy sea bathing at any time of year. There are also abundant opportunities for hunting, fishing, camping, riding, and almost every kind of outdoor diversion. If we consider

* "Two Health Seekers in Southern California," 1897.

all this, and the fact of an almost continuous sunshine, we can understand how outdoor life becomes a delight hardly imaginable until realized.

Here, also, one cannot only take the open-air treatment, but, while doing so, can, if strength permits, occupy himself in making a new home, and in light and pleasing work in garden and vineyard. As Dr. Richards says: "Southern California is not only a good winter residence, but a health-giving and health-restoring home for residence all the year round."

Formerly—and to a large extent at the present time—Southern California was considered one of the most favorable resorts in this country for pulmonary tuberculosis, and probably more invalids suffering from this disease frequented this region than any other class. Moreover, no discrimination appears to have been made regarding the stage or condition of the pulmonary trouble suitable for this climate. In the writer's opinion, this will not be so much the case in the future, since experience is proving more and more conclusively every day that the sanatorium treatment of consumption is affording the best results, and that the situation of the sanatorium, climatically considered, does not make so much difference, provided pure air, a dry soil, freedom from high winds, and a reasonable amount of sunshine are assured. Almost every State can offer these simple climatic conditions, and hence can have its own sanatorium.

This plan, moreover, possesses the further advantage, so much emphasized by the German phthisis-therapeutists, that the consumptive is treated under a climate like that in which, if cured, he will continue to live.

There are no published statistics known to the writer of the results of treatment of consumption by the Southern California climate, so that no comparison is possible with the results of other resorts and of sanatorium treatment. That this climate offers excellent opportunities for the open-air treatment of phthisis no one will deny, but that there is any striking advantage in it over that of many other resorts there are no statistics at hand to prove.

In the writer's opinion, Southern California, in the future, will be visited not so exclusively by consumptives as heretofore, but by the large class of invalids requiring a mild, equable, sunny climate, with ample opportunity for outdoor life and diversion; such as the feeble from age or inherited weakness, convalescents from various acute diseases, those suffering from malaria, catarrhal affections, chronic bronchitis, renal and cardiac diseases, scrofulous children, and those individuals who are in the quiescent state of pulmonary tuberculosis without pyrexia. Finally, to this list must be added that increasingly large number of persons who desire to escape the inclemency of a Northern winter.

The conditions for which this climate is unfavorable or doubtful are phthisis with acute symptoms, certain diseases of the nervous system, laryngeal phthisis, eczema, asthma, and rheumatism.

There has been much exaggerated and immoderate writing on the climate of Southern California, not infrequently from selfish and commercial reasons, as also from superficial and inadequate knowledge. One physician writes of San Diego that it presents "all the factors requisite in a perfect climate." Another, writing of Pasadena, says that it is "the greatest all-the-year-round-health resort in the world," and so on.

Such wild statements, generally made without any accompanying meteorological data, seem quite unnecessary in regard to a climate which in fact and truth possesses so many points of excellence as does that of Southern California.

Edward O. Otis.

CALIFORNIA GEYSERS, THE.—Sonoma County, California. Hotel and cottages. This marvellous region is located in the northeastern part of Sonoma County, about 100 miles north of San Francisco, 16 miles from Cloverdale, and 26 miles from Calistoga. Formerly tourists rode on horseback for many miles to visit this realm of fumaroles and solfataras, which is situated about 1,700 feet above the sea level; but, thanks to the push and

ANALYSIS OF WATERS FROM SEVERAL SPRINGS AT THE CALIFORNIA GEYSERS.

Contents per United States Gallon. Expressed in Grains.	Lemnade Spring, Temp. 16° F.	Witches' Caldron, Temp. 21½° F.	Acid Spring, Temp. 140° F.	Alum Spring, Temp. 130° F.	Iron Geyser Creek, below Alum Spring, Temp. 90° F.	Spring on side of hill near river, Temp. 138° F.	Iron Spring north of hotel, Temp. 70° F.	Indian Spring (second), Temp. 101° F.	Mud Indian Spring, Temp. 101° F.	Spring little above Indian Spring, Temp. 105° F.	Hot sulphur water above bathhouse, Temp. 140° F.	Devil's Tea-kettle, Temp. 212° F.
Potassium bisulphate.....	7.53	0.42	1.14	.....	.....	.....	.....	0.21	17.12	.....	.....	98.16
Sodium sulphate.....	53.91	39.82	9.62	5.14	.....	.....	.....	.....	.....	.....	.....	.....
Sodium carbonate.....	.....	.....	.....	.....	3.15	3.23	.....	3.29	.....	.....	.....	2.96
Calcium sulphate.....	.....	6.98	4.44	3.51	5.34	1.10	3.32	.....	6.42	8.72	.65	4.36
Calcium borate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calcium silicate.....	.....	.....	.....	.....	.....	10.18	.....	.....	.....	.....	.....	.....
Magnesium sulphate.....	40.73	9.62	91.29	34.49	16.66	.....	.....	2.52	.....	.....	.....	39.09
Magnesium carbonate.....	.....	.....	.....	.....	.....	.....	.....	15.47	.....	.....	.....	.....
Magnesium silicate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Magnesium borate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron sulphate.....	12.25	.....	16.63	7.34	.08	.11	.....	.....	.....	.....	17.31	.....
Iron carbonate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aluminum sulphate.....	32.02	2.04	20.62	63.82	.....	.20	.....	.12	.07	.....	.....	.....
Alumina.....	.....	.27	.....	.....	.....	.89	.....	.17	.18	22.78	118.78	2.39
Free sulphuric acid.....	31.82	.....	154.37	6.45	.....	.....	.....	.....	.....	32.30	5.75	.....
Hydrochloric acid.....	1.19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silicic acid.....	16.50	4.37	21.11	17.26	3.90	17.25	.99	5.42	12.25	18.08	8.63	12.83
Sulphureted hydrogen.....	Sat.	Sat.	Sat.	Sat.	Sat.	.....	.....	Sat.	Sat.	Sat.	Sat.	Traces.
Boric acid.....	.....	.....	.....	Traces.	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	195.95	63.52	319.22	138.31	29.62	47.53	7.12	33.39	150.20	221.26	38.12	296.24

enterprise of our Western civilization, it may now be reached in a comfortable six-horse stage from the termini of the Cloverdale and Calistoga railroads over excellent mountain roads. It is a good plan to go by way of Cloverdale and come back by way of Calistoga, as all the grandeur and beauty of the surrounding country may thus be seen. The following entertaining account of a visit to the geysers is taken from Dr. Anderson's work:

"Leaving Cloverdale after luncheon, comfortably seated in our stage, with an experienced and accommodatingly communicative driver, who takes pleasure in pointing out the many objects of interest, we soon cross the Russian River and commence the ascent. The hills and mountains are robed in evergreen verdure of indigenous flora, gigantic oaks, and towering pines. Here and there the huge boulders and rocky cliffs stand out in bold relief, and as we wind up and around the mountain sides, with the Pluton River many hundred feet below, basking and smiling in the afternoon sun, and rippling along its moss-covered banks and bright-pebbled bottom, with here and there a miniature cascade and waterfall, we feel that words cannot describe the grandeur of the scenery.

"As we gain in altitude the view becomes more and more extended, until our eyes leap with vivid interest from peak to peak and valley to valley for miles around, feasting upon the beauties of nature. Some two or three miles down the cañon, before we reach the geysers, our attention is called to the large white or yellowish-white banks across the cañon. They are known as sulphur banks, and consist of deposits of sulphur and cinnabar, with incrustations of salts of sodium, potassium, magnesium, sulphur, etc. . . . Near these sulphur banks are found the famous Indian Springs, at which Edwin Forrest camped for one season and was completely restored to health."

The waters are diuretic, laxative, and antacid, and are valuable in dyspepsia, torpidity of the liver and bowels, and in renal and cystic diseases. (See table for analysis.)

Near by are the real "Indian Mud Springs," which are highly extolled in the treatment of chronic rheumatism, gout, arthritis, and synovitis, and scrofulous and cutaneous contaminations. (See table.)

" . . . After a few more horseshoe curves have been passed and several more magnificent landscapes have been mentally photographed on the brain, we reach the geyser resort. The many cosy cottages, the hotels and grounds, are situated in a leafy dell on the side of the mountain opposite the Geyser Cañon. The huge oaks

and pines afford pleasant shade to the commodious verandas as we sit and enjoy the pure, dry, invigorating, and exhilarating mountain air and picturesque scenery which surround us on every side."

The geysers are wonderful and picturesque exhibitions of the nearly extinct volcanic forces slumbering beneath the romantic "Devil's Cañon." The region covers an area of about four hundred acres, most of the activity, however, being confined to the "Devil's" or "Geyser" cañon, comprising about sixty acres. Collectively, the springs, hot and cold, flow about one hundred thousand gallons daily.

From the foregoing analyses (see above) made by Prof. Thomas Price it will be observed that at the geysers can be found probably as great a variety of mineral waters as at any other place on the continent, or perhaps in the world. When the improvements now contemplated are carried out, the "geysers" will be one of the world's greatest sanatoriums.

There are other geysers in various parts of California, but they have not so far reached any great importance as health resorts. Near Litton's Station, in Sonoma County, some few miles from Geyserville, is a pleasant resort known as the "Geyser Spa" or "Soda Springs." The surrounding country is picturesque, and the climate mild and salubrious. A large number of people go to Geyser Spa every year. The waters are highly esteemed for their antacid, diuretic, and aperient properties. The following analysis was made by Dr. Winslow Anderson in 1888:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium chloride.....	8.93
Sodium carbonate.....	4.97
Sodium bicarbonate.....	21.16
Sodium sulphate.....	2.99
Potassium carbonate.....	Trace.
Magnesium bicarbonate.....	9.03
Magnesium sulphate.....	1.14
Calcium carbonate.....	4.90
Ferrous carbonate.....	2.06
Silica.....	3.75
Organic matter.....	Trace.
Total solids.....	58.57
Carbonic acid gas, saturated.	.....

A previous analysis made by Bauer and Price yielded results almost identical with Anderson's.

James K. Crook.

CALIFORNIA POPPY. See *Eschscholtzia*.

CALIFORNIA SELTZER SPRINGS. — Mendocino County, California. These springs are pleasantly located in the Coast Range, 12 miles from Cloverdale. The surroundings are picturesque, and the climate salubrious. There are comfortable accommodations for visitors.

On analysis the Seltzer Spring was found by Anderson to be composed as follows:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium chloride.....	17.15
Sodium bicarbonate.....	53.00
Sodium carbonate.....	Trace.
Magnesium carbonate.....	44.90
Ferrous carbonate.....	Trace.
Calcium carbonate.....	72.40
Organic matter.....	Trace.
Silica.....	Trace.
Total solids.....	187.15
Free carbonic acid gas.....	18.00 cu. in.
Temperature of water.....	57° F.

The waters are sparkling and quite palatable. They have a diuretic and aperient action, and are beneficial in dyspepsia with acid eructations, constipation, acid states of the urine, cystitis, etc. They belong to the alkaline-carbonated class.

James K. Crook.

CALISAYA. See *Cinchona*.

CALISTOGA SPRINGS.—Napa County, California. These valuable springs are situated 9 miles south of Mount St. Helena. There are two sets of springs, one in the city of Calistoga and the other just outside the town. They are very similar in chemical composition. There were at one time an excellent hotel and many fine cottages at the springs, but since the fire in 1863, which destroyed the former and several of the latter, the resort has changed hands many times, and has been allowed to run down. It is said that the present proprietor contemplates fully restoring the once handsome resort.

The mineral springs number some twenty or more, and range in temperature from 75° to 186° F. They are used for drinking and bathing purposes, and have acquired considerable reputation. The following analysis of the water of one of the springs at Magnolia Hotel was made by Dr. Anderson:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium chloride.....	20.76
Sodium carbonate.....	5.10
Sodium sulphate.....	1.75
Sodium iodide.....	.16
Potassium iodide.....	Trace.
Magnesium sulphate.....	2.90
Calcium chloride.....	5.57
Calcium sulphate.....	.63
Alumina.....	.47
Silica.....	4.55
Organic matter.....	Trace.
Total solids.....	41.89
Free sulphureted hydrogen gas.....	4.75 cu. in.
Temperature of water.....	95° F.

The following analysis shows the mineral ingredients of the Hot Swimming Pool on the grounds of the late Senator Stanford:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium chloride.....	23.07
Sodium carbonate.....	2.19
Sodium sulphate.....	6.92
Sodium iodide.....	.73
Potassium iodide.....	.21
Potassium carbonate.....	.76
Magnesium sulphate.....	1.16
Magnesium chloride.....	.40
Calcium chloride.....	.96
Calcium sulphate.....	1.25
Ferrous protoxide.....	.45
Manganese.....	Trace.
Alumina.....	.27
Silica.....	3.61
Organic matter.....	Traces.
Total solids.....	41.98
Sulphureted hydrogen gas.....	6.30 cu. in.
Temperature of water.....	121.6° F.

The springs have gained considerable celebrity in obstinate cases of syphilitic contamination, rheumatism, etc.

James K. Crook.

CALLOSITAS.—(*Callus, Hardened Skin*).—SYNONYMS.—Callosity; Tylosis; Tylosis; Callus; Keratoma; (*Fr.*) Durillon.

DEFINITION.—A circumscribed thickening and welding of the horny layer produced by intermittent friction or pressure.

Callosities are congenital or acquired. The congenital callosities, however, are now usually discussed separately under the heading of Keratoderma or Tylosis Palmæ et Plantæ. The latter are diffuse or circumscribed keratomata, usually symmetrically distributed over the palms or soles, or over both, springing from an apparently normal skin or surrounded by a red areola. Arsenic from prolonged use often causes a similar condition.

Peculiar symmetrical horny hypertrophies are sometimes associated with certain neuroses or unknown constitutional conditions; these are often preceded by mild inflammatory symptoms. The so-called syphilitic keratomata should probably be placed with the latter class. The term callosity is more properly applied to the acquired form, which is essentially a result of external irritation by friction, by *intermittent* pressure, or rarely by chemicals. *Continuous* pressure or friction causes active inflammatory reaction, either vesiculation, or pustulation, or sloughing. The result of this milder trauma is best seen upon the hands of mechanics, oarsmen, wood-choppers, and those whose occupations necessitate this irritation, as yellowish or yellowish-brown, circumscribed, round, or irregularly shaped flat or raised patches of thickened skin that are hard and resistant to the touch. They occur usually over the bony prominences or bursa, and spring from apparently normal skin.

Callosities may occur upon any portion of the body subjected to the exciting factor. The feet, next to the hands, are most frequently affected, due to walking bare-foot or to badly fitting shoes.

This thickening of the horny cells is an effort of nature to protect the more delicate underlying structures. Histologically there is probably no actual increase in the production of epithelial cells but a "welding" (*Unna*) together of the pre-existing horny cells by the friction, into a homogeneous horny mass; thus the cells normally thrown off are retained, producing an apparent increase and an actual thickening. Except in those cases in which the condition results from a more violent trauma, no marked inflammatory symptoms, aside from a slight dilatation of the vessels, are seen.

The acquired callosities can be differentiated from the keratomata by the history and symmetry of the latter, though it must be remembered that in those who are particularly susceptible, very little friction may produce a marked callus.

The syphilitic conditions of the palms and soles usually begin in the centre and not over the bony prominences, spread peripherally, and at some points the horny layer is often split up or undermined.

The treatment of callosities is first to remove the cause, whatever that may be. To soften and remove the thickened horny layer salicylic acid is the remedy *par excellence*. It can be used in form of a plaster (10 to 20 per cent.) or in flexible collodion (5 ss. — ʒ i.). Either should be applied for several days, when the affected part is immersed in very hot water for several minutes and the dead, macerated cells removed by gently scraping with a curette or dull knife blade. This procedure is repeated as often as necessary until the skin is reduced to its normal thickness, when a mild tar application will effectually complete the cure.

William A. Hardaway.

CALORIMETRY (*L. calor, heat + Gr. μέτρον, measure*) is the name applied to the process of measuring the heat given off from any body or substance; and a calorimeter is an instrument for making such measurement.

Animal calorimetry is determining the heat produced