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OWENS LAKE.—Inyo County, California. This second dead sea in California is located at the southern end of Owens Valley in Inyo County. It is eighteen miles long and ten miles wide. Its surface embraces one hundred square miles. The waters are remarkably rich in saline and alkaline ingredients. The following analysis was made by Professor Phillips, of London, in 1883: One United States gallon contains: Sodium chloride, gr. 2,450.81; sodium carbonate, gr. 797.01; sodium sulphate, gr. 2,427.69; potassium sulphate, gr. 29.77; potassium silicate, gr. 116.23; organic matter, gr. 14.11. Total, 5,835.62 grains.

We are informed by Dr. I. J. Woodin, of Independence, Cal., that numerous fresh-water springs are found along the shores of the lake, some of which are cold and others boiling hot. At the southwest end of the lake there is a valuable white sulphur spring which has not so far been improved. At a short distance from this spring is a mountain formed in great part of sulphur, of which Dr. Woodin sends us a handsome specimen, composed probably almost entirely of the pure element. The aspect of the country is mountainous, the elevation of the lake being three thousand feet above the Pacific. The region offers many attractions as a health resort, and it will no doubt soon be developed.

James K. Crook.

OWOSSO SPRING.—Shiawassee County, Michigan.
Post-Office.—Owosso.

Access.—Owosso is a station on the Detroit and Milwaukee Railroad, seventy-nine miles northwest from Detroit.

The following analysis was made by a chemist whose name has been lost: One United States gallon contains: Calcium bicarbonate, gr. 25.67; magnesium bicarbonate, gr. 19.09; iron bicarbonate, gr. 15.92; sodium chloride and potassium chloride, gr. 2.10; alumina and silica, gr. 0.62. Total, 63.40 grains.

This water, as shown by the analysis, is very heavily impregnated with iron. As the name of the analyst is not known, the analysis is not reliable.

James K. Crook.

OXALIC ACID.—Oxalic acid, having no medicinal virtues, is not official in the United States Pharmacopœia. Its importance depends entirely upon its toxicological relations. *E. C.*

OXALIC ACID, POISONING BY.—The salt obtained by evaporation of the juice of *Oxalis acetosella*, and now known as *binoxalate of potash, salt of sorrel*, or *salt of lemon*, was known at least as early as the middle of the seventeenth century, as Duclos makes mention of it in the "Memoirs of the Academy for 1668." A century later (in 1773) oxalic acid was obtained from this salt by Savary. Subsequently Scheele showed the oxalic acid obtained from sorrel to be identical with the *acid of sugar* obtained by Bergman, in 1776, by the action of nitric acid upon sugar.

The first case of poisoning by oxalic acid, of which we find record, occurred in England in 1814 (*Lond. Med. Repository*, i., 382). In this case the acid was taken in mistake for Epsom salt, a mistake which has subsequently become the most frequent cause of oxalic-acid poisoning.

Attempts at homicide by oxalic acid are of rare occurrence, owing to the difficulty of disguising the taste. Christison mentions one as having occurred in England in 1827, and others have been subsequently reported from the same country, the acid having been mixed with gin, coffee, sugar, tea, or buttermilk.

Notwithstanding the very extensive use of oxalic acid and the oxalates in the arts of dyeing, calico-printing, etc., they are as yet innocent of industrial poisoning.

As many articles of vegetable diet—beet, spinach, rhubarb, sorrel, etc.—contain oxalates, their use in excessive quantity has been supposed by some to be attended with some danger of poisoning. As, however, the amount of hydropotassic oxalate present is only 0.75 per cent. (= 3 grains per ounce) in fresh sorrel (Mitscherlich), and much less in the other vegetables, their use in any reasonable quantity may be regarded as unattended with danger.

A more probable cause of poisoning is to be found in the adulteration of citric acid with oxalic acid, and the use of the adulterated product in the manufacture of medicinal effervescent drinks or of cheap "lemonade."

Poisoning by oxalic acid and the oxalates is of very rare occurrence in France, while in England, Germany, and the United States several cases occur annually. The reason for the greater frequency of oxalic poisoning in the last-named countries is to be found in the very extensive use in them of oxalic acid and salt of lemon for household purposes, to clean metallic vessels and to remove ink and fruit stains from fabrics, as well as in the popular habit of "taking a dose of salts" at certain times of the year. Oxalic acid and magnesium sulfate resemble each other very closely in appearance, and hence the former is frequently taken by mistake for the latter.

Symptoms.—Oxalic acid is both a corrosive and a true poison, one or the other action predominating according to the size of the dose and the degree of concentration of the solution. If it be taken in the solid form or in concentrated solution, as is usually the case, the symptoms of corrosion are the first to appear and may be the only ones observed. But if the poison be taken in dilute solution the symptoms of corrosion may be entirely absent.

In a typical case of oxalic-acid poisoning, the dose being in the neighborhood of 15 gm. (℥ ss.), taken in concentrated solution, the patient experiences the first effects of the poison either immediately, during the act of swallowing, or within a few moments. In exceptional cases the first appearance of symptoms has been delayed ten or twenty minutes, although larger doses were taken.

The strongly acid taste is observed and is followed by a sense of heat in the mouth, throat, and stomach. This rapidly increases in intensity until it becomes an intense, burning pain. In some cases the pain is accompanied by a sense of constriction of the throat and of impending suffocation. The act of swallowing is performed with difficulty, and later the voice becomes fainter and husky, and sometimes completely extinguished. Within ten or fifteen minutes violent and persistent vomiting begins in almost every case. The vomited matters are most frequently of a "coffee-ground" character, and separate on standing into two layers: the upper a clear, yellowish, and strongly acid liquid; the lower a thick, red-brown sediment of altered blood. Occasionally true hæmatemesis is observed. In cases in which the poison has been taken in small quantity and in dilute solution, the vomited matters may be free from blood. In some cases persistent vomiting and pain, and later persistent purging of a bloody material are the only symptoms, and they may continue, with or without intermission, for five, six, or seven days. Death finally occurs from exhaustion in from five to ten days.

When very large doses have been taken (30–60 gm. = ℥ i.–ij.), the patient, after vomiting, may go into a state of collapse and die within five minutes.

The lips, mouth, and fauces are, shortly after the poison has been taken in solution, reddened, swollen, and painful. Later they become paler, and finally, sometimes within an hour, of a dirty, ashen-white hue, either throughout or in patches. The tonsils and uvula are much swollen. There is severe thirst.

Soon the symptoms due to the true poisonous action of the acid are added to those caused by its immediate corrosive action upon the alimentary canal. The countenance is pale, anxious, and haggard, the upper lip trembling, the lower jaw relaxed. The surface is bathed in a cold, clammy perspiration. The fingers are semiflexed and rigid, and the nails blue. The eyes are glazed and the pupils contracted. There is sometimes persistent hiccough. The pulse is small and thready, sometimes intermittent or imperceptible. There are general numbness and a sense of tingling or cramps in the upper and lower extremities. Abdominal pain is no longer complained of, although the abdomen may remain tender to pressure; but the patient suffers violent lumbar pains, shooting down into the lower extremities. The respiration is quick and labored. The skin in some cases is marked with an exanthem resembling that of roseola. The urine is frequently retained, and that removed by the catheter contains albumin in large quantity, epithelium, granular or hyaline casts, and crystals of calcium oxalate. Sometimes, in cases of recovery, the urine remains purulent for several weeks.

Sometimes there are violent spasms of a tetanic character; more rarely delirium. In cases of recovery, spasmodic twitchings may continue for a month.

In exceptional cases (usually, though not always, cases in which a small dose has been taken) the patient rapidly becomes stupid, somnolent, and unconscious. This condition has been known to pass into one of coma, terminating in death (Tidy: *Lancet*, 1872, ii., 41).

Like the mineral acids and alkalies, oxalic acid may cause death secondarily, after partial recovery, by starvation, due to extensive destruction of gastric and intestinal mucous membrane. This was observed in an early case by Fraser (*Edinb. Med. Journ.*, xiv., 1818, p. 607), in which death by inanition followed in fourteen days from the effects of a dose of ℥ ss. (15.5 gm.) of the acid.

The immediate cause of death in oxalic-acid poisoning may be, therefore, either collapse, or paralysis of the heart, or inanition.

Duration.—The duration of a case of oxalic poisoning is usually short if it terminate in death; but if the patient recover the illness is generally protracted through several days. Of 22 cases ending in death, 9 died within half an hour, 3 in from one to twelve hours, 3 in from twelve to twenty-four hours, and 7 in from two to fourteen days. Of 14 cases terminating in recovery, in which the time of discharge is mentioned, 3 recovered within one day, 4 in from one to five days, 4 in from five to ten days, and 3 in from ten days to three months. The shortest recorded duration of a fatal case is three minutes, the longest fourteen days.

Lethal Dose.—The following tabulation of 51 cases will illustrate the difficulty of fixing this quantity definitely:

Quantity of Oxalic Acid Taken.	Recovery. Cases.	Death. Cases.
Undetermined	5	11
4.00 gm. = (℥ i.)	1	1
7.75 gm. = (℥ ii.)	3	1
11.66 gm. = (℥ iij.)	1	1
15.50 gm. = (℥ iv.)	6	2
23.33 gm. = (℥ vi.)	0	2
27.22 gm. = (℥ vij.)	0	1
31.00 gm. = (℥ i.)	7	7
38.85 gm. = (℥ ij ʒ ij)	1	0
46.65 gm. = (℥ iss.)	1	0
	25	26

From this it will be seen that one-half of those who have taken over 4 gm. (℥ i.) have died; and that the deaths and recoveries are nearly evenly balanced with all doses below 30 gm. (℥ i.).

Treatment.—The first indication, and one which admits of little delay, is the neutralization of the acid in such a manner as to bring about the formation of an insoluble oxalate, and thus prevent further corrosion and absorption. For this purpose the alkaline carbonates are useless, because, although they neutralize the acid and thus prevent further corrosion, the salts formed are soluble and as poisonous as the acid itself. The old direction to "scrape the wall" and administer the scrapings, was well enough so long as whitewashed walls were in vogue; but to administer the scrapings of a modern plastered wall is of no benefit, as the calcium sulfate so given is incapable of neutralizing oxalic acid, or of converting it into an insoluble salt. The best antidote is syrup of lime, or a similar preparation of magnesia. Precipitated chalk is more frequently available and may be given, as the corrosion is not sufficiently extensive to render the generation of gas dangerous. For the same reason the introduction of the stomach tube and lavage are not attended with the same degree of risk of perforation as exists in corrosion by the mineral acids. Emetics are rarely called for, as persistent vomiting is one of the most characteristic effects of the poison. In the rare cases, however, in which vomiting does not occur as a result of the poisoning, emetics may be given, but only after early neutralization of the acid. In no case should warm water be given with a view to producing emesis; and, until the acid has been neutralized, the amount of liquid of any kind taken by the patient should be as small as possible. Opium may be given to allay pain, and stimulants in the stage of collapse.

Post-mortem Appearances.—The lips, tongue, mouth, and œsophagus are of an opaque, yellowish-white color, sometimes marked with patches of a reddish hue. The stomach is contracted, and in many cases contains a thick, gelatinous, reddish-brown and acid liquid, somewhat similar to the "coffee-ground" material vomited during life. The peritoneal surface of the organ, as well as the mesentery and the greater portion of the peritoneal surface of the intestines, is marked by blood-vessels filled with dark, fluid blood. The mucous surface of the stomach is strongly corrugated, and in most cases presents a uniform, bright red color in the elevations and depressions, except in so far as it may have been changed to brown, or even black, by post-mortem action. In some cases the mucous surface is, either in part or in whole, pale, opaque, or translucent, and marked with a coarse, ramiform vascularity of the submucous tissue. The mucous membrane, where it remains, is soft, pulpy, and easily detached. Although perforation has been observed, it is of rare occurrence. Crystals of oxalic acid, or of hydropotassic oxalate are not frequently found in the stomach, although Lesser figures a case ("Atlas," t. viii., Fig. 1), in which the patient died within ten minutes; and the almost uniformly pale and much contracted stomach was found plentifully lined with crystals of hydropotassic oxalate. Microscopic crystals of calcium oxalate are, however, found in many cases in the stomach and intestines, particularly in cases in which death has followed, not within a few moments, but in the course of from three to six hours. A microscopic examination of a section of kidney reveals the presence of amorphous and crystalline oxalate in the tubules, even in rapidly fatal cases (Lesser, *loc. cit.*, Pl. vii., Fig. 3).

Analysis.—The parts to be examined are the stomach and intestines and their contents, the liver, kidneys, and urine, also vomited matters.

The contents of the stomach and the vomited matters are strongly acid in reaction, unless antidotes have been administered, in which case they may be neutral, or even alkaline.

In a systematic analysis the acid, or its salts, are to be found in the residue of the portion examined for prussic acid and other volatile poisons, or in the aqueous liquid which has been treated with solvents for the separation of glucosids and alkaloids. If oxalic acid or oxalates alone are to be sought for, the materials are to be treated directly as below.

It must be remembered that the acid sought may be present either in the free state, in combination as a soluble oxalate, or, in consequence of the administration of antidotes, as the insoluble calcium oxalate, or the very sparingly soluble magnesium oxalate.

The substance under examination, if acid, is to be first extracted with water, the solution filtered, the filtrate evaporated over the water-bath, the residue extracted

with alcohol, the filtered alcoholic solution evaporated, and the residue redissolved in a small quantity of water. The solution so obtained (No. 1) will contain any free oxalic acid which may have been present. The material left undissolved by alcohol in the preparation of solution No. 1 is next to be extracted with alcohol, acidulated with hydrochloric acid, the solution filtered and evaporated, and the residue redissolved in a small quantity of water. This solution (No. 2) will contain any oxalic acid which may have been present in the form of a *soluble* oxalate. Lastly, the substance left undissolved by water in the preparation of solution No. 1 is to be treated with a sufficient amount of solution of potassium carbonate (not hydroxid) to render it distinctly alkaline, and boiled for two hours. The solution is filtered and evaporated, the residue extracted with alcohol acidulated with hydrochloric acid, the solution filtered and evaporated, and the residue redissolved in water. This solution (No. 3) will contain oxalic acid, if it were present in the form of an *insoluble* oxalate.

The tests for oxalic acid are then to be applied to the three solutions.

The urine, contents of stomach, and vomited matters should also be examined microscopically for crystals of calcium oxalate.

The detection of a *mere trace* of oxalic acid can only be of value as corroborative evidence in a case of suspected poisoning by that substance, owing to the normal presence of oxalates in articles of food and in the human economy.

Tests.—1. A solution of a calcium salt produces, in neutral or alkaline solutions, a white precipitate which redissolves in hydrochloric acid.

2. Argentic nitrate solution produces a white precipitate which dissolves in ammonium hydroxid solution and also in nitric acid. If the liquid containing the precipitate be boiled, the latter does not darken. If the precipitate be collected, dried, and heated upon a strip of platinum foil, it explodes.

3. Lead acetate solution, in solutions of oxalates which are not too dilute, produces a white precipitate which is soluble in nitric acid, but insoluble in acetic acid.

Rudolph A. Witthaus.

OXAPHOR. See *Oxycamphor*.

OXFORD MINERAL SPRING.—New Haven County, Connecticut. Post-Office.—Oxford.

Good hotel within one-half mile. This spring has been well known to residents of the neighborhood for many years, but it has only recently been brought to the attention of the public. Its medicinal properties are supposed to have been known to the Indians, as arrow heads and other evidences of aboriginal life are frequently found near it. The spring yields about one and a half gallons of pure, sparkling water per minute. An analysis by Prof. George F. Barker, of the Sheffield Scientific School, in 1873, resulted as follows: One United States gallon contains: Sodium chloride, gr. 0.35; sodium sulphate, gr. 0.49; potassium sulphate, a trace; lithium sulphate, a trace; magnesium sulphate, gr. 0.62; calcium sulphate, gr. 1.61; iron carbonate, gr. 0.91; silica and insoluble matter, gr. 1.33; organic matter, gr. 1.22; loss in analysis, gr. 0.10. Total, 6.18 grains.

The path of the stream can be easily traced by the abundant bright yellow deposit of hydrate of iron. In the short time since this water was brought before the public it has risen high in popular favor as an invigorant and general tonic. It is useful in conditions of debility and anæmia, and in stomach, liver, and renal disorders, etc. The water is used commercially, and is said to be acquiring an extensive sale. *James K. Crook.*

OXYCAMPHOR—($C_8H_{14}CO.CHOH$), a product of the oxidation of camphor—is prepared by reducing camphor orthoquinone with zinc powder and acetic, sulphuric, or hydrochloric acid. It is a white crystalline powder of bitterish, peppery taste, and without odor. It fuses at 204° C. (400° F.), and is soluble in fifty parts of cold water and freely in hot water, alcohol, ether, chloroform, and the oils. Its two-per-cent. solution coagulates albumin, reduces hæmoglobin, and is strongly bactericidal.

To this drug is attributed the special power to overcome dyspnœa by diminishing the excitability of the respiratory centre in the medulla. Physiological experiments with 0.5-per-cent. solutions and clinical usage by Ruttner, Ehrlich, Marlier, and others have demonstrated that oxycamphor tends to lessen the frequency of the respirations, to increase their depth, to slow the pulse, and slightly to increase the blood pressure. It improved the breathing in cases of tuberculosis, bronchitis, emphysema, Bright's disease, anæmia, and heart disease.

Exposed to light and moisture the powder becomes a soft, slimy, sticky, yellowish mass. It keeps fairly well, however, in tablet triturates made with sugar of milk, and is stable in fifty-per-cent. alcoholic solution. This solution, known as *oxaphor*, is given with much water in dose of 0.5–1.0 c.c. (♏viij.–xv.). *W. A. Bastedo.*

OXYGEN.—Oxygen is not recognized in the United States Pharmacopœia as a drug, but yet is used in medicine to a certain extent, generally by inhalation, either of the pure gas, or of the same mingled with from one to four volumes of atmospheric air or of nitrogen monoxide (nitrous oxide gas). Oxygen is a colorless, odorless, and tasteless gas, and is, when pure, distinctly irritant to sensitive parts. Its main medical interest centres upon the phenomena which follow the inhalation of the gas in greater concentration than is the case in the atmosphere. Continuously inhaled, pure, the irritant effects of oxygen are considerable; mice immersed in an atmosphere of pure oxygen die after three days with congested and inflamed lungs. With inhalations too short to excite local mischief, the question naturally arises whether an atmosphere abnormally rich in oxygen does or does not tend to determine abnormal absorption of the gas into the blood, and so a quickening of the oxidations concerned in vital processes. Opposite opinions have been held on this question. The one view (Regnault and others) is that with healthy lungs the blood normally takes from the ordinary atmosphere all the oxygen that it is physiologically capable of absorbing, so that the presentment to it of an air containing an increased proportion of the gas can have no effect on the absorption rate. But a considerable number of experiments and observations of various kinds seem to oppose this view, and lead to the belief that crowding the lungs with oxygen does also crowd the blood with the gas. Thus, during oxygen inhalations granulation tissue has been observed to grow quickly ruddier in hue (Demarquay), expired carbon dioxide to double in amount (Allen and Pepys, Limousin), and excreted uric acid to lessen in quantity, presumably by undergoing oxidation within the system (Kollman). Whichever answer to the question be the true one, no marked symptom pointing to any serious derangement of physiological processes occurs when a moderate inhalation is practised by one in health. The gas, even when pure, is pleasantly respirable, and from fifteen to thirty litres (from four to eight gallons, about) can be inhaled with little other obvious effect than a feeling of general warmth and nervous exhilaration, with occasionally a little giddiness and quickening of the pulse rate. But while the effects in health are comparatively negative, it is far otherwise when an oxygen inhalation is undertaken by one suffering for want of a sufficiency of oxygen because of some impediment to the full exercise of the respiratory function, such as may be caused by asthma, emphysema, cardiac disease, croup, diphtheria, etc. In such case the distress, because of the insufficiency of the air supply, tends to be compensated by the higher oxygenation of the same, and the dyspnœa may be greatly abated, or even, for the time, wholly abrogated. And the relief may persist, of course in keeping with the character of the case, for a longer or shorter time after discontinuance of the inhalation. Similar relief by respiration of oxygen is afforded in cases of asphyxia from irrespirable or noxious gases, such as carbon monoxide or the poisoned air of sewers.

The therapeutic applications of oxygen are, first in importance, the administration of the gas by inhalation for the relief of dyspnœa or asphyxia in the circumstances above described. Inhalations have also been practised with the view of quickening the processes of physiological chemistry and so determining better nutrition in chronic cachectic states, such as anæmia, chlorosis, tuberculosis, etc. The results of this latter therapeusis, however, have not been very striking. Under any circumstances the existence of ulceration or active inflammation within the air passages had better be accepted as contraindicating oxygen inhalation, unless the gas be well diluted. In appropriate cases, from four to sixteen litres (one to four gallons, about) may be inhaled at a sitting, two or three times a day, pure or diluted with air, from one to four volumes, according to the urgency of the case. The gas must be known to be pure, in the chemical sense of the word, and is best administered by means of the bags devised for the giving of nitrous oxide gas. But whether the gas be drawn from a bag or from a gasometer, the inhalation should be by means of a mouthpiece so fitted with valves that the products of expiration shall not pass into the apparatus to mingle with the gases to be respired. In order to obtain dilution with air the simplest expedient is to leave the nostrils open to inhale the atmosphere, while the mouth inhales oxygen.

Oxygen has been administered also by passing the gas into the stomach or the rectum, and with reported prompt relief of dyspnœa, the same as when given by inhalation. Four rectal injections of five litres each are said to have been absorbed in an hour. Oxygen has also been used locally for the vivifying of tissues disposed to ulceration or gangrene, with reported benefit. The practice is certainly not a common one in the United States. The gas is applied in jet upon the affected parts.

Oxygen is supplied for medical use in iron cylinders, generally condensed so that a cylinder holding from one hundred to two hundred gallons is of a size easily handled and stored. From such reservoirs a bag or gasometer is charged for the individual inhalations. Where these cylinders are not procurable, oxygen may be obtained by the usual procedure of heating potassium chlorate with admixture of a little manganese dioxide—this addition in some way determining the decomposition of the chlorate at a lower temperature than would otherwise be required. The manganese compound must be free from adulteration with carbon (such as occurs in some commercial samples by the accidental or intentional addition of pounded coal), else a dangerous explosion may result. It is best, therefore, to test an untried sample by heating a little of it with a little potassium chlorate in a test tube, where the small scale of a possible explosion will do no serious mischief. For the making, the mixed substances are heated in a closed retort or flask, from which a tube leads through an intervening wash bottle, containing caustic soda solution, to a gasometer or jar filled with water and inverted in a pneumatic trough, or to the bag from which the inhalations are made. The first portions of gas that come over should be allowed to escape before connection is made with the wash bottle. And this wash bottle is an all-important feature of the apparatus, the passage of the oxygen through soda being necessary to free the gas from contamination with carbon dioxide and chlorine. The connecting tube of the apparatus should be of good size, since the gas, when once it begins to disengage, comes over in great volume. For the same reason the heat should carefully be watched and regulated during the operation, to avoid too furious action. For each litre (about one quart) of oxygen required, 3.46 gm. (about gr. liiiss.) of potassium chlorate will be needed. The salt must be well powdered, and mixed with one-eighth of its weight, or thereabouts, of powdered and pure black oxide of manganese. *Edward Curtis.*

OXYQUINASEPTOL.—(Diaphtherin—$C_6H_4[HOC_9H_6NHO]_2SO_2$)—a registered compound introduced as a powerful antiseptic for surgical purposes, but which has not been much employed. It was reported upon by Prof. R. Emmerich, of Munich, at the Eleventh Congress for Internal Medicine, held at Leipsic in 1892.

It forms in amber-yellow transparent hexagonal crystals, which, when powdered, are soluble in one part of water, also soluble in dilute alcohol, very sparingly soluble in absolute alcohol. It melts at 185° F. without decomposition, but is not altered chemically at 212° F.

It is recommended as an antiseptic dressing in surgical practice, and for the treatment of ulcers, wounds, etc. A solution of one-half to one per cent. is said to be sufficiently strong for a lotion or to saturate dressings. Locally it has been employed in solutions as strong as fifty per cent. without any injurious effect.

The sole drawbacks are said to be a tendency to act on instruments, causing a black deposit, and a tendency to discolor the skin and clothing. *Beaumont Small.*

OXYURIS VERMICULARIS. See *Nematoda*.

OZÆNA. See *Nasal Cavities, Diseases of: Chronic Inflammation*.

PACHYAKRIA. See *Acromegaly*.

PACIFIC CONGRESS SPRINGS.—Santa Clara County, California.

Post-Office.—Saratoga. Hotel and cottages.

Access.—Stages connect at Los Gatos with Southern Pacific trains leaving San Francisco morning and evening. Time, three hours and fifteen minutes.

These springs obtain their name from their resemblance to the well-known Congress Spring at Saratoga, N. Y. The Santa Clara Valley is celebrated for its excellent climate and dry, pure, and invigorating air. A large and commodious hotel and several cottages have been established at an elevation of 735 feet above the sea level. The springs are located about one hundred feet farther up the mountainside. The drives about these springs are among the finest in the State. There are on the premises several springs which flow in great profusion. The waters belong to the alkaline-chalybeate class. They are valuable for table purposes. The following analysis was made by Anderson in 1888:

One United States Gallon Contains:

Solids.	Grains.
Sodium chloride	115.76
Sodium carbonate	120.42
Sodium sulphate	12.95
Potassium carbonate	2.06
Magnesium carbonate	26.34
Magnesium sulphate	14.17
Calcium carbonate	16.03
Calcium sulphate	14.19
Ferrous carbonate	13.87
Alumina	4.50
Silica	3.98
Organic matter	Trace.
Total	344.27

Free carbonic acid gas 44.17 cubic inches. Temperature of water, 50° F.

It will be observed that this water is much less densely mineralized than is that of its New York namesake. The Saratoga Congress Spring contains over 700 grains of solid ingredients to the United States gallon and over 392 cubic inches of carbonic-acid gas. The California Congress waters are, however, much more strongly chalybeate than are those of Saratoga. Their action is decidedly tonic, owing to this large infusion of iron. They are also mildly aperient (from the presence of Glauber's and Epsom salts), diuretic, and anti-acid (from the presence of alkaline carbonates). The springs have gained considerable celebrity in the treatment of anæmia, dyspepsia, liver and kidney troubles, irritability of the bladder, rheumatism, gout, and cutaneous affections. The waters are shipped to all parts of the coast.

James K. Crook.