

WATER AND SEWAGE.

NECESSITY FOR EFFECTIVE SEWAGE DISPOSAL.

Startling Figures of Death Rates from the Use of Contaminated Water.

A wise Providence, in creating this earth and placing upon it the many different species of animal and vegetable life, not only provided the necessary sustenance for the support and highest development of each and every kind, but has also provided the means for the final disposal of all wastes, fecal matters, etc., incident to such life in all its forms and stages.

The waters of our lakes and rivers, the rocks and soil of the earth, and the air, are filled with nature's agencies for disposing of all animal and vegetable wastes or refuse, in such a manner that it not only becomes harmless and no longer obnoxious to the senses, but is converted into substances that may again be assimilated by animal or vegetable life. All such wastes, if not properly disposed of, are sure to become, sooner or later, in a measure injurious to health.

The natural force of organic matter is to undergo putrefaction furnishing food for numerous varieties of micro-organisms or bacteria, and this decomposition, many of the products of which are powerful poisons, emits gases which, though they may not themselves contain specific germs of disease, when breathed into the lungs so lower the vitality that the body becomes much more susceptible to zymotic or contagious diseases.

Yet this putrefactive change can be controlled, and when allowed to take place in such manner that the oxygen of the air shall have free access to the particles undergoing decomposition, may be made the means of entirely removing the noxious character of sewage before discharging it into its final drain.

Excrement, both human and animal, contains, as a rule, many and under certain conditions, innumerable varieties of microscopic life, and when improperly or ineffectively disposed of, as is the rule, rather than the exception, ultimately finds its way laden with its death dealing cargo to rivers and lakes, the natural sources of water supply, where, if the volume of water is not adequate to sufficiently dilute it, or the amount of oxygen contained in the water and its rate of flow are not sufficient for self purification, these micro-organisms having thus found a suitable media for propagation, multiply enormously, infecting and rendering positively dangerous an otherwise potable water.

Possibly only a few miles below the sources of pollution may be found the intake of a municipal water works system, pumping millions of gallons of this sewage polluted water per day to its thousands of inhabitants, every gallon no doubt containing pathogenic bacteria, or when deposited in the old fashioned out door vault, "constructed for the avowed purpose of retaining the solid matters as long as possible upon the premises, they become centers of pollution and infection. The liquid portions escaping, pollute the soil and neighboring wells; the noxious exhalations arising from their putrefying contents contaminate the air."—Samuel M. Gray.

It has been pretty well established that water derived from uninhabited regions is harmless so far as the presence of pathogenic bacteria is concerned, and while all surface waters contain varying amounts of micro-organisms, the ordinary river water bacteria is not pathogenic. It is only water that is infected, or liable to infection from too close proximity to human habitation, that needs to be purified.

And "since it seems to be proven that the great majority of pathogenic bacteria which are likely to be water carried are voided from the system with bowel discharges, and these discharges are found most commonly in sewage, it is sewage polluted water that is most likely to be the cause of infection."—T. M. Cheeseman, M. D., "Common Causes of the Contamination of Drinking Water."

Millions of bacteria, mostly colon bacilli, always exist in the alimentary canal, and the excreta of a healthy person contains on an average about 200,000,000 bacteria per gram. "Assuming that a man discharges about 200 grams or 7 ounces of feces daily," this would give 40,000,000,000 bacteria discharged by one person each day.

The number of bacteria actually found in sewage, as a rule, greatly exceeds this amount. By a series of counts made from the excreta of typhoid fever patients in the Lawrence City Hospital during 1891 and 1892 the average number per gram was estimated to be about 1,000,000, and this discharge from a number of patients being emptied into a water course would go a long way toward putting one or more pathogenic bacteria into every gallon of water used.

The number of bacteria found in river water depends much on the amount and periodic intensity of precipitation, and the character of the surface of its drainage area, being usually lowest in summer, due to the lesser amount of rainfall and the destructive action of the sun's rays. Direct sunlight has a very powerful germicidal action, experiment having demonstrated its effect on micro-organisms to a depth in clear lake water of eight feet.

Water containing pathogenic bacteria is not only dangerous as a drinking water, but may communicate disease in other ways. A question that is becoming of importance to a number of our seaboard cities and towns is the contamination, by sewage, of the oyster beds. It is not only receiving the at-

tribution of oyster growers, but, justly as well, of the different State Boards of Health, for the purpose of protecting the public from sewage-polluted oysters. YWV water containing sewage does not seem to be harmful to the oyster itself, it affords a means for conveying harmful bacteria from the sewage water to the human body. Foote of New Haven demonstrated by laboratory experiments that the typhoid bacilli will live in oyster water for a period of eight days, and that, injected into the oyster, will remain abundant for several weeks.

Milk is another article of food that is liable to become contaminated, and being a favorable medium for the growth of micro-organisms, has probably conveyed more disease from impure water than any other food. The writer has in mind an instance of where an epidemic of typhoid fever was started by a milkman washing his cans in water that was subsequently found to have contained bacillus typhosus. Hence arises the necessity of sterilizing the water used in washing, and in effecting a disposal of these organic matters in such a manner that they shall lose permanently their power of producing or abetting disease. If the people of the United States would lay aside for a moment their all-absorbing financial and political problems and direct their attention to what is worth, and then think of the awful penalty in human lives that is being paid annually for their seeming indifference and negligence, the most heartless could not help but be awed. The number of fatalities in our recent war with Spain becoming insignificant in comparison with the needless sacrifices annually to water-communicable diseases.

Of course all cases of enteric diseases cannot be traced to the use of impure water, but the cause of many typhoid epidemics has been traced so positively to water supply having become contaminated by sewage containing typhoid bacilli that there is no longer any question as to the fact of such epidemics being spread through the medium of water supplies; and statistics prove that the mortality from this cause has been reduced by proper and adequate means of sewage disposal and water purification.

As civilization advances and the urban population increases the demand for a more abundant supply of water becomes more urgent, while at the same time the risk of sewage pollution of such supplies increases, and two ways suggest themselves for solving this problem: First, treat the sewage before discharging it into the water course by that form of disposal or treatment best adapted to the local conditions, so that all objectionable substances have been removed; or, obtain a supply of pure water, by filtration through a suitable material which retains or removes its impurities, or a rock water, where possible, by means of deep water wells. "With some European rivers the purification of both sewage and river water is insisted upon, thus giving a double line of protection, which is certainly advisable in cases of very dense population upon water sheds. This problem must be considered not only with reference to water supplies now taken from streams, but also with reference to those cities which may ultimately find themselves compelled to use river waters, although not at present so supplied."—Allen Hazen.

River waters should invariably be filtered when used as water supply, and this plan of purifying both sewage and water is becoming more popular in this country. The effect of the filtration of water upon the death rate from typhoid fever is well illustrated in the following table, showing the death rate in London previous to the adoption of sand filtration for the purification of its river waters, and also the rate after the use of filtered water:

Table with 2 columns: Year, Death rate. 1841-1850, ten years previous to filtration, 11.2. 1851-1860, 8.7. 1861-1870, 7.5 per cent. 1871-1880, 6.2 per cent. 1881-1890, 4.8 per cent. 1891-1898, 3.1 per cent.

The above rates are per 10,000 of population. This shows a reduction in the death rate from this disease alone of 85.7 per cent. since the introduction of filtration. The following from Albany, "Medical Annual" of March and April, 1897, gives about the average death rates from typhoid fever, of several cities in the United States obtaining their supply of water from adjacent rivers or lakes:

Table with 2 columns: City, Per 10,000. Allegheny, 11.2. Denver, 11.7. Washington, 11.2. Jersey City, 6.9 to 7.5. Philadelphia, 2.4 to 4.08. Baltimore, 2.4 to 4.08.

Chicago furnishes a very instructive example of the relation of impure drinking water to typhoid fever. The city pumps its supply of water from Lake Michigan, and previous to 1892 the cause of the Water Works system were close in shore and the water severely polluted. In 1892 the city completed two out of four projected new intake tunnels, receiving its supply from about four miles out in the lake, and the following very clearly shows the result. The death rate from typhoid fever per 10,000 of population during the years 1890, 1891 and 1892 was 11.5; the number of deaths in 1892 being 1,480. In 1894, the rate had fallen to 3.1, demonstrating clearly the effect of a purer water supply.

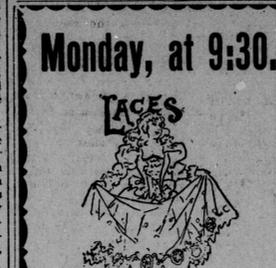
The last few years has seen an excellent beginning by a number of States toward a systematic study of the sources and contamination of public water supplies, with the idea in view of bringing them as near as possible to the ideal conditions of a pure water supply.

The laws of a number of States require that the State Board of Health shall examine and pass upon all projected water supply and sewerage systems, and this plan tends to the abolishment of the once universal and selfish practice of discharging crude sewage into the nearest stream, whether it was used as a source of water by other communities or not.

Municipalities as a general rule, are much more selfish than individuals, and so long as they have danger removed from their own doors, they care not to whose lot it may fall. Here is where the State Board of Health steps in and protects us one from another.

Where a city is badly sewered, or has no system of sewerage whatever, an abundant supply of pure water will not always diminish the death rate from enteric diseases. What is needed is that those in authority be furnished with the evidence to induce them to institute those other necessary reforms, in conjunction with a pure water supply. There will then be no reason why our cities and villages should not have as low a mortality from communicable diseases as its possible. Professor Andrews, Assistant City Engineer, Lima, O., in Municipal Engineering.

Monday, at 9:30. THE QUALITIES WE ENCOURAGE. The thoughtfulness, politeness and earnestness of our employees are frequent subjects of remark among customers. They are qualities that encourage to the utmost. Recently, in writing to our salespeople, occurred the following paragraph: "We want it ever said that one of the chief attractions of this business is the pleasure that comes from being served by its employees. We want our people to feel that they are acting for us and that they are to receive and serve those coming here as they believe we ourselves would receive and serve them."



Sale of Oriental Laces, Ribbons and Handkerchiefs.

One of our buyers was fortunate in securing, recently in New York, a lot of expensive Oriental laces to sell at about half regular prices. We shall offer them Monday as follows:

LOT 1—Oriental lace, 2 1/2 inches wide, open-work effect, and in either butter color or white.

MONDAY'S 7 1/2c yd PRICE.

LOT 2—Oriental laces in a very fine net, 4 1/2 inches wide, with two inches of work; heavy open-work effect. Comes in white only.

MONDAY'S 15c yd PRICE.

LOT 3—A lace 7 1/2 inches wide, of fine net with a fine spray effect, edged with a narrow Irish point effect. Either white or butter color.

MONDAY'S 19c yd PRICE.

LOT 4—A lace 7 1/2 inches wide on fine net with 5 1/2 inches work, in a rich spray pattern and button-hole work, making a handsome effect. Either butter color or white.

MONDAY'S 27c yd PRICE.

LOT 5—A lace 6 inches deep, with 4 1/2 inches Irish point, heavy open work effect; top of lace finished with a beading. Either white or butter color.

MONDAY'S 36c yd PRICE.

LOT 6—Lace on fine net, 8 inches wide, with 5 1/2 inches work; pattern of a large spray in an open work Irish point effect, the stitching being close and rich. This is a regular 85c quality.

MONDAY'S 48c yd PRICE.

(Continued in column on the right.)

Monday, at 9:30. THE QUALITIES WE ENCOURAGE. The thoughtfulness, politeness and earnestness of our employees are frequent subjects of remark among customers. They are qualities that encourage to the utmost. Recently, in writing to our salespeople, occurred the following paragraph: "We want it ever said that one of the chief attractions of this business is the pleasure that comes from being served by its employees. We want our people to feel that they are acting for us and that they are to receive and serve those coming here as they believe we ourselves would receive and serve them."

Monday, Feb. 20. Sale of Taffeta Silks, 65¢. With the opening of business Monday we shall place on sale taffeta silks—one of the most popular fabrics in the market. Its uses are almost without end. It is especially suitable for skirts, flounces, ruffles, tucking, stock waists, etc. This silk that we shall offer comes in hyacinth, cardinal, cerise, blue, emerald, petunia, royal baby blue, etc. Sale price, 65c.

Sale of Furniture Tuesday, Feb. 21.

Tuesday's "Record-Union" will give full particulars of a furniture sale we are to have on that day. Here in brief are some of the items.

White enameled bedsteads at \$11.50 to \$32.50, reduced to \$6.50 to \$22.50.

Corduroy couches with fringe and lined box beneath, \$7.98. Fancy corduroy bed lounges, \$8.40.

Moss hair mattresses for full-size beds, \$3.98. Solid oak dining chairs, 93c. Hanging hat racks, \$1.97.

Ripon tabbles for dyspepsia and stomach troubles, 5c per box of 10.

Birdsall's olive oil—a home product that is pure and high grade quality. \$1 per bottle, quart size.

Quinine put up in capsules, 2 grains, 8c dozen; 3 grains, 10c dozen.

Men's Tailoring Department.

Spring Samples Ready. The making of clothing to order is an established success with us. No doubt as to the satisfaction we give or the money that customers save in buying from us.

The samples of all the new Spring clothes are ready. You will find them the latest weaves and patterns in all sorts of black and colored cloths in plain and fancy weaves and mixtures. Suits from \$13.75 to \$40; trousers from \$3.50 to \$12.

If you are thinking of new clothing why not drop in to see these handsome cloths?

"Mothers' Friend" Waists for Boys.

These well known waists come in percale in light and dark colors, including navy blue. The bands are detachable so that the button piece is not sent to the laundry. Sizes 4 to 13 years at 50c.

Monday, Feb. 20. Sale of Taffeta Silks, 65¢. With the opening of business Monday we shall place on sale taffeta silks—one of the most popular fabrics in the market. Its uses are almost without end. It is especially suitable for skirts, flounces, ruffles, tucking, stock waists, etc. This silk that we shall offer comes in hyacinth, cardinal, cerise, blue, emerald, petunia, royal baby blue, etc. Sale price, 65c.

Sale of Furniture Tuesday, Feb. 21.

Tuesday's "Record-Union" will give full particulars of a furniture sale we are to have on that day. Here in brief are some of the items.

White enameled bedsteads at \$11.50 to \$32.50, reduced to \$6.50 to \$22.50.

Corduroy couches with fringe and lined box beneath, \$7.98. Fancy corduroy bed lounges, \$8.40.

Moss hair mattresses for full-size beds, \$3.98. Solid oak dining chairs, 93c. Hanging hat racks, \$1.97.

Ripon tabbles for dyspepsia and stomach troubles, 5c per box of 10.

Birdsall's olive oil—a home product that is pure and high grade quality. \$1 per bottle, quart size.

Quinine put up in capsules, 2 grains, 8c dozen; 3 grains, 10c dozen.

Men's Tailoring Department.

Spring Samples Ready. The making of clothing to order is an established success with us. No doubt as to the satisfaction we give or the money that customers save in buying from us.

The samples of all the new Spring clothes are ready. You will find them the latest weaves and patterns in all sorts of black and colored cloths in plain and fancy weaves and mixtures. Suits from \$13.75 to \$40; trousers from \$3.50 to \$12.

If you are thinking of new clothing why not drop in to see these handsome cloths?

"Mothers' Friend" Waists for Boys.

These well known waists come in percale in light and dark colors, including navy blue. The bands are detachable so that the button piece is not sent to the laundry. Sizes 4 to 13 years at 50c.

Chloride of lime for disinfecting in cans with convenient sprinker tops, 10c.

Weinstock, Lubin & Co., 400-412 K St., Sacramento.

and looks so tragic that I decide upon a plan of action. Putting an extra dash of powder on my face, for a woman doesn't like to face even an enemy with a red and shining countenance, I arm myself with my sweetest smiles and sally forth to the parlor.

As I enter the parlor the smile fades from his face; it is succeeded by a look of unconcealed disappointment. I tell him in no uncertain tones that Kate is engaged at present and has sent me to entertain him. I artfully lead him into conversation, and finally invite him out to the stable to see Kate's new horse. He accompanies me with ill-concealed reluctance. The rain soaks him through and through, for he is so brought up that he has forgotten to put his mackintosh on. I feel almost sorry for him, but steel my heart with the reflection that it is all for Kate's future happiness. I manage to keep him at the stables a good hour. If Billy comes reasonably early, I tell myself he will have ample time within that hour to straighten things out with his lady love.

Back to the house then we go, I stopping him every now and then to admire this or that until almost the half of another hour is gone when I find he is ready to follow me to the parlor. He is wet and disheveled, and looks totally unlike the young man who entered Kate's doors a short time ago. But I do not care. I take one glance at Kate and another at Billy and am satisfied.

Teddy, with more foresight than I gave him credit for, sees too and casting a malignant look at poor, little me, a vindictive one at Billy and a speechless one at Kate, he hastily takes his departure. I only wait to congratulate the happy couple before I, too, leave them alone to their new home; situate No. 222 L street, my homeward way through the wind and the rain, not to mention the mud, I am borne up by the serene self-consciousness that I have accomplished a good day's work.

Hood's Sarsaparilla is a special boon to soldiers, because it eradicates all disease germs, builds up the debilitated system and brings back health. Doctors prescribe it, nurses commend it.

RAIN or SHINE We Stay With You.

In Uncle Sam's Younger days he could not carry a letter for 2 cents. He does now. Six years ago we could not do what we are doing now, viz. delivering 'phone and other orders all over the city, besides calling for prescriptions, filling and delivering 'phone and other orders not met by any store on the coast. We have always given our customers the best for the least money and every dollar of the profit is spent to better our methods of SELLING DRUGS AS THEY SHOULD BE SOLD. Hence you receive a benefit from what you spend with us. In fact, we touch your purse so lightly you don't know it. And we want you to know this if we were up town, owing to a reference to the price which we charge no matter how small your purchase.

EITHER PHONE, NO. 10.

FRANCIS S. OTT, THE PLACE TO BUY DRUGS, 200 K Street, South Side Second and K.

A Badly Sprained Arm. Houston, Texas, Feb. 25, 1898. Dr. Radway & Co. Dear Sirs: August 25th I had a badly sprained arm. After using six different (what was called) remedies, I never got relief till I used Radway's Ready Relief, which eased the pain at once and cured me in two days. My father, who is 58 years old, says: "Radway's Ready Relief and Radway's Pills are the best of all medicines." We keep them in the house the year around. Respectfully, THOMAS HANSBROUGH, Special Police, City Hall.

W. P. COLEMAN, Real Estate Salesman, 385 J Street, F. BODIL, Manager.

FOR SALE. A splendid tract of land of 483 acres, situated near Sacramento Valley Railroad, and fifteen miles from Sacramento; under lease for this year for \$1,000, cash rent, payable after harvest. This is a splendid tract of land and will be sold at a reasonable price and upon easy terms if applied for soon.

TO LET. \$25—Large store room, formerly occupied by Capital Broom Factory; the building runs all the way back to the alley, therefore will make a splendid warehouse; situate No. 222 L street.

\$11—A nice dwelling of 5 rooms; No. 2409 O street.

\$15—Brick dwelling of 5 rooms, J and K, Fifth and Sixth streets.

\$25—New flat of 6 rooms; everything modern. 921 G street.

\$17—Nice cottage of 5 rooms; good yard. 1614 Third street.

\$12—Lower flat of 4 rooms, with bath and pantry. 1615 Twelfth street.

W. P. COLEMAN, Real Estate Salesman, 385 J Street, F. BODIL, Manager.

NATURE'S TEETH. Are not guaranteed, but the artificial tooth which I will firmly and securely anchor to your natural root is positively guaranteed.

Dr. Weldon, Dentist, 808 1/2 J Street.

RELIABLE and ENTERPRISING Sacramento Dealers.

F. CADY, 215 L STREET, COAL AND WOOD OF ALL KINDS, also carpet cleaning, Sunset phone, red 352. Capital 682.

WHITE OAK WOOD. The New Wood and Coal Company will sell four-foot second-growth white oak \$6 per cord; stove wood, \$3.40. Sunset tel. white 391. 145 J and Q street.

WOOD AND COAL YARD. Nice 4-ft white oak wood, second growth, at low rates. A. MENDIS, 1515 Front st. Carpets cleaned by steam process.

SUIE SING & CO. M A N U. of ladies' and children's muslin underwear, silk wrappers, notions, hosiery, etc., made to order. 412 J street. Will remove to 613 J street on February 16th instant.

UNION LAUNDRY. Calls the attention of gentlemen of the Legislature to a tention superior work done on shirts, collars, etc. Ring up phone red 398 or Cap. 721, and the wagon will call, night and day.

FURNITURE STORED. At low rates; two-story, fire-proof brick warehouse, 1013 Thirteenth street, between J and K streets. Goods stored here are safe and packed goods for shipment to all parts of the world. Capital Transfer Co., 596 K street. Reference, Breuners Bros.

CHEER UP! WE ARE MAKING cakes than ever. They are delicious. Fry one, only 10c, at N. Y. BAKERY, 1313 Third street.

PACIFIC GROVE BAKERY. The place in this city for everyone to buy their bread, pies and cakes. Domestic bread is our specialty. Its prompt delivery, three times a day, our care. Phones: Cap. 396, Sun. 634 red. RICE BROS., 322 J street.

WOOD, COAL, COKE and Charcoal of all kinds, and at the lowest cash prices. MCCAW & SON, 618 L street. Capital phone 838.

CARPET CLEANING. F. R. Y. Rived for a first-class job of cleaning, laying or retiling. We seem to please every one. Why not you? Telephone, Cap. 321. Sunset, white 711. Southwest corner Twelfth and O streets.

CANCER CURED. I WAS AFFLICTED WITH CANCER, the whole side of my face and half of my nose extending nearly to my ear, but to my eye and down below my mouth. I was treated by specialists and was given up as incurable. I was advised to try Dr. Shirley. The result is I am well and saw many cured during my treatment. My address is W. BARON, County. Will give any information required.

I have treated cancer and tumors, also cancer and ulceration of the womb, for fourteen years in Sacramento, with the best of success. Terms reasonable. Particulars apply to the Sisters of Mercy, Improved treatment, reducing the pain to a minimum.

Dr. J. H. SHIRLEY, 507 1/2 J Street - - - Sacramento

RUFFLE EDGE CURTAINS

On sale Monday at half price—regular dollar values for 50 cents a pair while they last. These are muslin window curtains, some plain white, others fancy figured.

Chas. M. Campbell, 411 AND 413 K STREET. House Furnishing Goods.

WHOLESALE LIQUORS. CRONAN & WISSEMAN, 880 K Street and 1108-1110 Third Street, Sacramento, Cal.

IMPORTERS AND WHOLESALE DEALERS in Fine Whiskies, Brandy and Champagne. EBNER BROS. COMPANY, 116-118 K Street, Front and Second, Sacramento.

IMPORTERS AND WHOLESALE DEALERS in Wines and Liquors. Tel. 384. HUGH CASEY Importer and Wholesale Wine and Liquor, Proprietor of Eagle Soda Wines, 215 K street, Sacramento.

LIQUORS, WINE, BEER, ETC. THOS. E. KENNEDY & CO. (Successors to Jim & Harry). Imported and Domestic Wines, Liquors and Cigars, 1009 THIRD STREET.

Go to GOLDEN GATE 330 street FOR FINE WINES, LIQUORS AND CIGARS. Steam and Lager on draught. CHAS. KEIPER, Proprietor.

GRUHLER'S 523 J Street, Lager Beer on draught. Colonial J. GUS CAMPE, Proprietor.

PALISADE SALOON, 221 K Street. EARLAN BROS., Proprietors. Western Hotel Building.

PORTLAND BEER AT BAUER & KOENECKE, Successors to Wiseman & Co., 1400 Fourth Street, J and K.

GAMBRINUS' LER & BURGER, Hall Props, Finest Wines, Liquors and Cigars, Steam and Lager as it should be. A good Lunch always to be found.

NEAGLE Medical Institute. ASTHMA CURED TO STAY CURED.

NEAGLE MEDICAL INSTITUTE OF PHYSICIANS AND SURGEONS, located permanently at 724 1/2 St., Sacramento.

Advertisement for Dr. M. A. McLaughlin's medicine, featuring an illustration of a man and text: 'Electricity Restores Health and Power to Weak Men Because It WARMS THE BLOOD! GIVES SNAP AND VIM! IT IS THE GREAT MAN BUILDER. Dr. M. A. McLaughlin's Electric Belt pours electric life into the nerves and vital parts of the body...'