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AND KINDRED SCIENCES.

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THE

SANITARY JOURNAL.

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OVERLOOKED PRECAUTIONS AGAINST CHOLERA.

Many look eagerly for items of information on the prevention of the dread epidemic, which it is commonly believed amongst the best informed as to the past course of cholera, is likely to visit this continent this year. Much, too, has been written on preventive measures. *The Alienist and Neurologist* draws attention in a lengthy article to one source of danger which has been for the most part overlooked. Below are portions of this valuable article :—

Though by sight of science we have probably found the cholera bacillus (the bacillus of cholera Asiatica and of cholera nostras, perhaps) we cannot yet, entirely by power of science, keep this potent living infinitesimal from evil, yet we can resist and circumvent its power, not only by clean streets and dwelling places, sunlight into the dark places and disinfection and pure air where dirt and filth abound, but by clean and strong bodies and by well sustained, well rested, invigorated and tranquilized nervous systems, built up to the power of resistance to the very maximum of physiological strength, not stimulated spasmodically by sudden fright after the pestilence has come, but trained up in advance by adequate but temperate nourishment; by ample rest of brain for the fullest possible recuperation, each night, of the day's wasted power; by making cities profoundly quiet in time of the pestilence by interdicting the needless noises both day and night, which keep the cells of the brain and nervous system agitated and restless, when they might be restful and in condition of repair for more work; and by a trained abeyance of the passions, the abandonment of exhaustive vices which undermine the nervous system and fit it to succumb to light assaults of disease.

To this end, in anticipation of an invasion of cholera here next year, the prudent will finish up, before the epidemic comes, present business enterprises which promise unusual mental strain, worry or other tax on their powers and permit a little of that reserve nerve force to accumulate, which, hitherto, like an improvident man with his bank account, they have been in the habit of expending as fast as it has accrued. Cholera is not in strictest sense a filth disease (?), at least in this country, though filth by contaminating the atmosphere and thus impoverishing the blood and impairing the nervous system, furnishes favorable conditions for its taking hold on the organism. On the contrary, putrefaction, bacteria, as Koch asserts, destroy the comma bacilli or arrest their multiplication. Alcoholic stimulation, at least to dissipation so-called, must be abandoned; the physiological tone of the vaso-motor system maintained and the perfect stability of the higher cerebral centres—the pyscho-motor and psychical—must be permitted to become re-established up to the point of their highest resisting power. Habitual alcoholization is a paralyzant of the vaso-motor nervous system as well as of the cortex of the brain, beyond all doubt, notwithstanding it acts as a temporary excitant, and momentarily stimulates latent power into increased activity. The frequent habitual use of stimulants like alcohol exalts the heart's activity, exhausts the tonicity of the brain by causing it to expend its latent reserve power daily; and leaves its vessels dilated and its substance oppressed; the cerebro-spinal fluid is crowded out of the perivascular spaces and the brain is prepared then for apoplexia and coma. Tobacco, too, is a vaso-motor paralyzant and motor depressant and weakener of vital power in those in whom tolerance has not been well established, and had better be used with moderation or abstained from.

To the end of proper prophylaxis in regard to the nervous system, the hours of rest and

labor should be regulated by municipal authority, that over-taxed human beings, especially among the poor, should not be made ready subjects for attack and almost certain victims to the fatality of cholera. Night work should be discountenanced so far as practicable and prolonged work hours without adequate rest following should, when practicable, be prohibited.

The schools should be looked after; tasks should be lightened and invigorating relaxation lengthened both for teacher and pupil, and more daylight and pure air let into the school room. Fewer hours of study should be required; overcrowded rooms should not be tolerated, and basement lunch, or recitation rooms abandoned.

Those who hold people to service should see that they do not engage in dissipating and exhausting pleasures during hours which should be devoted to sleep, and should enjoin staying at home and resting instead of wasting their nervous powers by frolicking till midnight, and then retiring to be awakened unrefreshed for the morning's work. Saloons should be closed at an early night season, if not during the day, in times of epidemic.

Men may deny that nature's God commanded the Sabbath day for rest, but physicians know that imperious nature demands it if longevity of human life would be reached. The law of Moses commanding a respite from customary labor one day in seven was founded in physiological wisdom, nature and nature's God inspired it. And for this reason physicians should demand that the sounds of busy industry should cease one day in seven, that the ceaseless bustle and din of business, which so tries the nervous system during the week, shall cease each seventh day, for one of recuperative rest to brain and mind; that all needless noises which harshly grate upon the ear and rob tired nature of needed repose should be suppressed in order that enough of sleep and rest, 'sore labor's bath,' 'tired nature's second course,' may come to the people of the heart of the city to 'knit up the week's ravelled sleeve of care.' There is too much unnecessary noise even on business days and too much noise allowed in the night time, and altogether too much on Sunday for the highest health of the people of our great American cities.

The wealthy suburban resident does not suffer so much from this cause of nerve disturbance as the workingman and subordinate business man who live down town, but the needless wear and tear of brain and nerve from unnecessary and preventable city noises if prevented would add very materially to the healthful endurance of the people in time of cholera and at all times, prolonging life and averting insanity and premature failure of the nervous system in other directions. To be well repaired man, like any other machine, must rest, and rest of brain and nerve is disturbed through the channels and centres of audition and sight as well as through those of motion, etc.

The prayer of conservative physiology is for rest, for the salvation of the resisting power of the nervous system to devastating pestilence; and the power of resisting and sustaining disease in general is obtained by adequate rest of the organism, which is a condition of its repair and power.

The cause of much of the premature decrepitude and nerve degeneracy and breakdown of our day is in the many inventions man has devised whereby he robs himself of timely rest. The morning newspaper often read through before breakfast; the telephone in his house to call him at any and all times aside from his repose; the electric light to keep his brain unduly stimulated through the retinæ; the railroad and the sleeping coach which may keep him constantly on the rail (if he chooses to so travel) for continuous weeks without rest from the noisy and exhaustive cerebro-spinal concussions of this mode of travel; hasty meals and telegrams, and business, and nightmare sleep, all commingled, wither and wreck lives innumerable, which, under wiser management might end differently, and the needless noise of the city, the bells and steam whistles, howling hucksters, noisy street cars, yelling hoodlums that make night hideous with soul-jarring sounds, hasten the premature endings of useful lives. And when, superadded to all this unphysiological strain, we have the assault of a pestilence that poisons, like cholera, how much exemption can such overwrought organisms expect? How much of resting immunity can such overstrained and exhausted nerve force oppose to the invaliding foe?

If the epidemic comes, as it almost surely will next summer or fall, there should be a common understanding among physicians to demand as much rest as practicable, for the people, and, by comity among themselves, they should lighten each other's labors and

no one should work continuously night and day.

It is not long after an epidemic comes before the long-watching nurses and the tired, over-taxed doctors become its victims.

The lesson a pestilence teaches is not only cleanliness but temperance, and restful resisting vigor for the nervous system and the conservation of its powers, maintaining the functions of the body in the presence of a blood destroying and vitality depressing enemy. With the human organization, in a long contest with disease, the blood is the life, but if the nervous system have secured to itself, by ample rest and frugality and economy of expenditure; and by freedom from overstrain and vicious indulgence, have established the habit of claiming and securing to recuperative use its own elements from the blood, it will be long in yielding and longer still in perishing under the assaults of disease.

The inferior animals, too, whose nervous systems are unshattered by the vices and overstrain of civilization are more exempt than man from cholera.

Many a man well endowed and unweakened in his nervous centres goes about unharmed with the same amount of malaria in his blood, probably, which causes another, less strongly fortified, to succumb to a fatal form of congestion.

All other things being equal, the tranquil-minded and restful and daily and adequately recuperated nervous systems of a community afford the best and longest immunity in time of pestilence. The unrested and unrestful, the weary and the heavy laden, the vice-broken and the unsteadily endowed nervous systems furnish the most numerous and earliest victims."

THE PHILADELPHIA CITY BOARD OF HEALTH has sent out twenty-five inspectors into the most crowded and dirty portions of the city, who are reported to be doing good work, and, instead of meeting much opposition, have been well received.

FOR HEATING the feet or other parts of the body a bag of sand is far more convenient than warm water bottles and Indian rubber bags. The sand should be fine, clean and thoroughly dried, then put into a flannel bag, and the bag covered with linen or cotton cloth, to prevent the sand from sifting out. The bag may be quickly heated by placing it in an oven or on a stove. The sand holds the heat a long time, and imparts a more agreeable warmth to the feet or hands than a warm water bottle.

MINISTERS AND TOBACCO.—Horace Mann, in speaking of ministers who use tobacco, says: "He visits the bedside of the dying, with a breath which, if the immortal essence could be infected by an earthly virus, would subject the immortal soul to quarantine before it could enter the gates of Paradise."

THE VEGETARIAN QUESTION.

BY. W. MATTIEU WILLIAMS IN "KNOWLEDGE."

In my introductory paper I said, "The fact that we use the digestive and nutrient apparatus of sheep, oxen, etc., for the preparation of our food is merely a transitory barbarism, to be ultimately superseded when my present subject is sufficiently understood and applied to enable us to prepare the constituents of the vegetable kingdom to be as easily assimilated as the prepared grass which we call beef and mutton."

This has brought me in communication with a very earnest body of men and women, who at considerable social inconvenience are abstaining from flesh-food, and doing it purely on principle. Some people sneer at them, call them, "crotchety," "faddy," etc., but for my own part I have a great respect for crotchety people, having learned long ago that every first great step that has ever been taken in the path of human progress was denounced as a crotchet by those it was leaving behind. This respect is quite apart from the consideration of whether I agree or disagree with the crotchets themselves.

I therefore willingly respond to the request that I should devote one short paper of this series to the subject. The fact that there are now in London nine exclusively vegetarian restaurants, and all of them flourishing, shows that it is one of wide interest.

At the outset it is necessary to brush aside certain false issues that are commonly raised in discussing this subject. This question is not whether we are herbivorous or carnivorous animals. It is perfectly certain that we are neither. The carnivora feed on flesh *alone*, and eat that flesh raw. Nobody proposes that we should do this. The herbivora eat raw grass. Nobody suggests that we should follow *their* example.

It is perfectly clear that men can not be classed either with the carnivorous animals, nor with the herbivorous animals, nor

with the graminivorous animals. His teeth are not constructed for munching and grinding raw grain, nor his digestive organs for assimilating such grain in this condition.

He is not even to be classed with the omnivorous animals. He stands apart from all as The Cooking Animal.

It is true that there was a time when our ancestors ate raw flesh, including that of each other.

In the limestone caverns of this and other European countries we find human bones gnawed by human teeth, and split open by flint implements for the evident purpose of extracting the marrow, according to the domestic economy of the period.

The shell-mounds that these prehistoric bipeds have left behind show that mussels, oysters, and other mollusca were also eaten raw, and they doubtless varied the *menu* with snails, slugs, and worms, as the remaining Australian savages still do. Besides these they probably included roots, succulent plants, nuts, and such fruit as then existed.

There are many among us who are very proud of their ancient lineage, and who think it honorable to go back as far as possible, and to maintain the customs of their forefathers; but they all seem to draw a line somewhere, none desiring to go as far back as to their interglacial troglodític ancestors, and therefore I need not discuss the desirability of restoring their dietary.

All human beings become cooks as soon as they learned how to make a fire, and have all continued to be cooks ever since.

We should, therefore, look at this vegetarian question from the point of view of prepared food, which excludes nearly all comparison with the food of the brute creation. I say "nearly all," because there is one case in which all the animals that approach the nearest to ourselves—the mammalia—are provided naturally with a specially prepared food, viz., the mother's milk. The composition of this preparation appears to me to throw more light than anything else upon this vegetarian controversy, and yet it seems to have been entirely overlooked.

The milk prepared for the young of the different animals in the laboratory or kitchen of Nature is surely adapted to their structure as regards natural food requirements. Without assuming that the human dietetic requirements are identical with either of the other mammals, we may learn something concerning our approximation to one class or another by comparing the composition of human milk with that of the animals in question.

I find ready to hand in Dr. Miller's "Chemistry," Vol. III., a comparative statement of the mean of several analyses of the milk of woman, cow, goat, ass, sheep, and bitch. The latter is a moderately carnivorous animal, nearly approaching the omnivorous character commonly ascribed to man.

* * * * * *

According to this it is quite evident that Nature regards our food requirements as approaching much nearer to the herbivora than to the carnivora, and has provided us accordingly.

If we are to begin the building-up of our bodies on a food more nearly resembling the herbivora than the carnivora, it is only reasonable to assume that we should continue on the same principle.

The particulars of the difference are instructive. The food which Nature provides for the human infant differs from that provided for the young carnivorous animal, just in the same way as flesh-food differs from the cultivated and cooked vegetables and fruit within easy reach of man.

These contain less fat, less nitrogenous matter, more water, and more sugar (or starch, which becomes sugar during digestion) than animal food.

Those who advocate the use of flesh-food usually do so on the ground that it is more nutritious, contains more nitrogenous material and more fat than vegetable food. So much the worse for the human being, says Nature, when *she* prepares food.

But as a matter of practical fact there are no flesh-eaters among us, none who avail themselves of this higher proportion of albuminoids and fat. We all practically admit every day, in eating our ordinary English dinner, that this excess of nitrogenous matter and fat is bad; we do so by mixing the meat with that particular vegetable which contains an excess of the carbohydrates (starch) with the smallest available quantity of albuminoids and fat. The slice of meat, diluted with the lump of potato, brings the whole down to about the average composition of a fairly-arranged vegetarian repast. When I speak of a vegetarian repast, I do not mean mere cabbages and potatoes, but properly selected, well-cooked, nutritious vegetable food. As an example, I will take Count Rumford's No. 1 soup,

already described, without the bread, and in like manner take beef and potatoes without bread Taking original weights, and assuming that the lump of potato weighed the same as the slice of meat, we get the following composition, according to the table given by Pavy, page 410 :

	Water.	Albumen.	Starch.	Sugar.	Fat.	Salts.
Lean beef.....	72·00	19·20	.....	.....	3·60	5·10
Potatoes.....	75·00	2·10	18·80	3·20	0·20	0·70
	147·00	21·40	18·80	3·20	3·80	5·80
Mean composition of mixture.....	73·50	10·70	9·40	1·60	1 90	2·90

Rumford's soup (without the bread afterward added) was composed of equal measures of peas and pearl-barley, or barley-meal, and nearly equal weights. Their precentage composition as stated in above-named table is as follows :

	Water.	Albumen.	Starch.	Sugar.	Fat.	Salts.
Peas.....	15·00	23·00	55·40	2·00	2·10	2·50
Barley-meal.....	15·00	6·30	69·40	4·90	2·40	2·00
	30·00	29·30	134·80	6.90	4·50	4.50
Mean composition of mixture...	15·00	14·65	62·40	3·45	2·25	2·25

Here, then, in one hundred parts of the material of Rumford's half-penny dinner, as compared with the "mixed diet," we have forty per cent. more of nitrogenous food, more than six and a half times as much carbo-hydrate in the form of starch, more than double the quantity of sugar, about seventeen per cent. more of fat, and only a little less of salts (supplied by the salt which Rumford added). Thus the John Bull materials fall short of all the costly constituents, and only excel by their abundance of very cheap water.

This analysis supplies the explanation of what has puzzled many inquirers, and encouraged some sneerers at this work of the great scientific philanthropist, viz., that he found that less than five ounces of solids was sufficient for each man's dinner. He was supplying far more nutritious material than beef and potatoes, and therefore his five ounces was more satisfactory than a pound of beef and potatoes, three-fourths of which is water, for which water John Bull pays a shilling or more per pound when he buys his prime steak.

Rumford added the water at pump-cost, and, by long boiling, causes some of it to unite with the solid materials (by the hydration I have described), and then served the combination in the form of porridge, raising each portion to nineteen and three quarters ounces.

I might multiply such examples to prove the fallacy of the prevailing notions concerning the nutritive value of the "mixed diet," a fallacy which is merely an inherited epidemic, a baseless physical superstition.

I will, however, just add one more example for comparison—viz., the Highlander's porridge. The following is the composition of oatmeal—also from Pavy's table:

Water.....	15·00	Sugar.....	5·40
Albumen.....	12·60	Fat.....	5·60
Starch.....	58·40	Salts.....	3·00

Compare this with the beef and potatoes above, and it will be seen that it is *superior in every item excepting the water.* This deficiency is readily supplied in the cookery.

These figures explain a puzzle that may have suggested itself to some of my thoughtful readers—viz., the smallness of the quantity of dry oatmeal that is used in making a large portion of porridge. If we could, in like manner, see our portion of beef or mutton and potatoes reduced to dryness, the smallness of the quantity of actually solid food required for a meal would be similarly manifest. An alderman's banquet in this condition would barely fill a breakfast-cup.

I can not at all agree with those of my vegetarian friends who denounce flesh-meat as a prolific source of disease, as inflaming the passions, and generally demoralizing. Neither am I at all disposed to make a religion of either eating or drinking, or abstaining. There are certain albuminoids, certain carbo-hydrates, certain hydrocarbons, and certain salts demanded for our sustenance. Excepting in fruit, these are not supplied by Nature in a fit condition for *our* use. They must be prepared. Whether we do *all* preparation in the kitchen by bringing the produce of the earth directly there, or whether, on account of our ignorance and incapacity as cooks, we pass our food through the stomach, intestines, blood-vessels, etc., of sheep and oxen, as a substitute for the first stages of scientific cookery, the result is about the same as regards the dietetic result. Flesh-feeding is a nasty practice, but I see

no grounds for denouncing it as physiologically injurious.

In my youthful days I was on friendly terms with a sheep that belonged to a butcher in Jermyn Street. This animal, for some reason, had been spared in its lambhood, and was reared as a butcher's pet. It is well known in St. James's by following the butcher's men through the streets like a dog. I have seen this sheep steal mutton-chops and devour them raw. It preferred beef or mutton to grass. It enjoyed robust health, and was by no means ferocious.

It was merely a disgusting animal, with excessive perverted appetite; a pervision that supplies very suggestive material for human meditation.

My one experiment on myself, and the multitude of other experiments that I am daily witnessing among men of all occupations who have cast aside flesh-food after many years of mixed diet, prove incontestably that flesh-food is quite unnecessary; and also that men and women who emulate the aforesaid sheep to the mild extent of consuming daily about two ounces of animal tissue combined with six ounces of water, and dilute this with such weak vegetable food as the potato, are not measurably altered thereby so far as physical health is concened.

On economical grounds, however, the difference is enormous. If all Englishmen were vegetarians, the whole aspect of the country would be changed. It would be a land of gardens and orchards, instead of gradually reverting to prairie grazing ground as at present. The unemployed miserables of our great towns, the inhabitants of our union workhouses, and all our rogues and vagabonds, would find ample and suitable employment in agriculture. Every acre of land would require three or four times as much labor as at present, and feed five or six times as many people.

No sentimental exaggeration is demanded for the recommendation of such a reform as this.

HOUSE DRAINS AND HEALTH—GREAT EVILS OF THE PRESENT SYSTEM.

FROM "HOW TO DRAIN A HOUSE," BY GEO. E. WARING, JR., M. IST. C. E., ETC., JUST PUBLISHED.

Forty years ago the best houses in American cities were little if at all better in the matter of drainage than are the best houses of Paris, with very rare exceptions, to-day. They had at best only one drain to remove the kitchen waste and another to drain the cellar. All the water used was carried by hand and it was used in limited quantities. The bath was an exceptional luxury; the water-closet was almost unknown, and the unspeakable horrors of the privy, the close-stool and the sick-chair—still dominant in undrained houses, and especially in country houses—were accepted as an inevitable incident of human life. Happily, we are now emerging from this barbaric condition, and are learning to regulate our appliances according to the dictates of health and decency. A dozen years ago in a pamphlet description of the earth-closet, then recently invented, I wrote the following, which is as true of country houses now as it was then:

Out-of-door privies, those temples of defame and graves of decency, that disfigure almost every country home in America, and raise their suggestive heads above the garden-walls of elegant town-houses, are, I believe, doomed to disappear from off the face of the earth. Twenty years ago, every back-yard in New York City was provided with one of these buildings; now, since the water-closet has come into universal use, probably there are not twenty of them to the square mile. Twenty years hence, it is to be hoped, they will become equally rare in smaller towns and in the country. That they are objectionable on the score of decency and comfort, will be confessed by all. What is not so generally understood is their pernicious effect upon health. The influence of subterranean stores of fecal matter in the propagation of disease has already been referred to, and will be more fully discussed hereafter; but that which produces, in the aggregate, far worse results—the aggravation of the difficulties of delicate females—has attracted less attention than its importance deserves. It is universally admitted that nothing is more injurious to health than irregularity and the undue retention of the rejectamenta of the intestines. It is not necessary to quote scientific authority to prove to any person of intelligence that in prompt and regular attention to this duty lies the cardinal secret of health. We have all been reminded, in our own persons, that our health and efficiency, as well as our cheerfulness and good humor, depend on perfect regularity in this regard. There can be little question that the prevailing female complaints are often induced, and always intensified, by disorders of the digestive

organs, and the oppression in the lower regions that neglect in this matter causes. Admitting the justness of the view, let us see what chance a woman living in the country has to escape the direst evils that "delicate health" has in store for its victims. The privy stands, perhaps, at the bottom of the garden, fifty yards from the house, approached by a walk bordered by long grass, which is always wet except during the sunny part of the day, overhung by shrubbery and vines, which are often dripping with wet, and sometimes exposed to the public gaze In winter, snow-drifts block the way, and during rain there is no shelter from any side. The house itself is fearfully cold, if not drifted half-full with snow or flooded with rain. A woman who is comfortably housed during stormy weather will, if it is possible, postpone for days together the dreadful necessity for exposure that such conditions imply. If the walk is exposed to a neighboring work-shop window, the visit will probably be put off until dusk. In either case, no amount of reasoning will convince a woman that it is her duty, for the sake of preventing troubles of which she is yet ignorant, to expose herself to the danger, the discomfort, and the annoyance that regularity under such circumstances implies. I pass over now the barbarous foulness and the stifling odor of the privy-vault. It is only as an unavoidable evil that these have been tolerated; but I cannot too strongly urge attention to the point taken above, and insist on the fact that every consideration of humanity, and of the welfare not only of our own families, but of the whole community, demands a speedy reform of this abuse. It will hardly be believed by my more civilized readers that, over more than half of the older settled parts of the United States, even the every-way objectionable system that I have described is comparatively unknown, and that the corn-field and the thicket are the only retreat provided, while the majority of farmers' houses, even at the North, are most inadequately supplied. In view of the foregoing facts, I make no apology for calling the attention of women themselves to this important matter, believing that they will universally concede that, however much of elegance and comfort may surround them in the appointments of their homes, their mode of life is neither decent, civilized, nor safe, unless they are provided with the conveniences that the water-closet and the earth-closet alone make possible.

As a positive source of disease, and as the occasion of a most injurious irregularity, the barbarous appliances of our ancestors, still existing in connection with nine-tenths of the habitations of the United States, were and are doubtless more injurious, even at the arm's length at which they were held, than are the average water-closets of average city houses. In saying this, however, it is not intended to be understood that these average modern appliances are acceptable as any thing but makeshifts—though relatively good, they are absolutely bad.

That their injurious effect on health is practically as bad as theoretically it ought to be, is not obviously true. Many of their victims die in infancy, and so large a number of those who pass this critical period withstand their evil effects, that it has come to be believed by the people at large that the outcry against them is an unreasonable one.

Perhaps all popular outcry is unreasonable, but certainly those who will take the trouble to investigate the condition of the drainage of an average house, supplied with the usual plumbing appliances, will find defects at every turn—not merely slight defects which it would, on the whole, be better to avoid, but generally very grave defects which it is absolutely necessary to eradicate before we can hope to secure those conditions of perfect health which we have a right to demand of the civilization of which we boast. In periods of epidemic, or when cholera or yellow fever is apprehended, the popular imagination on the subject becomes excited, and the long death-roll which pestilence creates gives an almost dramatic force to the stronger arguments advanced against our imperfect plumbing work.

As a matter of statistcis, however, the deaths caused by any epidemic, and the degree to which these are favored by bad drainage, are of very secondary importance. The thousands of deaths from yellow fever in New Orleans, and in Memphis, and in the Mississippi Valley generally, in 1878 and 1879, fairly shook the country with terror. They amounted in all, in both years, to less than twenty thousand.

Their suddenness and their concentration gave them their striking effect.

In the country at large there are annually not fewer than one million deaths, and not fewer than two hundred thousand of these are from directly preventible diseases. Not fewer than one hundred thousand of these latter probably owe their origin to diseases

occasioned by defective drainage or to the improper retention of fecal matter and other organic wastes.

This enormous preventible death is, *from the point of view of the political economist*, only an index of something worse. Each preventible death doubtless represents, taking one disease with another, twenty cases of preventible sickness, and each such case of sickness implies at least twenty days of suffering and disability with its serious incidental cost in nursing and medication.

The real benefit, therefore, that is to accrue to the community from the establishment of perfect sanitary regulations, in the house and in the town, aside from the establishment of greator vigor and efficiency, and of increased ability to withstand insalubrious conditions, is to be sought not so much in the prevention of these deaths as in the abolition of the diseases which cause them.

As in the town, so in the individual house, we shall be safe if our attention is given only incidentally to the saving of life, but directly to the preservation of health, *i. e.*, to the removal of all those conditions which affect the purity of the atmosphere in which we live, involving, of course, the purity of the ground on which our houses are built and the absolute prevention of the putrefaction any where within or near the house of its organic offscourings.

THE SYSTEM OF SEWAGE DISPOSED IN BERLIN, GERMANY.

A new system of sewerage in Berlin is described by Walter Wyman, M.D., Surg. U. S. Marine Hospital Service, in the Baltimore *Medical Chronicle*. The system was begun in 1870, was developed gradually, has been fairly in operation for eight years and now includes seven of the twelve districts into which the city has been divided for sewage purposes.

The plan contemplates in each district a pumping station, where all the sewage of the district is received and pumping thence to the irrigation fields, some twelve or fifteen miles distant. Seven pumping stations have been established, but five only are in actual use. The irrigation fields are four in number, three only being utilized, and are located to the north, north-west, south and south-east of the city. The four fields contain 14,666 acres of land.

Of the two stations visited by Dr. Wyman, it will be more interesting to describe the one which operates the drainage from the most central section of Berlin, viz: the third section, which includes the Unter den Linden with its palaces, and a densely populated commercial district as well. This station is the oldest, though not the largest of the five now in use. One might suppose that its location would be in some out of the way place, but were surprised to find it in a desirable portion of the city not specially removed from other buildings and only a three minutes walk from one of the finest railway stations in Europe—the Anhalter Bahnhof. The buildings, grounds and brick fence had a neat and orderly appearance, not unlike that of a well-conducted manufactory.

In the yard is the large cistern or *sand-fang* into which is poured, and through which is strained the sewage of the whole district—sewage of all kinds with the flush and rain waters. The district, or section No. 3, has a population of 130,000 and the quantity of sewage pumped here (in fluid state of course) is about 16,000 cubic metres every twenty four hours. On Saturdays the quantity is increased to 20,000 or 30,000 cubic metres.

It requires but an hour and a-half or two hours for all excrementa and other sewage to get from the place of deposit to this sand-fang, and so great is the quantity of water that by the time the cistern is reached the excrementa are in thorough solution. The water dilutes and renders them inoffensive and they are pumped out of the way before putrefaction begins. An attendant raised a few of the planks to give us a view of the contents. It appeared about half full of simply a muddy looking fluid, a bucketful of which was hauled up and emptied back to show that it was liquid only, and without stench. It has been shown that in 500 cubic metres of the fluid there is one cubic metre of solid matter, and in fact this fluidity of the sewage and its very rapid removal seem to be the two features which make this system successful.

The cistern has a capacity of about 5,000 cubic metres, its location is but a few yards distant from a busy street, and not more than twenty steps removed from the front entrance of the local manager's residence. It is loosely covered with boards an inch or more apart, and upon stepping upon the platform we failed to notice any odor. No sickness has been caused by it either in the residence or among the laborers. Occasion-

ally, though not often, it is necessary to flush it with water.

Dividing the cistern into two equal parts is an iron grating or strainer, the bars of which are perpendicular and two centimetres apart, and serve to catch paper, rags, etc., which are scraped out every day or two and burned in the boilers. The fluid thus strained passes into the suction pit, where there are six cylinders or suckers operated by the six engines of the station. The pit was opened for our inspection, and though the fluid was in agitation there was no odor. The engines run day and night (for it will be remembered that there is no detention of the sewage at the station), one engine being held always in reserve.

On going into the fields, Dr. Wyman says, after first noticing the absence of odor, (and the day was mild) our next surprise was the entire absence of machinery. The pumping force of the engines in Berlin is sufficient to throw the fluid to two central distributing points through channels measuring respectively one metre, and seventy-five centimetres in diameter. From these two central points distributing pipes radiate in every direction for a certain distance, connecting with the open courses or ditches which extend through the fields. At the point of junction of the pipes with the ditches, valves are provided for regulating the flow.

The fields which receive the sewage from sections 1, 2 and 3 of the twelve sections into which Berlin is divided, contains 3,333 acres. Five thousand cubic metres of liquid are distributed into them every twenty-four hours, of which 25 per cent. remains as deposit and 75 per cent. flows off the water. For every 500 persons, there is required about $2\frac{2}{3}$ acres, and the area of irrigation land required is about one and a-half times the surface of the city drained. The fields are very level and divided off with some degree of regularity by avenues lined with small trees, and further by ditches and furrows, giving to the whole a tesselated appearance. The sections are of two general sizes, the larger called meadows, being used for raising grass, and the smaller called beds, for the growth of vegetables.

A particular meadow, containing about four acres, had been flooded four days before and was to be flooded again the following day. Its soil appeared simply dark and moist; a ditch surrounded it, two feet in width and one and a-half feet in depth, through which the sewage fluid was slowly running. The current was made stronger, indeed quite forcible, by turning a valve at one corner of the meadow where the open ditch connects with the distribution pipe. To flood the meadow the current is put on at full force and the surrounding ditch opened at various points on the meadow side. This particular meadow gave five cuttings of grass last summer.

Besides grass, rye, oats, wheat, hemp and corn are raised; and in the beds, sugar beets, carrots, turnips, cabbage and chicory. Cows are pastured in the fields and are all healthy. The laborer, who has been employed here for five years, asserted that there is no sickness common among the workmen, except rheumatism, caused by working on moist ground —that sometimes in the summer strangers complain of the odor but the workmen never. The odor is chiefly experienced in the morning when the stop valves are opened, allowing the exit of gas that has accumulated in the pipes during the night. This passes off after the fluid runs a few moments. There is some stench also when the ditches are cleaned out, as they must be occasionally.

The remaining point to be explained is the method by which these beds and meadows are prevented from becoming marsh-like and soggy, in other words the drainage. They are all underlain by porous drain tiles placed one or more metres below the surface. Where the soil is sandy the tiles are about seven meters apart; where it partakes more of the nature of clay they are but three metres apart. The water collects in the tiles, runs into receiving ducts which empty into a main ditch. This ditch discharges into a small stream that flows into the river Havel, near Potsdam. At Potsdam is the summer seat of royalty, and the Emperor's summer palace "Babelsberg" is located directly on the Havel, the statement may be more readily believed that the water discharging into the Havel is clear, inoffensively and free from deleterious matter.

THE LANCET ON THE LONDON SEWAGE SYSTEM.

The Metropolitan Sewage Discharge Commission, appointed in 1882, has issued its second and final report. It will be remembered that in their first report the commissioners proved the existence of the nuisance complained of by evidence that placed it

above doubt, but reserved the far more difficult question of a remedy for further consideration. The new report is in several respects very satisfactory. The hot summer of 1884 has rendered the condition of the river so horrible that some very strong supplementary remarks, on the evils of the present system, have been added by the commissioners. On one occasion, three out of five commissioners, and also their clerk, suffered from severe diarrhœa after their day's inspection. The sewage was perceptible by sight as well as smell throughout a large area. At Greenwich Pier "the water was very black, and the smell excessively strong." At Woolwich, "the river for its whole width was black, putrid sewage, looking as if unmixed and unalloyed. The stench was intolerable." "At Erith the smell was strong, and in Erith Reach the sewage was clearly visible and the water dark," and so on at all the points visited down to Greenhithe. It is not wonderful that the unfortunate visitors should have summed up their experience in such trenchant words as the following: "We found a condition of things which we must denounce as a disgrace to the metropolis and to civilization."

The state of the river in the past summer was actually too much for the Metropolitan Board, who have gone so far as to "have admitted the existence of the nuisance in the present year," an admission, however, hardly in accordance with their previous broad statement that they "did not concur in the conclusions arrived at by the commissioners, and stated in their first report."

For the last thirty years and more scheme after scheme has been tried for the disposal of town sewage, and some have met with partial succees. But it cannot be said that anyone of them has proved quite satisfactory. All, under the conditions prevalent in the Lower Thames, would be expensive; and as there is now no doubt that some scheme must immediately be adopted it only remains to choose the one which with real efficiency promises to be the least costly. Sir Joseph Bazalgette proposes the extension of the present sewer, united into one by a conduit under the river at Crossness, to Thames Haven, thirty-six miles below London Bridge by river, but with characteristic persistency, he urges that the sewage should still go into the stream in a raw state. We are glad to find that he is quite alone in this last opinion. It is, moreover, anomalous that the engineer who has so long and so stoutly opposed this extension should now himself propose it.

On the whole there seems to be a consensus of opinion, heartily adopted by the commissioners, that the sewage must be taken to Sea Reach. What to do with it there is less certain. Carry it still further and throw it into the sea, say some engineers; and it is very possible that this might be the cheapest course, but there are many objections to it; and we are entirely in accord with the commissioners in believing that the proper system to adopt is that which is generally known as precipitation supplemented by application to land. Let the sewage of the whole metropolis, including that of the Lower Thames Valley, be taken in a single conduit to Canvey Island, below Thames Haven; provide sufficient land for intermittent downward filtration; precipitate the solid matters by the cheapest available process; apply the solid matters as manure to the land, thereby fertilizing it and raising its level; irrigate the land with the fluid portion, and throw only a decently clean effluent into the river. All this would doubtless be expensive, but it is necessary, and we believe that if a parliamentary committee were appointed to fix the means, it would be found to involve no greater expense than the metropolis could bear.

Meanwhile, some temporary precipitation process should and must immediately be adopted at the two great outfalls. We cannot too often repeat that the fearful danger of cholera hangs over the land, and if no preparation is made for it before next summer a most serious responsibility will lie with our rulers. Let us conclude in the words of the report before us, embodying as it does the opinions of Drs. Stevenson and De Chaumont, the medical members of the commission:—"The condition of the river is such as to be a danger to health; and in view of the probable arrival on it of vessels with cases of cholera on board, should the state of the river not improve very speedily, the gravest results may be apprehended."

DANGEROUS POTTERY.

On this subject Mr. E. Peyrusson, in *Cosmos Les Mondes*, gives the following:—Having had occasion to examine some common pieces of pottery which were suspected of having led to accidents of lead-poisoning, I have been able to demonstrate that a great number of these objects are, despite asser-

tions to the contrary, glazed with lead salt, and that their glazing contains a quantity of lead which is a menace to health, since I was able to detect in 100 grammes of milk, which was allowed to ferment or sour in one of these vessels, the large amount of 0.22 gramme of sulphate of lead.

It is also well known that M. Constantin has discovered a process more economical and entirely harmless for glazing by means of the borosilicate of lime, and that chemist, who has been honored by the Academy, has generously given his discovery to the public.

The glazing of fine earthenware, both French and English, has been greatly helped by the addition of boric acid and borate of lime, which permits a large reduction in the amount of carbonate of lead used, which formerly was considerable. These latter vessels give to fermented milk or soup but a small percentage of lead; but it being granted that this metal is the most dangerous of the common metals, it is beyond doubt that if these vessels are incapable of producing as acute poisoning as those glazed with lead salt, they nevertheless can by constant use cause accidents which are so much the more alarming, as the elimination of this poison requires a long time, during which time also small doses can accumulate to dangerous proportions.

In my experiments I noticed that the vessels in which I had at first permitted the milk or soup to ferment brought this fermentation on much more rapidly when I repeated the experiment, even after they had been carefully cleaned. I then thought that perhaps the cracks and chinks which always occur in the glazing af earthenware which has been used for some time had something to do with it. I thought that these small crevices, in spite of repeated washing, retained a certain number of the germs, which started the fermentation of the new liquids I inclosed in the vessels.

It seems to result from my experiments that the cracks can screen the germs, and from analogy it is quite possible that such vessels, being used for the sick suffering the attacks of contagious diseases, can spread the disease of the patients whose food they contain. The report of M. De Mussy on the epidemics of 1880 mentions the fact that twenty-three men contracted typhoid fever at the hospital where they had been received for quite different complaints. I should not be surprised that the disease was conveyed by just such vessels, etc., under the conditions I have indicated above. It seems prudent, therefore, in hospitals not to use the earthenware, at least for patients with contagious diseases upon them. Glass and porcelain are the only entirely safe materials to use in the sick room. Metal itself presents unevenness, where the germs may settle and remain attached, although washed and cleaned with boiling water.

SANITARY ASSOCIATIONS.

A committee was appointed at a late meeting of the "Ohio State Sanitary Association" to urge upon the counties, towns and villages of the State the great desirability of *local sanitary societies.* The committee send the following to the *Sanitary Monitor* and press upon its readers the "vital interests involved in this new gospel of humanity."

WHO SHOULD BE WILLING TO JOIN AND TO OPERATE SUCH A SOCIETY, AND WHY?

All *clergymen* should be active in such a cause, for they well know that physical and moral uncleanliness are inseparable; that "cleanliness is akin to godliness"; that the first steps on the ladder of moral purity are clean faces, clean bodies, clean clothes, clean food, clean houses, and clean surroundings.

All *teachers* should give it a helping hand. They are in daily communication with children of all classes and orders of society. They know how pleasant it is to teach clean, bright, healthy children; how unpleasant and offensive are the unwashed, the dirty, the squalid. They know that dirt breeds sickness; that contagion is the inevitable result; that the efficiency of their school is in this way sadly obstructed, and that death clearly traceable to disobedience of sanitary laws may rob them of their best and most promising scholars.

Philanthropists should be eager to spread abroad whatever tends to make their fellowmen healthier, happier, more efficient workers in their allotted station in life; to mitigate the terrors of disease and death; to advance their community to a higher plane of well-being and well doing.

Lawyers should interest themselves. Not simply because they are citizens, but because of their peculiar relation to the making and the execution of the laws of the state.

Their counsel and influence are greatly needed to bring about proper and healthful sanitary legislation and to assist sanitary officers in the performance of their duties.

Capitalists would be surprised to learn what good investments have been made in practical sanitary reforms. Sanitary lodging-houses have displaced disease-breeding and burglar-sheltering slums, changing the whole aspect of a neighborhood, and have paid a good interest on the investment. Sewage farms have proved profitable beyond any reasonable expectations. Abattoirs have quickly superseded the old offensive slaughter-houses, with good profits to the owners. A wide experience, now on record, proves that capital invested in sanitary improvements pays.

Business men should take an interest in sanitary reforms and in spreading a knowledge of sanitary laws. They know what one epidemic may cost them in the way of loss of business and stagnation of trade. Small-pox, a clearly preventable disease, is said to have cost Philadelphia, in one epidemic, between ten and twenty millions of dollars, in loss of business.

In 1879 the report of a single case of yellow fever in the south caused a shrinkage in the provision market, in the city of Chicago alone, of more than a million dollars within twenty-four hours. The present epidemic of cholera has cost Southern Europe not less than *one hundred million dollars.* To take an interest in sanitary reform is therefore a clear duty as a matter of business.

It is hardly necessary to add that the humane, the philanthropic, the christian *physician,* should take special interest in sanitary reforms. No other class of citizens can so fully realize the necessity. The medical profession has ever been in advance in all matters pertaining to the health of the people, and we appeal to the profession to-day in special confidence.

HOW SHALL SUCH SOCIETIES BE ORGANIZED?

Upon reading this let some interested party at once call a meeting of all those who are known to be in sympathy with this movement for sanitary reform, writing special invitations if necessary. Organize a society with proper officers, and hold regular meetings for the purpose of mutual instruction in everything pertaining to sanitary science. Read selections on appropriate topics. Exhibit pictures of diagrams illustrating the truths set forth. Discuss the best methods of accomplishing any given problem. Write plain practical essays to be read before the society, and then, if considered suitable, let them be published in the papers. Let organized effort be brought to bear on city councils, on superintendents of public buildings, on municipal authorities, and on householders and house-owners to the end that nuisances may be abated, that sources of disease may be investigated and diminished, and that the necessity for pure air, good water, and healthful food may be inculcated on the whole community.

This committee and the Ohio Sanitary Association earnestly implore every community to take this action at once in view of the apprehended approach of cholera in the near future, and because of the too frequent occurrence of typhoid fever, diphtheria, dysentery, and other preventable *filth-diseases* in our midst. If, in our own persons, in our families, or among beloved friends, disease and death due to *preventable* causes should overwhelm us with unhappiness and grief, what answer can we make them when sanitary science, pointing out the way of health, invites us to walk therein? Who will dare to say it is the hand of the Lord that has desolated our homes, when our own ignorance, or stupidity or carelessness is alone at fault?

SUMMARY ON PREVENTION OF CHOLERA.

The following, from "Rules for the prevention, development and spread of Asiatic Cholera," compiled by the editor of this JOURNAL from latest authorities, for public distribution, will be of practical use at this season:—

THE AIR—DWELLINGS AND OUTBUILDINGS.

THE CELLAR AND BASEMENT should be looked to, and if there be any decaying vegetable or other organic matter, all should be removed and every corner thoroughly cleaned and disinfected, and a coating of lime wash laid on the walls. The under surface of wooden floors of cellars and basements should be looked to and, if commencing to decay, should be replaced by new, and all drains under floors should be inspected. Many a death has been caused by a leakage under a basement floor. If the soil near the floor be not thoroughly dry, the drain should be laid deeper. All cellars and basements, and indeed all rooms, should have abundance of sunlight and air let into them. All drains soil-pipes, vents and traps should be well looked after, and a free out-flow of sewage secured by free flushing from all water-closets, sinks and baths. Sinks and grease traps,

and in some cases, even cooking utensils and dish cloths, require inspection, and more.

THE BACK YARD, STABLES OF ALL SORTS, PIGGERIES, HENNERIES AND PRIVY VAULTS should be thoroughly cleaned and every trace of excreta removed. Where the soil has been soaked with liquid excreta from the stable or the vault, or from slops thrown on the ground, it should be removed, or the worst of it, and some clean new soil spread over the places. And, where practicable, grass seed should be sown freely about back yards. The walls of vaults, if of wood, brick, or stone, after having been well cleaned, should be washed with a strong solution of copperas; if only of earth, much of this below and around the vault should be removed. Every day all excreta in the vault should be covered with dry earth or coal ashes. Abundance of lime wash would greatly improve the condition of stable walls and help to keep the air in and around them pure.

PUBLIC OR MUNICIPAL MEASURES.

STREETS, LANES AND VACANT LOTS should be thoroughly cleaned. Slaughter houses, piggeries, large stables, cowbyres and certain kinds of manufacturing establishments must be looked after usually by municipal authorities, and all should be thoroughly cleaned and renovated. Pools of stagnant water must be eradicated. All sewers should be freely flushed and inspected, in order that there shall be no stagnant sewage in them. all street gratings must be carefully cleaned and freely disinfected at repeated intervals.

Inspectors should make a house to house inspection and see that all premises are well looked after, as above pointed out. If not done by the occupant it should be done by the municipality, when the occupant should be compelled to pay for the work. In cities there are usually over-crowded and badly ventilated, filthy houses, which it is very desirable that the proper authorities should have set right. Such places, in the event of an epidemic, are very liable to become centres of outbreaks. The condition of our lake and river steamers and of the privies and closets of railroad stations and cars should be carefully looked after.

In most villages, towns and cities, old wooden pavements and decaying planks and timber are to be found on streets and back lots in a state of partial decomposition, and often saturated with moist filth. These should be carted away and burned.

All the cleaning should be done before the hot season sets in. In times of actual pestilence it is not usually well to disturb collections of filth. Better to disinfect the surface and cover them with a layer of dry earth.

The poor must be looked after that they do no not suffer for want of proper food and lodging and so become centres of outbreaks, and that they be provided promptly with medicine in case of illness from supected cholera, or diarrhœa. In times of epidemics the poor are much more likely to suffer and need attention. And in populous places provision should be made to have in readiness isolation hospitals in case one should be required.

DRAINAGE OF THE SOIL.

This is a very important measure. A damp soil, especially when containing an abundance of organic matter, is particularly favorable to the spread of cholera and all zymotic diseases. A great deal of underdraining might be done during the early part of the coming summer, by which over dampness of soil in the autumn would be pervented and so many lives saved which otherwise would fall victims to zymotic diseases. Pettenkofer says: "All towns which have been provided with good drainage and water supply have lost their susceptibility to cholera;" and he gives instances in English towns. In the absence of underdrainage open drains should be provided to dry any wet or damp places.

THE WATER SUPPLY—HOW TO MANAGE WELLS.

A bad water supply has long been associated with great prevalence of cholera. The disease is not probably communicated by means of water, as has long been believed by many, but pure water is as necessary to health as pure air, pure food, and so forth, and bad water will doutless give rise to a personal predisposition, or a local predisposition, to the disease.

AS TO WELLS, there is not one, probably, but should be repeatedly cleaned, and more especially now, by reason of a threatened epidemic. The well, after being pumped dry and well cleared of all impurities which may have collected, should be well washed and the grimy sides thoroughly cleaned, a few barrels or tubs full of the first water pumped out being preserved for the purpose. A little sulphate of iron (copperas) 4 oz. to a

pailful of water, for a second washing, the walls being rinced with water alone, would promote perfect cleanliness. See that there is no possible source of contamination of the water, as by washings from, and collections of filth. Trust not in a hundred feet of space, nor a thousand feet, between the well and privy vault or other foulness. Water may precolate many hundreds of feet through soil and still be poisonous. The only absolute safety is in the complete destruction of all filth, and the complete "disinfection" of the places where it had been, then there can be no washings from either. See that the pump (or chain and bucket) is thoroughly clean and pure. A wooden pump may get very foul in some waters. And see that the well is securely covered.

THE PUBLIC WATER SUPPLY must be looked after by the municipal officers, and all sources of possible contamination removed. Any filters used should be thoroughly cleaned or renewed.

BY THOROUGH BOILING, water is most likely rendered absolutely safe in all circumstances until it becomes again contaminated. After having been boiled it is best that it should stand for a few minutes at least that any destroyed products of active impurities may subside and be rejected. In times of epidemics especially boiled water only should be taken into the system in any form, either with foods or as drink. The kettle or vessel in which water is constantly boiled should be frequently well cleaned. Neglect of this often makes boiled water unpleasant to drink. Boiling is safer than filtering.

THE FOOD SUPPLY.

This requires both private and public oversight. Everything that is eaten should be absolutely pure and fresh. The milk supply must be closely looked after, and the source of it. It would be much safer, too, to make a practice of boiling the milk. Fruits and some other vegetable products, from their proneness to early decay, demand perhaps the most care in looking after, inspecting, &c. Unripe as well as decaying fruits should be interdicted. Great care should be exercised in regard to all canned foods, animal or vegetable, and all cured meats and butchers' meats, to see that they are free from taint, pure and sweet. The sources of the ice supply demand special attention, and if any be suspected the ice from such ought not to be used with drinks or foods.

On individual or personal measures much has already been given in this JOURNAL (see No. for March, 85, p. 117).

LEAD-POISONING IN INFANTS.—Dr. J. Lowy reports three cases of lead-poisoning occurring in infants which deserve to be widely promulgated, especially among the laity (*Wiener Med. Presse, in Therapeut Gaz.*) 1. A child of 5 weeks of age, nourished by a wet-nurse, was suddenly seized with violent colicky paroxysms, accompanied by a bluish-livid colour of the skin. The cause was found to be the lead-containing face-powder of the child's nurse. 2. Another infant of the same age showed similar symptoms, which were traced to the use of lotions of Goulard's extract by its nurse, which she applied to her sore breast, without cleaning the latter thoroughly before nursing the infant. 3. An infant of 3 months of age was taken suddenly ill with distinct symptoms of lead-poisoning. An examination revealed that the nursing bottle used by the infant contained a lead-cork, andthat on account of a rupture in the rubber tube passing through this metal cork the lead came in direct contract with the milk.—(*Wiener Med. Presse.*)

HOW TO PLANT AND GROW SHADE TREES.—A leading nurseryman of Cincinnati was lately "interviewed" and gave some information regarding trees and tree culture, from which the following, from the *American Inventor* will be of interest: No tree should be taken from the nursery before it is two inches in diameter at the collar and at least six feet high. In digging up trees care should be taken that all the roots and fibrous tendrils are preserved, which are most necessary in order to take hold of new soil. If done by inexperienced hands the roots will be more or less bruised, and a tree of this kind transplanted seldom lives. Preparatory to planting, the holes should be made at least two feet deep and about that wide at the top. As much of the native dirt as can possible be retained should be left around roots. With this it is sometimes a good plan to mix coarse river sand. This should be placed just over the roots, and clear to the top of the cavity, in order that water may easily find its way through. The earth should never be tramped around a tree, as it compresses the roots and prevents them from taking a natural and easy position in the soil. Never plant trees closer than eighteen feet apart. Tree boxes serve many useful

purposes. They protect the trunk of the tree from the hot sun of summer and the cold winds and storms of winter. A little hay or woolen cloth, if put between the box and the young tree, will shield it from the severest winter weather. And now as to pruning. Much fault is found with the reckless manner in which trees are trimmed, causing the destruction of many hundreds every year. None of the limbs of a tree except the lower ones should be cut from the trunk. The custom of thinning out a tree is the most detrimental that could be followed. The thicker the foliage the better it is.

THE DEADLY TEAPOT.—While good temperance people are decrying liquor, says a leading American physician, (*Brit. Med. Jour.*) they seldom stop to think how much harm is being done by an abuse of a beverage to which so many of them are devoted. I just came from attending a case of a five-year-old baby who is ruined for life by its parents indulging in tea-drinking. The child became very nervous and dyspeptic, and they sent for me. I asked them how much tea the child drank. "About two cups at each meal, and several between meals," was the reply. You see, the physician continued, they let the teapot stand on the stove all day. Thus the tannic acid is extracted, which serves to turn the linings of the stomach into leather, and brings on dyspepsia and kindred diseases. Yes, you will find hundreds of women, young girls and aged women, and occasionally a man, who have completely ruined their nervous system by the excessive use of common tea. It would be a blessing to mankind when a temperance crusade can spare wind enough from its attack on alcohol to assail tea.

SLEEPLESSNESS AND NARCOTICS.—Again we (*Lancet*) have to record, with deep regret, a sad proof that those who give or take chloral, or bromide of potassium, for sleeplessness, are guilty of a deplorable error and do a grievous wrong. The narcotics which poison sleep also deprave the higher nervous centres, enfeeble the controlling power of the will, and leave the mind a prey to the depressing influence of a conscious loss of self-respect and self-confidence. The cultured mind feels the ignominy of this intellectual and moral depreciation with great acuteness, and in the end succumbs to the sense of powerlessness to recover self control and do right. The deprivation wrought is purely physical. The baneful influence of the lethal drug is, so to say, organic. The essential elements of the nerve tissue are blighted by the stupefying poison, as by alcohol in habitual drunkenness. In short, the recourse to chloral and bromide is precisely the same thing as a recourse to alcohol. The man or woman who is sent to sleep—the mocking semblance of physiological rest (will not this apply to all soporifics?)—by a dose of either of these narcotizers is simply *intoxicated*. No wonder habitual drunkenness of this class first impairs and then destroys the vitality of the mind organ, and places the subject of a miserable artifice at the mercy of his emotional nature, and makes him the creature of his passions. When will the public awake to the recognition of facts with regard to the use of these most pernicious stupefacients? Persistence in recourse to them has no better excuse than unwillingness to take the trouble to search out the cause of the wakefulness which prevents natural sleep.

THE INTOLERABLE NUISANCES.—It is gratifying to find the privy system sinking gradually—though not so fast as it ought to—into disrepute. The *American Agriculturist* gives the following:—"The family wastes are of three sorts: 1st, garbage—the kitchen solid refuse, including ashes; 2nd, liquid waste—kitchen slops, washing water, etc.; 3rd, the wastes of the human body. Leaving the other wastes to another time, we call attention to the wastes of our bodies as the most dangerous of all, and at the same time the most readily disposed of. Nothing can be more inadequate for the purpose than the ordinary privy vault, It is not only a constant offence, but a continuous source of danger, its contents often contaminating wells at the distance of a hundred feet or more, and bringing disease and death into the family. Dangerous at all times, the privy vault is especially to be dreaded in time of cholera. There is but one thing to be done with a privy vault—abolish it! Do this at once, before hot weather. It is impossible to mend, improve or make it tolerable. Fill it up and be done with it. The substitute for the vault is the earth closet. If the small house that has stood over the vault is more convenient than any other place for the earth closet, use it. Such buildings are usually eye-sores, and the filling up of the vault removes all excuse for the unsightly presence. An earth closet may be placed in any convenient room; one may be partitioned off in a shed, in a barn

or other outbuilding, or the closet may occupy a small room in the house without unpleasant results. The material required is dry loam—not sand, but good soil—the stiffer the better. Dry this earth thoroughly by spreading it on a platform of boards in the sun. When dust dry, pass it through a sieve, to remove lumps, stones, etc., and store in a barrel or boxes, in a dry place. Where coal is burned sifted ashes will answer in place of dry earth, but wood ashes must not be used.

"HEAP'S PATENT" Dry Earth or Ashes Closets are acknowledged by the leading sanitarians to be the best in the world. They have been awarded thirteen first prize medals. Nearly 16,000 are in use. They are the only perfect dry earth closets made in Canada. No others can compare with them. The patent enamelled urine separator keeps the liquid from mixing with the solid excreta, and renders them perfectly inodorous and healthy. They manufacture inodorous commodes for bedrooms. The factories are at Owen Sound and Toronto, and the head office and showrooms at 57 Adelaide street west, Toronto. The Ottawa depot is at 45 Elgin street; R. C. W. McCuaig, agent.

DISINFECTION AND DISINFECTANTS.—Disinfection properly and essentially consists in the destruction of disease germs. Popularly, the term disinfection is used in a much broader sense. Any chemical agent which destroys or masks bad odors, or arrests putrefactive decomposition, is spoken of as a disinfectant. This use of the term has led to much misapprehension, and substances which have been found to destroy bad odors—*deodorisers*—or to arrest putrefaction—*antiseptics*—have been recommended and used for the destruction of disease germs in the excreta of patients with cholera, typhoid fever, etc., and injurious consequences have resulted. Many deodorisers and antiseptics, are entirely without value for the destruction of disease germs. Antiseptic agents restrain the development of disease germs, and their use during epidemics is to be recommended when masses of organic material can not be completely destroyed, removed, or disinfected.

SEWAGE FARMING.—Mr. Edwin Chadwick, C.B., &c., in a recent paper relating to sewage, gives the following:—On the occasion of the International Medical Congress, we took a party of foreign health officers to see the sanitary works on the separate system at Croydon, and for their information I asked the surveyor "Are your houses all water-closeted?" "Yes, they are." "In what time, then, is all the fecal matter removed from the farthest point of the town to the outfall and on the land?" "In about two hours," was the answer. The deputation went to the outfall, and there perceived no smell of decomposition. On the land there was a fivefold yield of superior milk and butter. Yet, in the face of such examples of works, now answering abroad as well as at home, the vestral authorities, it must be said from their incompetency, have in the metropolis thrown away what is the equivalent of the milk and butter of some hundred and eighty thousand cows, into the river or the sea. The experiences of the fen system of working by convergence into sumps warrant the conclusion that from every part of the farthest part of the metropolis the sewage of the morning from its half million of houses would have been removed, and would be on the land by about the middle of the day, not merely in mechanical suspension, but, at Croydon, in chemical combination. Fresh sewage is more fertilizing by a third than putrid sewage. A verification would have been presented, and may yet be presented on a grand scale, of the maxim of de Candolle, the greatest vegetable physiologist of the last century, that the future of agriculture will be found in giving food and water at the same time.

ARSENIC AS A DOMESTIC POISON.—A good paper on this subject in the last health report of Massachusetts is thus referred to by the *Sanitarian*, N. Y.: This paper shows the fallacy of the belief that the use of arsenic is commonly limited to the *green* papers and fabrics. Dangerous specimens are shown in various colours—blue, drab, brown, yellow, pink, crimson and mingled colours of wall and glazed papers, and cotton fabrics which contain all the way from *one* to *fifty-five* grains of arsenious acid to every square yard. The most dangerous papers being the glazed papers used in the manufacture of fancy boxes, cornucopias, and confectionary boxes, and for wrapping cough lozenges. Similar papers are also used in the manufacture of theatre and concert tickets and playing-cards. The presence of arsenic has also been found in children's toys—paints, building blocks, india-rubber balloons, painted balls and painted dolls; children's books—both paper and cloth, and toy-candles for Christmas-

trees. In articles of clothing fatal cases of poisoning have been reported, caused by the green flannel lining of boots, maroon flannel shirts, calico shirts, gloves, coat-sleeves, hat linings and paper collars. Stuffs used for covering furniture, lambrequins, bed-hangings, chintz window-curtains, baby-carriage linings and carpets have all been found to contain arsenic in dangerous amount. Artificial flowers are also a common source of poison from its use; of six different kinds of *fuchsine* examined, only one was free from arsenic. German fly-paper is a special source of danger. This is made by soaking coarse bibulous paper in a strong solution of arsenite of sodium, and allowing it to dry. In its ordinary use, by placing a piece in a plate or saucer and moistening it with sweetened water, the flies killed by partaking of it lie dead in all parts of the room, thus scattering the poison; and, besides, three cases of fatal poisoning in children, by drinking the sweetened water soaking the fly-paper, have been reported. The "The Buffalo Carpet-Moth Annihilator," labelled: "This remedy contains neither hellebore nor carbolic acid; it has no offensive odor, and can be used anywhere, as it leaves neither colour nor stain. This insect antagonist or compound should be sprinkled beneath your carpets, and especially along the edges. . . . Should be freely used in trunks, closets and drawers, and wherever woollen, cotton or silk materials are packed or stored. In all places and crevices favourable to vermin it should be used, and will be found especially efficacious in the putting away of furs." A single specimen of this powder analyzed by Dr. C. Harrington, was found to contain 6.726 per cent. of crystals of white arsenic. "Rough on Rats" is a grayish white powder, which also contains white arsenic crystals.

CONSTRUCTION OF HABITATIONS.—In "A Text Book of Hygiene," by Geo. H. Rohé, M.D., (Prof. of Hyg. Col. of P. and S.,) of Baltimore, Md., is the following: The importance of observing the principles of hygiene in the construction of habitations for human beings is not sufficiently appreciated by the public. Architects and builders themselves have not kept pace with the sanitarian in the study of the conditions necessary to be observed in building a dwelling house which shall answer the requirements of sanitary science. In an investigation conducted by Dr. Villermé it was found that in France, from 1821–1827, of the inhabitants of arrondissements containing 7 per cent. of badly constructed dwellings, one person out of every seventy-two died. Of inhabitants of arrondissements containing 22 per cent. of badly constructed dwellings, one out of sixty-five died, while of the inhabitants of arrondissements containing 38 per cent. of badly constructed dwellings, one out of every forty-five died.

UNSANITARY COUNTRY PLACES.—It is common for people who spend their lives in the country or the smaller towns to consider their habitat much more favorable to health and long life than that of their city brethren. The *Hydraulic and Sanitary Engineer* gives the following truths:—While the man of the city sees the dangers which surround him and endeavors to avoid them his country brother is apt to give himself no concern about risks equally threatening. He lives in a hereditary belief that he has such a large advantage in the matter of healthful conditions that he need give himself no concern about "preventive medicine," unless perhaps when he learns the cholera is coming. Then a spasmodic cleaning up may occur, and a little chloride of lime and whitewash be brought into requisition. By this indifference the advantage possessed by the country from the absence of crowding is minimized. precisely the same causes of disease may exist in the country as in the city; they may recur with as much frequency, and prove just as fatal. The people of the country need to be as careful in the disposition of their wastes as do those of the city. These wastes must be closely looked after, unless one is willing to take the risk of being poisoned. It is equally true that bad drinking water may be had in the country just as often as in the city—in fact, a great deal oftener—and that pure air and other favorable surroundings will not do much to mitigate its evil effects. While a system of sewers and water-works is vastly more complicated than a system of out-houses and wells, the supervision required in each case is of a degree rather than kind.

UNWHOLESOME WATER.—The effects of drinking unwholesome water are very insidious. Its operations are not immediate, but cumulative. How much of the ill-health—that state of general debility which is not of a sufficiently pronounced character to need the services of a physician—is due to the drinking of impure water, it would be impossible to calculate; but we

may safely say that it is considerably more than half. In sanitary matters generally people are difficult to teach. Simply because the water is not disagreeable either to sight, taste or smell, they persist in thinking it must be a healthy beverage. They have drunk it for years and, as they imagine, have experienced no ill effects. But, nevertheless, the poison has been imbibed. It is in the system, though it is often kept in subjection for years, working so insidiously as to create no suspicion; but there it is, ready when the opportunity comes to work its deadly purpose, often doing its work so covertly that neither the sufferer nor his friends have the least suspicion whence the blow comes. At times the poison thus closed up operates like gunpowder, and, acted on as by a spark, there is a sudden explosion. The result is an epidemic which spreads disease and death on all sides. This, of course, absorbs attention by the numbers of the victims, but we are well assured that the sum of minor resultant evils far outbalances the more prominent cases.

WELLS are generally, if not always, to be looked on with suspicion. They may be perfectly safe at one time, and become very unsafe at another, by an inflow of sewage. Surface springs may be exposed to the same danger. Where sources of possible contamination exist, the only safe method is to control them by proper care; or better, to substitute the rain-water cistern for the well or the surface spring.

PREVENTION OF THE SPREAD OF SCARLET FEVER.—At a recent discussion in the Practitioners' Society of New York, on the propagation of acute infectious fevers, especially scarlet fever, the first question raised was the contagiousness of scarlet fever during the stage of incubation. Some speakers believed in this, but the chief evidence went to show that the disease was very feebly infective at this stage, if so at all. As to measures deemed necessary during the sickness of the patient to prevent the spread of the disease nothing very new was suggested, and the chief reliance was on isolation and plenty of air, the disinfection of clothes, and the hanging of a sheet wetted with a disinfectant solution before the door. One gentleman thought the room and not the child was the chief source of danger.

THE SOIL-FERMENT.—It was determined by experiment a few years ago (*Pop. Science Mo.*) that the capacity of earth to purify sewage from organic matters by oxidation could be suspended by treating the earth with chloroform, but that in time the soil would regain its oxidizing quality. The conclusion was reached from this observation that the oxidation of organic matters in sewage depends, in part at least, on the presence of small living organisms whose activity could be suspended by dosing them with chloroform. This conclusion has been confirmed by subsequent observations, and it is believed now that the oxidizing property of the soil is promoted by the presence of a a micrococus, which acts most efficiently at a temperature about that of the blood, but more feebly at higher or lower temperatures, while its efficiency ceases entirely at near the freezing point and above 130° Fahr. It appears to be, in dry soils, most abundant in the upper six inches, and to cease to act at depths below 18 inches. It has been further determined by these experiments that nitrogenous solutions to be acted upon by the ferment must be alkaline, while acid solutions are not affected. Ordinary house sewage is slightly alkaline and readily acted upon, but this susceptibility is destroyed when acid manufacturers' wastes are admitted to be mixed with it, or with the soil.

SMALLPOX AND ISOLATION.—It having been stated that smallpox was prevalent among the persons residing in the barracks of the Salvation Army, Clapton, England, the medical officer of the Salvation Army writes to the *Lancet* and states that the report is absolutely untrue, and that since the barracks have been opened at Clapton, three years ago, there have been in all twelve cases; seven this year, three in 1884, and two in 1883. Every care is taken to prevent infection spreading; on the slightest suspicious symptom the cadet is isolated (in a room kept on purpose for infectious cases), and as soon as smallpox is pronounced the patient is at once removed to the hospital at Highgate. Every precaution as regards disinfection is taken after the case has occurred. So far *there has been no spread of the disease in the barracks*, the cases being isolated ones.

THE United States Consul at Genoa, in a communication to the Home Government, since the outbreak of cholera at Toulon and Marseilles, states that the Sunday excesses among the laboring classes proved a powerful feeder of the epidemic.

Leading Articles.

CREMATION OF GARBAGE.

The ultimate disposal of our waste products is a question which is now attracting much attention in every quarter. For many years the refuse matter of some cities has been disposed of for manure; some places deriving considerable revenue from the sale. Of late years the sales have fallen off, and large cities in Britain and the United States are considering the question of cremation of garbage. In our own limited spheres we can all do much in solving this question, by simply burning up all the refuse vegetable and other waste matter in our houses, as soon as it is produced. Reader if you will try burning up each day all the parings of vegetables, fruit and even refuse of meat, instead of keeping them for the scavenger to call for them, the result will repay and please you; the trouble is a mere nothing, in the ordinary day's work, the inconvenience from smell, absolutely *nil* if properly managed, and the comfort of having no refuse to make smells, attract and breed flies and other vermin will result in a contented mind. In our own home, a pail full of garbage has not been mixed with the ashes of the stoves and furnace for twelve months, no complaints are made against the trouble of cremation and our sanitary senses are never reminded that any such performance is being carried on in the kitchen.

SANITARY ASSOCIATIONS.

The first session of the Toronto Sanitary Association closed on the 13th April; we are very pleased to learn that it has been a very successful movement. In many respects it was perhaps incumbent on a large and influential centre like Toronto, to take a lead in this matter, and it is well it has done so. The association has made itself felt in many ways, though no direct evidence of its fruit is visible. In the under tone of public and private opinion, it is easily gathered that the leaven of increasing sanitary interest is working. We would like to see this Association enlarge its sphere next year, and undertake a series of public lectures on a variety of the subjects which go to make up health: such as care of the body, waking and sleeping; dress: food; exercise; care of children, particularly infants; with a lecture or two on hints on nursing, &c.

The sphere of such associations does not lie only in large cities and towns. Every village can have its association, in which every member can do a great deal to promote the public health, by keeping his premises clean and tidy, and setting an example to his neighbours. Each householder doing a little tidying up on his own premises, will soon work a great change in the general appearance of a village. The movement is certainly one which commends itself to each of us, as all are interested in the question of health. Social reforms are always most effective when they are spontaneous. Towns and villages on the "other side" are in general appearance in advance of those in Canada, and it is always pleasant to admire the pretty villages there. There is no reason why our Canadian villages should not be fit accompaniments to the lovely landscapes of waving grain and heavy laden fields and orchards. Nature gives us its beauties freely in golden fields, mellow landscapes, rich sunsets; we in return should make our homes harmonize with the surroundings.

Sir William Thompson, in an article on diet, in a late number of the *Fortnightly*, avows his conviction that more mischief in the form of actual disease, of impaired vigour and of shortened life, accrues to civilized men from erroneous habits in eating than from the habitual use of alcoholic liquors, great as he deems that to be. He adds, too, "I am not sure that a similar comparison might not be made between the respective influences of those agencies in regard of moral evil also."

All rags sent to New York are arranged in bundles and placed in an impermeable receptacle into which superheated steam is introduced (330° F.). In about five minutes the temperature of the bundles is so high that in two hours it does not fall below 100°. The experiments that have been made prove that this process destroys completely all germs contained in the rags, whereas sulphurous acid is not so successful.

Recent and Current.

HEALTH OF THE CANADIAN ARMY.—This on the whole appears to have been and to continue to be exceedingly good. Although up to the present time (18th inst.) there have been three deaths (from disease) this is a low mortality as compared with the mortality in European armies, while the number on the sick list has been comparatively low. Although the time is short upon which to base reliable comparisons, a few facts are worthy of note. In the English army, in times of peace, the mortality has been usually about 8 per 1,000, per annum. At one time it was much higher than this, but with progress in Sanitary science it has gradually become lower. In the French army the mortality is higher; usually about 10 per 1,000. According to a recent number of the *Journal d'Hygiene*, it was, in 1881, seemingly the latest recorded, 13.60 per 1,000 amongst those in the active service. Three deaths amongst the 5,000 troops (in round numbers) in the North-West during the forty days (the average) since they were called out, is only equal to a mortality of 5·4 per 1,000 per annum. As to sickness, Parks says, of the English army, about one-twentieth of it is constantly sick in times of peace. In Paris, in every 1,000 men (of the army) an average of 54.7 are daily on the sick list.

THE MEDICAL STAFF.—Having in our April number expressed satisfaction with the arrangements made for the care of the sick and injured amongst the volunteers, and with the physicians appointed on the medical staff (believing that the appointments would be approved of by the profession generally), and conviction that the medical necessities of the troops would be well attended to, we are much pleased to find our views, as thus indicated, were in accordance with those of many leading members of the profession. The *Canada Medical and Surgical Journal* (Montreal) has since said, after naming the appointments, "these are all excellent, and will commend themselves to the professson at large." In the *Canadian Practitioner* (Toronto) for May, we find, "we are glad to know that very complete arrangements have been made by the Government for the care of the sick and wounded in the North-West campaign. A very judicious appointment was made in selecting Dr. Bergin, M.P., of Cornwall, for the position of Surgeon-General." And again, "we must congratulate all concerned upon the ability, foresight and energy which have been exhibited in making arrangements so complete and so satisfactory, in a very short space of time."

ON THE CHOLERA POISON, its nature and origin, very much has yet to be learned. Indeed little comparatively is known. Opinion is divided as to whether Koch's coma bacillus is the true cause of the disease or not. It seems that the evidence, and with it the majority is favorable to the affirmative view. Meanwhile those interested in preventive medicine everywhere are urging the carrying out of local sanitary measures with increasing vigor. There is no diversity of opinions as to the absolute necessity of perfect cleanliness everywhere. The practical conclusions deducible from the most recent statements of the foremost sanitarians, in regard to cholera and other epidemic diseases, are, that, while surface filth of all kinds is odious and more or less noisome, and should therefore be removed, filth stowed away in dark privy-pits, cesspools and retaining sewers, is much more dangerous; and that the old sewerage systems of Europe and the United States, subject as they are to obstructions, insufficient flushing and without ventilation, are a great sourse of danger in the event of cholera.

ENGLAND, having rightly rejected the quarantine system as practised half a century ago, nevertheless, holds herself aloof in the words of an exchange from the only measures which can, with any degree of certainty, be considered effective for the prevention of cholera transportation by commerce, namely: thorough inspection, purification, and exclusion at the port of departure where cholera is wont to prevail. In London the public

are much exercised about the disposal of the sewage. The Thames, as referred to elsewhere, is for its whole width, in some places black with putrid sewage, looking as if unmixed and unalloyed, and the stench intolerable; insomuch that three out of five Commissioners, and also their clerk, suffered from severe diarrhœa after a day's inspection. There is now said to be a consensus of opinion that the sewage of London must be either taken to sea, or promptly subjected to such treatment as will transform it into a fertilizing product without danger to the public health.

In France M. Proust, the Inspector-General, has formulated the following propositions regarding the spread of cholera: Cholera was imported into the cities and towns in the departments mentioned. The severity of the epidemic was in direct proportion to the unsanitary condition of the locality. Water has had a very great influence on the spread of the disease. The disappearance of the epidemic in the places attacked may be attributed, in part, to the hygienic measures adopted, and to active disinfection. On the other hand, it appears *(Jour. d'Hygiene)* that on the first day of the epidemic many cases occurred at points widely distant, and that though 60,000 to 80,000 persons left Toulon, Marseilles, and other places, to escape the plague, hiding in almost every corner of France, yet few of them were the means of spreading disease.

In Italy, sanitarians recognize the fact that the sanitary conditions and regulations of the country are sadly defective. The Minister of the Interior has been questioned regarding existing laws and their efficiency for the prevention of another outbreak of cholera. Professor Guido Baccelli urged the adoption of measures by the Government to prevent the latest germs from developing into a new epidemic of cholera during the next summer. The Minister Depretis stated that the laws in existence gave full power to the Government to guard the public health though he promised to present a bill, at an early day, providing for additional security.

In Spain, in the Province of Valencia, an epidemic has prevailed, of which there has been within a few weeks about one hundred cases, "resembling cholera," of which fifteen have been fatal within twenty-four hours from the time they were attacked. "The prospect of another invasion of cholera greatly alarmed the people, and they petitioned the Government for active preventive measures. The disease was proclaimed by the authorities to be cholera morbus or *cholurine* only, and of local origin." Meanwhile, the same disease is reported at another point in the same province, and there too, it is said to be of local origin, due to drinking water from a canal tainted by paper mills that uses suspicious rags.

Considerable excitement has been aroused in Spain, according to the London *Lancet*, May 2d (inst.), both within and without scientific circles, upon the alleged discovery of protective inoculation for cholera; and we learn that already 300 people have submitted to inoculation with the choleraic "virus." The *Lancet* says the profession in Spain would do far more to protect their country from an epidemic if they urgently pressed on the authorities to undertake sanitary measures in towns, than by lulling people into a fancied security by spreading the belief that inoculation will protect an individual from the disease. If cholera does visit Spain they will be wofully undeceived. But how does the *Lancet* know this? It is a strong advocate of vaccination in small pox. Of course it considers that the transmission of cholera by inoculation has not yet been proved.

The typhoid outbreak in Plymouth, Pennsylvania, chiefly inhabited by miners and their families, affords another instance of the terrible consequences which frequently follow neglect of sanitary laws. The endemic is a bowel-disorder, decidedly typhoid in character, although apparently not typical typhoid fever. It seems that in this small community more than a thousand persons have been stricken with the disease, and many have perished. According to the

Philadelphia *Medical Times*, the outbreak has been directly traced to insanitary conditions, poverty, and filth, but more particularly to the contaminated water-supply. The drinking water is taken from wells which indirectly receive the drainage of the town, or from the river, which contains the sewage of Scranton and other places only a short distance above the town. "The river being unusually low at present, the sewage has been consumed by the people in a less diluted form than usual; hence the pestilence, which in many features recalls the outbreak which occurred in Eastern Tennessee some months ago, and is not very dissimilar to the winter cholera which sometimes prevails in Chicago."

LANDLORD AND TENANT.—Not long ago reference was made in this JOURNAL to a case in court which had occurred between a New York landlord and his tenant in regard to sanitary matters, which resulted in establishing a legal precedent as to the non-liability of the tenant for the rent of leased premises abandoned on account of their insanitary condition. A similar but more complicated case has recently been in a Chicago court, and the landlord has again discovered that the tenant was not bound to pay for what he could not enjoy. The occupant of a fine house discovered that something was wrong with the air. Investigation showed that a tile drain, which had become defective, permitted sewage to flow into the ground under the house. Repairs were made, but members of the family, who had been rendered seriously ill by the escape of sewage, did not get better, and a second investigation showed that the work had been imperfectly done and foul air was drawn into the furnace. The owner refused to make further repairs, the tenant moved out, and suit was brought for the rent for the unexpired term. Judgment was given against the landlord, and the tenant now claims $10,000 damages for loss of health and enforced neglect of business.

LANDLORDS SUFFER much, there is no doubt, from both the carelessness and the unreasonable demands of their tenants, and, as the *Hydraulic and Sanitary Plumber* puts it, "This naturally creates an indifference in the former which even runs so far as to blind them to their own interests, but such a state of affairs ought not to be permitted to prevent justice being done to well-disposed tenants. As it is now, the landlord often has things pretty much his own way, and if he be pig-headed he can do much damage to the comfort and health of his tenant; as it ought to be, the tenant would be amply protected in his undoubted right to have all that he is entitled to under the lease. The remedy of moving out is often a very poor one. The premises are not taken with a view to their sudden abandonment. To quit without previous calculation would usually entail additional expense as well as discomfort, and to this the tenant should not be exposed by accidents which can easily be remedied by the landlord.

ON OVER-PRESSURE IN SCHOOLS.—Dr. Crichton Browne's letter in *The Times* a few days ago, will be read with interest. (*Lancet May 2d.*) He contends that the recent reduction in the rate of mortality among children, upon which Lord Aberdare laid great stress in his address at Manchester, is no proof of beneficial results from the effects of education; and he urges, on the other side, that disease and disturbance of the nervous system are increasingly frequent among the young. This is a fact which cannot be gainsaid. Headaches and nerve troubles of various descriptions are extremely prevalent, and we have no doubt that they are in great part the effects of brain work of a class and kind which is injurious to health, and will hereafter be found to be detrimental to progress. "Mr. Mundella may try to sweep back the Atlantic with a broom, but, as Dr. Crichton Browne remarks, he must find better brooms than have yet been made available, Sir Lyon Playfair and Lord Aberdare not excepted."

A NEW ANTISEPTIC has been discovered in Spain. It is *helenina*, the active principle of Elecampane (*Inula helenium*). This is a

common indigenous plant in various parts of Canada and often resorted to as a domestic remedy in various diseased conditions. It has been found that a slice of veal sprinkled with a solution of helenina in alcohol, and kept in a warm room, remained perfectly sweet for ten days, by which time it was completely dried up. An egg beaten up with a solution of it remained unchanged for six days, while another egg similarly beaten up without the drug, kept at the same temperature, rapidly decomposed, and in twenty hours emitted a strong odour of sulphide of hydrogen; to this latter a solution of helenina was added, and in a few minutes the offensive odour had disappeared, and the mixture underwent no further change. Similar experiments were made with carbolic acid, boracic acid, and salicylic acid, instead of helenina; but much larger proportions of these substances were required to prevent putrefaction, and none of them were capable of arresting commencing putrefaction of the egg, as helenina had done.

In experimenting with the tubercle bacillus Dr. Korab found that a few drops of a solution of helenina immediately killed the organisms. While the experimenter was working with helenina in his laboratory, he noticed that the bad odours usually present in the vicinity were replaced by the aromatic smell of the drug, due to the washings thrown away. He also noticed that insects, which were commonly very numerous, were at that time absent; even the mosquitoes were kept away from the whole house during the months in which they specially abound. The drug has proved most valuable in surgery as an antiseptic when carbolic acid and other agents had failed. It has been successfully given internally in malarial fevers, tubercular, infantile, and catarrhal diarrhœa; and it is expected to prove an excellent substitute for carbolic acid in the Listerian system of asceptic surgery.

An Epidemic of glanders amongst horses, it is reported, is prevalent in Montreal. This disease is not unfrequently a cause of death in man. It is not long since several deaths of a terrible character were reported as having occurred in Michigan, from this disease having been communicated to man from the horse, to which animal the disease was directly and easily traced.

Is Alcohol a Food?—Dr. T. W. Thompson, M.R.C.S., late surgeon 1st Life Guards, in conjunction with a Dr. Hamerton and "a friend in whom they had the greatest confidence," have been making some experiments in connection with their own bodies on this question. Dr. Thompson says (*Lancet*, April 25th, 1885), I must express my belief that unless our experiments have been rendered fallacious by errors of practical manipulation, "our experiments certainly indicate in the clearest manner that alcohol, in small doses at all events, is a source of nourishment—i.e., a food."

A new deodorant—"Thymo-Cresol"—is being largely introduced into Canada, and, so far as we can learn, is giving excellent satisfaction. The resident physicians in the Toronto and Ottawa hospitals, and the Ottawa medical health officer, speak of it in terms highly favorable. From its composition it appears to be a material which gives off binoxide of hydrogen freely, such as referred to in this JOURNAL on many occasions, and is, therefore, a powerful oxidizer. It is very useful in destroying foul smells anywhere.

Explanation.—The very large amount of work in all the printing offices in this city during the session has made it quite impossible to have the mechanical part of the JOURNAL finished "on time," and it is hoped subscribers will bear with the unavoidable delays.

The Herald, of Philadelphia, Lum Smith, editor and proprietor, is a journal that is deserving of liberal support. For years it has waged war on pernicious journalism, medical quacks and other nostrums and frauds who swindle publishers out of valuable space in their papers, and indeed frauds of all sorts. Anything we can do to assist the *Herald* in its good work we shall be happy to do

Current Literature.

LITERATURE THE FASHION—AUTHORS STRIKES.—In *Harper's Monthly* for June we find the following: It is a fortunate thing for literature that it comes into fashion occasionally. It is a good thing for the publishers and the printers, and it is an encouragement to the authors. Say what we will about the superiority of man, and try to believe it, women make and set the fashions. They decide what society shall interest itself in, and when society takes up letters, then and then only there will be what is vulgarly called a "boom" in literary affairs. A little reflection ought to teach man humility. * * * The "Drawer" does not recall any period in history when literature was more in fashion than it is now. And perhaps the public does not comprehend how exceedingly opportune and fortunate this fashion is. Owing to various discouragements, particularly the want of an international copyright, it may not be generally known that the literary producers in English were on the point of a strike. All that was necessary was for the authors to come to a common agreement not to produce another line until their rights were admitted and their demands were satisfied, and the public would have been in the condition of the Egyptians when the Nile subsides. Of course the printers and publishers would have suffered first, and a good many industries which depend entirely upon the continued movement of the pens of authors would have come to a standstill. Congress takes notice of these industries, and taxes and protects them; but the industry lying back of them, the motive power of them all, the queer stir in the brains of authors, which is communicated to their fingers and produces "copy," Congress is wholly unaffected by. And probably it never will recognize it until the literary producers strike and go to raising cabbages. The female movement, which has made literature fashionable, has averted this strike for the time being; but he is not out of place to suggest that if the women are really interested in literature—and interested they certainly are, for they produce about half of all that keeps the type foundries and presses running—they will procure an international copyright without delay. If they like, they can make international copyright as fashionable as a four-o'clock tea in New York, or as drawing-room Bible reading was in London a few years ago.

THE FUTURE LIFE—FROM THE MAY CENTURY.—The march of the mind in its great quest for truth is like a work of tunneling through a mountain. Marvellous is the engineer's sagacity that directs the advance; mighty are the forces that slowly blast the rock; strong are the arms and resolute the hearts that push their way on through the darkness toward the light beyond. But out on the mountain side the glad sunlight is poured; every dew-drop glistens in it, every flower drinks it, birds sing and children play in its embrace. So, while thinkers are working their way, there are countless folk, simple or learned, who daily live in an untroubled and happy sense of a divine love, from which they can never escape.

It is Life itself which, with its various voices teaches us the things best worth knowing. And the voices which come home to us with sovereign authority are those of Love and Death,—and for the mother's sake, shall we add, Birth? Let one of the chief of women interpret for the mothers,—It is Elizabeth Barrett Browning, speaking to two parents who mourn their child as lost:—

"'God lent him and takes him,' you sigh;
Nay, there let me break with your pain:
God's generous in giving, say I;
And the thing which He gives, I deny
That He ever can take back again.
He gives what He gives. I appeal
To all who bear babes. In the hour
When the veil of the body we feel
Rent round us,—while torments reveal
The motherhood's advent in power,
And the babe cries!—has each of us known
By apocalypse (God being there
Full in nature) the child is our own,
Life of life, love of love, moan of moan,
Through all changes, all times, everywhere.
He lends not; but gives to the end,
As He loves to the end. If it seem
That He draws back a gift, comprehend
'Tis to add to it rather,—amend,
And finish it up to your dream,—
Or keep, as a mother may toys
Too costly, though given by herself,
Till the room shall be stiller from noise,
And the children more fit for such joys
Kept over their heads on the shelf."

So speaks the woman. And what has the man to say? Here is he whom we boast as the wisest and highest among our American authors,—a man, too, so wrapt in philosophic thought, so happy in his lonely contemplation, that he seems generally to stand apart from the struggling work-a-day world, where most of us live. But the man is a father, like other men; his boy dies, and how does he bear it? He puts his heart into the tenderest poem he ever wrote, the "Threnody." He looks longingly back on just such pictures as other parents do,—the throng of children about the baby in his willow waggon, led by the boy with sunny face of sweet repose,"—The painted sled, the show fort, the sand castle, the garden of which his "blessed feet" had trod every step,—and now the boy is gone. The lonely father thinks of it, and will not drown or forget his grief; and slowly there comes to him the sense that love can never lose its own. The rainbow, the sunset, all beauty, all experiences of the soul, teach him a new lesson:—

"What is excellent,
As God lives, is permanent;
Hearts are dust, heart's loves remain,
Heart's love will meet thee again."

The moments when such convictions flash in—such insights, rather — are an assurance deeper

than belief; but how much can be carried forth from them into the common levels of every-day life? How much will stay after the first exalted hours? There are not many of whom the world can take testimony on these questions; but occasionally there is some one in whom a typical experience is wrought out, and who has the gift of expressing it, like Tennyison in "In Memoriam."

HARPER'S MAGAZINE for June, just received, is in every way a strong and entertaining number. The frontispiece is a remarkably good engraving by W. B. Closson, from G. F. Watts's painting, "Paolo and Francesca," illustrating an article by F. D. Millet on the Watts Exhibition. This number contains the sixth part of Miss Woolson's interesting novel, "East Angels," and the concluding part of "At the Red Glove," illustrated by C. S. Reinhart. We are promised in the July number the first part of a new novel by W. D. Howells, entitled "Indian Summer." Mr. Millet's quaint and entertaining Baltic sketches are concluded with rambles in Jutland and Vierlande, illustrated. Probably no brighter magazine sketch has ever been published than Mrs. Alice Wellington Rollin's "Ladies' Day at the Ranch" (in Kansas), illustrated by Mr. and Mrs. R. Swain Gifford. "Knoxville in the Olden Time," by Edmund Kirke, is a well-written sketch of much historical value, and entirely novel in its portraiture of frontier life in the South-west. Austin Dobson contributes a poem, "To a June Rose," beautifully illustrated. A noveletto, entitled "A Secret of the Sea," by Brander Matthews, is a striking and dramatic story; and a humorous sketch is contributed by Mary Tucker Magill, entitled "A Georgian at the Opera." Among the important articles of the number are "English in Schools," by Prof. A. S. Hill, and "How Earthquakes are Caused," by Richard A. Proctor.

THE PRESENT NUMBER of the *Century* begins its thirtieth half-yearly volume with a first edition of a quarter of a million copies. George de Forest Brush's account of "An Artist among the Indians" is beautifully illustrated with full-page engravings of two notable paintings by the author. Edmund Clarence Stedman's paper on the poet "Whittier" is the important literary feature of the number; and the Reverend T. T. Munger, in a careful essay, discusses the relations of science and faith in a paper entitled "Immortality and Modern Thought;" the same subject is treated in "Topics of the Time." Of fiction the May number contains a brief story by Mrs. Helen Jackson (H. H.), entitled "The Prince's Little Sweetheart;" the seventh part of Mr. Howell's novel, "The Rise of Silas Lapham," and the fourth part of Henry James's serial, "The Bostonians." The poems of the number are by Edmund Gosse, C. P. Cranch, Miss Charlotte Fiske Bates, John Vance Cheney; and in "Bric-à-Brac," by J. A. Macon, Mrs. Alice W. Rollins, Stanley Wood, and others.

"IN CLEARING THE RIFLE-PITS at Batouche by a bayonet charge," says *The Week*, "the volunteers must be admitted to have done their duty most gallantly. General Middleton, who is not given to gush, bestows a high encomium upon them. The charge which dislodged the insurgents came after three days' hard fighting and a good deal of endurance. The volunteers have earned some recognition of their services beyond their ordinary pay, and we trust that the Government will see its way to making a grant of a quarter section of land to every man of them. There is plenty of land out of which to make the grant, and it could not be put to a better use." In all this we fully agree with *The Week*.

BOOKS RECEIVED.

HUMAN OSTEOLOGY: Comprising a Description of the Bones, with Delineations of the Attachments of the Muscles, the General and Microscopic Structure of Bone and its Development. By Luther Holden, assisted by James Shuter, F.R.C.S., M.A. With numerous illustrations. Sixth edition. New York: Wm. Wood & Co.

This is the January (1885) volume of Wood's Library series, and is a reprint of the English edition with electrotype copies of the original illustrations reduced in size. This work is the best on osteology which has been issued up to the present time, and is familiar to every student of anatomy. The usefulness of this edition is much enhanced by valuable notes on comparative osteology which follow the description of each bone. The fact that a work of this kind has gone through six editions is of itself a sufficient commendation. The book is in the usual handsome style of the "library" and is profusely illustrated.

THE DIAPHRAGM AND ITS FUNCTIONS: Considered Specially in its Relations to Respiration and the Production of Voice. By J. M. W. Kitchen, M.D. "The Voice" First Prize Essay. Edgar S. Werner, publisher, Albany N.Y.

To this admirable treatise was awarded the first prize offered by *The Voice*, competitions being open to all winners, foreign as well as American. The author considers the function of the diaphragm under three main heads: anatomical, physiological and hygienic. Under the hygienic heading is considered the diseased conditions to which the diaphragm is subject, the conditions essential to its nurture and healthy action, corset and waist-constriction, special exercise of the diaphragm, how to breathe, etc. An appendix gives practical conclusions and advise. The book is valuable both for the medical and vocal professions.

We do not agree however with Dr. Kitchen in his strong denunciations of the corset. It is the tight lacing that does the harm. Properly worn they promote a graceful form. But we have discussed this question on former occasions.