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T H E

# SANITARY JOURNAL.

DEVOTED TO

PUBLIC HEALTH.

EDITED BY

EDWARD PLAYTER, M.D.

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VOLUME III. 1877-8.

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*SALUS POPULI SUPREMA EST. LEX.*

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# THE SANITARY JOURNAL.

DEVOTED TO  
PUBLIC HEALTH.

VOL. III.]

MAY, 1877.

[No. 1.

## Original Papers.

### THE VENTILATION OF HOUSE DRAINS.

It is truly remarkable that it is such a very difficult and tedious matter as it proves on trial to be, to instil into the public mind the reality of the existence of imminent dangers, of a most subtle and stealthy nature, which lurk within many households, especially in cities, from defective drainage, particularly as regards soil and waste-pipes. That there are such dangers, dangers almost wholly preventible, if they could but be recognized as such by the general public, that annually destroy thousands of lives—not unfrequently those most valuable, is alas! but too well attested.

In cold weather, when the temperature of rooms is for the most part much increased, and is much above that of the outer air or that of the sewers, and with windows and doors carefully closed, dwellings stand in the position of exhausted receivers placed over prolongations of the sewers, for such, in fact, disconnected soil and waste-pipes really are. Ordinary water-traps are utterly powerless in resisting the suction forces thus set up; and yet it seems almost impossible to shake the abiding faith in these yielding contrivances.

Many question the value of water-closets and sewers. They are great mechanical improvements, while they are, as at present constructed, undoubtedly great carriers of disease. W. C. Merrifield, F. R. S. &c., in a paper read not very long ago at the annual meeting of the British Association, said:—"As applied to the particular problem of getting rid of waste products, especially solid products, I do not think they were any improvement at all on much that we already had. In many towns in Great Britain, where there previously existed a well understood and well carried out scavenging system, I think they have done more in saving trouble than in conducting to health." This is putting it mildly enough.

It is urged that the fault is not in the system, but in improper and defective construction, and in want of proper ventilation in connection with the system. In this there is much truth, yet probably the time will never come when there will not be a good deal of danger from bad material and bad workmanship.

Our only real safety seems to be in carefully attending to the four following particulars:—1st. The entire disconnection of our houses from the sewers. 2nd. The construction of the house drains in such a manner that impurities formed therein, or entering from without, can not get into the houses. 3rd. The thorough ventilation of the sewers at numerous points; and 4th. The frequent flushing of these so that no excrement can be retained in them for more than about two days; as there seems to be little danger from the decomposition of faecal matter until it has been exposed two or three days; at least there is much less danger from fresh sewerage.

Dr. John Spear, medical officer of health for South Shields, Jar-row, and Hesburn, Eng., lays down in the *Sanitary Record*, the following rule:—

*Soil Pipe.*—1. The soil-pipe must be disconnected from all other house-drains, receiving only the discharge from the pan of the water-closet.

2. In addition to the usual trap at its commencement, this drain should have a trapping bend in the horizontal part of its course, as it runs towards the sewer; thus cutting off air-communication with the common sewer system.

3. From the house side of this additional trap a ventilator should proceed directly to the surface, opening at the surface in a convenient spot in the yard or premises.

4. The soil-pipe should be carried up, full calibre, as a ventilating shaft, to the roof.

*Discharge Pipes from Baths, Sinks, Urinals, etc.*—1. These may be connected with one common drain, which should always discharge in the open air, above a trapped gully.

2. If the drain be a long one, leading from upper stories, it, too, should be carried for the purposes of ventilation to the roof, thus being open at both ends. The inlets from the house should be trapped.

In reference to the enclosed sketches, [see next page]:—A, illustrates the method of disconnecting slop-water and sub-soil drains from the sewer; B, that of trapping and ventilating water-closets. They are slight modifications of the mode advocated by Mr. Buchan and Dr. Spear, and also by Dr. Buchanan (in app'x to Report on outbreak of typhoid at Croyden.)

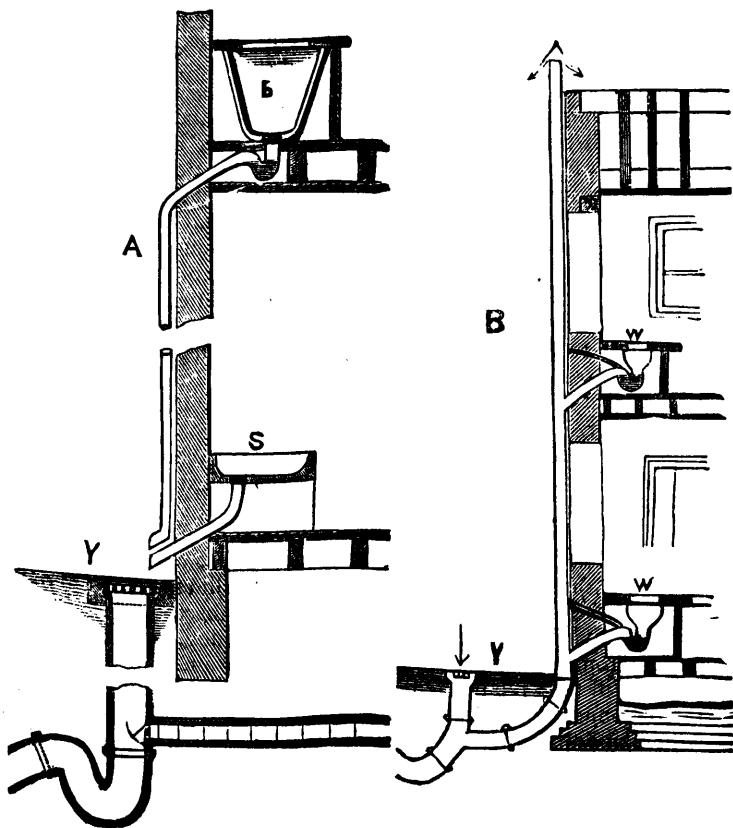
The bath is shown at b; s, sink; w w, water-closets; y, yard.

The advantage of the ventilating tube leading from the upper part of the bend near the trap of the closet is obvious.

It has been argued that the ventilator at the yard level is unsafe, but it has not been found to be so in practice. In accordance with the natural laws of the movements of gases, a constant current of pure air will pass through the soil-pipe, the inlet being the yard ventilator, and the outlet the opening at the roof. If foul air chanced to escape into the yard, it will probably be because the pipe has become choked at the bend, or the trap has been forced by the gases

of the main sewer. And it is better that this last should escape into the yard than enter the soil-pipe in close contact with the building, whence it may readily find its way into the house through defective or weak traps or flaws in the pipe. I will conclude this paper with the following remarks on this point from Mr. Buchan. He says:—"To go back in regard to ventilating soil-pipes with an air inlet at the ground and an outlet above the roof, I may mention that in June, 1866, I altered the drains and soil-pipes of Mr. Browne's house, 7, Queen's Terrace, Glasgow, and a perforated grating was there placed three feet from the back door, which allowed a current of air to enter and pass up the soil-pipe and out above the roof. Owing to the lower opening being so near the back door, I watched for long after to see if there was any cause of complaint, but although parties for the last ten years have been constantly walking across the grating, I have never heard any complaint as yet in answer to my inquiries.

C. E.



## ON THE AIR WE BREATHE.

EXTRACTS FROM A PAPER READ AT THE MEETING OF THE CANADIAN INSTITUTE, TORONTO, MARCH 31, 1877, BY EDWARD PLAYTER, M.D.

In the entire range of physical science there is no subject which demands more close investigation than the atmosphere we breathe.

It is the first essential of life, and of all causes of disease it is the most constant and important factor, for in whatever condition we find it we must necessarily inhale it. And statistical inquiries on mortality prove beyond a doubt, that of the causes of death which usually are in action, impurity of the air is the most important.

It has been noticed that, without exception, a *high general death-rate* occurring in towns and cities indicates a foul condition of the atmosphere; whereas, *sudden outbreaks of disease* are usually referable to the water supply; or as has frequently been the case in Great Britain, immediately to the milk supply \* \* \* \*

Besides these normal constituents of the atmosphere a great number of substances find their way into it. The works and habitations of men however furnish the most important impurities. In addition to the solid particles from the soil, and the *debris* of vegetation and of dead animals which had lived in the air, and the numerous and varied substances arising from manufactories and workshops, there are the vapors and gases arising from the decomposition of organic matter, numerous living creatures, the contagiums of specific diseases, and, especially in enclosed spaces, as inhabited rooms, the products of respiration and exhalations from the human body." Although the impurities arising from the occupations of men are highly important, I shall on this occasion only draw attention to those arising from the decomposition of *fæcal matter*, to the products of respiration, and to living organisms and specific contagiums \* \* \*

Having referred to the vapors and gases arising from the decomposition of excrement and in connection with respiration, I will now notice living organisms and contagiums.

When external air is examined either by means of an aeroscope of some kind, or by drawing it through previously heated glass tubes, surrounded by a freezing mixture, living organisms can be found. Dr. Angus Smith indirectly calculated the amount of these from the ammonia in the air, which appears to be derived from organic matter, and supposed that their might be over half a million germs in one cubic foot of the air of a city. Ehrenberg has discovered at least 200 forms of living creatures—rhizopods, tardigrades, and anguillulæ; some lifted from the ground, others growing in the air. These can be dried, and will then retain their vitality for months and even years. There are found extremely small, round and oval cells, sometimes presenting an appearance like the figure of 8, and which are supposed to increase rapidly by cleavage. These require a magnifying power of about 1000 diameters to see them properly. They are

is id to grow faster when sulphurated hydrogen is in the air. To this same class Parkes thinks the bacteria and monads may perhaps be assigned. Spores of fungi are not unfrequently found (most commonly in July and August) probably from some form of smut. Dr. Smith found innumerable spores in water through which the air of Manchester had been drawn, and it was calculated that one drop of the water contained 250,000 of them, as well as mycelium of fungus.

Now as to the germs or contagia of specific diseases. The theory that zymotic diseases are caused by the invasion of the human body by microphytes —by some of the lower forms of vegetable life—is to say the least making great progress. Indeed, as regards cholera, small-pox, diphtheria, typhoid and the like, many regard the germ theory, not as an hypothesis, but as a doctrine, as something true. That these germs in many cases reach the person through the medium of air, as well in others through water or food, cannot be doubted. Moreover, while the living germs grow and multiply in the body of a susceptible person, it is more than probable that they may find nourishment and grow, though probably in a modified form, in the air, especially in that containing certain vapors and gases. Some forms of mycrozymes, as I have stated, have been found to grow faster when sulphurated hydrogen (one of the sewer gases) is in the air ; and as is well known, the peculiar carbo-ammoniacal vapor emanating from foecal matter favors the growth of fungi, and hence the dissemination of spores and mycelium.

Many years ago, several experimenters, found in the air of cholera wards spores and mycelium of some species of fungi. Staff-Surgeon Norbury, R. N., of H. M. S. *Juno*, has contributed a paper to the last and recent official Report on the Health of the Navy, on the subject of Tonsillitis and Atmospheric fungi. He found, through the aid of the microscope, in the air of the ship when she was in and on the other side of the Suez Canal, numerous well defined globose spores of fungi. These spores corresponded exactly, he states, with many found on yellowish-white elevations that appeared on the tonsils of twelve men suffering at the time in the ship from all ordinary symptoms of acute inflammation of the tonsils. The elevations seemingly resembling those of diphtheria. No case of this disease was seen prior to the appearance of the spores. A paper by Dr. Koch has quite recently appeared, and was noticed in the London *Lancet* last month, on the Etiology of Splenic Fever. The writer has found a species of Bacilli, apparently similar to those of hay infusions noticed by Tindal. When the minutest drop of a fluid containing these was injected into a living animal, as a mouse, the organisms increased with enormous rapidity (in the blood and fluids of the animal) by developing in length and dividing tranversely.

In reference to small-pox, Dr. Klein, in experimenting upon sheep with this disease, within the last two years, or thereabout, has demonstrated the development of an organism in the fluids and tissues of

the animal going hand in hand with the development of the lesions characteristic of the disease. And Dr. Weigert, of Breslau, has been experimenting upon man with the same disease, and though his account is not so complete as that of Klien, it strongly corroborates it. Again, in reference to *vaccinia*. On the 6th of the present month Dr. Godlee read a paper before the Pathological Society, of London, (Eng.) on the "Cultivation of Micro-Organisms found in Vaccine Lymph." He has found that in inoculating vaccine lymph into milk, turnip infusion, &c., and keeping at a temperature of 90° to 100°, an "organism will generally be developed of perfectly characteristic appearance, and closely resembling that seen in the lymph." He found the organism grow most vigorously in turnip infusion.

Within the last year or so, Klien has also demonstrated the existence in typhoid fever of low vegetable forms, in the fluids and tissues of patients affected with this disease. Typhoid fever being a common endemic disease here I will enter a little more fully into the history of this supposed typhoid plant. The lesions of this disease being found in the alimentary canal, here also Klien found most abundantly the vegetable parasite. He says the fungus possesses mycelium threads, the contents of which in some parts split up into microgonidia, the gonidia become discharged from the thread breaking, and these gonidia end in micrococci. The changes produced in the human system by this invader are apparently similar to those produced in other organism by the attack of fungi. There is, says Klien, a deposition of a peculiar dark colored material (probably micrococci), in connection with and around which the tissue undergoes the necrotic changes, is, in short, destroyed. The condition of a typhoid fever patient is said to be parallel to that of a potato affected with the rot. Both are the victims of a fungus which feeds and multiplies at their expense. This vegetation of Klien corresponds closely with one (*the crenothrix polyspora*) found by Cohn in some well-water at Breslau, famous for typhoid fever.

It is argued that the gonidia mentioned by Klien, and their descendants, are modified representatives of the sporules of some mould. To establish the claim of this fungus to be the specific cause of typhoid, it is absolutely necessary to connect it with ærial typhoid poison. It is well established that persons who contract this disease by way of water may communicate it through the medium of air. While the converse of this is common. Whatever the typhoid poison is, then, it is evident that under certain conditions, it must be convertible from an air poison to a water poison. And the same may be said of the poison of small-pox, cholera, diphtheria, &c. Most of these low terrestrial organisms, it appears, will not only sustain themselves when immersed in fluids containing nitrogenous matter, but will multiply rapidly in the probably abnormal medium, owing to the facility with which their organs of fructification adapt themselves to it.

A writer in the *Medical Times & Gazette* last year, thinks that most Phytologists would infer from the description of, and from the draw-



ings of the vegetation figured by, Dr. Klien, that it is the water phase of the plant, and that by proper cultivation on the surface of a fit substrate, it would revert to its original or mildew form. It is, he says, a warrantable scientific inference that the vegetation in the typhoid tissues is a casual and degenerate state of its existence, and that its true or highest, or original form is that of a mildew, growing on a free substrate. And that the one great substrate, which has supplied the typhoid mildew in all ages and in all countries, is fœcal matter. Granted the mildew, and the conclusion that fœcal matter is the principal substrate on which it flourishes immediately before its reception into the human organism is well nigh forced. Other animal and vegetable matter, as decomposing refuse, may be over-run with this specific typhoid mildew, and may thus cause the surrounding air to be charged with particles of the poison, but the toxical properties of these particles may be modified by the qualities of the substrate, and if imbibed, they will probably cause some one or more of the typical symptoms and lesions of Typhoid. Hence, probably, febriculæ, and bastard or obscure forms of typhoid. The writer believes that a mildew grown on fœcal matter is the only possible exegegis of typhoid causation. It certainly does seem that by this hypothesis all the phenomena which have been observed in epidemics of typhoid, and in isolated cases of the disease, may be clearly interpreted. It readily explains its *de novo* or spontaneous origin in many cases. It is strongly supported too by many facts, which, as Parkes says, decidedly show a connection between the effluvia from sewers and excretia and typhoid fever; facts which prove that the prevalency of typhoid stands in a close relation to the imperfection with which sewerage matters are removed.

It has occurred to me that, the fact that these organisms are found most numerous in,—seemingly seeking as it were, the lower part of the alimentary canal, where the undigested portions of the food eaten is fast assuming the character of fœcal matter, may be regarded as evidence in support of this hypothesis, that fœcal matter is the natural substrate of their higher or original form of existence.

Now if it is true that the typhoid vegetation is a modified representative of the sporules of some mould, the same is likely to be true of the special organisms of small-pox, cholera, and kindred diseases; each having their favorite or natural nidus or substrate, which may be in all cases some form of refuse organic matter.

Now how far can any of these facts be practically applied to ourselves here in Toronto. There is a large amount of organic refuse in the back yards and lanes of the city; though last year it appears, owing to more vigorous sanitary administration, they were kept in a considerably less objectionable condition than formerly. In winter, house and stable refuse accumulate, and with the warm weather decomposition commences, and with the spring rains the soil becomes more or less saturated with organic matter. There are, too, in Toronto probably not less than 10,000 privies unconnected with sewers,

and in the vaults or pits of which are the accumulated excreta of years, in all states and stages of decomposition. We are positively surrounded, divided and beset on every hand with hoarded festering masses of fæcal matter. These and the lanes and back yards, constitute hot-beds for the development of those most unwholesome vapors and gasses which have been enumerated, and for supplying food for the multiplication of microzmes and mycrophytes, while they probably also constitute substrate for the growth of the typhoid and other poisonous plants, whatever the exact nature of these may be. In a calm, warm day, when there is no perflation or hardly any movement of the air any where, when the fæcal emanations reach great rapidity of evolution, what must be the nature and composition of the air around us, which we of necessity inhale? I desire not to 'overdraw' in this matter, but it seems to me we may be regarded as calmly preparing for the invitation of some direful pestilence.

It was said of Over Darwin—a town in England of 25,000 inhabitants, over 2,000 of whom were attacked within a brief period, a little over two years ago, with typhoid fever, and many died—that the people sat amidst, walked in, and breathed, and drank their own excreta. This would seem a hard thing to say of Toronto. But some of us here to-night heard not long ago in this room some facts related by Professor Ellis regarding the well water used by a large number of the people in the city, which was shown to be no better than largely diluted sewerage. Toronto is probably not, however, in a worse sanitary condition than most other cities and towns in Canada, where little or nothing is done to improve their condition in this respect. We have nothing to lead us to suppose they are in a better. Punch's parody on Mrs. Hemans' "Homes of England," is not inapplicable to thousands of homes in this fair Dominion. He says

"The cottage homes of England,  
Alas! how strong they smell;  
There's fever in the cess-pool,  
And sewerage in the well."

Let us see what figures divulge? That last year there were buried in the three principal burying places of this city, 1,957 human bodies, besides a number, I do not know how many, in the new Mount Pleasant Cemetery. Nearly 2,000 deaths in one year, in a population, according to the estimates at the last assessment, of less than 68,000. A death-rate little short of 30 per 1,000 living. In 1875 the same sources show 1,815 deaths in Toronto, and in 1874, 1,818 deaths. The population being somewhat less in those years, the death-rate was about 26 or 27 per 1,000. So as regards last year at least the death-rate is "working up." The death-rate of London, (Eng.) averages about 22 per 1,000. In very few cities indeed, so far as known, on this continent or in Great Britain, is there so high a death-rate as here; in a large number it is much lower.

There has not been any sudden outbreaks of disease worthy of

note, and as I have said, it has been found that, without exception, a high *general death-rate* indicates a foul condition of the air.

Again, young children are known to be much more susceptible to the influences of foul air, they are better indices of its purity, than adults. Last year in Toronto there died over 400, less than one year old, in a total of less than 2,000 deaths. In 1875, 630 of the total 1,815 deaths were of children under one year; considerably over *one-third*. It seems, according to Parkes, as I have stated, the breathing of air contaminated with emanations from *foecal matter*, gives rise to diseases of the alimentary canal rather than of the pulmonary organs. Last year there died, according to the returns from the cemeteries—which I admit are not very satisfactory, but which are as likely to afford antagonistic evidence as any other, there died 135 from diarrhoea; and all, except 12, died in July, August, and September. In 1875, diarrhoea carried off 160, chiefly in the same months. 204 died last year, and 209 in 1875, from what was certified as debility, and nearly the half of these during the warmest months, and it is more than likely that in most of these, the debility was caused by diseases of the alimentary canal, or digestive organs. It must be borne in mind that 665 of the deaths of last year were *unclassified*; the causes not given. This is important in noticing the proportion of deaths from any one cause. Excepting inflammation of the lungs, causing 137 deaths, and consumption 171; diarrhoea caused more deaths than any other disease named. Considering the large number dying during the very warm weather from debility, it is more than probable that diarrhoea and its complications caused more deaths than any other disease. Again, there died in July a total of 212, and in August of 228, while the next most fatal month, April, a total of 181 died. In January, when it is said most old people die, there were 107 deaths, in February 134, and in December, 151. All indicating a condition favorable to infant mortality. As further evidence of this, I may be permitted to refer to something coming within my own personal observation, and I suppose every medical man in Toronto could furnish like testimony. I refer to sending little patients to the country in summer. The good effects of which remedy is often most marked. One little child last year I sent three times out of town in order to save its life; each time it improved rapidly in the country, and was soon apparently well; but on returning to the city it would in a few days again fail fast in health, manifest symptoms of derangement of the digestive functions, and it was necessary to take it to the country again. This child lived in a part of the city seemingly as healthy as any other part, and was fed entirely on condensed milk, both in the country and city. So that the improvement was not in any degree owing to change in diet. When in the city it was a good deal with its nurse in the open air. The water used with the milk constituting this child's food, was that of a well, but it was always very carefully filtered. With the cold weather, this child contrived to live in

Toronto. Thus much then as regards the death-rate. Now it is very well known that the *death-rate* in a locality does not bear an approximate ratio to the amount of *sickness* there. There may be a high death-rate and a low sickness-rate, or there may be a much larger proportion of sickness than even a high death-rate would indicate. At the present time there is no system of registration of diseases, and no means of knowing the amount of sickness in any locality, but it is believed by some to be very large in Toronto. It is strong circumstantial evidence of this, the fact that there are an unusually large proportion of medical men in the city, and it may be assumed that did they not find business with them tolerably good there would soon be a smaller number.

Now, in reference to the air in our dwellings and places of business. If the outer air is not pure, the air cannot be pure within; rather it must necessarily be rendered still more foul by the products of respiration especially, and by many other substances. To the highly poisonous nature of the organic matter in expired air I have already referred. Upon those extreme cases of poisoning by it, I need hardly dwell. \* \* \*

Dr. McCormac has insisted on this mode of origin of consumption; and Dr. Greenhow, in his "Report on the Health of the People of England," enumerates this as a prominent cause of this disease. The well-known fact of the great prevalence of consumption not long ago in the armies of England, France, Prussia, Russia and Belgium, can scarcely be accounted for, Parkes says, in any other way than by supposing the vitiated atmosphere of the barrack room to be chiefly at fault. This was indeed the conclusion of the Sanitary Commissioners, in a very celebrated report. Finally, on this point, Dr. Parkes, whom I have so often quoted, and who was probably the greatest Sanitarian of this or any other age, observes, "Not only may phthisis be reasonably considered to have one of its modes of origin in the breathing of an atmosphere contaminated by respiration, but other lung diseases, bronchites, and pneumonia (inflammation of the lungs) appear also to be more common in such circumstances." He adds, furthermore, that in addition to a generally impaired state of health, and lung affections, it has long been considered, and apparently quite correctly, that such an atmosphere causes a more rapid spread of the specific diseases; as small-pox, scarlet-fever and the like.

Again, as regards ourselves, when we consider that there is an almost utter want in all our buildings of any means or system of ventilation, or of changing the air in our homes and shops, and that, according to the death returns before alluded to, there died in Toronto last year from the effects of the three chief lung diseases, consumption, pneumonia and bronchitis, 370 human beings; excluding the 665 deaths, the causes of which are not given, we have considerably over one-fourth of the remainder of the deaths attributed to those diseases,—that in 1875, exactly the same number

died, 370, out of a total of *less*, by about 150, than last year; I say when we consider these facts, can we doubt that as a people we suffer very greatly from breathing air contaminated by emanations from fæcal matter as well as air poisoned by respiration—poisoned in our lungs, or in those of our neighbors.

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### BIBLE HYGIENE—OR THE MOSAIC MODE OF SANITATION.

EXTRACTS FROM A LETTER DELIVERED BEFORE THE JEWISH CLUB AND INSTITUTE BY ERNEST HART.—(SANITARY RECORD.)

\* \* \* Now, although I propose to consider the Mosaic ordinances in their relation to modern sanitary knowledge and law, I wish very carefully to guard myself against being supposed to assert that that was the sole or indeed the chief object with which many of these ordinances were laid down. As a whole, and viewed solely from the sanitary standpoint, they form the most remarkable body of public health law of which we have any knowledge in ancient or modern times. They created at once a standard to which no modern community has yet succeeded in attaining, and to which the Jews of our time are prevented from adhering by the conditions of life of the society amongst whom they dwell. They established principles of which the full force is not yet recognized in all the countries even of civilized Europe, and which at this moment the enthusiasts of sanitation are urging upon an inert and somewhat scoffing public with a view to establishing a hygieian Utopia.

If the modern sanitarian were asked to state the basis of Public Health under a few simple divisions, he would probably say that they might be conveniently classified under the following heads: 1. Purity of air, soil, and water. 2. Isolation of infectious disease and disinfection. 3. Thorough personal hygiene. I do not at all mean to say that this is a complete or scientific classification of a sanitary code, but it is perhaps sufficiently simple and comprehensive for our purpose to-night. At any rate, these are the main objects of modern sanitary legislation, and it is to attain these ends that a great body of Public Health law has been created in this country.

Let us look at the Mosaic law to see what provision was made for these necessities, in order to ensure the first group of conditions mentioned. To ensure purity of air, soil, and water, very strict conditions were enjoined by Moses and were observed by the Jews in the great city of Jerusalem. There are two prime causes of contamination of earth, air, and water—dead matter and excrementitious matter. In respect to both of these, the Hebrew ordinances were most stringent, nay fastidious, and their observance was hedged round with so much traditional importance that they were very rarely infringed, even in the slightest particulars.

*Conservancy of Soil, Air and Water.*—In Deuteronomy, xxiii. 12,

13 and 14, there is laid down for all camps, villages, and communities dwelling in tents, a system of conservancy which modern science now accepts as the perfection of human reason, and details of practice which the Rev. Mr. Moule has since patented. The rain to the river and the sewage to the soil, is an axiom which modern engineers esteem as the summary of some centuries of fatal experience during which millions of lives have been sacrificed to the disregard of this rule. The polluted rivers of modern England, the middens which breed wide-spreading disease in the cities and towns of the North, are the evidences of a fatal infringement of the Mosaic law. 'For the Lord thy God walketh in the midst of thy camp to deliver thee, therefore shall thy camp be holy that He see no unclean thing in thee and turn away from thee.' The details of this ordinance I need not here discuss, but we know from the Talmudic statements that it was amply carried out, even in the City of Jerusalem, and that the Sanitary police allowed no offensive matters to be retained within the city, but required them to be removed outside the city bounds were they were to be dug into the earth. Had the same rules been observed in modern Europe in our cities, it is probable that some forms of disease which are now most fatal, and are endemically rooted in the soil would be altogether unknown or capable of easy extinction. Great Britain pays an annual toll of between eight and nine thousand deaths from typhoid fever alone to the neglect of this one Mosaic ordinance; cholera knows no other origin and spreads by no other agency than the pollution, first of water, then of soil and air. Both are known euphemistically as pythogenic diseases. Mr. J. Simon has given them the more outspoken Saxon title of 'filth diseases.'

The same rigid observance of hygienic precaution strengthened and emphasized by the same solemn sanctions provided for the sanitary care of the dead bodies whether of the people or the animals of the community. Whilst the sanctity of the dead was guarded by religious observances which surrounded them with solemn and tender reverence; physically and in its hygienic relation to the community, the dead body became an unclean thing, to be isolated from the living, to be set apart in its own chamber, so that while still cherished and revered as the symbol and former dwelling-place of a living spirit, it was in itself a thing which no man might touch without becoming unclean. He must thereafter cleanse himself with water, and the linen with which the body came in contact must be submitted to prescribed purification, whilst open vessels within the room in which the body lay were also unclean. Numbers xix. 11.—'He that toucheth the dead body of any man shall be unclean seven days.—12. He shall purify himself with it on the third day, and on the seventh day he shall be clean; but if he purify himself not the third day, then the seventh day he shall not be clean.—14. This is the law when a man dieth in a tent: all that come into the tent, and all that is in the tent shall be unclean seven days.—15.

And every open vessel which has no covering bound upon it is unclean.—17. And for an unclean person they shall take of the ashes of the burnt heifer of purification for sin, and running water shall be put thereto in a vessel.—18. And a clean person shall take hyssop, and dip it in the water, and sprinkle it upon the tent, and upon all the vessels, and upon the persons that were there, and upon him that touched a bone, or one slain, or one dead or a grave.—19. And the clean person shall sprinkle upon the unclean on the third day and on the seventh day: and on the seventh day he shall purify himself, and wash his clothes and bathe himself in water and shall be clean at even.'

*Interments.*—Jewish interments were always extramural. Dr. Joseph Perles, in his notes on interment of the dead, published by the American Jewish Publication Society, points out that between death and interment there was but a short interval amongst the Jews. It was part of the sanitary system of the City of Jerusalem that no corpse was permitted to pass a night within its walls; he adds that the cruelty of such interments was more apparent than real, for it was mitigated by the circumstance that the corpse was deposited in an open grave, and carefully inspected for several days, until the signs of dissolution were unmistakably present. The public cemetery was usually situated at least 150 yards from the city boundaries. In selecting its site, care was taken that the ground should be rocky and well drained.

Those who are at all familiar with the frightful injuries to health and insufferable nuisances created by the intramural system of interment, which until recently prevailed in this city, will fully appreciate the Jewish ordinance of extramural interment based on the Mosaic law.

*Isolation of Infectious Disease.*—We may fairly presume that such regulations as these must have preserved the Jewish people from many of the epidemic diseases now prevalent and most deadly. The importance of isolating cases of prevailing infectious diseases is very fully recognized in the Scriptural system of sanitation. The type of contagious disease which the code selects is leprosy. Isolation is recognized by modern sanitarians as the great principle of action in dealing with infectious disease. The last consolidated Public Health Act, passed by the Health minister *par excellence*, Mr. Disraeli, two years since, contains a number of clauses intended to give to urban and rural sanitary authorities those powers for isolating infectious eruptive diseases, which the sanitary ordinances of Moses not only conferred but compelled the authorities to carry out. The almost Utopian proposition of Sir James Simpson for stamping out scarlet fever by isolation, and the 'sentinel system' of Mr. Clark, are modern adaptations of the hygiene of the ancient Hebrews. 'All the time that the plague is on him,' we read in Leviticus xiii. 45, 'he shall be unclean. He is unclean, he shall dwell apart; without the camp shall his habitation be.' Numbers v. 2. 'Command the children of Israel that they put out of the camp every leper and

everyone that hath an issue, and every one that is defiled. How vainly are our medical officers of health daily pleading with boards of guardians and with sanitary authorities, that this old Levitical precept, given in the wilderness 4,000 years ago, shall not be altogether forgotten or disregarded in this country, and at this time. If Dr. Brewer were a Rabbi, and Limehouse were within the bounds of Jerusalem, we should have had no procession through the principal streets of the city to protest against the establishment of a small-pox hospital in the midst of it; nor would the board over which he presides be still labouring to elaborate a system of isolation for infectious eruptive diseases, in which it is constantly baffled by the prejudices of the population and the inertness of local vestries. During the present epidemic of small-pox in London less than half the deaths from this disease have occurred in hospitals, and therefore more than half the cases, occurring for the most part under circumstances where home isolation is impossible, have not received hospital isolation. Hence the epidemic has been left to run its natural course. The isolation of infectious diseases was, under the Mosaic rule, invested with all the dignity and force of a religious ordinance, and the establishment of houses of isolation was recognised as a public duty of the most urgent importance. The medical officers of health throughout the country are at this moment proclaiming their powerlessness to stop infectious disease for want of notice of its occurrence. The Mosaic ordinance gave that which the law of England must shortly give, and which Mr. Sclater-Booth a few weeks since acknowledged to be necessary; but feared to propose to Parliament as being in advance of public opinion.

*Disinfection.*—As to the means of disinfection, strangely enough we are returning also to the Mosaic standard. The means of purification employed by the Hebrews in minor cases of uncleanness such as arose from the touching of unclean things or dead bodies varied with the degree of defilement. Thus, in some cases, the uncleanness ceased in a few hours without ceremony, in others by bathing the body in water or by the washing of garments, in others by sprinkling and washing with animal charcoal, according to the directions given in Numbers xix. 5, which directs the ceremonial preparation of an animal charcoal for the purposes of purification. Finally, in the more extreme cases the walls are to be scraped or the stones destroyed, and the garments are to be burnt with fire. Leviticus xiii. 32—‘And they shall burn the garment or the cloth or the stuff of wool or linen or any utensil of skin wherein the plague is.’

I should like, with your permission, to refer you to the best chapter on disinfection with which I am acquainted, that which was written by Mr. Wanklyn, the well-known chemist, in the ‘Manual of Public Health,’ published by Smith, Elder & Co. You will find, after reciting the various means of aerial disinfection so-called, and enumerating the ordinary means in use, he concludes that scraping the walls and thorough washing are the best means of disinfection in



the slighter cases, and that in the worst cases fire is the only agent that can be relied on.

*Personal Hygiene: Cleanliness.*—Not long since there was a newspaper controversy as to the scriptural origin of the dogma of 'Cleanliness is a part of godliness.' The traces of the laws of personal cleanliness, to which Moses gave a religious sanction, are to be found in the earliest chapters of the Biblical history of the Jews—Genesis xviii. 4: 'Let a little water, I pray you, be fetched and wash your feet,' and Genesis xix. 2: 'And, he said, behold now, my lord turn in, I pray you, into your servant's house, and tarry all night and wash your feet.' Ablution before meals was so invariably performed that, according to Dr. Kalisch, it became a common metaphor or emblem for declaring freedom from guilt or violence. The laws of ablution and purification have of course relations to religious and spiritual conceptions. And once again I would say that if I do not at all dwell upon or even allude to this relation of these laws, it is because we are considering them to-night solely from the sanitary stand-point. The priests on entering upon their office, as well as before and during their duties in the Temple, were obliged to wash and bathe themselves; and many passages in the Talmud refer to cleanliness as an ornament and a necessity. Among the later Israelites, the Pharisees and the Essenes were most distinguished for their strictness in ablutions. Running water plays a great part in the Mosaic system of ablutions, and the strictest ideas of cleanliness are hardly compatible with any other method of attaining complete cleanliness, as may be illustrated for any one who chooses to visit the Hammam in Jermyn Street, and indoctrinate himself with the lessons on washing of Mr. Urquhart, which are based on the Mosaic precedents still observed in the rites of our religious services.

According to Wunderbar, the later Israelites bathed not only in rivers, but also in baths, the houses of prosperous people always enclosing a bath in the forecourt (2 Samuel ii. 2; Susannah xv.) Turkish baths, as we now call them, are really Jewish baths, and were common in Jerusalem under the name of perspiration baths. After coming out of the bath the body was oiled and perfumed, and there was a favourite beverage, which seems to have been a mixture of wine, oil and water, and was considered to possess most agreeable and strengthening qualities. According to Talmudic authorities, the favourite ablution of the ancient Hebrew much resembled the tubbing custom of which the modern Briton is justly proud, and which excites the mingled horror and admiration of the Gaul and the Teuton. It was the custom after finishing with the warm bath to dip into the cold one, or to pour cold water over the body, a method which constitutes the acme of healthful luxury in the daily bath of the modern Englishman.

Laws of purification by bathing were established in great detail for women generally (Leviticus xv. 19-22). For women after child-birth strict laws are also laid down (Leviticus xii. 2), prescribing days

of hygienic precaution, such as must have rendered almost impossible the forms of puerperal fever, which are now among the chief sources of mortality from child-birth among the European communities. They are such as we are at this moment endeavouring to enforce in connection with our lying-in hospitals, and on this subject we can only say that if these Mosaic ordinances were universally observed, puerperal mortality would fall considerably in all great cities of the world. I had lately an opportunity of visiting in Paris the great Maternité Hospital, directed by M. Tarnier, and there I observed that in one single cottage, situated in the grounds of the hospital, strictly Mosaic rules of purification were observed; it is the only corner of any public institution with which I am acquainted, in which they are fully and conscientiously carried out; this little cottage contains only four beds, but it is the admiration of the obstetricians of Europe, and its hygienic regulations are almost as perfect and almost as religiously observed as if this hospital were situated in Jerusalem and guided by Hebrew physicians, practising upwards of 2,000 years ago.

(To be Continued.)

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## NOTES AND EXTRACTS ON VACCINATION.

### DANGER OF COMMUNICATING SYPHILIS—ANIMAL VACCINATION—RE-VACCINATION.

On 'Safeguards against Small-pox' and the risk of syphilitic contamination the *Medical Times & Gazette* says:—"When vaccination was made compulsory on all, its merits had been so well tested that the promoters of public vaccination were, through their great anxiety to see it universal, induced, perhaps to look at the process and its results through too rosy spectacles. They saw only one side of the shield; they looked only on the lives saved and the faces unscarred by the ravages of the small-pox. They forgot, or did not believe, that, without the greatest precautions, the practice of vaccination might possibly give rise to disorders almost as serious as, if not more so than, small-pox itself. Hence the stringency of the laws. But since that time it has been proved almost indubitably, by Mr. Jonathan Hutchinson and others, that Syphilis may be inoculated into the system along with, or instead of, the true vaccine virus. And this is no longer among the things which are doubtful; it has been absolutely and to the satisfaction of all who have seen the cases irrefragably proved. In Dr. Seaton's "Hand-book on Vaccination" we do not think the possibility of such a thing is ever hinted at, certainly not admitted; and as Dr. Seaton has been the authority consulted, directly or indirectly, by the Government authorities, we can hardly blame official for refusing to take any steps to remedy an evil that was evidently deemed chimerical. That the risk is not chimerical,

but that the danger is real, and likely at a time such as the present to become serious, has now been sufficiently shown, and it will become the duty of the members of our profession, as well as of the public at large, to enforce the prominence of this danger on the notice of the Government authorities, as well as to insist on the fulfilment of demands which are in themselves reasonable.

That the risk of syphilitic contamination by means of vaccine fluid was not long ago known seems to depend, as Mr. Hutchinson has pointed out, on the fact that the subjects of vaccination are only, as a rule, seen twice by the vaccinator—once when vaccinated, and again a week after when they come up for examination. Now in the case of children, we all know that at or about the usual period of vaccination they may look fat, plump and in fine condition, whereas seen later they may present all the well-known and unmistakable signs of congenital syphilis. Healthiness of appearance, therefore, as far as the vaccinifer is concerned, cannot be taken as an absolute test of the purity of the vaccine lymph. Neither is it until those infected with syphilis by vaccination are followed to their homes, and the subsequent history studied, or it may be that some accident brings such patients again under the eye of the surgeon, that the true history of the results of impure vaccination or revaccination is to be discovered.

Arm-to-vaccination is undoubtedly the best; but except the whole history of either subject (especially of the vaccinifer) be known, it is also, as far as risk of syphilitic contamination goes, by far the most dangerous.

Dr. Charles R. Drysdale, M.R.C.P.L., &c., &c., in a communication to the above journal, writes on the subject of animal vaccination in Belgium, as follows:—That vaccination is the most splendid triumph of preventive medicine possessed by science is, I suppose, admitted on all hands by persons with capacity for estimating evidence. There are, however, I believe, two objections, against vaccination from arm to arm, or to humanized lymph. Firstly some diseases may be conveyed by such lymph; and, secondly, there is apt to be a great paucity of vaccine lymph just when it is most needed. Both of these objections must, I think, be admitted to have a certain weight; for that syphilis is now and then communicated from an infant that is apparently perfectly healthy to other healthy children, by vaccination, is now admitted by all \* \* \*

The practice of animal vaccination is now very successfully carried on in Belgium, and also in the State of Massachusetts, U. S.; and it seems to me that it deserves our most close and sympathetic attention.

At the Belgian "Institut Vaccinal de l'Etat," we are informed by Dr. Warlomont that animal vaccination is rapidly superseding humanized lymph. Thus of 2000 practitioners in Belgium, some 1000 gentlemen practise vaccination; and of these I find, from a pamphlet I lately translated at the request of Dr. Warlomont, that 768 applied to the State Vaccinal Institute for animal vaccine points in

1873—showing that the whole of Belgium is rapidly taking up the idea that animal vaccine ought alone to be relied on, as being superior to that from arm to arm. It appears, too, that vaccinations made with ivory points of animal vaccine matter, delivered by the Institute, succeeded in 96 per cent. of the cases vaccinated; and that in revaccinations, as many as 62 per cent. were successfully inoculated by it. And it is alleged that, out of 10,000 children vaccinated at Brussels by animal vaccine from 1865 to 1870, passing through the great epidemic of small-pox of 1870-71 not a single child was attacked by variola, whilst the same immunity was noticed in all persons who were successfully revaccinated by animal vaccine—a far greater number, of course, than 10,000.

In the time of the epidemic in Belgium, the State Institute of Brussels furnished animal vaccine for more than 500 vaccinations daily, and sent off a great deal of lymph to foreign countries. And if 5,000 vaccinations a day had been needed, all that the Institute would have required would have been to hire a greater number of young calves. The calves are lent by a butcher to the establishment for a week, and then removed in perfect health and undiminished value.

In reference to this subject we find, in a Report on Vaccination, read before the Ohio State Medical Society last year, and which is called an inquiry concerning Human Vaccine, Vaccino-Syphilis, and Animal Vaccine, with an Appendix containing letters from Hebra, Sigmund, Seaton, M. Guerin, Zeissl, Neuman, and Widerhofer, by William B. Davis, A.M., M.D., etc., the following conclusions:

Syphillitis cannot be transmitted by humanized vaccine lymph, unless syphilitic pus, tissues, or blood, be mixed with the vaccine lymph. Whenever proper precautions are used, such contaminations can be avoided. Animal vaccine—particularly cow-pox lymph and regenerated cow-pox lymph—is very difficult to take, unduly severe in its action when it does take, will not bear transportation or preservation with any degree of certainty, and does not afford the same degree of protection against small-pox as humanized vaccine lymph. While it may not transmit syphilis, it has transmitted carbon and typhus, which are more dangerous to life than syphilis.

Again, Dr. W. C. Chapman, in a pamphlet on vaccination as a preventative of small-pox, holds that, while it may be that syphilis is conveyed during vaccination by the admixture of either blood, pus, or tissues, with the lymph, yet it is not always certain that the admixture can be avoided. Hence he holds that the vaccinifer should always be a healthy subject. As regards the protective influence of bovine virus, he is of opinion that, while it acts more severely it takes quite as readily and protects just as perfectly as humanized lymph.

**REVACCINATION.**—In reference to revaccination, and the necessity for it, we find the following in a late number of the *London Lancet*: Is it necessary to revaccinate every seven years? Is there such

a thing as "experimental testing" of susceptibility or non-susceptibility of the system to small-pox by revaccination? Does the failure of revaccination signify that the person in whom the operation has failed is insusceptible to small-pox? Such is a sample of questions which have of late been sent us from various sources—questions which, judging from the columns of several of our contemporaries of the daily press, would appear to exercise at the present moment certain of the general public as well as of the profession. It is not quite easy to understand how any doubt should exist on the several matters to which these questions refer, seeing the abundant and ready sources of authoritative information (notably Dr. Seaton's "Hand-Book of Vaccination") accessible with regard to them. The fact remains, however, and we proceed to answer the questions categorically.

First, there is no evidence to show that revaccination, once efficiently performed at or after puberty, need ever be repeated. On the other hand, the frequent repetition of revaccination, which has become common during alarms of small-pox, is distinctly to be deprecated. Such repetitions are, as a rule, futile; they are wasteful of vaccine lymph when lymph is most precious; they tend to unsettle the minds of people regarding some of the best established facts as to the preservative power of vaccination; and (which ought to be all sufficient for the profession) they are unnecessary. The official memorandum of the Local Government Board on revaccination says: "Revaccination once properly and successfully performed *does not appear ever to require repetition.*" The nurses and other servants of the London Small-pox Hospital, when they enter the service (unless it be certain that they have already had small-pox), are invariably submitted to vaccination, which in their case generally is revaccination, and is never afterwards repeated; and so perfect is the protection that, though the nurses live in the closest and most constant attendance on small-pox patients, and though also the other servants are in various ways exposed to special chances of infection, the resident surgeon of the hospital, during his forty-one years of office there, has never known small-pox affect any one of these nurses or servants. Some thoughtful practitioners are of opinion that the occurrence of severe general diseases after revaccination, such as enteric fever, may weaken the protective influence of revaccination, and that where this has happened, and generally where, long after revaccination, a person is brought into immediate contact with small-pox, a second revaccination is desirable. This, is, however a very different thing from the promiscuous revaccination which has come into fashion in periods of epidemic small-pox; and, although probably an unnecessary precaution, it need not be discouraged.

Next, as to the success or non-success of revaccination as a means of determining the susceptibility of an individual to small-pox, the notion is wholly fallacious. Revaccination succeeds equally well

upon the well-vaccinated as upon the ill-vaccinated, and vaccination is as successful after small-pox as revaccination after primary vaccination. The local effects of revaccination may be produced again and again in the same individual. Dr. Seaton says on this subject, "The local results *obtained by the revaccination of any individual give us absolutely no information whatever as to the constitutional condition in which the revaccinated person was with regard to liability to contract small-pox.* It has frequently been argued, and is indeed often to be heard said now, that if a revaccination cannot be made to take, or if it take only in a modified way, it is evident that the constitution would not at the time take small-pox; whereas, if a complete local result follows, it may be assumed that the protection of the primary vaccination had worn out, and that the person was in danger or at all events in more danger than in the former case, of taking variolous infection." The erroneousness of this view is proved by certain facts derived from revaccinations in the Wurtemberg and our own army, and which show, if the view had been correct, that 319 out of every thousand persons who had had small-pox, 310 out of every thousand who had been well vaccinated, but only 281 out of every thousand who had been ill-vaccinated, were in present danger of small-pox; and of the soldiers (not recruits) in our own army, 451, 485, and 237 would represent the ratios in the three classes respectively, which is clearly a *reductio ad absurdum*. Our knowledge that revaccination exhausts the exceedingly limited liability to small-pox that may exist, or may recur, after primary vaccination, rests upon a broad basis of observation, but we are unable in any given case to judge of the existence of this liability from the effects or non-effects of the operation.

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## NOTES AND EXTRACTS ON DISPOSAL OF SEWAGE.

### HIGHLY IMPORTANT REPORT—SEWAGE FARMING.

The removal and disposal of excrement is really the great question of the day. On it depends very largely the purity or impurity of the air and water supply. Heretofore all methods for manufacturing portable manure from sewage seem to have utterly failed, from one cause or another, and the advantage of sewage farming—land irrigation, is certainly in the ascendancy with those most interested, and who have paid most attention to the subject.

Some time since, the President of the Local Government Board (*Med. Times & Gaz.*) appointed a Commission, consisting of Mr. Robert Rawlinson, C.E., Mr. Clare S. Read, M.P., and Mr. Smith as an assistant, to inquire as to the great difficulties of devising means for the disposal of sewage, and also as to the practical efficiency of the chief systems then (1875) in operation, by sewage farms, land filtration, and by precipitation or chemical processes.

The report of the Commissioners, the chief recommendations of which have been known for some time, was made public last week. The Commissioners visited Edinburgh, Wroxham, Chorley, Blackburn, Doncaster, Harrogate Wolverhampton, Leamington, Warwick, Rugby, Banbury, Bedford, Croydon, Norwood, Reigate, Worthing, Aldershot, Romford, Tunbridge Wells, Cheltenham, Merthyr Tydfil, Barking, Norwich, and Enfield; Kendal, where the downward intermittent principle is carried out; Leeds, Bolton, Coventry, Tottenham, Edmonton, and Hertford, where sewage is treated by a chemical process; Bradford, Birmingham, and Luton, where sewage-sludge is precipitated by the addition of lime; and Halifax, Rochdale, Salford, and Manchester, where the pail system is partially used for dealing with excreta. They also visited Leyden and Amsterdam, where the pneumatic system is partially in operation: Paris, where only a portion of the sewage is used in irrigation; and Brussels and Berlin, where the sewage is about to be disposed of in irrigation. The Commissioners are of opinion that the retention for any lengthened period of refuse and excreta in cesspits or cesspools, or at stables, cow-sheds, slaughter-houses, or other places in the midst of towns, must be utterly condemned; and that none of the (so-called) dry earth or pail systems can be approved. The sewerage of towns and the draining of houses must be considered a prime necessity under all conditions and circumstances, so that the subsoil water may be lowered in wet districts, and may be preserved from pollution. That most rivers and streams are polluted by a discharge into them of crude sewage, which practice is highly objectionable. That, as far as they have been able to ascertain, none of the existing modes of treating town sewage by deposition and by chemicals in tanks appear to affect much change beyond the separation of the solids and the clarification of the liquid. That, so far as their examinations extend, none of the manufactured manures made by manipulating town's refuse, with or without chemicals, pay the contingent costs of such modes of treatment; neither has any mode of dealing separately with excreta so as to defray the cost of collection and preparation by a sale of the manure been brought under notice. That town sewage can best and most cheaply be disposed of and purified by the process of land irrigation for agricultural purposes. That land irrigation is not practicable in all cases. That towns situate on the sea-coast or on tidal estuaries may be allowed to turn sewage into the sea or estuary below the line of low water, provided no nuisance is thereby caused.

According to the *Sanitary Record* the town council of Bedford, Eng., have managed to solve the question of sewage disposal by a yearly outlay of the ratepayers' money amounting to £371, or 1d. in the pound on the rateable value. The population of Bedford is stated to be 18,000 souls, and its rateable value £65,000. The council cultivate a sewage farm of about 180 acres at Newnham, which is about a mile from the town. The soil is 'a rich loom with

a gravelly subsoil, well adapted for the purpose to which it is devoted, and the surface has been specially laid out for irrigation.' The volume of sewage delivered every twenty-four hours averages 700,000 gallons, inclusive of 300,000 of sub-soil water. It flows by gravitation into a sewage well, and is thence pumped over the land. The profit and loss account for the year 1875 was this in brief :—

	£	s.	d.
Yearly instalment on cost of works, farm rent, labor, etc., etc.....	3,832	7	8
Realized by sale of stock and crops.....	3,461	6	0
	<hr/>		
Ultimate cost to ratepayers.....	371	1	8

The crops were various, consisting of Italian rye grass, potatoes, mangolds, onions, carrots, cucumbers, vegetable marrows, asparagus, rhubarb, cabbage, cauliflowers, oats, wheat, permanent pasture.

Below is an abstract of a financial statement by Dr. Carpenter of the Beddington sewage farm for the year ending September 29, 1876. This fine farm has been noticed several times, and its history has been given, in this JOURNAL.

There is an increase in the value of stock and crops on the farm of  $\text{£}466$  5s. 5d.

The total receipts during the year have been  $\text{£}7,384$  3s. 5d.

The total payments, rent, taxes, wages, etc.,  $\text{£}8,890$  1s. 7d.

The cost of the farm to be paid during the year, about  $\text{£}1,500$ , was less than a penny rate, notwithstanding enormous rent paid. Dr. Carpenter thinks, if the farm had been managed by a farmer for his own benefit, it would have paid handsomely at a reasonable rent.

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#### MODERATE DRINKING.

On the 7th ult. a special public meeting of the National Temperance League was held in Exeter Hall, to discuss the subject of moderate drinking. Sir Henry Thompson, F.R.C.S., presided, and said they were met together that evening because they believed there was a great deal of erroneous opinion current in society as to the use of alcoholic liquor in dietary, and to declare to what extent it was desirable to have alcoholic liquor at all. Raised a few years ago, such a question would have created, and did create, the greatest opposition, but now the attitude of the public was very largely changed, and they no longer found hosts expecting their guests to get drunk at their tables. They had nothing that night to say to drunkards or to people who sometimes got the worse for liquor without getting drunk, nor to the people who drank good wine daily, appreciating its bouquet and flavour; for as to the former, the case was already settled, while the latter admitted that by the daily consumption of wine they shortened their lives. Their controversy



was with the great mass of people who believed that alcoholic liquors were good and necessary articles of diet, and to convince them two arguments must be employed. The first must be the physiological one, and as to that he should maintain that alcohol was of a certain value under certain very exceptional circumstances. When a man had lost his nervous pluck, when the nervous system, and not the muscular one, had come to grief, then a stimulant was useful. By giving alcohol when a man had lost all desire to live, he had saved life, and he would ask them not to talk nonsense about putting anything out of their reach if they could ever do any good with it. But that made his argument all the stronger that this alcohol should not be taken daily by healthy people. His second argument was based on experience, but he must remind them that alcohol varied enormously in its effects, and that they could not dogmatise and lay down absolute rules on the subject. The people who could not stand alcohol were the brain-workers, a daily increasing class, whose nervous systems were more susceptible and irritable than those of their forefathers. He had often had the old men, hard drinkers, who lived to seventy or eighty used against him in argument, but they were told nothing of the thousands of men who had gone down, and nothing of the different position of men in those days and these. Those who envied the habits of living and the drinking customs of old he would advise to go and live as they did, if they could.

Dr. Richardson, who was very warmly received, said moderate drinking was the moral mainspring of all the drunkenness and all the crime in the world. Defining alcohol as the devil in solution, he maintained that it did not warm the body, did not give muscular power, increased the action of the heart but weakened its strength, built up no tissue except useless fat, and was of no good whatever. By experiment on himself he found that he could do more work, more varied work, and never worked with such facility, or with such a sense of freedom from anxiety, as when abstaining. Observing that the difficulty of dealing with moderate drinking was that nobody could agree what it was, he proceeded to point out the effects of what certainly must be considered moderate drinking. A. drank daily a pint of mild liquor, half-pint of wine, and one or two glasses of whiskey at bedtime; this was equal to six ounces of alcohol, made the heart beat 30,000 times faster in the day, and was equal to raising nineteen tons a foot. B. took a pint of cooper, one brandy-and-soda, and a pint of claret, equal to four ounces of alcohol, to 12,000 extra beats, and to fourteen foot-tons. C. drank two glasses of port or sherry, and a pint of claret, which was equal to three ounces of alcohol, to 10,000 extra beats, or to nine foot-tons. From such figures they might judge of the harm done to the heart by the use of alcoholic liquors. From the amœba floating unperceived in liquid up to the highest type of animal, Nature built up the constitution of each with water alone, and on this fact Dr. Richardson based a telling appeal to his audience in favour of total abstinence.

Vice-Admiral Sir B. James Sullivan gave several remarkable instances of the value of total abstinence in Arctic expeditions.—*Sanitary Record*.

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### SEWER VENTILATION.

In reply to questions sent by the surveyor of Carlisle, Mr. Morley, to a great many co-professionals in England, the following valuable and interesting information had been obtained. The system adopted by Mr. Morley had been to send out circulars making inquiries as to population, acreage, length of main sewer, average distances between manholes, number of manholes, whether ventilated and how, general system of ventilation, whether tall chimneys and rain-water spouts are utilized for ventilation, average extent of daily supply of water per head, the number of water-closets, private house drainage, method of flushing sewers, disposal of sewage, and velocity of travel of the sewage. Dr. Yield, Sunderland, had stated that in that town there are 1,000 open ventilators placed forty yards apart, and that no inconvenience results from them. At Smethwick, near Birmingham, at Walsall Lincoln, Tipton, Dudley, and many other places there is not yet any system of main drainage in operation; and that is the case even at Bradford, where the authorities are about to apply for borrowing powers. At Doncaster, with an estimated population of 20,000 and an acreage of 1,690 (rather more than that of Carlisle) the length of the main sewer is 9 miles, average distance between manholes about 100 yards, all manholes ventilated, no charcoal used in the cylinders, and in addition to the manholes there are metal shafts used for ventilators. There are very few water-closets compared with the size of the place. At Bilston the manholes are all ventilated in direct communication with the streets, and no effluvia rises. The same is done at Wolverhampton (population 72,000) where tall chimneys are not used for ventilation, where a hose is kept for flushing sewers when required, and where the water-supply is  $18\frac{1}{2}$  gallons per head per day. At Rochdale (population 70,000, length of main sewer 10 miles) a manhole is placed at every change of line or gradient and at every junction of streets. All the manholes now put in are ventilated, but some of the old ones are not. No charcoal boxes or side chambers are used, and no inconvenience is felt. All new private drains are ventilated. The rate at which sewage travelled there is 3 to 12 feet per second, and the water supply is 13 gallons per head per day. At Kendal, with a population of 14,200, acreage 2,621, though the town proper only covers 450 acres, the main sewers are  $7\frac{1}{2}$  miles in length, and the average distance of manholes is 170 to 500 feet. All the manholes are ventilated, and side chambers but no charcoal used. Tall chimneys and rain-water spouts are not utilised. Velocity of the sewage, 128 feet per second; water-supply 25 gallons per head per day. At Kidderminster the ventilation is by open gratings over the manholes

in the centre of the streets. At Henley the same system has been adopted, with cans suspended to catch the rubbish that falls through instead of side chambers, which are thought to interfere with ventilation and certainly add to the cost. These are specimens of one class of replies received, but many contained no information of any value to the Carlisle authority, others had no sewer system, others a sewer system but no means of ventilation, others just beginning to ventilate by putting open grids on new manholes, and so on. A few reported that they ventilate by means of metal shafts run up above the gables of houses, a few use rain-water spouts where they do not come within a certain distance of windows. The supplies of water vary from about 13 gallons per head per day at Rochdale to 48 gallons at Salisbury and 50 at Wakefield. On this point Mr. Milburn suggested that probably a brook ran through each of the towns and the authorities reckoned the whole of that water as a supply. At Croydon, with a population of 63,000, 900 manholes about 150 yards apart, open grids without charcoal are used and no inconvenience arises. The water-supply is 45 gallons, and the rate of mortality rarely exceeds 18 per 1,000 per annum. At Over Darwen only one manhole at the highest point is ventilated. We have given these returns in some detail, affording as they do some of the latest information as to these places.—*Sanitary Record*.

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### PEROXIDE OF HYDROGEN,

FOR THE PREVENTION OF THE SPREAD OF SCARLET FEVER AND SMALL-POX.  
BY JOHN DAY, M.D., OF GEELONG, AUSTRALIA.

In October, 1875, by request of the Mayor of Melbourne, I drew up a report which was subsequently published by order of the local Board of Health, on fifty-one cases of scarlet fever which had been treated by me between April, 1873, and April, 1875. These comprised all the cases of scarlet fever which had come under my charge during that period. They were all treated in a similar manner. Each patient was freely rubbed over the whole surface of the body three times a day with a preparation composed of one part of ethereal solution of peroxide of hydrogen (erronously called ozonic ether) and seven parts pure lard, well incorporated with the aid of heat. The inunctions were continued for about three weeks. No other remedies were prescribed, except in a few cases where the throat symptoms were severe, when a gargle composed of two drachms of ozonic ether in eight ounces of water, was ordered to be used every second hour.

These fifty-one cases occurred in thirty-eight different houses, and in four houses only was there any extension of the disease. There were no deaths. Since the above-named period I have attended sixty-four cases, occurring in fifty different houses, and in three houses

only was there any extension of the disease after I had commenced my treatment. I have been less fortunate, however, in my results, having had six deaths.

Peroxide of hydrogen contains a larger amount of oxygen than any other known substance, and moreover, one half of its oxygen is loosely combined and in a highly active condition, ready to combine with any organic matter with which it may be brought in contact ; so that it would appear to be an agent specially suited for the destruction of the poison-germs of scarlet fever, small-pox and other epidemic diseases. Dr. William Squire, in an excellent paper "On Sanitary Precautions against the Infectious Eruptive Diseases," read before the National Association for the Promotion of Social Science, says—"It [infection] cannot be carried far in the air, for fresh air oxidates and destroys it, so that for the most subtle disease the infecting distance is small." Now, the loosely combined atom of oxygen in each molecule of peroxide of hydrogen is infinitely more potent as an oxidiser than the oxygen of the atmosphere ; consequently I think it is reasonable to infer that by coating the body of a person suffering from scarlet fever or small-pox—diseases in which most of the poison is eliminated by the skin—with peroxide of hydrogen in combination with lard, cocoa butter, cold cream, or any other substance which will conveniently retain it, we are reducing the danger of infection to a minimum. I have recently slightly modified my formula for the external application, and now generally prescribe it as follows : Ozonic ether, four drachms ; pure lard, four ounces ; benzoic acid, twenty grains ; otto of roses, four drops ; to be carefully mixed without the aid of heat. The benzoic acid, in addition to its being a powerful antiseptic, possesses the property of allaying cutaneous irritation, a symptom often very distressing to scarlet fever patients. The otto of roses gives an agreeable odour to the preparation.

I now also prescribe, throughout the whole course of the disease, a mixture composed of two or three drachms of ozonic ether in a half a pint of water ; the dose ranging from a teaspoonful for a child twelve months old, to a tablespoonful for an adult, to be taken every second hour. This is used for the double purpose of benefiting the throat symptoms, and disinfecting the breath.

I have so much faith in the disinfecting properties of peroxide of hydrogen that I recommend all my friends and patients who are in a position to afford it to use freely, that which for want of a better name, I call oxygenated perfumery. It is made by adding ozonic ether, in the proportion of about a drachm to the ounce, to any kind of perfume, according to individual taste. I give the preference either to Rimmel's toilet vinegar or Eau de Cologne. Letters, newspapers, and articles of clothing may be disinfected by sprinkling them over with oxygenated Eau de Cologne, or with any other oxygenated perfume.

With regard to any power that peroxide of hydrogen may possess

of destroying the poison germs of small-pox, I must confess myself to be merely a theorist, for we have not yet had small-pox in its epidemic form in Australia. In 1871 a vessel arrived at Melbourne with small-pox on board, and shortly after the passengers were landed a few cases broke out in different parts of the colony; but through the energetic measures adopted by Dr. McCrea, our Chief Medical officer, the disease was soon stamped out. At that time, however, it first occurred to me that it might be possible, by a process of oxidation to destroy the poison-germs of small-pox as rapidly as they are given off from the body, and in a paper "On a Means of Arresting the Spread of Small-pox," read before the Medical Society of Victoria, July, 1871, I suggested the use of peroxide of hydrogen for that purpose.

From a theoretical point of view it might be supposed that peroxide of hydrogen would act more powerfully as a disinfectant in small-pox than in scarlet fever, in consequence of the curious property that pus cells possess of exalting its chemical activity and giving it the oxidising powers of ozone.—*Medical Times and Gazette.*

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#### THE GERM THEORY APPLIED TO THE EXPLANATION OF THE PHENOMENA OF DISEASE.

A book upon this subject has been written by Dr. Maclagan, and in reviewing it, the *Lancet* observes :

We must pass over the arguments upon which Dr. Maclagan claims support for the theory of a *contagium vivum*. They have been ably propounded by Dr. Sanderson, and are familiar to most of our readers. The application of this theory to the actual diseases themselves is of more extended interest, and it is to this part of the work that we desire especially to call attention. The characters common to all the eruptive fevers, their incubation periods, the febrile state, their characteristic local lesions, definite duration, and the frequency with which immunity is conferred upon the individual from a second attack, are held to be best accounted for on the hypothesis that each fever is represented by its own specific organism, which from the moment of its entrance into the system to the time at which the first symptoms of the disease appear, is growing and multiplying. That the growth and nutrition of the organism, which lives parasite-like in the body, requires water and nitrogen, the deprival of which from the body constitutes the chief feature incidental to pyrexia; that, in accordance with its parasite nature, it seeks and obtains a special nidus for its development in particular regions of the body, and thus gives rise to the "local lesions"; that the definite duration of the disease is consistent with the exhaustion of the material for the sustenance of the organism, an exhaustion upon which can also be explained the protection of the individual from further attacks—these are the broad statements upon which are grounded the arguments contained in the work.

In the simplicity of the germ theory of contagious fevers lies its great merit. Once grant the existence of the living contagium, and it is not difficult to see how the wasting of nitrogenous tissues that occurs in the pyrexia can be explained on the view that the contagium itself appropriates the nutriment destined for the repair of the tissues. A like appropriation of water by the contagium accounts for many of the febrile phenomena, as well as for the *decreased* elimination of urea sometimes noticed. In like manner it is owing to the activity of the processes by which the living contagium appropriates materials destined for the tissues that the increased activity of the circulation occurs, and, *pari passu*, the increased body heat. The varied nervous symptoms of fever, rigors, headache, convulsions, coma, &c.—the typhoid state itself—are reduced to the denutritive changes undergone by the nervous centres by the same property of growth at the expense of the tissues that the contagious organism exhibits.

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#### HYGIENE OF THE EYES IN CHILDREN.

Dr. Galezowski recently read a paper at the Société Médicale d'Emulation (*Union Med.* April 7; *Med. Times & Gaz.*, April 14), entitled "Some consideration concerning the Hygiene of Sight in Children," of which the following is an abstract:

With respect to children in early infancy the following rules should be observed:—1. The bed of the infant should be so placed that on waking it does not have its face towards the light. It is after sleep that the eyes are most sensitive and delicate, and if the light strikes them at that time it often induces contraction of the internal muscles which may become permanent. In fact, according to Cuignet, the photophobia which in young infants accompanies either hypermetropia or inflammatory affections of the eyes is one of the principle causes of convergent strabismus. 2. When the infant is taken out in the air it should have its face protected from the sun by a blue or green veil, and not—contrary to the usual practice—by a white one. The light which traverses a white veil is very dazzling, and greatly tires the eyes. 3. The nurse of the infant should accustom herself to carry it sometimes on one arm and sometimes on another, for the child is constantly trying to look at its nurse, and may insensibly acquire the habit of looking only to the left or right, whence may arise strabismus. 4. In choosing nurses we should reject those who have bad eyes or who squint. The disposition to imitation is carried in infants even of the earliest age, to such a height that they may sometimes be seen almost uninterruptedly winking, because their nurses, having bad eyes, are obliged to keep them half closed in the light of day.

The importance of observing the hygiene of the eyes is much more important with regard to children going to school or entering

upon apprenticeship ; and in order that their vision be not prematurely damaged, it is necessary that the occupations which they are called to should be carried on under the best hygienic conditions, and especially that the school-rooms and workshops be properly lighted.

In regard to the illumination of school-rooms, daylight should always come from the left side in relation to the students, and never from the right or the front. This direction of the light is especially favorable for writing, as the hand does not then project its shadow on the copy-book. Benches should not be placed opposite windows, for too much light is very prejudicial ; nor should the classes ever be ranged towards the south, working being very fatiguing with the sun on the windows. Photographers and painters so well understand the inconvenience of this, that they always choose their studios with a northern or eastern aspect.

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#### YORKSHIRE ASSOCIATION OF MEDICAL OFFICERS.

At the recent annual conference of the Yorkshire Association of Medical Officers of Health some interesting papers were read.

Dr. Britton stated that in a village near to Halifax, a child, living in a cottage at the top of a steep hill, was taken ill, the diagnosis being that she was suffering from acute tuberculosis. She died, and her funeral was attended by some children, amongst whom, eighteen days afterwards, typhoid fever broke out. Dr. Britton was then called in, and he advised that the excreta from these fever patients should be buried. Instead, however of this being done, it was simply emptied over a wall into a field about 120 yards from the village. Half way down the hill was a small open pool of water out of which cattle drank, and the overflow from which ran into a well which supplied half the village with water. At the time when this was done the weather was very dry, but shortly afterwards a great rain came down which washed the dry excreta into the pool, from whence it was carried on into the well which supplied half the village. On June 30—six days after the rain—two cases of typhoid fever broke out, and within a week there were twelve cases, and the number was ultimately increased to thirty-nine, out of which were five deaths. All these thirty-nine cases could be directly traced to the first twelve. This history showed the absolute necessity of a little education on the part of the public.

Dr. Goldie confined himself to the statistical evidences of deaths caused by preventable diseases during the last ten years. For the purpose of comparison, he divided the ten years into two equal periods. The statistics referring to scarlatina went far to prove that scarlatina seems to possess some inherent quality in its epidemic character which results in an epidemic wave, enlarging for three years as it rolls on to exhaust itself ; then comes a period of rest or de-

crease for two years, and so on repeating its supremacy. It was well known to medical officers of health that sickly children were found in public and private schools, and he was of opinion that the unmanageable character of the late scarlet fever epidemics was largely dependent upon this mode of spreading it. A single infected child in a large congregation of school children would prove a most dangerous companion. Scarlet fever had a peculiar advantage of infecting school children—that is, that the favourite age of attack is exactly the school-going age ; and this is one reason why we find it spreading from schools, and a reason why it is far more intractable than some other of the zymotics—say small-pox, for example. Then again it is a disease (an exanthema) not always diagnosed by the rash ; some of the worst cases are those which either never show a rash, or, if they do, it is for so few hours that neither the parents nor the school-teachers can detect persons who are actually suffering from it. Hence children are admitted to schools infected.

Dr. Parsons read a paper “On the Reduction of Mortality effected by Sanitary Improvements in Selby.” By the provision of efficient sewerage and a pure water-supply, and other sanitary improvements, the average annual death-rate of Selby had in thirty years been reduced from 29·3 to 21·1 per 1,000. The scavenging had of late been carried out by the Local Board with their own carts and men with great success, the proceeds of the sale of manure leaving a small balance in hand after the payment of working expenses.

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#### THE CRUSADE AGAINST DRUNKENNESS.

There can be no doubt that the efforts now being made by all classes in the country to repress what we fear must be called our national vice are as earnest as they are wide-spread. There is one aspect of the question, however, which has hitherto received but slight attention, although worthy of much. It is necessary, so it seems to us, to teach people not only what *not* to drink, but what they *may* drink and *ought* to drink. A religious missionary not only tries to wean the savage from the barbarous superstitions bequeathed to him by his ancestors, but offers him something better in exchange.

The missionaries of temperance in this country have hitherto contented themselves by preaching “Thou shalt not drink alcohol,” and with this exhortation to a negation they have rested content. Surely there is much to be done in a positive way, and our belief is that more good will be effected by alluring the public towards pleasant and wholesome non-alcoholic beverages than by merely inveighing against the beverages which exist.

Why should not coffee, the very prince of all beverages, be as good in England as in France? The Government and the public are too prone, we think, to look upon a “public house” only as a



place for the sale of intoxicating drinks, and too little is done to encourage publicans to deal in non-alcoholic drinks, although we believe the profit arising from the sale of the latter to be scarcely less than that which belongs to the ordinary "liquor traffic." Would it not, for example, be a good plan to allow the public-houses in Ireland and Scotland to be open on a Sunday for the sale of non-intoxicating drinks? In this way, perhaps, the publicans would learn that their trade profits are not limited to alcohol, and the public would be tempted during their Sunday rambles to learn a lesson which might serve them on a week-day too.

It has been the custom in country districts to offer a small prize occasionally to the woman who can produce the best loaf of bread or the best sample of potatoes boiled ready for the table, but we have never yet heard of a prize for the best cup of coffee, and we throw this out as a hint to country gentlemen interested in the temperance cause.

When the labouring classes can procure a decent cup of tea or coffee with the same facility that they can now get a decent glass of beer, we may expect to see a genuine growth of temperate habits, and the temperance agitators must bear in mind that it is not only necessary to take away our beer, but still more necessary to give us something in return.—*Lancet*.

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#### TYPHOID FEVER AND DRINKING-WATER.

Julius A. Post, M. D., Rochester, N. Y., sends to the *N. Y. Medical Record* the history of an outbreak of typhoid, of which the following is an abstract:—Some time during the early part of September last it was noticed that typhoid fever was confined to a particular part of the city (Rochester). The Board of Health took the matter in hand, and proceeded to investigate, with the following results: Most of the persons who were sick used water from a well which was located at a four-corners, and situated directly in front of a grocery and lager-bier saloon. This well was a famous watering-place for farmers and teamsters, who allowed their teams to stand near the well. In this way the well received washings, from small cesspools of urine, manure, and filth, which had accumulated around it. The Board of Health caused the well to be closed. This action caused much excitement among those who used the water. Prof. Lattimore, of Rochester University, analyzed some of the water. His report showed nothing which would be injurious to health. The Board of Health determined to make a house-to-house inspection, as it was evident that science and hygienic laws were at variance somewhere. Each house in the neighborhood was visited, as far as any persons could be found who used the water. The results of inspection were as follows: There were forty families who used the

water from this well ; these forty families contained two hundred and nineteen persons ; in these forty families there had been, during the past season, twenty-three cases of typhoid fever, and one case of consumption—in all, twenty-four cases of sickness. In the district inspected there were forty-seven families, who used water from wells in their own or their neighbors' yards ; these forty-seven families contained two hundred and seventy-one persons ; in these forty-seven families there had been, during the past season, one case of dysentery, two of typhoid, one of pneumonia, one of whooping-cough, one of disease of the kidneys, and two sick for a few days, but did not call a physician—in all, eight cases of sickness. After closing the well there were no more cases of typhoid in that neighborhood than in any other part of the city.

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SANITATION IN NORWAY.—Though so much has been done in England in sanitary matters, Norway is not behind. The *Lancet* says : Unless public health organization and legislation soon enter on a new phase here, we shall before long be left far behind by our continental neighbours in matters appertaining to sanitation. We have received a copy of the first of a new series of weekly returns for the city of Christiania, which bears unmistakable evidence that the capital of Norway is considerably in advance of the capital of England in the organization of its public hygiene. Christiania is a city with an estimated population not exceeding 79,000 persons. The weekly return in question records, however, the number of living and still-births, distinguishing the legitimate and illegitimate, and, as regards the deaths, shows the ages of the deceased in eight groups, and the diseases under sixteen headings. Beyond this the return records the number of new *cases* of epidemic disease reported by the medical practitioners during the week, and a note appended to these figures states that it is compulsory upon a medical practitioner to report to a sanitary authority all cases of infectious diseases coming under his notice.

GLASS-WOOL.—A French journal states that M. Limousin laid before the Paris Therapeutical Society a specimen of "glass-wool," or *Glaswolle*, which is much used in Germany, and especially in Austria, for the purpose of filtration, in laboratories. It exactly resembles wadding, but is a little more silky, and slightly crepitates when held near the ear. Bohemian glass is the only kind from which it can be produced, being drawn out, at the moment of fusion into threads of an extreme tenuity. Under the microscope these fibrillæ are as delicate as those of cotton, and quite as supple. The *Glaswolle* neither produces any alteration in the filtered substances, nor does it undergo any alteration from them. It may be also conveniently used for painting parts with chromic acid, nitrate of silver tincture of iodine, etc.—*Med. & Sur. Report.*

**THE PARIS ATMOSPHERIC ORGANISMS.**—The Paris Municipality recently established at the Meteorological Observatory at Montsouris a *service*, with the object of investigating the conditions of the climatology in relation to hygiene in different parts of the metropolis, comprising among other things the microscopical examination of the organic dust held in suspension in the air. The service, which since January 1, has been in the hands of one of the most distinguished micrographists, M. Miquel, has already yielded some important results, which show that the atmosphere of Paris is loaded with microscopic organisms, the proportions of which vary greatly in the different quarters—the more healthy parts of the town, as the Park of Montsouris, containing the fewest. The soil of Paris also containing a notable number, and they are found to abound in houses undergoing demolition for making new streets. An epidemic of typhoid having caused the evacuation of the barracks at Château d'Eau, M. Miquel detected in the air collected from the rooms of these multitudes of algæ, vibriones, bacteria, monads, etc., and this organic dust mixed with food and drink may very well have contributed to the production and extension of the epidemic.—*Union Méd.*, Feb. 1.

**THE DURATION OF LIFE.**—Dr. William Farr, F. R. S., in his letter to the Registrar-General on the mortality in England and Wales during the ten years 1861-70, states that the annual mortality in the city of London was at the rate of 80 per 1000 in the later half of the seventeenth century, and 50 in the eighteenth century, against 24 in the present day. This implies that the mean duration of life in London, was more than twelve in the seventeenth century, was about twenty in the eighteenth century, whereas it is now about forty years. The mean duration of life depends upon the death rate at various ages, which show the widest range in different parts of the country, dependant upon their sanitary condition.—*Med. & Surg. Reporter*.

**DANGER OF RAW MEAT DIET.**—Dr. Brochard, who has done so much in France for improvement in the hygienic treatment of infants in his *Almanach Illustré la jeune Mere* cautions mothers against the great abuse of raw meat which now takes place in France in the treatment of the ailments of infancy; and to which he attributed the great increase of verminous disease, and especially tænia. As long as the child has no teeth, good cow's milk, mixed or alternating with broth, forms the best diet; and when meat is commenced it should always be well cooked. If good milk is not procurable, the Swiss condensed milk, diluted with tepid water, will succeed well.—*Revue Méd.*, Feb. 5.

**THE MATHEMATICS OF RHEUMATISM.**—An English observer, Mr. Mackereath, has found that rheumatism occurs when the barometer and hygrometer show great changes; and that by multiplying the morning barometer by the difference between the wet and dry bulbs in the morning, by doing the same with the evening records, and

subtracting the one from the other, he would get a result which when varying greatly from day to day, would indicate when rheumatism would prevail ; and when the numbers were nearly the same from day to day, rheumatism would disappear.—*Med. & Surg. Reporter.*

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### ON PREVENTING INFANTILE DEATHS.

To the Editor of the SANITARY JOURNAL.

DEAR EDITOR,—If you would not think it presumption in me, I should like to say a few words to you about something which has been on my mind for months, and which likely enough you and others have thought of, but to which I have not observed that any attempt has been made to draw public attention.

When I think of the very large number of little children who die every year in Toronto, and of the very much larger number who suffer days, and often weeks from sickness, which is so very trying to the poor little ones, and expensive to their parents, and think of the Dispensaries for providing medicine for curing the sick, and of the great and noble efforts made by ladies to establish and carry on successfully the Hospital for Sick Children, the dearest (I don't mean expensive) institution I know of ; and then think, on the other hand, of the old familiar saying, in the truth of which every one seems to believe, that "Prevention is better than Cure," and think again that so far as I can learn, not anything is being done to prevent so appalling a number of deaths, and so much trying and troublesome sickness, for I hear many say a large proportion of both might be prevented, I am completely at a loss to account for what is certainly to me, in my girlish simplicity, a most unaccountable inconsistency.

I am told that in some other cities, as Philadelphia, there are societies for the prevention of cruelty to young children, and sanitary missions for making efforts to prevent sickness and death, and places provided in the delightful country, where the children of the poor may be sent during the very warm weather, at which time the greatest number die in the city. And it is, Sir, to these I wish to draw attention, and to ask and beg that something may be done in Toronto in this way, to prevent so very many little ones dying, which could not have been the will of our Creator, although He has permitted it. Will you please, sir, try and stir up some one to "lead off," when it seems to me many other might follow, and much might be done here as well as in other cities.

Yours, &c.,

April, 21st, 1877.

A SCHOOL GIRL.

# THE SANITARY JOURNAL.

Communications solicited from Medical Men and others on all subjects pertaining to  
Public Health.

VOL. III.

TORONTO, MAY 1, 1877.

No. I.

## ON THE RELATIONS OF MEDICAL MEN TO THE PUBLIC.

In no subject effecting the profession of medicine do we feel a deeper interest than in the one above named. Because we believe that no other is of greater general importance; and that the well-being of the public depends very largely upon it. We have often quoted the words of Sir William Jenner, a physician whom every medical man must highly respect and esteem, that "to prevent disease is the most important aim of the science and art of medicine." They cannot be too often repeated. Is there a medical man who will say that such should *not* be "the most important aim" of the medical science and art, yet, how many practice in accordance with these words? The entire practice, almost the entire teaching of the schools, is in *curing* disease, instead of preventing it, the highest aim. The physician is universally associated in the public mind with disease and nauseous doses, rather than with health,—the goddess Hygiea. This ought not to be. He stands as it were on the wrong side of that turning point between health and disease. The science of cure is but a small and a secondary part of the whole science of medicine. A few recognize this fact to the full, and many now place less faith than formerly in the science of cure, as at present understood, and in drug remedies.

Dr. Samuel Wilks, F. R. S., &c., Physician and Lecturer on Medicine, Guy's Hospital, London, in a paper read before the National Health Society, in June of last year, observed:—"The idea of cure lies at the bottom of all quack systems. They are all alike in this, that they do nothing else, and profess to do nothing else, than cure existing ailments." "Now, as the tendency to quackery is in proportion to ignorance, it is clear that the idea of 'cure' is low-born and common-place, whereas the sentiment expressed in the motto, Prevention is better than cure, is significant of a higher intellectual advancement." Many physicians, however, rise little above the

pharmacopœia in their daily or semi-daily rounds, and prescribe long lists of drugs, the effects of which upon the system are too far from being even fairly understood.

We hope to see the time when it will be the rule, instead of the exception, as now, for physicians to attend patients and families more or less when in health, being employed for this purpose by the year, and endeavor to keep them well. We have long advocated this method of practice, and though a long time may elapse before it is generally adopted, it is certain to be sooner or later.

It was with no small degree of surprise that we observed in a recent number of the *Pacific Medical and Surgical Journal*, that at a meeting of the San Francisco Medical Society, one of the members introduced a series of most illiberal resolutions condemnatory of this sort of practice, and proposing to exclude those who engaged in it from membership and professional association. Though many seemingly approved of the measure, it was urged that it would drive off many members and prevent others entering, and it was concluded, wisely no doubt, to defer the question till after the meeting of the State Medical Society.

Quite different from this seems to be the feeling in England. At a meeting of the Birmingham and Midland Association of Medical Officers of Health, held early, this year in Birmingham, Dr. Wilson, the President, delivered an address on the Relations of General Medical Practice to Preventive Medicine. He dwelt on the vast saving of life and health which may be achieved by well-directed efforts to prevent disease, much of which medicine is powerless to cure. He described how, in his opinion, curative and preventive medicine should be made to go hand in hand for the promotion of the public health. All that is required in bringing about the change in practice, he contended, is that the ordinary medical attendant should be paid by an annual stipend, and not according to the number of visits he may make during illness. The advantages of this system were thus enumerated: In the first place, the practitioner would advise his patients concerning the sanitary condition of their houses; in the second place, he would advise them against any bad habits or against errors in diet and clothing injurious to health; thirdly, he would make it his duty to call from time to time without being sent for, and would thus be able to detect "ailments in the bud"; and, lastly, he would take every needful precautionary measure in cases of infectious disease, and would

have no scruples in giving timely information to the officers of the sanitary authorities. The *Lancet* in referring to this system says, it has much theoretically to recommend it, but we do not think there is any likelihood of its speedy adoption. The British public would require a good deal of preparatory education before the "merits of the system" could be made apparent to and be appreciated by them.

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OMNIVOROUS MAN.

On several occasions we have been asked for our opinion on Vegetarianism. It is one of those subjects upon which one need not hesitate to give an opinion. It seems hardly to admit of discussion, and it is somewhat strange that there should be two opinions upon it. For those few vegetarians—those who strongly advocate the doctrine, that man for his perfect corporeal and mental development ought to subsist entirely on the direct products of the vegetable kingdom, we have the utmost respect and for their sincerity of purpose, but we cannot fully comprehend why they are vegetarians, in this sense. It seems probable that primeval man did subsist upon vegetable foods alone, and, when in his primitive state, when but little effort, physical or mental, was demanded of him, even fruits may have been sufficient for his sustenance. And doubtless most, if not all men may now, especially in warm climates, live in good health and to advanced age, and perform a large amount of labor, upon an exclusively vegetable diet; and a few who, from heredity or habit, have become subjects of diseased or disordered (if there is a distinction) functions, may be benefited or best served by such a diet. Notwithstanding all this, or anything more which has been eloquently and ably brought forward in advocacy of such a mode of living, the experience of centuries proves that, in temperate climates, at least, those nations who use foods from both kingdoms, properly proportioned, manifest the highest degree of vigor, physically and intellectually; while those individuals who have attained the greatest age have been in the habit of consuming a moderate quantity of flesh. Again, comparative anatomy affords very strong evidence that man was created, and is, an omnivorous animal. The formation of his teeth, and the extent of his alimentary canal, which is less than that of vegetable feeders and greater than that of the carnivora, show this and one would suppose would place the matter beyond controversy.

Furthermore, taste and appetite are instinctive provisions for the selection of food ; and the taste for animal food in young children is almost universal. The flesh of animals, too, is as a rule, more readily digested and assimilated than vegetable foods ; it is, as it were, vegetable food already once digested. Less force is therefore required for the digestion of flesh ; and the conservation of force is of the first importance in the economy of the human body. Finally, man being at the head of all created things, all other things created seem designed for his use,—for aiding in, and contributing to, his physical and intellectual development, improvement and progress. It is not easy to conceive of any other purpose for which many animals could have been designed, except as food for men.

Man, at the head of created beings, seems at liberty to use for his food, anything his appetite guided by his reason may select. Variety is almost unlimited, boundless. But the great trouble, the evil effects, seem to arise not from the *sort* of foods, but from the *quality*, and the *quantity* consumed.

‘ Made strong to stand,      But free to fall,’

Man too often permits his appetite and taste to get the better of his reason, and to indulge in more than is for his good. This is the case as well with foods as with drinks. It is most probable that in those cases where a change from an animal to a vegetable diet has been found beneficial, too much, too large a proportion of animal food had been eaten. This being a more concentrated food, no doubt the temptation to *excess* in it is greater than in vegetable food, but this cannot be fairly used as an argument against the moderate use of an agreeable, nutritious, easily digested article of diet.

It appears most vegetarians use milk, which is properly an animal food, certainly not a vegetable, and without which their diet would probably sometimes prove defective.

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#### THE USE OF TOBACCO.

Against the use of this repulsive poisonous weed, which can hardly lay claim to a single virtue, we have from the first number of this JOURNAL repeatedly given space to articles. We have been tempted to reflect that much which is now being urged by “temperance” people against alcoholic beverages might also be urged against tobacco. They are twin evils which ought not to be separ-



ated by acts of Parliament—casting out the one and retaining the other ; with this exception, some forms of alcoholic liquors can not be safely dispensed with, while not anything approaching this can be said of tobacco. Excepting the moral or mental effects of alcohol—the tendency its use has to stimulate to crime, it is probable the effects of tobacco at the present time (upon the physical man) are more injurious than those of alcohol. About two years ago, a committee of the Virginia State Medical Society on tobacco, reported, among other things, that its use was “more revolting and obnoxious to the natural physical man than the use of alcohol.” Moreover, by reason of the relaxing and debilitating effects of tobacco, the use of which by the young frequently *precedes the use of spirits*, the temptation to indulge in the latter is increased, while the power to resist the temptation to excess in them is greatly lessened ; and hence, the use of tobacco directly leads to and favors intemperance. We have no doubt whatever of this. It is well known that the use of tobacco diminishes the vital force. The boating-men who train for the races at Oxford and Cambridge are not allowed to indulge in its use. Sir Benjamin Brodie denounced the use of it as the most enervating of all modern practices. Mr. Solly, an eminent surgeon of St. Thomas’ Hospital, whom we have frequently quoted before, and who gives much attention to the tobacco question, wrote : “I know no single vice which does so much harm as smoking. It soothes the excited nervous system at first, to render it more irritable and *feeble* in the end.” Its depressing effect upon the natural recuperative powers are well-known in hospital practice, and that it is hardly possible to cure some diseases while the habit of smoking is continued by the patients. Those waging war against alcohol are not striking at the root of the evil.

The *Canada Lancet* for February, we are pleased to see, speaks out strongly against tobacco, and calls upon medical men to use their influence against its use. It says : “the smallest amount of consideration, or investigation of the effects of tobacco on the human system, must have convinced them of its seriously detrimental character.” Among the numerous and varied effects of its use, it enumerates the following :—giddiness, nausea, vomiting dyspepsia, heartburn, vitiated taste in the mouth, loose bowels, diseased liver, distorted vision, headache, diseased brain and spinal cord, congestion of the brain, apoplexy, palsy, mania, loss of memory, amaurosis, deafness, nervousness, emasculation, timidity, and cowardice.

## Annotations.

### THE REPORT ON VITAL STATISTICS AND PUBLIC HEALTH.

Dr. Brouse has favored us with a copy of the Report of the Select Committee of the House of Commons, to enquire into the expediency of legislating in the matter of Sanitary Reform. Dr. Brouse will not allow this matter to drop, we feel sure, until something useful to the country comes of it, but how long it will be necessary for him to keep agitating it is quite uncertain. The Report sets forth the great necessity for legislation on sanitary matters, if we are to make any progress against the continual inroads of epidemics and preventable diseases, and also sets forth the benefits that have resulted in other countries by enforcing sanitary laws. The Report says :—“ A careful legislation on the part of the Government would place the population of the Dominion in a far more secure condition than they are now in. A striking illustration of this fact was the terrible epidemic in the *North-West*, which ravaged the Icelandic population and then spread to the Indians and other inhabitants of that territory, thus showing the want of a proper means of arresting and stamping out contagious diseases. *Here the Government found the outlay attendant upon sending medical and other aid far greater than if a regular system of sanitary law had been adopted, besides terrible loss of life, which might otherwise have been avoided.* Were a greater interest shown by the Government in the sanitary condition of the Dominion, and did a more perfect code of laws exist regarding public health the population of the country would greatly increase and Immigration would be greatly facilitated. This has been peculiarly shown some years ago in the State of *Colorado*. That State by addressing circulars to all the leading medical men of the *United States* and *Canada*, embodying a set of sanitary queries, and showing the comparative advantage of that territory for healthy settlement, succeeded in attracting settlers from all parts of the country, including *Canada*, peopling their territory to the detriment and cost of ours.”

It further urges that, as an apparent conflict of jurisdiction exists between the Provincial Government and that of the Dominion as regards legislation in this matter, some arrangement should be speedily effected in the matter of jurisdiction. This last is just what we drew attention to and urged exactly two years ago, in this JOURNAL.

In view of this rather ‘pressing’ nature of the report thus far, the last sentence of it certainly reads rather strangely :—“The Committee further urge that the Government, *as soon as the public interest will allow*, should legislate for the health of the people.”

Could they not have urged, especially after what had just before been stated, that the *public interest* would *not allow* of legislation for the health of the people being deferred from session to session while most other countries have been grappling with the matter for years to the great saving of life. We regret that this was not put in a much stronger way.

## MICHIGAN STATE BOARD OF HEALTH.

This Active Board must be conferring vast benefits upon the State. At the regular Quarterly Meeting held in Lansing, on the 9th January, a paper entitled "The Location of Healthy Homes," was read by Dr. Henry F. Lyster, of Detroit. The condition of the homes of the people, he said, may be regarded as an index of their civilization. A complete, healthful, and beautiful home indicates health, intelligence and refinement in its occupant. He dwelt upon the various insanitary conditions most common to our modern homes. Those most strongly touched upon were, defective disposal of sewage, unwholesomeness of water-supply, unfavorableness of location, too complete exclusion of sun-light and air, resulting from excessive shade, lack of proper drainage, etc.

Prof. R. C. Kedzie reported on Illuminating Oils. He thinks the people of Michigan are to be congratulated upon the present condition of their illuminating oils so far as exemption from injury to life and property are concerned. The public prints are not now filled with recitals of deplorable accidents from the use of kerosene.

Dr. H. O. Hitchcock, submitted a report asking that a commission be appointed to investigate and report in two years concerning the influence of the liquor traffic upon the life and health of the people of the State, to ascertain, as far as possible, the value to the State of the traffic in alcoholic drinks, and the losses to the State fairly chargeable to the use of intoxicants, &c., &c.

Rev. Mr. Brigham reported upon the sanitary influence of the *Eucalyptus Globulus*, or blue gum tree. Dr. Lyster said the trees were growing in Detroit, that by being cut back they had become somewhat hardened. He recounted instances in which the tree had been planted in Africa where they had a remarkably beneficial sanitary influence.

Dr. O. Marshall presented a communication on Opium and Morphine eating. He gave facts concerning twenty-five cases which had come under his observation. He thought the evil was increasing and that measures should be taken not only to assist those who are already victims, but to prevent others from acquiring the habit. He especially urged the prohibition of the sale of soothing syrups, cordials and anodynes, which create in the infant a predisposition to the opium habit in the adult.

THE ANNUAL MEETING of the Board was held April 10, 1877.

Rev. C. H. Brigham read an essay on "Recreations in their Influence on Health." He said "that the best recreation is that which gives the most exhilaration of mind and body, with the greatest economy of time and strength, and the least danger to life and limb."

Dr. Barker submitted a proposed circular of information on the "Restriction and Prevention of Scarlet Fever." It embodied carefully framed rules for the prevention of this dreaded disease, and directions for different methods of disinfection, &c. The subject

had been a year under consideration. The document was adopted and 20,000 copies were ordered to be printed in pamphlet form, for distribution in the State.

The subject of illuminating oils was discussed, and there was a unanimous feeling that in the interests of public safety, the present flash test of 140° Fahrenheit, should be maintained.

The Secretary submitted his quarterly report. About 1,600 copies of the last Annual Report had been distributed during the quarter.

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**DRY CLOSETS.**—In reference to the use of these the *Sanitary Record* says:—"At one time the term dry closets was only applied to earth closets, now it has come to be the designation of almost every kind of closet in which the receptacle is movable, or in which an attempt is made at deodorisation, disinfection, absorption, or separation. The passing of the Rivers Pollution Bill has given dry closets a fresh impetus, and now we find sanitary authorities pretty generally considering whether they cannot escape their sewage difficulties by falling back upon some one or other of the numerous so-called dry systems of conservancy. This feeling is not confined, as might be expected, to small towns and rural populations. but towns of the size and importance of Manchester, Birmingham, Salford, Halifax, Rochdale, etc., are busily engaged in extending the use of dry closets and in opposing by all legal and moral means in their power in the further introduction of water-closets. It seems, indeed, as though the old midden, at all events was doomed, and that is a consummation devoutly wished for by all sanitarians, but how far the sewage problem or difficulty will be solved or assisted remains to be seen.

#### INFANT DIET.

In the course of an inquest recently held at Plumstead on the body of a child aged four months, it transpired that the deceased, who had been put out to nurse, had been mainly fed on corn flour and water. On such a diet the child would sooner or later perish. Corn flour contains little else than the granules of starch, and, although producing a certain amount of heat-producing force, is in no sense a flesh-former. When employed it should always be given with milk, as mixed with water only it is useless. When an infant is deprived of its natural supply of milk, its food should be assimilated as much as possible to that provided by a mother. Hence on the excellent substitute found in the cow's milk (always diluted with water be it understood) the most delicate offspring can be successfully reared. Generally speaking, the diet should be exclusively a milk one until the age of one year is reached, and for some time after that broth or beef-tea should be very sparingly given. Meat and

potatoes should be carefully eschewed, and we are convinced that the reckless use of these is responsible for many of the formidable evils which beset childhood.

**THE TWIN SANITARY DOOR.**—The *Sanitary Record* draws attention to an invention designed to achieve the isolation of water-closets and apartments in dwelling-houses, and the other buildings from the other parts of them so far as regards air, effluvium, and sound by means of twin doors. Suitable mechanism is introduced in such a manner that these doors will close or open simultaneously. When such doors are closed an automatic contrivance immediately opens a valve and allows a free circulation of air to pass—by means of a suitable channel provided for that purpose—from the outside of the building between the doors. In the case of infected air, or germs of disease being supposed to be present, the valve is employed for the admission of fumes, vapours, or gases of a disinfecting nature. The doors thus employed are kept at a suitable distance from each other, and the inlet valves are inserted in the upright linings or jambs, an outlet ventilator being placed in the upper part under the lintel in order to create the requisite current of air.

#### BLUE GLASS.

It was said by DeMorgan that certain men appear occasionally to play the part of "foolometers," *i.e.*, to measure the number and quality of the fools in society. Pleasonton may be regarded as playing that part about the present time. Numerous and marvellous cures, however, are reported by the press as having been effected by blue-glass. One is mentioned worthy of note. It is that of a young lady who had suffered for a long time from a wart on her nose. Her society was, consequently, little courted, and her admirers were few; but she tried blue glass, and thanks to that wonderful discovery the wart has disappeared, and she has had a dozen offers of marriage.

Under the spectroscope, sunlight through blue glass is nothing more than sunlight diminished 90 per cent. in intensity. The Academy of Science of Kentucky reported that blue light "increases the amount of carbon dioxide produced in animals," and says that blue light "may possibly prove useful in some diseases and injurious in others." Dr. Javal, of Paris, remarking on the general preference now existing for blue glasses over green as protectives, observed that it was not certain whether particular colors are deleterious, and whether there is any advantage in extinguishing certain colored rays. The arguments, he says, on which the use of blue glasses are founded are valueless, and the whole question needs to be reconsidered.

**DR. WM. OSLER**, Professor of Physiology, McGill University, Montreal, has been the recipient of a complimentary address, and a purse of \$100, to aid him in scientific research, as a token of the high esteem in which he is held by his colleagues and students.

**CONSUMPTION A PREVENTABLE DISEASE.**—In the first Annual Report of the State Board of Health of Colorado, Dr. Bancroft, President, advances the suggestion that phthisis properly belongs to the class of "filth diseases," and can be controlled and prevented by attention to cleanliness. He supports this view by the fact that tubercle is inoculable, and may enter the body through contaminated drinking water. In Colorado phthisis was practically unknown until cases from other States brought it there. Now it is found among the native population.

This view is strongly supported by the inquiries of Drs. Greenlow, Parkes, Farry, Morgan, and others; especially that the disease is connected in some way with decomposing, purifying organic matter, particularly of that of respiration. The great physician Baneloque regards this last as the sole cause. And Sir James Clarke regarded the respiration of a deteriorated atmosphere as one of the most powerful causes of this disease. A late member of the *Medical and Surgical Reporter* says too, this view receives very strong support from the history of health resorts in Europe. The time was when phthisis was practically unknown in Maderia, in Naples, in Malta, along the Rivera and the Upper Nile. Consumptives flocked there in crowds, and now in all those districts the native population succumb to the disease in quite as large proportion as elsewhere. The practical lesson is that equal care about disinfection and sanitation should be exercised in regard to consumption, as in regard to typhoid or scarlet fever.

**MILK AGAIN.**—The 'milk of human kindness' is sometimes spoken of. In Toronto they get the milk of human trickery, it would seem, according to the report of the public analyst. But possibly the cows have 'water on the brain,' as a milkman pleaded before a magistrate recently in England. The plea did not serve him there, however, and he was heavily fined. Hardly a week passes that we do not observe in our English exchanges notice of one or more outbreaks of typhoid traced directly and unmistakeably to the milk supply. In Canada, having no inspection, or sanitary machinery whereby such outbreaks or cases of disease can be traced, the people are in blissful ignorance of the number of cases of disease and death, the germs of which are secretly conveyed to them in the milk-can, possibly from some barnyard pump. When shall there be a system of milk and cow inspection here to afford the people some protection?

**ALCOHOL AND COLD.**—At a meeting given to the Good Templars of the English Arctic expedition, Mr. William Malley, of the Alert, in relating his experiences, said that among the few men who escaped scurvy, and did any sledging worthy of notice, were four teetotallers, who enjoyed perfect immunity from all sickness, establishing beyond the shadow of doubt that the intense cold of the Polar regions could be well endured without the aid of stimulants.

**BOARDS OF HEALTH.**—The committee appointed by the American Medical Association for the State of West Virginia, for the purpose, has memorialized the Legislature to create a State Board of Health. The petition states, twelve States have seen the wisdom of such Boards, and are now reaping the golden fruits matured from such efforts. That we may keep pace with our sister States, we must call to our aid sanitary knowledge.

Competent men, members of Legislatures, who have been as such, desirous of great economy in disbursing the public funds, have, from their own experience, acknowledged that funds so voted by the State authorities for such support have been more than repaid by the reforms brought about in various villages and towns, which reforms have mitigated or prevented diseases previously existing at periods of the year.

**AERATED BREAD.**—On the important subject of bread, the *Sanitary Record* observes: The manufacture of aerated bread has now stood the test of fifteen years' experiment with progressively increasing success. Nor is this result to be wondered at when we consider the differences in the process of manufacture. The abomination of the bread-making process, as carried on in ordinary bakehouses, and revealed in reports on the subject, are enough to upset the strongest stomach, and make one wonder that aerated bread is not even more universally used than it is at the present time. Readers of this JOURNAL and others may obtain aerated bread of excellent quality, at Mr. J. Nasmith's, Adelaide St., the only manufacturer of aerated bread in Ontario.

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**TO OUR READERS AND FRIENDS.**—We again commence our monthly visits and shall make great efforts to render them interesting and instructive.

We dislike to talk again of money, but we shall require much of it now to continue the enlarged, improved form of the JOURNAL we have adopted; giving about 50 per cent. more reading matter for the same money.

TWO DOLLARS NOW may do as much good as \$3 some time hence, and we sincerely hope our friends will not put us to the expense and trouble of sending bills, but will remit without any delay, *now*, in advance. To those in arrears now, we shall send bills with our next, if they will not be so kind as to save us the trouble by soon remitting the amount, as marked on outside of cover, first page, above.

Please attend to this and oblige; or, if they would only let us hear from them by Post Card, fixing a date on which to pay, as a few have done

IN THE NEXT NUMBER of the JOURNAL there will be an article on the Public School Houses in Toronto, the Hygienic Experiences of an Invalid, and on Women's Dress. Some book-notices of books received have been crowded out, but will appear in the next.

FOURTH ANNUAL REPORT of the Secretary of the State Board of Health of Michigan. Lansing: George & Co.

This is a volume of nearly 200 pages, full of highly instructive matter, on such subjects as the Achievements of Hygienic Science and Art; Vaccination; Criminal Abortion; Sanitary Improvements in Schools; Methods of collecting Vital Statistics, &c. About 1,600 copies of the Report have been distributed, which cannot fail to be of great service in educating the people in sanitary matters.

THE CANADIAN MONTHLY and National Review. Toronto: Hart & Rawlinson.

The May number of this thoroughly Canadian periodical is before us. It is not too little to say that under its new proprietary it seems not to lose in interest; and we wish it every possible success. The number contains an able article on the "Evolution of Morality," by J. A. Allen; "Our noblest end is health and vigor of mind and body." "As civilized men we are yet only in the *transition* stage of our moral life." "But the process is going on and the result is certain;" undoubtedly, though it be a "thousand millenniums" hence. We have, among other good things, perhaps most worthy of note, the conclusion, seemingly, of Louisa Murray's "Swift and The Women who Loved Him," full of interest; and a poem, "Spring Birds," genuine poetry; concluding with Current Events, Reviews, Music and the Drama, worth the price of the Monthly.

BELFORD'S MONTHLY MAGAZINE. Toronto: Belford Bros.

This new magazine, the sixth number of which we have received, was started with the belief that there was room in the Dominion for a magazine of a "popular character," without being inferior as a literary work. It has been well received, and we hope it will be a success. Its illustrations will compare very favourably with those of English monthlies. The principal story, a serial, receives its name from its principal character, "Nicholas Minturn," a truly original "hero." This is written by J. G. Holland, a well-known and able author, and must command interest. The May number contains a strange, interesting, psychological story, "The Gerrard Street Mystery," in which old Toronto characters are the actors. The "Current literature" is interesting and instructive.

WE SINCERELY THANK all those who have kindly exchanged journals with us for yet more kindly continuing to send their journals during the suspension of ours. We have received ALL with remarkable regularity, and our friends must not entertain a doubt of our full appreciation of their goodness.

ERRATA.—The illustrations on page 3 ought to show a trap between the sewers and yard ventilators. It is mentioned, however, in the text. At page 11 for Mosaic Mode read Mosaic Code.